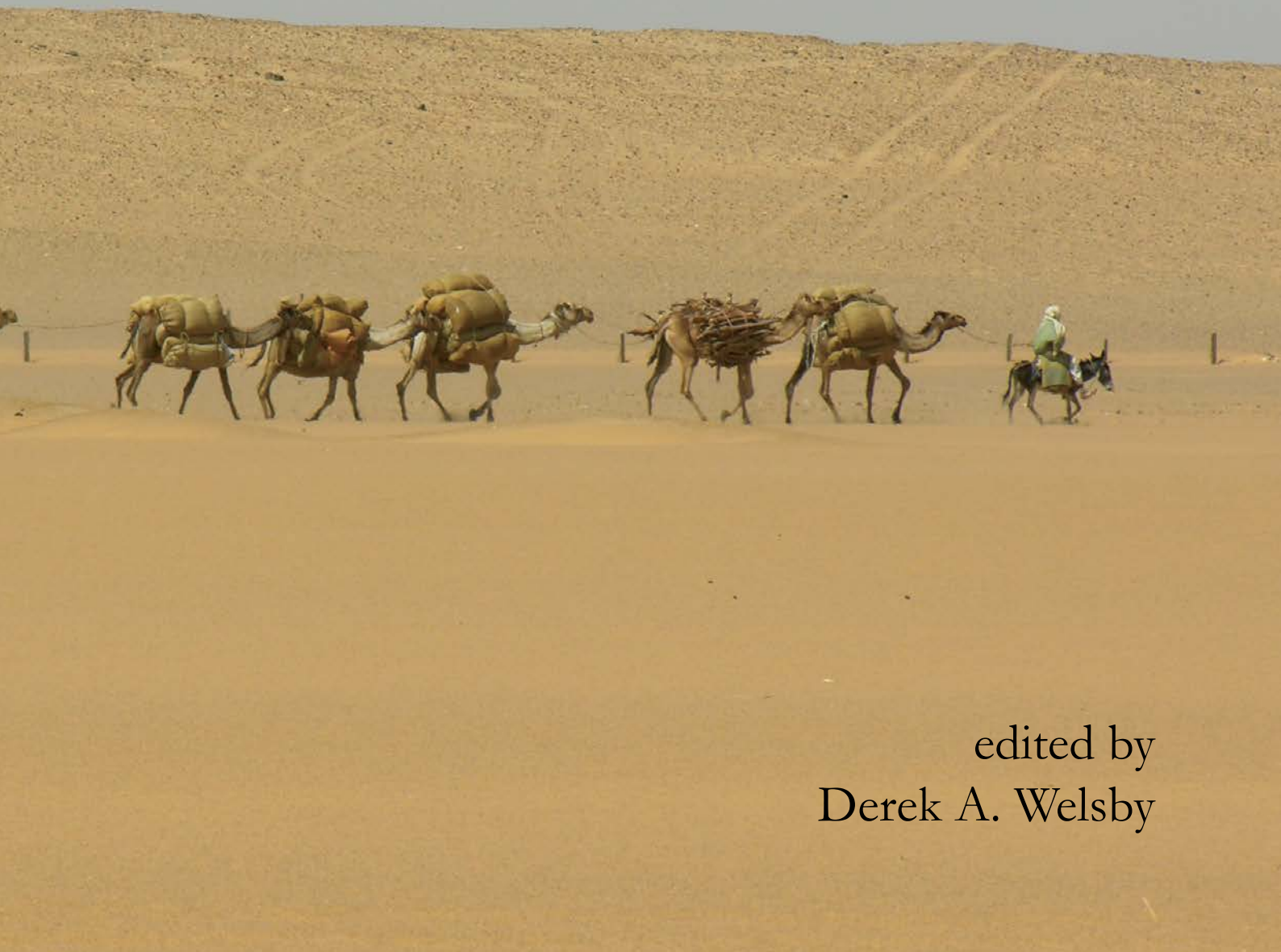


GEMATON: LIVING AND DYING IN A KUSHITE TOWN ON THE NILE

Volume I

Excavations at Kawa,
1997-2018



edited by
Derek A. Welsby

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with contributions by

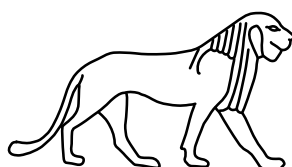
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Front cover: Kawa, the upper town from the east

Back cover: Pyramid S5 in the Kushite cemetery, site R18



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1. Introduction

Derek A. Welsby

The archaeological site at Kawa¹ lies on the right bank of the Nile 7km upstream of the bridge which spans the Nile from Seleim to Dongola. The modern tarmac road from Kareima to Dongola and the north passes less than a kilometre to the east while to the west the site is bounded by the steep river bank. Although the Northern Dongola Reach is heavily populated Kawa still maintains its isolation, the result of the prominent dunes and soft sand sheets that make driving past it a difficult endeavour. To the north there is a gradual encroachment of farms but these may have been halted for the time being and that established immediately adjacent to the *tell* was abandoned well over a decade ago.

History of archaeological activities at Kawa

Kawa has in the past been little visited. The main route through the region passes north along the left bank of the Nile to Dongola at which point, until recently by ferry but now by the bridge, through traffic crosses the Nile to the east bank proceeding north to Kerma and beyond. From the ferry crossing/bridge a route branched off from the river crossing the desert to Kareima. Until the completion of the tarmac road a few years ago this route, the Sikkat el-Maheila, was little used and was particularly dangerous being known as the Road of Death. Very little traffic passed close to Kawa; what little traffic proceeded upstream on the right bank went several kilometres to the east along the Wadi el-Khowi. Owing to its location Kawa was rarely visited by travellers and antiquarians in the 19th century. Waddington and Hanbury, Calliaud, Linant de Bellefonds, Hoskins² and Lepsius all failed to record its ruins. The earliest mention of the site comes in 1884 on 13th December when Wolesley *en route* from Dongola to el-Khandaq was forced to put in to the bank to repair a leak in his *dahabieh*. He notes

‘... the remains of a temple & apparently of copper smelting works—I am told that some good bronze statuettes have been dug up here and some scarabei.’

(Preston 1967, 86)

In 1885 it became the site of the earliest British excavation in Sudan when, on the suggestion of Col. Colthorne, some troops of the Gordon Relief Expedition agreed to participate in excavations on the site.

‘Accordingly, half-a-dozen of us accompanied him thither, on his *dahabieh* and in whalers, drank his brandies and sodas—such a luxury!—

¹ In *The Archaeological Map of Sudan* reference system the following have been assigned to Kawa:

NE-36-A/20-0-(100-999) – temple and connected sites

NE-36-A/20-0-(1000-1999) – structures and sites in the northern part

NE-36-A/20-0-(2000-2999) – structures and sites in the southern part

² Cowah does however, appear as a village on the map produced by Hoskins (1835).

and pretended to be deeply interested in the proceedings. So we hired a lot of locals, and set them to work with shovels. Very soon the pillars began to grow, and the workmen found themselves on the roof of a tiny temple. Digging away all round this disclosed some interesting hieroglyphics on the walls, and seven or eight feet down we came on some large figures in relief of gods and goddesses, together with the top of the entrance into the holy place. As enough had been done for one day, we returned home, intending to come another time.’

(Gleichen 1888, 281-2)

This work, mentioned in passing, is the only reference to Kawa in Budge’s *The Anglo Egyptian Sudan* (Budge 1907, 372). The location of this temple is unknown.

The site was mentioned in the section devoted to antiquities by Gleichen and Crowfoot in *The Anglo-Egyptian Sudan a Compendium Prepared by Officers of the Sudan Government* published in 1905,

‘Six or seven miles south of New Dongola, on the right bank at a place named Kawa, is a delicate little Egyptian temple, date unknown, in good preservation. (Discovered and partially excavated by Colonel Hon. J. Colborne, 1885).’

(Gleichen and Crowfoot 1905, 313)

On the 4th January 1910 the Egyptologist, F. W. Green while staying in Dongola made a visit to Kawa where he had been told that there were ruins.³

The site proved one of considerable extent: judging by the pottery I should say ½ along the bank and extending about ¼ K inland. A camel track of importance from Old Dongola here rejoins the Nile having cut off a large bend. The surface is sandy but quite close below alluvial earth is met with. There traces abound of about three temples or stone buildings the most perfect shows the stumps of 3 small sandstone columns showing above ground while the extent of the building is marked by quantities of sandstone chips with a few fragments of brick (A) At B (see plan) are other traces of stone work C is a building of crude brick heap up with a mass of pottery and potter [*sic*] intermingled with wood ashes The pots are the local representative of the “tuyes” but are unperforated like those at Karema All are broken, and in places have formed a sort of conglomerate with the ash which they contained I have always maintained that these are some sort of offerings brought to

³ This reference, to be found in the unpublished diary of Green, was kindly brought to my attention by Vivian Davies.

the temple. I so much believe, and in this case it is impossible, that they were tuyes of a furnace. As I have already said this form seems to be the local shape of the more elongated variety found in Egypt and at Muzgas which I take to be 18th Dyn the more foot shaped vase may be meroitic.

To the south of the temple on a mound are remains of brick houses, with masses of pottery and occasional pieces of bronze vessels. Here I found two pieces of worked gneiss similar to that of the Colossi at Argo, they were evidently parts of a statue the surface was well polished, not merely hammer dressed as is the case with the colossi & the group of apes, I am inclined to attribute the ..., therefore to the 18th Dynasty there is a certain amount of 18th pottery, Sayce picked up a nearly whole saucer of this shape & I part of a tall pot of good early 18 shape I also found a small axehead of diorite. There is a certain amount of "pan pottery" but rather coarse this came from among the houses. I think it is 12-18 or 18th Dyn. To the south again is a considerable cemetery quantities of small

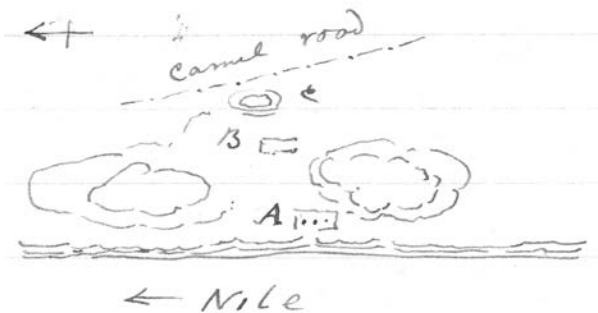


Figure 1.1. Green's sketch plan of Kawa.

pieces of pottery and bone litter the sandy ground. In some cases these bones are those of animals, as a tooth I found was that of an ox as far as I could see. This may have been part of some meal + this place a house sits there were bricks about on the heap of pots

(F. W. Green diary)⁴

The first readily accessible report on the site was that published by F. Addison in *Sudan Notes and Records* for 1929. At the insistence of the governor of the province he records how he cleared a part of the temple built by Taharqo in December 1928 and noted the 18th Dynasty temple lying to the west. On the evidence found Addison suggested that the town was continuously occupied for at least 1500 years until Meroitic times (Addison 1929, 89). Colonel Huth Jackson had also excavated on the site within the 18th Dynasty temple where he uncovered mud-brick walls covered with painted plaster which had been destroyed by the time of Griffith's excavations (Griffith 1955a, 2).

In late 1929 Francis Llewellyn Griffith spent eight days with a team of between 50 and 100 workmen investigat-

ing the temples built in the 18th Dynasty and by Taharqo. In November 1930 work began in earnest with a workforce of 300 men and a few boys, the excavations being completed in late February-early March 1931. Griffith excavated the following:

- Temple A – built by Tutankhamun
- Temple B – later Kushite reusing columns of Shabaqo
- Temple T – built by Taharqo
- Western kiosk
- Altar associated with Temple T
- Eastern kiosk
- 'Eastern Palace' – a later Kushite temple.

Following the death of Griffith in 1934 the project was completed under the direction of Laurence P. Kirwan with M. F. Laming Macadam as epigrapher. This expedition arrived in Kawa on 6th November 1935 and during the single season the epigraphic material collected by Griffith's team was collated while Kirwan excavated in the garden of Temple T and in a sequence of dwellings abutting the inner face of the *temenos* wall. The results of the Oxford Excavation Committee's work were published in full in 1949 and 1955; the temples with reliefs and inscriptions by Laming Macadam, the excavations of 1935-6 by Kirwan.

No further archaeological research took place on the site for several decades although, as a result of the discoveries made, its pivotal role on any discussion of, in particular the early phases of the Kushite state, meant that it was frequently referenced.

In 1993, mindful of the increasing rate of development particularly of agriculture in the Northern Dongola Reach, the Sudan Archaeological Research Society, with the full support of the National Corporation for Antiquities and Museums began a campaign of survey on the east bank. The first season focussed on the environs of Kawa although the town itself was excluded from the survey. During this first season 10km² were surveyed to the north, south and east of the Pharaonic and Kushite town. As well as sites and artefacts dating to the Neolithic and Kerma periods one very large (Site R18) and one smaller (site R22) Kushite cemeteries were surveyed in detail, the results being published in *Life on the Desert Edge* in 2001 (Welsby 2001a). With the completion of the Northern Dongola Reach survey in 1996, and the one season devoted to the excavation of a number of key sites, attention was turned to Kawa, by far the largest archaeological site in the concession. It had been the intention to inaugurate a campaign of excavation on the site over the next decade beginning in the winter of 1997-8. However things did not go entirely to plan. The threat of a new dam on the Nile at the Fourth Cataract led SARS to devote its 1998-9 season to an exploratory mission to the Cataract. During the planning of that season the American cruise missile attack on Khartoum, endorsed by the British prime minister, Tony Blair, resulted in a break of diplomatic relations and created an insurance problem. The Fourth Cataract season was thus postponed to the autumn of 1999 and the Kawa season for that winter pushed back into early 2000. After two seasons at Kawa again the work was disrupted when the decision to build the Merowe Dam was taken.

⁴ The text and Figure 1.1 are published here courtesy of the Trustees of the British Museum.

From 2003–2007 the Society was fully occupied at the Fourth Cataract.

With the end of the Merowe Dam Archaeological Salvage Project work at Kawa recommenced each winter until 2010–11, that season being devoted to the total excavation of the *Kerma Ancien* cemetery at site H29. The excavation season in the winter of 2012 was to be funded by the Qatar Sudan Archaeological Project (QSAP) but funds did not appear in time to undertake the work. From 2013 until 2018 the Kawa Excavation Project continued under the auspices of the British Museum as a part of, and entirely financed by, QSAP.

Survey and excavation teams

1993, January to February – Melanie Browning (surveyor), Fathi Abdul Hamid Salih Khider (NCAM inspector), Helen Kehoe (archaeologist), Helen Poplett (archaeologist), Nick Wells (archaeologist), Isabella Welsby Sjöström (pottery specialist), Derek Welsby (director).

1997–8, December to February – Abdelhai Abdelsawi (NCAM Inspector), Angela Brennan (archaeologist), Stephen Fletcher (archaeologist), Lisa Harris (archaeologist), Fred Heller (archaeologist), John Percival (archaeologist), Isabella Welsby Sjöström (pottery specialist, assistant director), Derek Welsby (director).

2000, January to March – Margaret Judd (physical anthropologist), Gail Mabbott (archaeologist), Mohammed Faroug (NCAM inspector), Charles Morse (archaeologist), Robert Radford (site planner), Alexey Vinogradov (archaeologist, epigrapher), Isabella Welsby Sjöström (pottery specialist, assistant director), Derek Welsby (director).

2000–1, December to February – James Beckwith (archaeologist), Lauren Bruning (archaeologist), Kim Burrows (archaeozoologist), Margaret Judd (archaeologist, physical anthropologist), Nassreen Sedek Yahya (NCAM inspector), John Payne (archaeologist), Philippa Pearce (conservator), Paulina Terendy (site planner, illustrator), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

2001–2, December to February – James Beckwith (archaeologist), Jon Crisp (archaeologist), Claire Haywood (conservator), Margaret Judd (archaeologist, physical anthropologist), Mortada Bushara (NCAM inspector), Sandra Rowntree (site planner, illustrator), Pip Stephenson (archaeologist), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

2007–8, December to February – Catherine Ambrey (archaeologist), Enas Awadulla Mohammed (NCAM inspector), Iwona Kozieradzka (physical anthropologist), Anna Mabrey (archaeologist), Mohammed Ibrahim Mahmoud (cook), Julian Newman (archaeologist), Stephen Porter (archaeologist), Alison Tigg (archaeologist), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

2008–9, December to February – Pernille Bangsgaard Jensen (archaeozoologist), Alice Forward (archaeologist), Enas Awadulla Mohammed (NCAM inspector), Moham-

med Ibrahim Mahmoud (cook), Julian Newman (archaeologist), Ross Thomas (archaeologist, pottery specialist), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

For two weeks – Tomasz Herbich, Dawid Świąch (remote sensing experts).

For one week – Mark Macklin, Jamie Woodward (geomorphologists).

2009–10, December to February – Tanya Bowie (archaeologist), Emilie Gustafsson (physical anthropologist), Matt Harrison (archaeologist), Mohammed Ibrahim Mahmoud (cook), Mortada Bushara (NCAM inspector), Stephen Porter (archaeologist), Ross Thomas (archaeologist, pottery assistant), Alison Tigg (archaeologist), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

For one month – Sue Coffey.

For several days – Yong Soo.

Irene Vincentelli assisted by Silvia Bonamore studied the seal impressions.

2010–11, December to February – Abdelhai Abdelsawi (NCAM inspector), Pernille Bangsgaard Jensen (archaeozoologist), Tanya Bowie (archaeologist), Susanne Hakenbeck (archaeologist), Jane Joyce (illustrator), Natasha Kalogirou (physical anthropologist), Mohammed Ibrahim Mahmoud (cook), Stephen Porter (archaeologist), Ross Thomas (archaeologist, pottery assistant), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

For one month – Peter Lovell, Chris Lovell.

For two weeks – Paul Major.

2013, January to February – Abdelhai Abdelsawi (NCAM inspector), Silvia Gomez (archaeologist), Moises Hernandez (archaeologist), Susanne Hakenbeck (archaeologist), Julian Newman (archaeologist), Rebecca Whiting (archaeologist, physical anthropologist), Mohammed Ibrahim Mahmoud (cook), Jon-Paul McCool (archaeologist), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

2013–14, December to February – el-Ghazafi Yousif Ishag and Murtada Bushara (NCAM inspectors), Guy Cockin (archaeologist), Mike Lewis (archaeologist), Steve Matthews (archaeologist), Nina Olofsson (archaeologist), Rebecca Whiting (archaeologist, physical anthropologist), Mohammed Ibrahim Mahmoud (cook), Hannah Woodrow (archaeologist), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

For two weeks – Matthew Berry, Sophie Hay and Steven Kay (Ground Penetrating Radar team).

2014–15, December to February – Haitham Mohammed Abdurahman Elimam (NCAM inspector), Alice Jones (archaeologist), Monica Frombellida (archaeologist), Michael Joyce (archaeologist), Elisa Vecchi (site planner, illustrator), Lauren Neal (archaeologist, small finds registrar), Iain Bennett (archaeologist), Bonnie Knapp (archaeologist, physical anthropologist), Mohammed Ibrahim Mahmoud (cook), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

2016, January to February – el-Said Ahmed Mukhtar (NCAM inspector), Piotr Osypiński (prehistorian), Monica Fombellida (small finds registrar), Loretta Kilroe (pottery specialist), Mohammed Ibrahim Mahmoud (cook), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

2016-17, December to February – Haitham Mohammed Abdurahman Elimam (NCAM inspector), Eliza Doherty (conservator), Alain Pascal (illustrator), Poppy Yapp (small finds registrar), Mohammed Ibrahim Mahmoud (cook), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

2017, January to March⁵ – Belsem Abdul Hassan (NCAM inspector), Guy Cockin (archaeologist), Andrew Ginns (director), Luke Jarvis (archaeologist), Mohammed Ibrahim Mahmoud (cook), Tatiana Vlemincq-Mendieta (physical anthropologist).

2017-18, December to February⁶ – Haitham Mohammed Abdurahman Elimam (NCAM inspector), Grant Bettinson (archaeologist), Eliza Doherty (conservator), Alain Pascal (illustrator), Mohammed Ibrahim Mahmoud (cook), Steven Porter (archaeologist), Tatiana Vlemincq (physical anthropologist, small finds registrar), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director).

For 10 days – Tomasz Herbich and Robert Ryndziewicz (gradiometer survey).

Preservation of the site

Kawa is one of the best preserved archaeological sites in Sudan and has not been devastated by earlier generations of archaeologists as have such sites as Jebel Barkal and Meroe. It owes its preservation to the wind-blown sand which has been a serious problem on the site at least from the mid 5th century BC. During the life of the town there was a constant build-up of sand both outside buildings and within them. Some buildings became partly subterranean during their life in use, others saw a remorseless rise in their internal floor surface. Abandoned buildings were rapidly engulfed in sand to be overbuilt by later structures. The wind-blown sand is both an ally and a bane for archaeologists. The first to feel the frustration of their excavations being infilled during the work were the troops of Colthorne in 1885.

‘It so happened that a strong wind blew for the next three days, and when we returned to the place nothing was visible but the broken pillar tops as before—all our labour was buried in the sand-drift!’

(Gleichen 1888, 282)

Kirwan faced this problem in 1935 when many of the buildings excavated five years earlier were infilled with ‘vast quantities of sand which had encumbered and in some cases buried the various monuments’ (Kirwan 1955, 207). The situation remains the same today with the often gale-

⁵ Owing to logistical difficulties the SARS Kurgus excavation team, with the permission of NCAM, relocated to Kawa for the single season.

⁶ Bettinson, Porter and Doherty each participated in the season for one month.

force wind not only importing vast amounts of sand into excavation trenches but also scouring the newly exposed deposits and undermining walls. Structures totally covered in sand are protected from further destruction but anything left above the sand is very susceptible to severe erosion as can be seen only too clearly in the columns of the First Court in Taharqo’s temple, columns first exposed by Griffith. Another serious danger to exposed architectural elements is the very infrequent but on occasion short-lived heavy rainfall. These agents served to seriously damage the walls uncovered by Jackson (Griffith 1955a, 2) and those uncovered by Griffith which had been seriously weakened by a heavy fall of rain between 1931 and 1935 (Kirwan 1955, 207).

Objectives of the current project

The town

The excavations of the Oxford Excavation Committee were spectacularly successful. As well as uncovering the remains of important monumental buildings the discovery of a large number of inscriptions and reliefs shed much light on early Kushite history, art and religion. The temple of Tutankhamun carried the story back close to the date of the town’s foundation as an Egyptian centre, presumably at the time of Akhenaten. Although Kirwan broadened the remit of the project, excavating the temple gardens and houses, all the work was focussed in a restricted part of the site. Griffith estimated that the site covered about 15ha; in reality it extends over a minimum of 29ha and perhaps much more, particularly to the north and south.

The present project began by placing Kawa in the context of its immediate environs and on a regional level. The study of a large and complex archaeological site such as Kawa is problematic. In many other places only limited parts of the whole can be investigated amongst more recent buildings and infrastructure such as roads and railways. At Kawa the whole site is available for excavation although the earlier phases can be expected in many places to be buried by later features and deposits. In the now quite distant past large archaeological sites could be cleared if not excavated quickly and there are good examples of this approach in Sudan as at Sesebi, Jebel Barkal and Meroe. Such an approach was not only a product of the much less meticulous archaeological techniques used but of the much greater funding available – Griffith could employ 300 men along with a *decauville* railway at Kawa for example. Now the pace of excavation is dramatically and quite rightly curtailed by the need to proceed in a very careful and meticulous manner. Given that, the excavation of a site such as Kawa is a daunting task. With its large size and an estimated 12m of stratigraphy anything even approaching total excavation would take many decades. We are thus forced to focus on certain aspects of the site and to try and target those areas of the site which might provide the data on the research questions.

At its broadest level the present project is seeking to gather information on all aspects of life at Kawa with a reduced focus on the major religious institutions

adequately investigated by Griffith and his colleagues. It is now clear that generally structures and deposits dating to the Egyptian occupation of the town are deeply buried below those of the Kushite period. The project as a result is mainly involved in Kushite settlement archaeology and the aims and results below must be seen in this context.

With the focus on the town itself a number of activities and research themes have been pursued.

Topographic survey

The first task was to undertake a detailed topographic survey of the town making a detailed record of its appearance before we disturbed the archaeological record further. This has been achieved by the production of a detailed contour survey utilising a total station.

Planning buildings

In part of the site some buildings are upstanding, perhaps having been cleared by robbers in the past. Elsewhere walls lie immediately under the surface. In these cases the wall tops were brushed to reveal the uppermost course of bricks but no attempt was made to dig down to reveal more deeply buried sections of walling so as not to disturb the underlying stratigraphy. All walls were planned at a scale of 1:50 and located on the overall plan of the town. To further enhance our understanding of the town plan a Fluxgate Gradiometer and Ground Penetrating Radar were used.

The town plan produced, although having many gaps within it, offers an idea of the special distribution of activity areas across the site which was used to inform the location for detailed excavations.

Excavations

In pursuit of our stated aim to move towards an understanding of life at Kawa in the past a range of what appeared from surface indications to be different activity areas were investigated.

Domestic housing

– Area B large scale excavation of parts of two streets, a single (Building B1) and a multi-period dwelling (Buildings B5, B12, B13 and B14).

– Area C a single season of excavation of a palimpsest of domestic buildings and of the street which they flank.

A shrine and adjacent structures

– Area A, a mud-brick religious monument (Building A1) dating from the time of Taharqo along with an associated dwelling (Building A2) and earlier housings (Buildings A3 and A4) and occupation deposits.

Gateway and *temenos* wall

– Grid square (TG5), investigation of the gateway and multiple phases of *temenos* wall surrounding the temple built by Taharqo.

Administrative/store building

– Area F, Building F1, a large multi-roomed, mud-brick structure with store rooms at ground level and higher status accommodation above.

Industrial complex

– Area F, two later Kushite mud-brick rectangular kilns (Buildings F3 and F7) cutting through the denuded remains of earlier housing.

Building of uncertain form and function

– Area Z, remnants of a building (Building Z1) towards the northern edge of the urban area.

– very limited excavation within the courtyard of the building complex, F4, F5 and F10.

Street

– Grid square (FZ2), a street flanked by small mud-brick structures of uncertain use.

The cemetery

Griffith only excavated three graves in the cemetery which lies to the east of the town as a way of training his workforce (Laming Macadam 1955, 116). The eastern cemetery (Site R18) was surveyed in detail in 1993 by the SARS team. Covering approximately 32ha, 823 features, which at the time were assumed to be grave monuments, were recorded (Welsby 2001a, 148-150, figs 3.96 & 3.97). The north cemetery (Site R22) was also recorded in a similar way (Welsby 2001a, 151, fig. 3.100) but all traces of it had vanished in 2007 by which time a new farm had been laid out over its remains. The parallel investigation of a settlement and its associated cemetery is an ideal scenario. We are able to study where people lived, what objects they used and what food detritus they left while at the same time looking at the impact of aspects of life at Kawa on the individuals themselves.

In the cemetery we again sampled different areas to try and gain an overview of its use. Large scale excavations have been conducted in four areas

Area (GD3) – A dense concentration of graves with many intercutting. This was the only excavation area where clear Napatan-period burials were located.

Area (HA1) – a large number of grave cuts became visible on the alluvial surface following a prolonged period of high winds, of which 13 graves were excavated; no tomb monuments survived.

Area (HA2) – an area 20 x 20m square was excavated with the location of 19 graves some of which were reused on more than one occasion.

Area J – a total of 4,075m² was excavated with the location of 43 graves. Surviving tomb monuments included one tumulus, six stone pyramids and several mud-brick structures which also may have had a pyramidal form.

Several individual tombs have also been excavated across the cemetery, that designated (KE5) being published by Fathi Abdul Hamid Salih Khider (1994; 2001).

Brick laying and bonding

In the reports that follow the placing of the bricks and the bonding employed in the foundations and walls are described following the conventions represented in Figure 1.2. The walls varied in thickness according to the layout of the bricks and can be categorised as follows:

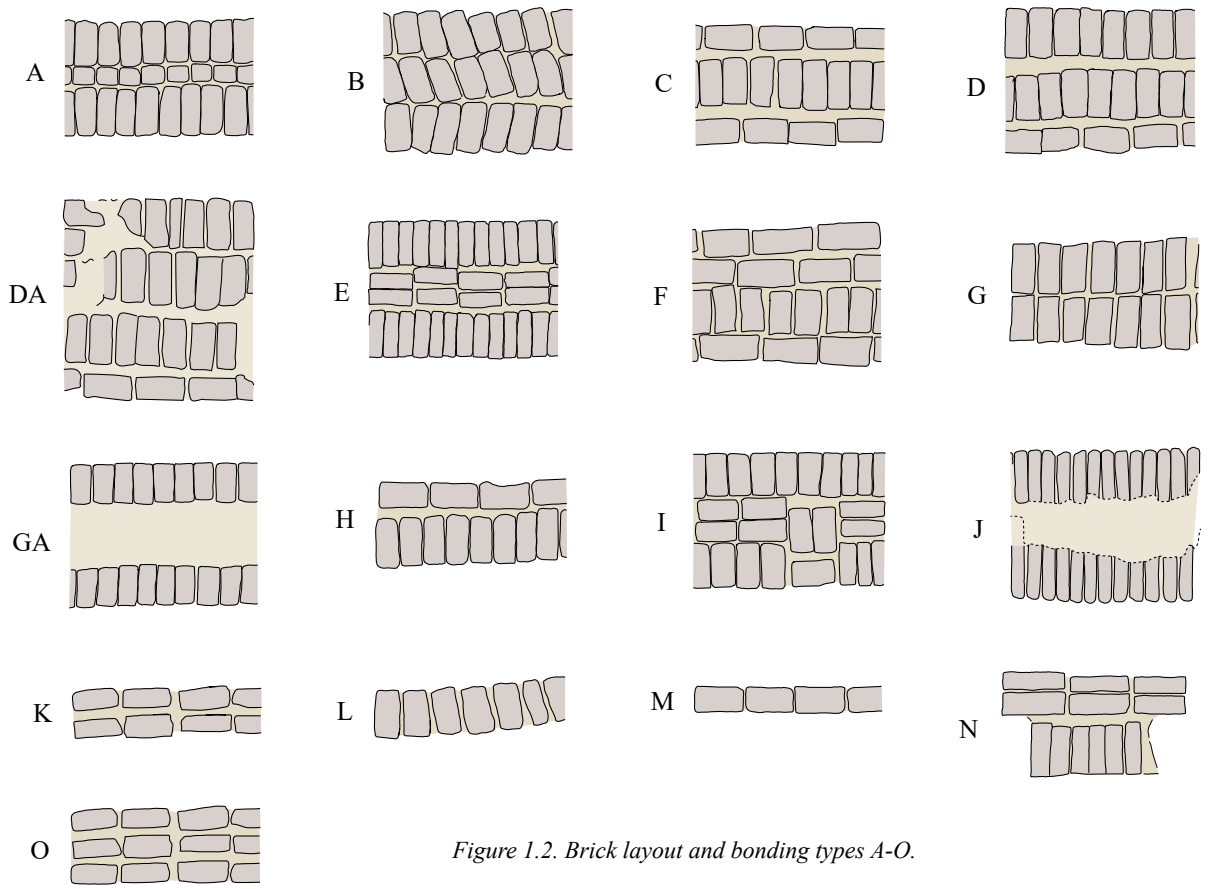
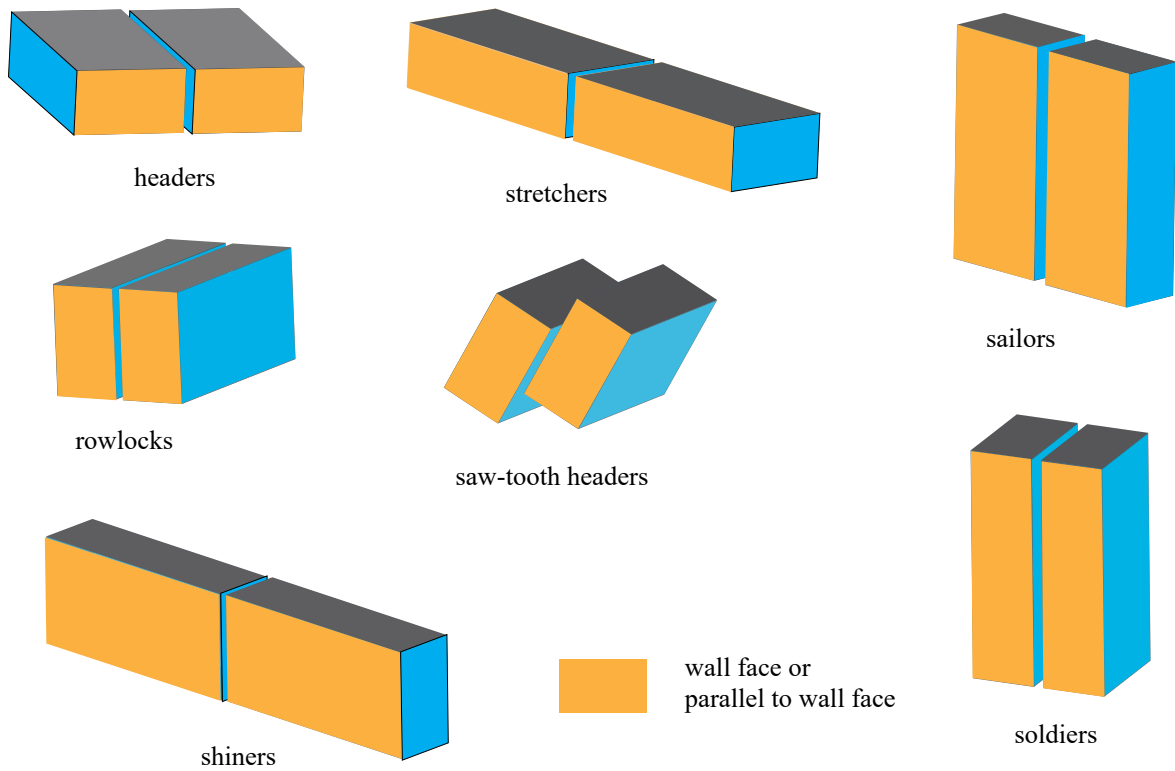


Figure 1.2. Brick layout and bonding types A-O.

Bricks laid as headers and/or stretchers

½-brick wall	Type M
1-brick wall	Types K and L
1½-brick wall	Types H and O

2-brick wall
2½-brick wall
3-brick wall
3½-brick wall

Types C, G, GA and N
Types A, D and F
Types B and I
Type DA

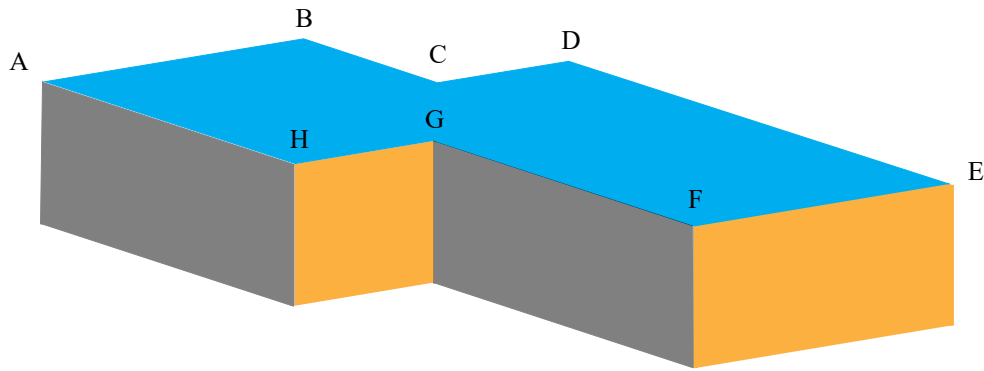


Figure 1.3. A floor tile from Building F3.

Bricks laid as rowlocks and/or shiners

2-brick wall Type J
3-brick wall Type E

In the kiln, Building F3, the floor tiles (Figure 1.3) were identical to the consistency of red bricks. Their dimensions varied a little, perhaps the result of differential shrinking as they were fired or burnt *in situ* in the kiln. A sample range of dimensions are as follows:

A-B	173mm	179mm	174mm
B-C	93mm	90mm	95mm
C-D	83mm	91mm	90mm
D-E	277mm	270mm	265mm
E-F	178mm	177mm	180mm
F-G	183mm	180mm	186mm
G-H	93mm	91mm	94mm
H-A	176mm	175mm	173mm

Thickness: 79mm, 90mm, 94mm, 95mm

The Finds

Throughout the excavation reports the following prefixes are used to direct the reader to the appropriate specialist report for more details of individual finds. These will be published in volume II of the Kawa monographs (Welsby (ed.) forth. a.

- B- beads catalogue
(Then-Obłuska and Welsby forth.)
- B&M- basketry and matting catalogue
(Wendrich forth.)
- C- painted coffins catalogue
(Taylor forth. c)
- F- small finds catalogue
(Welsby and Taylor forth.)
- L- lithics catalogue (Osypiński forth.)
- ML- macrolithics catalogue
(Welsby forth. b)
- S- mud seal impressions catalogue
(Vincentelli forth.)
- Sc- scarabs catalogue (Taylor forth. a)

Any object number followed by an x is a pottery type number. For further details on the pottery referred to within the excavation reports see Welsby Sjöström 2023.

Acknowledgements

Throughout the project the teams working at Kawa were greatly assisted by the staff of the National Corporation for Antiquities and Museums in Khartoum. Accommodation was rented in the nearby village of Kasura, in most seasons from the el-Majid family, facilitated by Selim Abdul Majid who was also the site *ghaffir*. The excavations were undertaken by a workforce drawn from Kasura and its environs and to them we are most grateful for their hard work on site and hospitality in the village. Some of these men became very proficient excavators, particularly excelling in the difficult task of excavating graves and cleaning the bodies therein. The work was supervised by archaeologists from around the world as noted above, amongst whom the NCAM inspectors played a full role. This report on the surveys and excavations could not have been produced without the work of the local men, and the diligent recording of the uncovered remains by the site supervisors as the excavations progressed.

Excavations up until 2013 were funded by the Sudan Archaeological Research Society, greatly supported by grants from the British Museum, the Institute for Bioarchaeology and the Society's patrons. The British Museum, through the good offices of the Keeper of the Department of Ancient Egypt and Sudan, Vivian Davies, provided much logistical support and allowed its staff, particularly the excavation director but also a number of conservators, to participate in the work.

Dr Patricia Spencer kindly copy edited this volume. Any remaining errors are the full responsibility of the editor and the individual authors.

2. The Kushite town of Gematon

Derek A. Welsby

The Environs of Kawa

The area around Kawa was extensively surveyed in the first season of the Northern Dongola Reach Survey in 1993 (Figure 2.1; Welsby 2001a, 141-142, 147-153). Activities thereafter at Kawa were concentrated within the bounds of the Pharaonic and Kushite town and in the associated Kushite cemetery to the east, Site R18.

The Topographical Survey

When the Oxford Excavation Committee began work on the site they considered the settlement to cover an area of 15ha (Plate 2.1). This is indeed approximately the area of the high mound which forms the core of the town. To the north the mound tails off gradually into the raised *levee* along the river bank. Although the most northerly building identified to date, Building Z1, lies 350m north of Temple T¹ occupation material extended several hundreds of metres to the north and a cylindrical oven was noted in that area. To the west the site is bounded by the river with occupation material becoming very sparse as one gets close to the river bank or where large vegetated dunes mask any evidence of human occupation. To the east the mound drops steeply to the alluvial plain. To the north east of Temple T occupation material extends out into the plain while elsewhere this is not the case. As one moves further south a large dune encroaches on the site from the east. This is actively moving south west and has, within the last decade, encroached on the site boundary to a depth of over 1m. South of the prominent town mound there is an extensive elevated area covered in occupation material and with many traces of buildings visible on the surface. The most southerly building observed, Building A1, is 800m south of Temple T. Beyond that point the mound becomes indistinct but Kushite occupation debris extends at least another 200m to the south partly obscured by a scatter of post-Medieval artefacts and thereafter by large dunes.

Excavations of Building Z1 indicated that it was partly constructed on at least one terrace down a steep slope. The erosion of the walls indicating a slope, after the demise of the building, in the region of 15° (Plate 2.2). This is 40m to the west of the present top of slope down to the river. Much further south the geophysical survey suggested that

buildings were constructed up to the edge of the river bank, now approximately 65m to the east of the current river bank which at this point drops steeply to terraces which are extensively farmed. Extrapolating from this data a minimum area for the town is in the order of 29ha² although the limits to the north and south are imprecise and, of course, the size and density of occupation will have fluctuated over time.

In order to locate the features and artefacts found on the site a detailed topographic survey was undertaken result-



Plate 2.1. Aerial view of the Upper Town looking north east.



Plate 2.2. The north wall of Building Z1 Room 1 showing the steeply sloping ground surface at the time its upper superstructure was eroded away. This was subsequently covered by a deposit of wind-blown sand which formed a horizontal surface.

¹ All measurements are made from the centre of the doorway through the pylon.

² Following the early seasons of work at Kawa the area of the settlement was estimated at 36ha (Welsby 1999-2002, 184), based on the dense artefact spread. It was subsequently raised to 40ha (Welsby 2002, 42) on the assumption that the ancient town extended to the present-day, steeply sloping, river bank. Subsequent work showed that this was not the case.

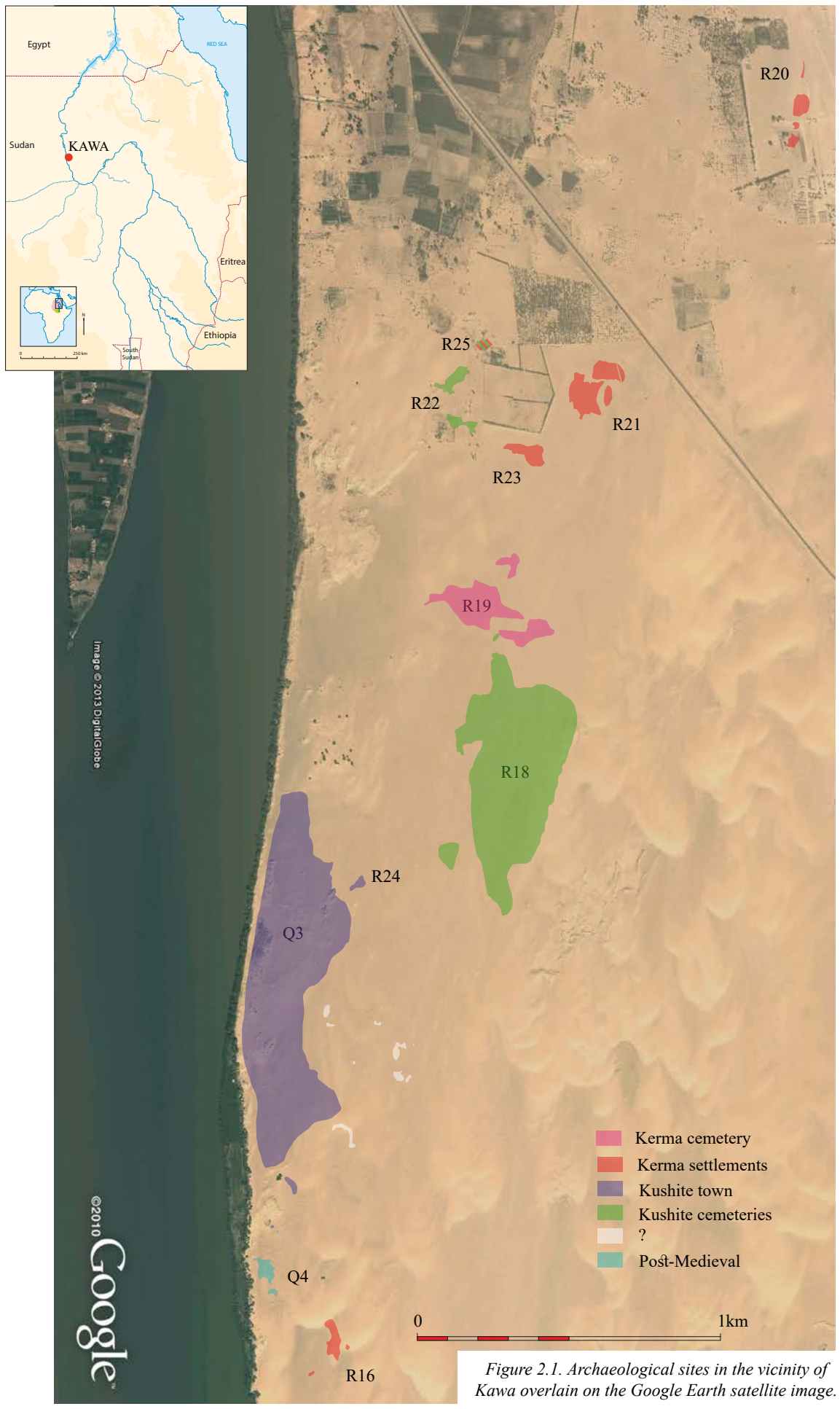
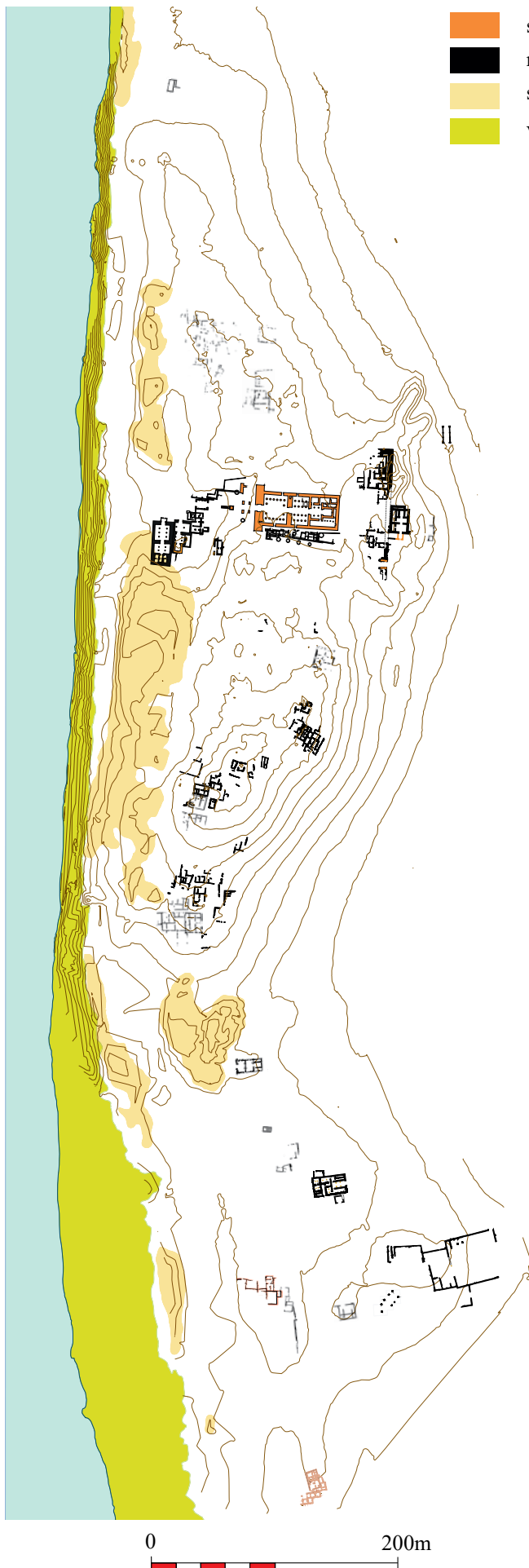


Figure 2.1. Archaeological sites in the vicinity of Kawa overlain on the Google Earth satellite image.



- stone
- mud brick
- sand dune
- vegetation

Figure 2.2. Contour plan of the site with the major building remains (scale 1:5000; contour interval 1m).

ing in the production of a contour plot of the whole site up to the boundaries of the core archaeological zone (Figure 2.2). Points were taken on average at 2m intervals, over 30,000 being logged in total. The remains today sit on the levee alongside the Nile and to the east extend down to the level of the plain which is approximately 5m above the current river level in December to February. It is likely that the plain has been subjected to flooding during or after the occupation of the town. The Eastern Kiosk excavated by Griffith on the lower slopes of the town mound had been severely eroded. This may explain the absence of clear evidence for the Pharaonic and sparse evidence for the early Kushite cemeteries while those of later Kushite date are well preserved and never appear to have suffered from fluvial erosion.

The whole of the surface within the town is covered in artefacts (Plate 2.3) and there are also dense concentrations of bone where the material has been broken into very small pieces. The bulk of the artefactual material comprises pottery sherds although there are also amounts of copper-alloy waste material, stone arrowheads, axes and grinding implements. There are very few upstanding architectural remains, most being those unearthed by the Oxford Excavation Committee including elements of Temples A, B and T, the Eastern Palace (also a temple), the *temenos* wall and the houses abutting onto its western side. Immediately to the south of the highest point on the site two houses are also visible as upstanding monuments. Presumably these have been cleared at some time in the not too distant past but by whom is uncertain. Further walls are now visible as a result of the SARS excavations in Areas,



Plate 2.3. General view across the upper town showing the abundance of artefacts visible on the surface.

A, B, C, F and T. Elsewhere walls lie immediately below the surface to which level they have been eroded by the often extremely strong sand-laden north wind. At that level they have reached an equilibrium, the surrounding surface stabilised by the large amounts of artefacts resting on it.

Planning of surface features

Walking across the town buried walls were easily located in many areas as the transition from soft sand to hard wall and back onto soft sand betrayed their presence. By the simple expedient of brushing a thin layer of sand, gravel and artefacts from the surface walls became visible and these were planned in detail (Plate 2.4). The site has suf-

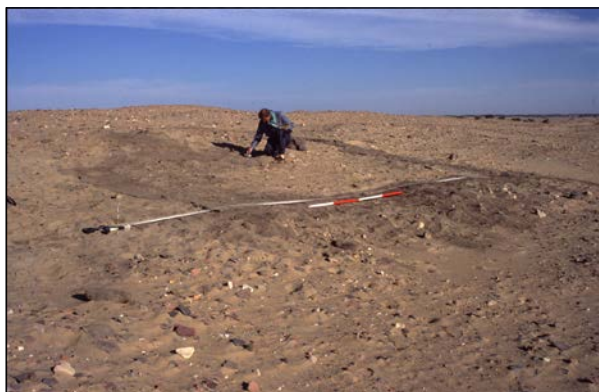


Plate 2.4. John Payne planning buildings visible on the surface in Area C.

ferred extensively from the activities of the *sebakhiin* and in many areas walls suddenly disappear while elsewhere they dive down beneath sand or later occupation deposits. Under no circumstances were the walls traced down through later deposits nor were the sides of walls cleared to facilitate the production of a more detailed plan. Such activities would potentially cause serious damage to stratigraphic relationships between the walls and adjacent deposits and were deemed undesirable. To enhance recovery of the building plans a fluxgate gradiometer survey was undertaken which covered most of the lower town, a total of 9.62ha being surveyed by Tomasz Herbich and Dawid Świąch (Figure 2.3a, Plates 2.5 & 2.6). A smaller area, 5.34ha, was also investigated immediately south of Temple T by Tomasz Herbich and Robert Ryndziewicz (Figure 2.3b) and another in the northern part of the site (Figure 2.3c). It was noted that some walls clearly visible on the surface do not appear on the geophysical plot at all presumably because the walls were so shallow, only surviving to a few courses at the most.³

Ground penetrating radar was also employed (Plate 2.7) (for a sample of the results see Figures 2.5 & 2.6).⁴ The GPR survey partly duplicated that of the gradiometer with a view specifically to investigate those areas in the lower town where the earlier survey had not located any

³ For a discussion of the technical aspects of the survey and an interpretation of the results see Herbich and Ryndziewicz 2019; Herbich, this volume.

⁴ The team from the British School at Rome / University of Southampton consisted of Sophie Hay, Stephen Kay and Matthew Berry. For full details details of this survey see Kay and Hay, this volume.



Plate 2.5. Tomasz Herbich undertaking the fluxgate gradiometer survey.



Plate 2.6. Dawid Świąch with the fluxgate gradiometer.



Plate 2.7. The Ground Penetrating Radar survey.

evidence for buildings. The results of both types of survey were directly comparable (Figure 2.4).⁵

The plans, many of them combining elements from the

⁵ Figure 2.4 is the author's interpretation of the data. This differs in some places to the interpretation offered by Herbich (see his report in this volume). Only excavation will provide a definitive answer as to what man-made structures are actually under the surface.

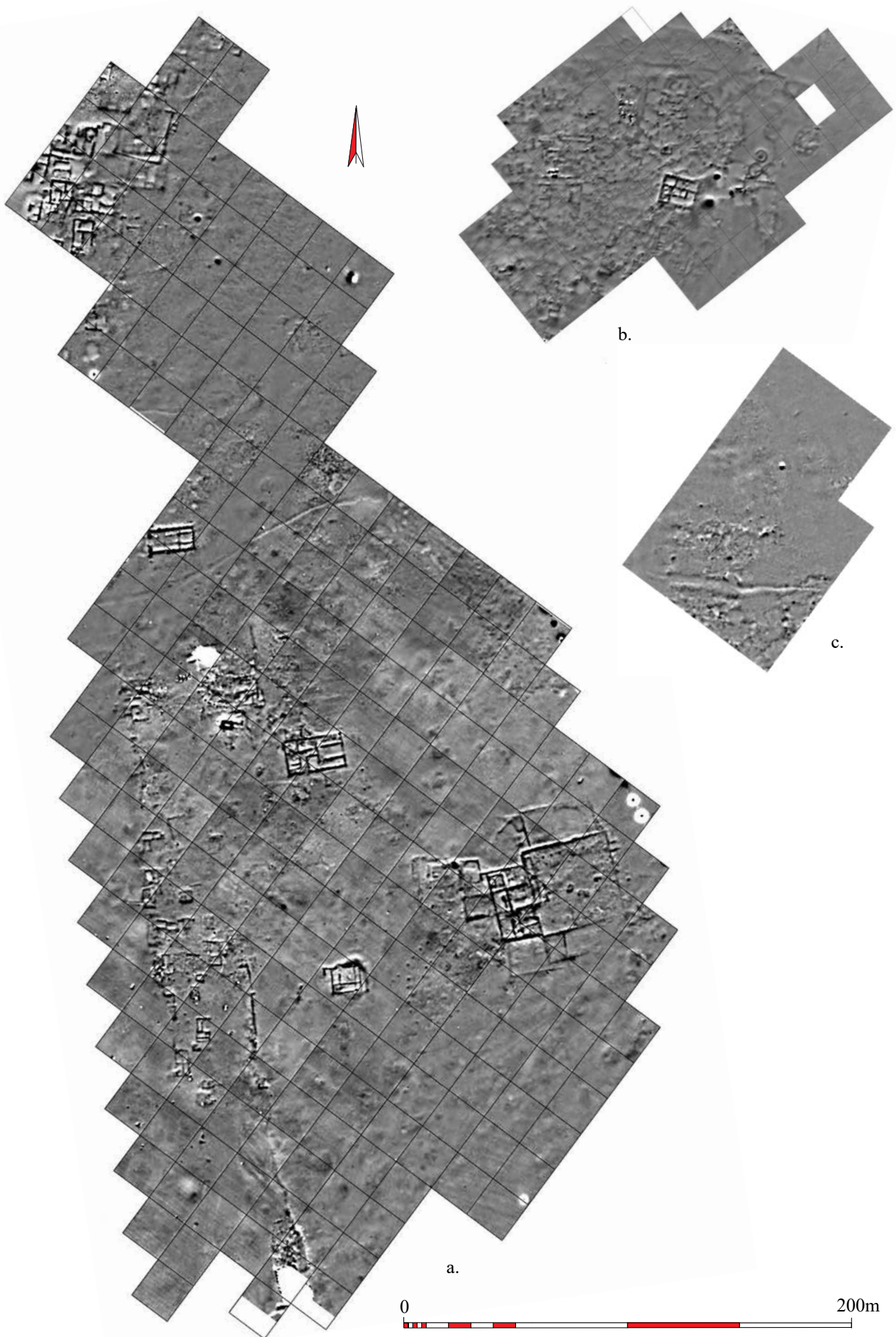


Figure 2.3. Fluxgate gradiometer survey. The lower town, a – Areas A, B, C, F, G and H. The upper town, b – Area D; c – Area Z.

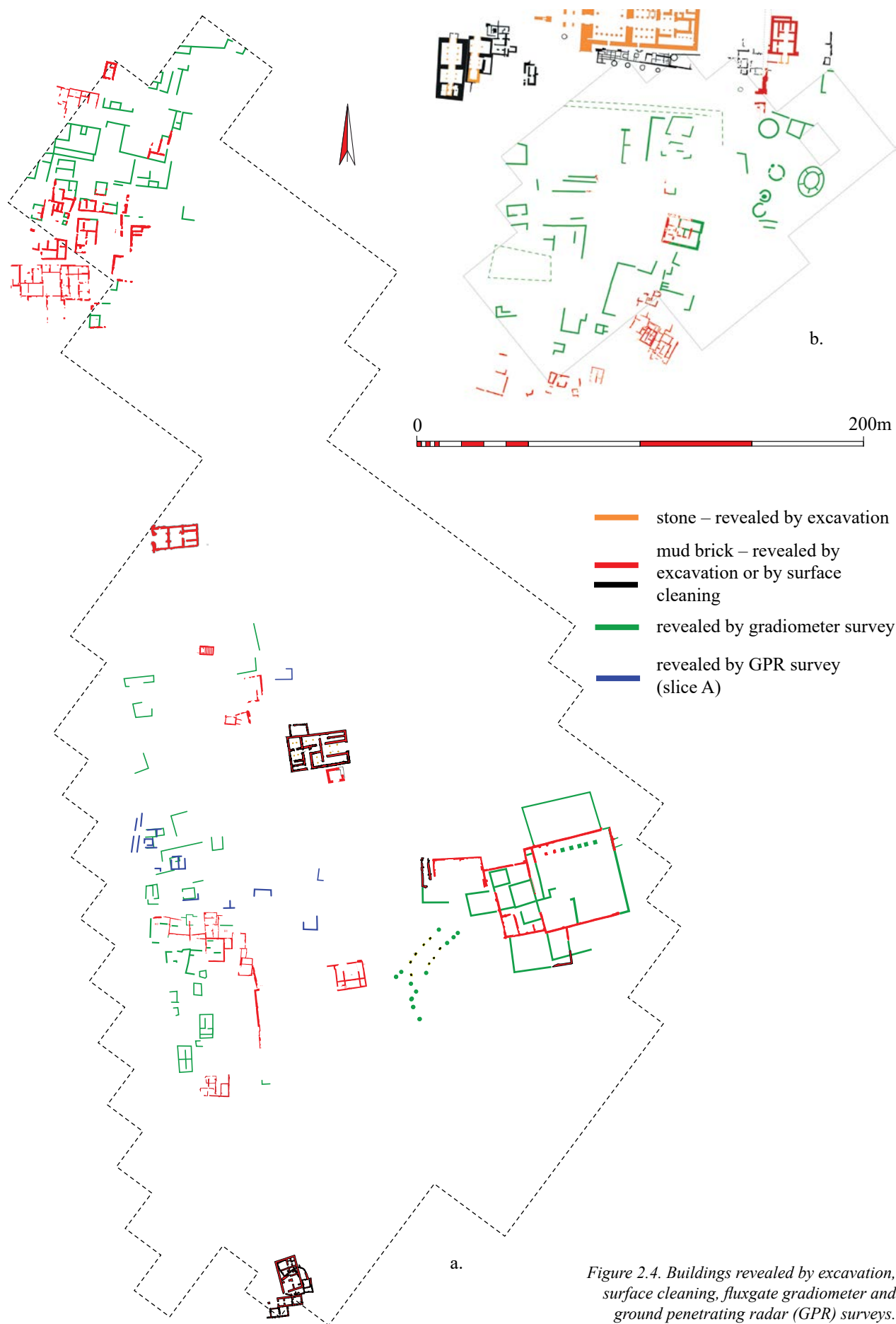
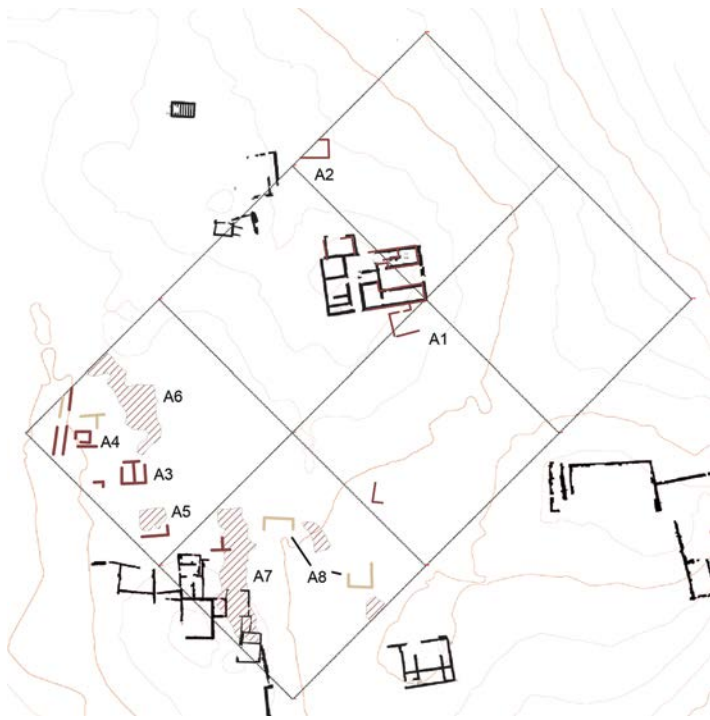





Figure 2.4. Buildings revealed by excavation, surface cleaning, fluxgate gradiometer and ground penetrating radar (GPR) surveys. a. the lower town, Areas A, B, C, F, G and H; b. the upper town, Areas D and T.

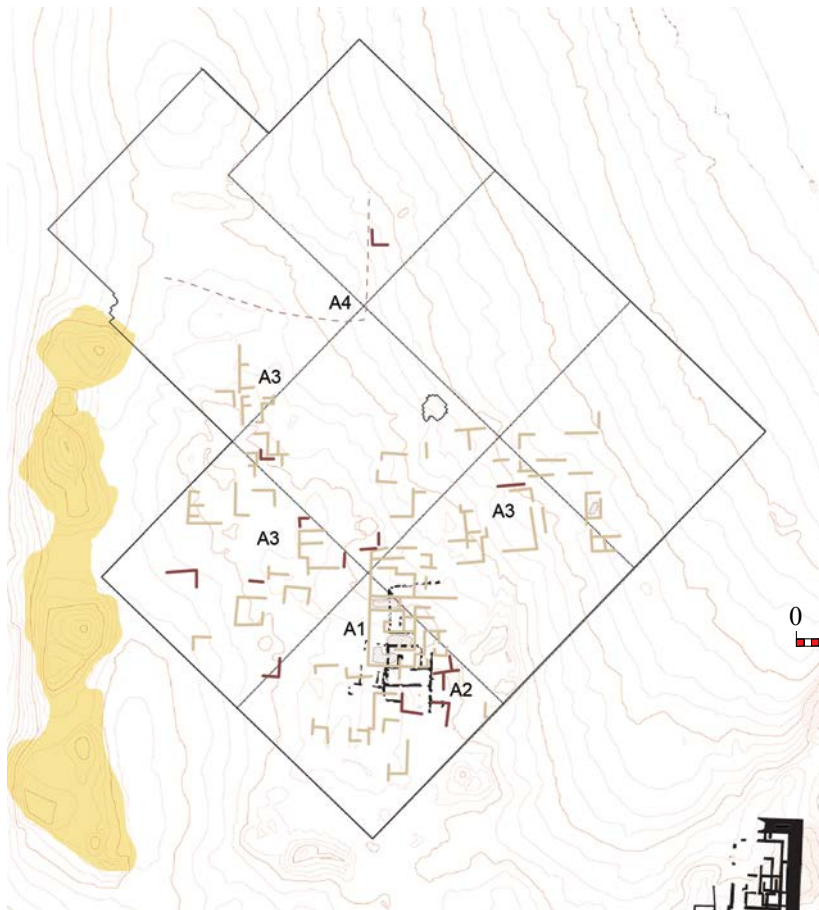





-  Area of high amplitude
-  Low amplitude linear
-  High amplitude linear

0 100m



Figure 2.5. Ground Penetrating Radar survey in the lower town, Area A, slice A (scale 1:2000).



-  Area of high amplitude
-  Low amplitude linear
-  High amplitude linear

0 100m



Figure 2.6. Ground Penetrating Radar survey in the upper town, Area B, slice A (scale 1:2000).

geophysical as well as the surface surveys, thus produced are incomplete but in many places give a general impression of the nature of the urban landscape across the town. This is a snapshot of what happens to survive up to the present surface. Certainly not all the buildings are contemporary or necessarily may have been features of the urban landscape at the same moment in time.

Building planned at the surface or during excavation

Walls are, almost invariably, built of mud brick, generally constructed of alternating courses of headers and stretchers and are described thus:

1-brick wall – one header or two stretchers to the course (bond type L or K)

1½-brick wall – one header and one stretcher to the course (bond type H)

2-brick wall – two headers (bond type G) or one header and two stretchers to the course. In the latter arrangement the headers are most frequently flanked by the stretchers (bond type C).

Walls of intermediate thickness are produced by the provision of a mortar or rubble core or by having bricks set at an angle, the acuteness of the angle reflecting the thickness required. For details of the brick layout and terminology used, see Welsby this vol., 5-7 and Figure 1.2.

A1 – Figure 2.7a & 2.7b. 11.3 x 4.55m (Phase 1). 3 rooms. Long axis east-west. Bricks 280-340 x 140-180 x 80-90mm. The north and south walls were of 2-brick build, the east and west external walls and the internal walls were of 1½-brick build (bond type H). All the walls were bonded and plastered and covered with a whitewash inside and out, those internally being further embellished with polychrome decoration. The building was terraced into the gentle slope which rises to the east. Thresholds were of mud brick or stone, floors were of earth in the western rooms and of thick stone slabs in the eastern room. The external doorway was initially 1.9m wide reduced during the construction phase to 1m in width. Internal doorways were 880mm and 770mm wide as one progresses east which will have given the illusion of greater perspective and hence length of the building. Walls survived to a maximum height of between 1.66m and 900mm but no traces of windows were noted although two stone window grilles indicate that they were probably 245mm high and 205mm wide. The two rooms added on to the south side of the building (Figure 2.3b) were of 1½-brick build. One had a well-laid floor of mud bricks.

For the detailed excavation report see Welsby, this vol., 54ff.

A2 – Figure 2.7c. 15.1 x 9.6m. 6 rooms. Long axis north-south. Bricks 330-360 x 140-170 x 80-100mm, some in the west wall 260 x 160 x 80mm. The external walls, which survived to a maximum height of 2.2m, varied between 2½-brick and 2-brick build; the bricks in the 2½-brick sections being a little smaller than the norm. In the uppermost surviving course of the west wall adjacent to Room V/VI the headers were set on edge separated by a stretcher also on edge, a 2¼-brick build. Internal walls were of 1½-brick build. The exception was the wall between Rooms I and III with its 2m-wide entrance which was of the same build as the external walls presumably on account of the heavy door lintels it will have supported. Other internal doorways were 1.36m, 1.12m, 0.75m and 0.64m wide. The lowermost course of the walls were carried through these door openings. Only the doorway between Rooms V/VI and VII survived to its full height of about 1.58m. It had a timber lintel. The external walls and some of the internal walls were bonded, other internal walls were not although there is no reason to suppose that they were not broadly contemporary. In the north wall the lower part of four slit windows survived with sills at a height of 1.35m. Each was 150mm wide and were set in pairs 170mm apart.

Amongst the modifications to the building was the

insertion of a wall of 1-brick build dividing Room V/VI into two with a doorway 1m allowing access from one to the other. Floors throughout the building at all periods were either of sand or mud.

For the detailed excavation report see Welsby, this vol., 66ff.

A3 – Figure 2.7d. 16.5 x 13.9m. 5 rooms. Bricks 330 x 150 x 90mm. The plan of this building was not fully elucidated being buried beneath the walls of Building A2 and extending out of the excavation area. It was constructed throughout of walls of 1-brick build strengthened on the inner face by small buttresses. At its core was a faceted oval space, presumably a courtyard, with reconstructed dimensions of 13.9 x 10.1m entered from the south through a doorway 940mm wide with brick responds and a pivot stone remaining *in situ*. Set over the boundary line of the oval at the east side is a rectangular room. Extending from the north wall are four walls, the westernmost of which returns to the east. In the next phase the east wall was strengthened by a massive buttress and the rectangular room on the east side was extended a little to the east and more to the south. The relationship to the walls marked on Figure 2.7d in red is uncertain.

For the detailed excavation report see Welsby, this vol., 49ff.

A4 – Figure 2.7e. 16.5 x 13.9m. 5+ rooms. Bricks 320 x 160-150 x 90mm; 360 x 160 x 100mm; 300 x 170 x ?mm. This building reuses elements of its predecessor to the east and south east whilst elsewhere constructing new walls of 1½-brick build to delimit rectilinear spaces. In its north wall of the central space it has an entrance 1.9m wide. The relationship of the walls further to the north is unclear. With their differing alignment they may belong to another building.

For the detailed excavation report see Welsby, this vol., 52-53ff.

A5 – 1+ rooms. Bricks 340 x 170 x ?mm. Only part of one rectangular room was excavated. Whether the building was more extensive or not is uncertain.

For the detailed excavation report see Welsby, this vol., 48.

A6 – 1+ rooms. Bricks 200 x 150 x 100mm. Only one length of walling was revealed.

For the detailed excavation report see Welsby, this vol., 48.

B1 – Figure 2.8a. 15.5+m x 8.7–9.5+m. 7+ rooms. Long axis east-west. Bricks 310-340 x 140-160 x 70-90mm. Terraced into the slope, the western end has been totally removed by erosion. This structure was fully excavated. It was markedly trapezoidal in plan, the north wall being at an angle of 96° to the east wall of the building. Walls were of 1½-brick construction. A doorway 688mm (975mm within the jambs) in width gave access into the building through the south wall at its east end. Two internal doorways were 655mm wide (961mm and 988mm within the jambs), the other 680mm wide (1.08m within the jambs) and had been blocked with 1-brick walls.

For the detailed excavation report see Welsby, this vol., 104ff.



Figure 2.7. Building plans. a. Building A1, phase 1; b. Building A1, phase 3; c. Building A2; d. Building A3; e. Building A4; (scale 1:200).

B2 – Figure 2.8b. 15.5 x 9.2m. 5? Rooms. Long axis north-south. Bricks 280 x 160mm, 305 x 160mm, 330 x 175mm. Only partial plan recovered. Constructed of 1½-brick walls (bond type H) apart from the walls between Rooms 3 and 5a and that dividing Room 5 which each have a row of two headers to the course (bond type G) as visible in the wall tops. Room 5 presumably housed a stair probably entered from Room 3 to the north into 5b.

B3 – Figure 2.8c. 15.7+ x 13.5?m. 7+ rooms. Long axis east – west. Only partial plan recovered. Constructed of 1½-brick walls (bond type H). The south wall is slightly bowed. There appears to be a range of three rectangular rooms 4.2m long internally along the south wall but the form of the rest of the building is uncertain.

B4 – Figure 2.8d. A complex of walls with no limits to the building being clearly visible. Walls vary in thickness from 1½ bricks (bond type H) to 2 bricks (bond type G). One room, 3.3m square internally, is presumably a stairway with a thick rectangular mud-brick newel (bond type D).

B5/B12/B13/B14 – Figure 2.9a. A complex of buildings which was fully excavated. The sequencing of the individual structures is uncertain; the buildings seem to have been added to and modified throughout their lives.

For the detailed excavation report see Welsby this vol., 81ff.

B5 – probably 15.8 x 13m originally. 9 rooms but some are later insertions. External walls of 2-brick build, internal wall 1½ build apart from the later internal walls of Rooms XI and VI which were of 2-brick build. Long axis north-south. One narrow slit window remains in the centre of the north wall with its sill probably around 1m above the contemporary floor level within the building which is terraced into the slope.

B12 – 19 x 14.5m. 10 rooms. Long axis east-west. Abutting Buildings B5 and B13 on either side. External walls of 2-brick construction, internal walls appear to be of 1½-brick build. Divided into two sections, the eastern with a large, presumably open, courtyard 10.1 x 7.6m internally and two squarish rooms to the north, accessed through a doorway in the east end of the courtyard's north wall. The western section is a complex of rooms with a narrow corridor on its north side.

B13 – 14.6 x 4.3+m. 3+ rooms. Long axis? Much of the western part of the building has been lost to erosion. Its external walls were of 2-brick construction, internal walls appear to be of 1½-brick build.

B14 – The southern end of the building, which survives as an open courtyard 7m wide by at least 10.5m long, has been totally lost to erosion. A complex of rebuilding/remodelling at the north-east corner confuses the relationship between Buildings B5, B12 and B14.

B6 – Bricks 335 x 183mm.

B7 – Figure 2.9b. 8.7+ x 11.9+m. 3+ rooms. Long axis ? Bricks 310 x 165mm, 340 x 190mm. The north-west corner of a substantial building with external walls of

2½-brick build (bond types A, C & D) and the walls of the only surviving room of 2- and 2½-brick build (bond types D, GA & H?). The room is a stairway 3.7 x 3m in size internally entered via a doorway towards the south end of its east wall.

B8/B16 – Figure 2.9c. 8.9+ x 11.4+m. 1+ rooms. Long axis? Two sections of 2-brick build walls (bond types C & G) which may be part of the same building.

B9 – Figure 2.9d. 11.4 x 9.8+m. 1+ rooms. Long axis? Bricks 320 x 180mm. Two sections of 2-brick build walls (bond types C & G) which may be part of the same building.

B10 – Figure 2.10a. Bricks 305 x 160mm, 315 x 165mm. sections of 1½-brick build walls (bond type H) on slightly differing alignments.

B11 – Figure 2.10b. 14.8+ x 7.5+m. 3+ rooms. Long axis ? Sections of 1½-brick build walls (bond type H).

For a general view of some of the buildings in Area C see Plate 2.8

C1 – Figure 2.10c. 13.5 x 10+m. 5+ rooms. Long axis? Bricks 335 x 170mm, 335 x 180mm, 355 x 180mm. The northern part of a 1½-brick build structure (bond type H



Plate 2.8. Buildings in Area C looking downstream.

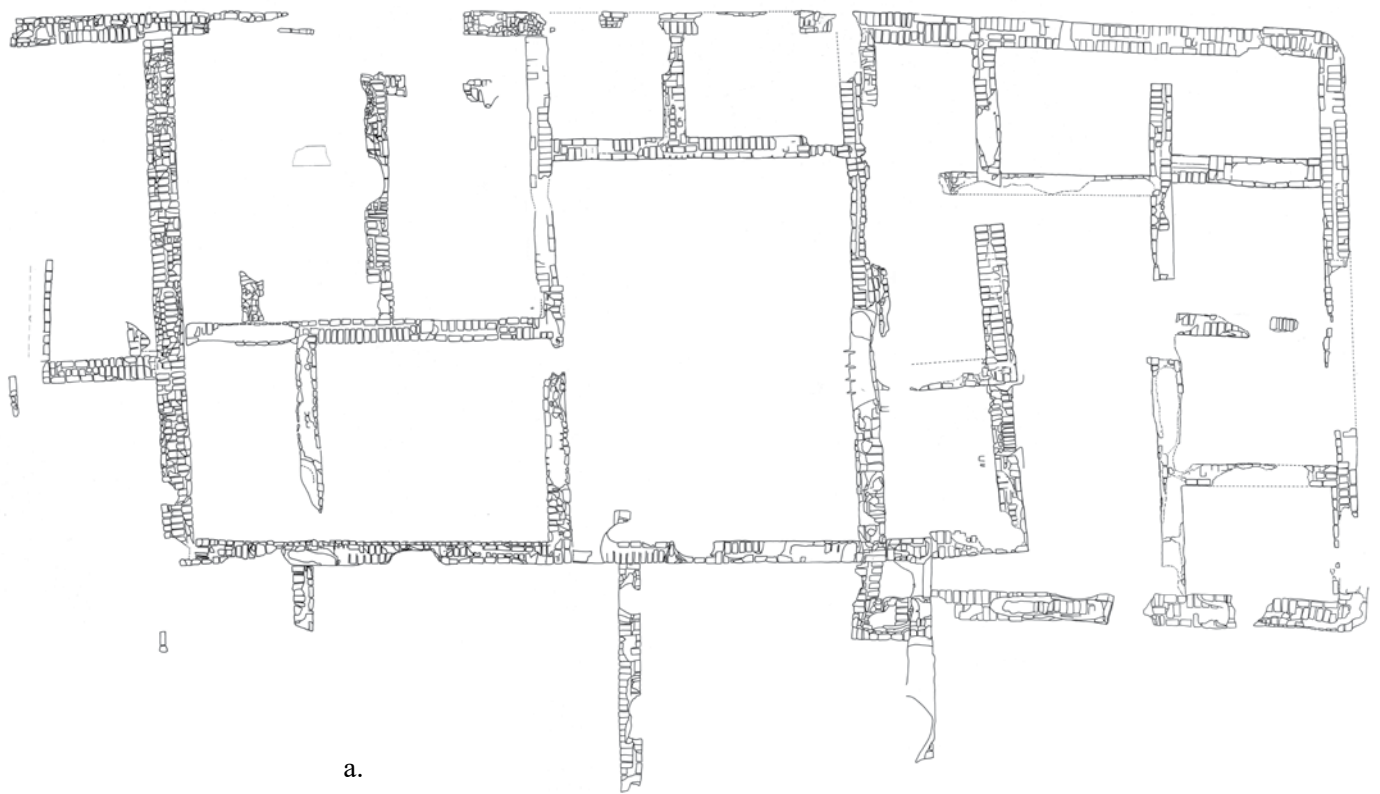
plus small section of bond type O) with signs of modifications and with a building abutting it on the west side.

C2 – Figure 2.10d. 12.3 x 10.7m. 6 rooms. Long axis east-west. Bricks 350 x 150-155mm. This building, with external walls of 2-brick build (bond types C & G), appears to have a tripartite division, a feature also seen in B5. There is again a stairway in the south-west corner, measuring 3.15 x 3.1m internally entered through a doorway at the south end of its east wall immediately adjacent to the doorway giving access into the building. The stairway has a very thick newel of 3-brick build (bond type I). The internal space is divided into three equal divisions by north-south walls of 2-brick build (bond types C & G) and the northern part of the eastern two divisions are partitioned off by walls of 1½-brick build (bond type H) with doorways at the eastern ends.

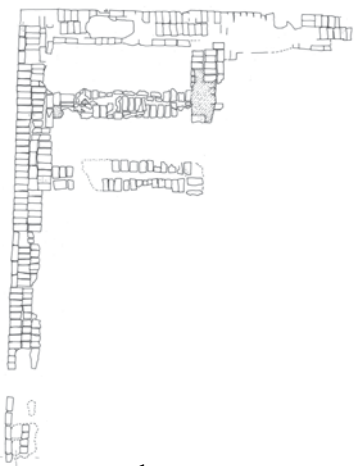
C3 – Figure 2.10e. 12-12.45 x 8.3m. 5 rooms. Long axis east-west. Bricks 325 x 160mm, 340 x 165mm, 350



Figure 2.8. Building plans.
 a. Building B1;
 b. Building B2;
 c. Building B3;
 d. Building B4;
 (scale 1:200).



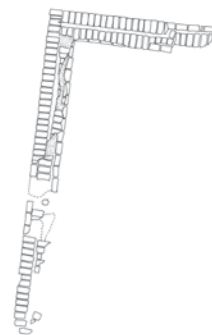
a.



b.



c.



d.



Figure 2.9. Building plans.
 a. Buildings B5, B12, B13 and B14;
 b. Building B7;
 c. Building B8;
 d. Building B9;
 (scale 1:200).

x 180mm. Of the four external walls the eastern is of 1½-brick build (bond type H), the others of 2-brick build (bond types D). It is divided into two equal halves down its long axis by a 2-brick build wall (bond types C, G & J) and further subdivided by 1½-brick build walls (bond type H). A stairway in the south-west corner, with 2-brick build walls, occupies 13% of the ground floor area. It measures 3-2.9 x 3.1m internally.

C4 – Figure 2.10f. 7.8 x 4.65m. 2 rooms. Long axis north-south. Bricks 355 x 185mm, 368 x 180mm. The building, with external walls of 1½-brick build (bond type H), is divided into two rooms by a 1-brick wall (bond type uncertain), a smaller one at the back; the larger front room entered by a doorway through the south wall in the south-east corner.

C5 – Figure 2.10g. 9.1+ x 3.4+m. Bricks 307 x 140mm, 345 x 175mm. The south-east corner of a structure of 2-brick build (bond types C & G) with a rectangular room of 1-brick construction (bond type L) abutting its eastern side 5.4 x 2.6m internally.

C6/C7/C10 – Figure 2.11a. Bricks 330 x 155mm, 332 x 162mm, 340 x 170mm. A complex of walls most of 1½-brick build (bond type H) although some walls of C6 are of 2-brick build (bond type D). The north-west corner of C6 abuts the south walls of C7. The form of these buildings is unclear. One room in C7 may have had a mud-brick floor which survived across the full width of the room as rows of seven headers.

C8 – Figure 2.11b. 15.2+ x 11.3m. 1+ rooms. Long axis east-west. Bricks 240 x 170mm, 317 x 175mm. Two walls of 1½-brick build (bond type H) at right angles to each other. There is a doorway 1.3m wide at the south end of the east wall.

C9 – Figure 2.11c. 3.3+ x 2.3+m. Bricks 335 x 175mm. The south-east corner of a building aligned 15° from north. External walls are of 1½-brick build (bond type H).

C11 – Figure 2.11b. 5.9+ x 2.8+m. 1+ rooms. Long axis? Brick dimensions not clear. Two walls of 1½-brick build (bond type uncertain) at right angles to each other. Towards the corner the south wall thickens to 2-brick build internally (bond type N).

C12 – Figure 2.11d. Bricks 360 x 175mm. Sections of walling of 1- (bond types K & L) and 1½-brick build (bond type H) which may not relate to a single building.

C13 – Figure 2.11e. Bricks 295 x 150mm, 350 x 180mm, 350 x 187mm. Possibly two single-roomed structures separated by a narrow alleyway. All the walls are of 1½-brick build (bond type H). The western 'room' is 3.7-3.4 x 6.5m externally with a doorway in its south wall at the east end. The eastern 'room' is 3.75 x 6.7m in size. Its north walls extends west beyond the building line towards the western room.

C14 – Figure 2.11f. 4.5+m long. A single length of 2-brick build wall (bond types C & G).

C15 – Bricks 355 x 170mm. An isolated section of walling.

C16 – Figure 2.11g. 2.3+ x 1.9+m. Brick dimensions not

clear. The south-east angle of a building of 1-brick build (bond types K & L).

C17 – Figure 2.11h. 7.3-7.2 x 9.4m. 3 rooms. Long axis north-south. Bricks 330 x 170mm, 340 x 165mm. The external walls are of 1-brick build (bond types K & L). The slightly trapezoidal building is divided into two equal halves by a 1½-brick build wall (bond type H) set slightly obliquely along its long axis. The greater thickness of this internal wall presumably reflects the fact that it had to support the roof timbers over both of the rooms flanking it whereas the external walls were only required to support one set of roof timbers. The eastern side was further divided by a 1-brick build wall (bond type L).

C18 – Figure 2.11i. 8+ x 7.6+m. 4+ rooms. The north-east corner of a building aligned 31° from north. External walls are of 1½-brick build (bond type H) as is at least one internal wall, others are of 1-brick build (bond type L).

C20 to C32 and C34 – Figure 2.12. These were partly or totally excavated. Too little survived of Buildings C26, C27, C29, C31, C32 and C34 to allow any meaningful discussion of these structures.

For the detailed report see Welsby this vol., 114ff.

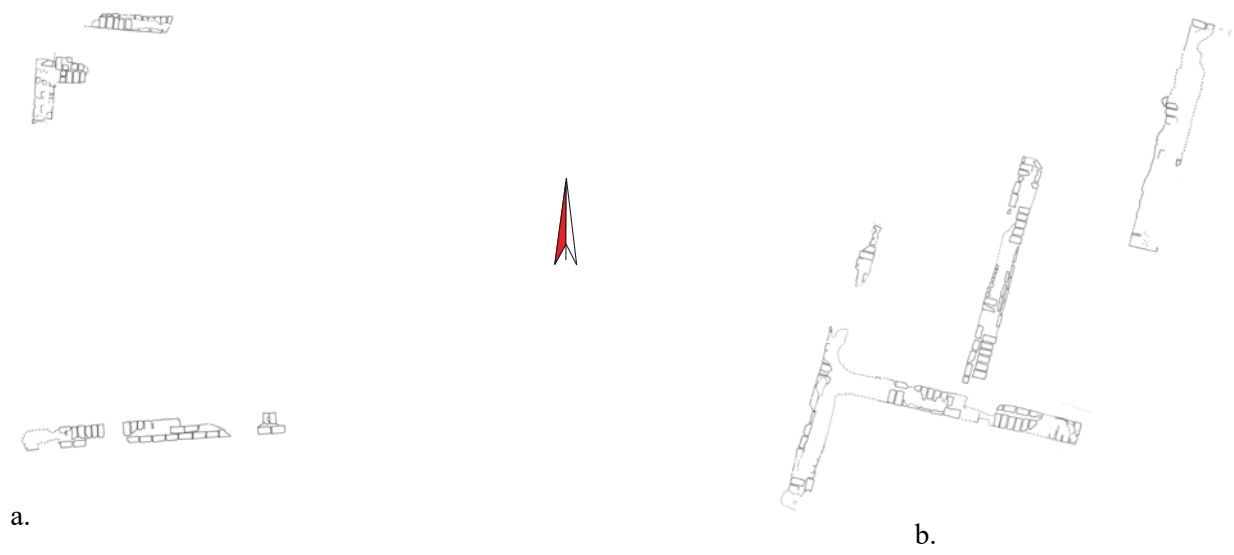
C20 – Figure 2.12a. 7.27 x 7.05m. 3 rooms. Bricks 350 x 180 x 60mm. Almost square building, one room possibly subdivided by a narrow partition wall. It may have been entered by two doorways through the south-west wall. Walls vary from 1-brick (bond type L) to 1½-brick thick (bond type H).

C21 – Figure 2.12b. 8.81 x 6.67-7.4m. 4 rooms. Bricks 320-340 x 150-180 x 70-80mm. Slightly trapezoidal building with each room of a different size. It was entered through a centrally-placed doorway in its northern wall giving access into one small room and from there through another doorway into the largest room from which the other two could be accessed. All walls were 1½-brick thick (foundations of rowlocks and shiners, bond type N; superstructure bond type H).

C22 – Figure 2.12c. 5.08 x 3.68+m. 2+ rooms. Bricks 320 x 160 x 70mm; 350 x 180 x 70mm. Little remained of this building of at least two rooms with walls of bond type L. A large stone block forms the end of one wall in its lowermost courses.

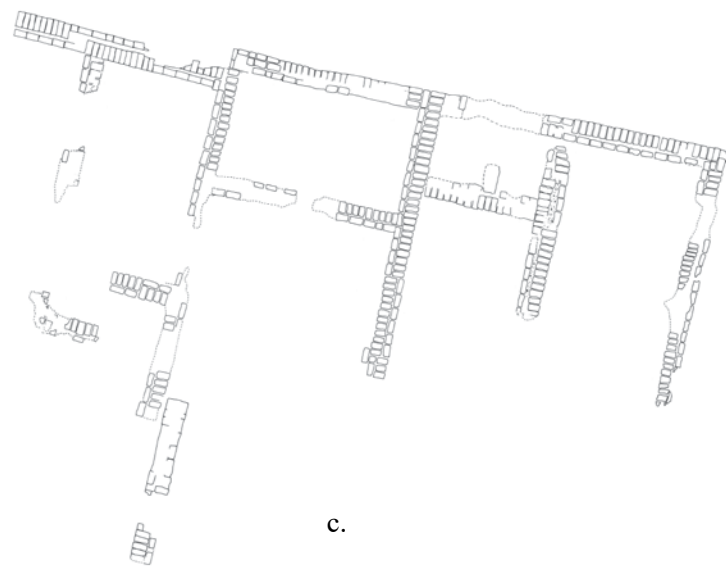
C23 – Figure 2.12d. 13.23 x c. 3.38m Bricks 290-350 x 160-170 x 60-90mm. Walls of bond types L and H. This long, thin, rectangular building was inserted into the street between Buildings C20 and C21/C25 partly using the walls of those buildings to form its walls. The long narrow space was divided into three rooms of different sizes with the possibility of further rooms to the south east where it may have overlain Building C20. The central room may have been entered along a narrow alleyway between Building C25 and the north-west wall of Building C23's northern room. There was no doorway between the northern and central room.

C24 – Figure 2.12e. Minimum dimensions 15.47 x 9.09m. 3 rooms. Bricks 350 x 180 x 60mm. Incomplete plan of a building, perhaps an extension of Building C20 on its north-east, south-east and south-west sides. One room



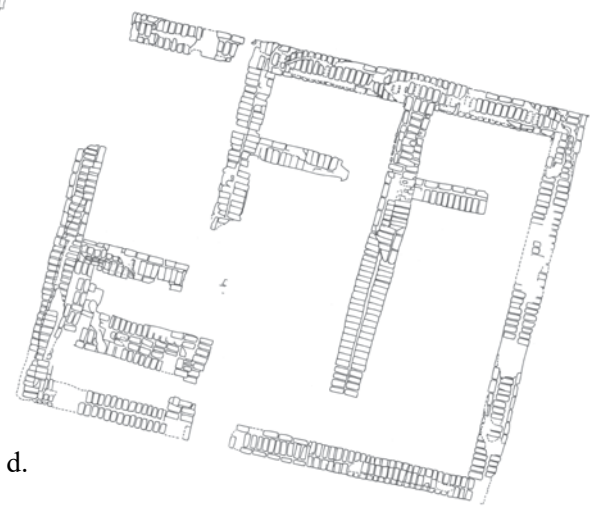
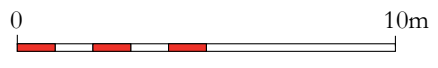
a.

b.

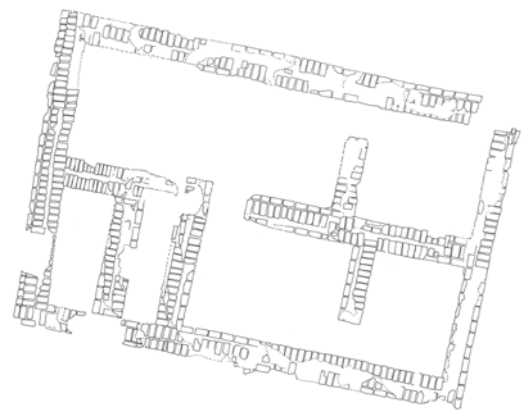


c.

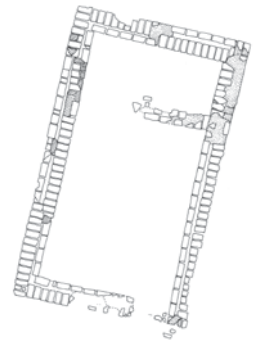
Figure 2.10. Building plans.
 a. Building B10; b. Building B11;
 c. Building C1; d. Building C2;
 e. Building C3; f. Building C4;
 g. Building C5; (scale 1:200).



d.



e.



f.



g.

Figure 2.11. Building plans.
 a. Buildings C6, C7 and C10;
 b. Buildings C8 and C11;
 c. Building C9; d. Building C12;
 e. Building C13; f. Building C14;
 g. Building C16; h. Building C17;
 i. Building C18 (scale 1:200).



lapped around the north-east corner of Building C20. Walls are generally of 1-brick construction (bond type L).

C25 – Figure 2.12f. 7.35 x 3.67m. 2 rooms. Bricks 300 x 160 x 70mm. Rectangular building with one room much larger than the other, with a communicating door between. It is entered by a wide doorway at the southern end of the end wall into the larger room. All walls are of 1-brick construction (bond types K & L).

C27 – Figure 2.12g. 8.45 x 3.95-4.33m. 2 rooms. Bricks 340 x 180 x 76mm. A rectangular building with one large room and one much smaller. The building is entered through the southern wall at its eastern end. External walls 1½-brick build (bond type H); internal wall 1-brick build (bond type L).

C31 – Bricks 200+ x 170 x 70mm.

C32 – 10.94+ x ?m. Bricks 330 x 160 x 70mm. Surviving section of walling of 1-brick build.

C33 – Figure 2.12h. Walls of one or more rectilinear building with bond types C, G, H, L and M. The wall of bond type M may be an internal features such as the side of a bin.

C34 – Fragments of mud-brick walls forming a 90° corner. No further details could be observed.

D1 – Figure 2.13a, Plate 2.9. *c.* 21.32 x 16.74-17.15m. 8? rooms. Bricks 360 x 170mm, 375 x 165mm, 385 x 180mm, 420 x 185mm, 450 x 180mm. The internal walls are either around 520mm (1½-brick, bond type H) or 790mm (2-brick, bond type G) thick, comparable with the wall thickness found in many buildings across the site, but the external walls are much thicker, in the range 1.38-1.48m (3½-brick, bond type DA). In the east wall bricks are set on edge as is typical of foundation courses. In the centre of the building there may be a narrow corridor (W:800mm). A red sandstone column drum lies immediately to the north but there is no indication that it originally came from this building. Another column element and a block with a torus moulding was uncovered by robbers in 2009 a few metres further north (Plate 14.3).



Plate 2.9. Building D1 looking north east towards the eastern wall of the temenos.

D2 and D3 – Fragments of mud-brick walling.

A little to the north east of Building D1 a number of extremely interesting buildings were revealed by the gradiometer survey. No traces of these are discernible

on the ground (Plate 2.10) and, therefore, no details of their construction are available apart from the fact that they appear to be, like most other buildings at Kawa, of mud-brick construction.⁶

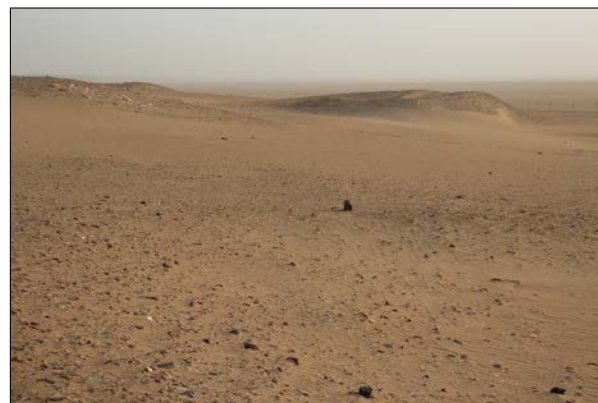


Plate 2.10. Area D looking north across the location of the circular structures. The prominent mound is a spoil heap from the 1930s excavations.

D4 – Figure 2.14. A regular circular building *c.* 7.9m in diameter externally. Its walls may be in the order of 1m thick. It has a single entrance to the west *c.* 2.3m wide. In the centre is a solid circular or square feature, perhaps in light of its location a central roof support or a platform of some sort.

D5 – Figure 2.14. A slightly oval building, *c.* 9.14 x 7.76m, immediately adjacent to D4 with a wide entrance (*c.* 4.5m) to the north east. The walls appear to be thinner than those of D4, perhaps around 750mm.

D6 – Figure 2.14. Faint outline of what is probably a circular building approximately 9.75m in diameter.

D7 – Figure 2.14. This building, if that is what it is, appears to be represented by the presence of some walls and elsewhere by robber trenches dug to remove walls. It may have been oval, 18.35 x 14.9m in size, with an internal oval space surrounded by rooms. The plan is advanced very tentatively.

D8 – Figure 2.14. Faint outline of what is possibly a circular building approximately 12m in diameter.

F1 – Figure 2.13b. 27-26.85 x 16.1-15m. 10 rooms. Long axis east-west. Bricks 310-350 x 130-160 x 70-100mm – most common 320 x 150 x 100mm; Room XII 380 x 180 x 90mm. This building was totally excavated (see Welsby, this vol., 129ff). A doorway 4m wide centrally placed in the east wall gives access into a long room or courtyard flanked by slightly narrower rooms to north and south. The northern room has a stairway occupying its eastern end. A doorway 1.7m wide in the south wall allows access into a north-south corridor. Immediately inside the doorway a doorway on the left gives access to a stairway 1.5m wide. In the larger rooms pairs of stout palm trunks set on stone post-pads supported the main roof timbers. Most of the internal and external walls are of 2½-brick build. However the west wall is of 2-brick

⁶ For Herbich's slightly differing interpretation of some of these features see pg. 399 and fig. 13.14.



Figure 2.12. Building plans.
 a. Buildings C20;
 b. Buildings C21;
 c. Building C22;
 d. Building C23;
 e. Buildings C24 and C32 (green);
 f. Building C25;
 g. Buildings C27 and C31;
 h. Building C33
 (scale 1:200).

build, the south wall of the staircase room tapers east to west from 2½- to 2-brick build while the north wall of Room VIII is basically of 2-brick build but with a core of brick fragments giving it a thickness of approximately 2¼-bricks. The newel is also of 2-brick build. Doorways were provided with timber thresholds and jambs and the western stairway had the front of each riser formed of timber, the rest being mud brick. The walls of Room VIII, the east wall of Room IX and the west wall of Rooms IX and X had a foundation of bricks laid flat projecting out from the wall line. The west wall of Room I is constructed of bricks set on edge as is usual in foundation courses.

Modifications included the blocking and sealing of the doorway between Rooms VIII and IX, raising of the threshold with reused bricks bearing painted decoration between Rooms V and VI and the blocking of the main entrance from the east with column drums and dressed stone blocks. The presence of the two substantial stairways and the discovery of plastered mud bricks bearing painted decoration and hieroglyphic inscriptions indicates that the building had high status rooms at first floor level. Abutting the north wall is a rectangular room 7.2-7.1 x 4.9-4.4m internally with 1½-brick walls. A *mastaba* or buttress, 3.4 x 0.9m in size, abuts the west wall by the north-west corner of the building.



a.



Figure 2.13. Building plans.
 a. Buildings D1;
 b. Buildings F1;
 (scale 1:200).



b.

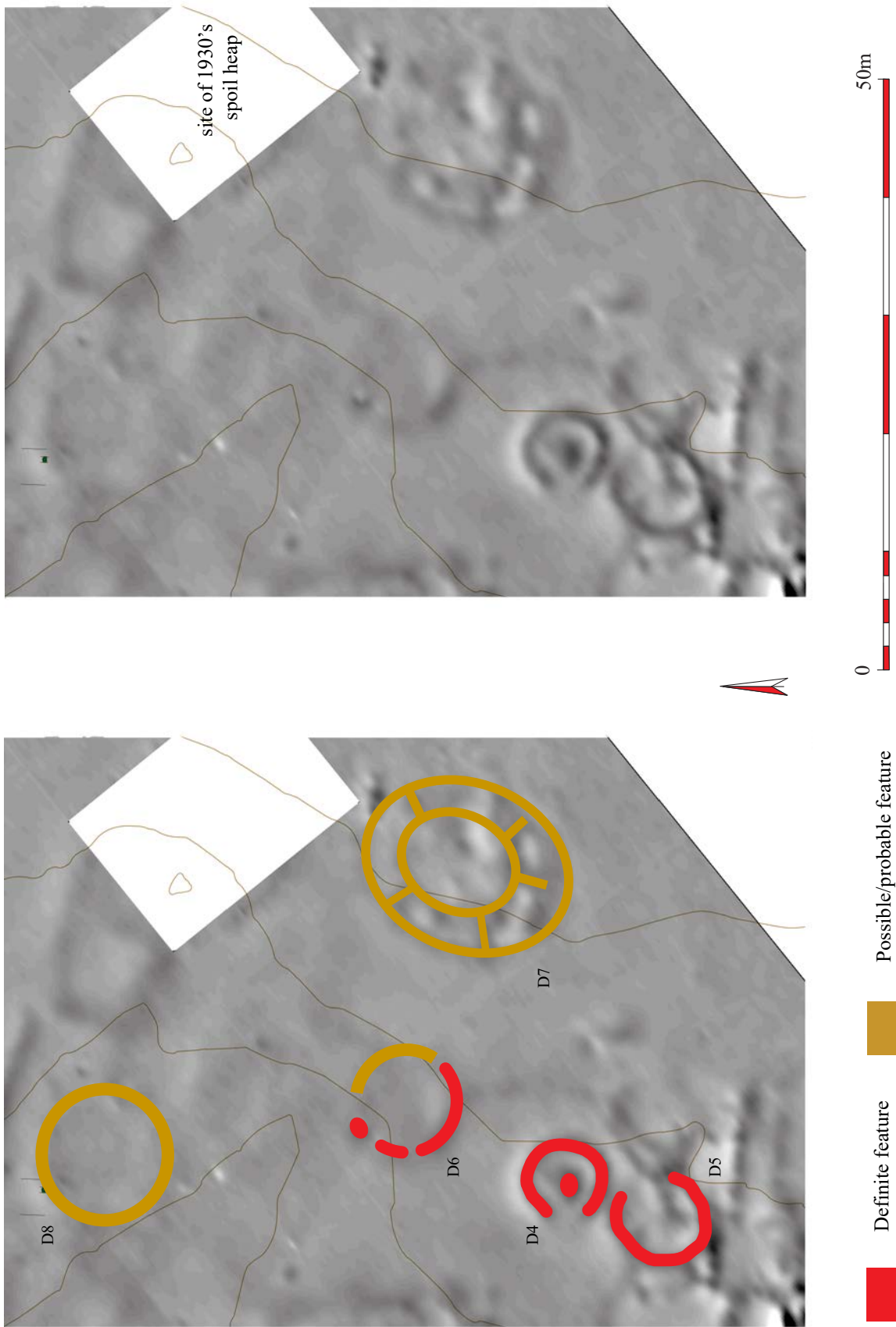


Figure 2.14. Fluxgate gradiometer survey of the area to the south east of Temple T with certain and possible features indicated. None of these have been investigated further (scale 1:500).

F2 – Figure 2.15a. 13.3 x 12.1-11.8m. 6+ rooms. Walls range in thickness between 1½-brick and 2-brick with some falling between the two having a core of brick fragments. The north wall extends at least 3m to the west beyond the building line and appears then to return to the south over a distance of 3m. The building is divided into three by north-south walls, the rooms in the eastern part being narrow at approximately 1.7m internally. In the south-west corner is a stairway, the room measuring 3.2 x 2.9m internally. It is totally infilled with a solid mass of carefully-laid mud bricks. At the east end of the north wall is a buttress or *mastaba* 2.2 x 0.6m in size and there may be another in the angle between the west and north walls.

F3 – Figure 2.15b. 6.58-6.63 x 4.24-4.15m. Long axis east-west. Bricks 380 x 180 x 80mm. A rectangular kiln with the floor of the firing chamber supported on closely set parallel walls constructed across the short axis of the structure each of which was pierced by a large arch. Access to the sub-surface chamber was via two sloping ramps leading down to small arched openings in the east and west walls. The external walls are of 1½-brick build, the internal walls of 1-brick build.

For the detailed excavation report see Welsby, this vol., 162ff.

F4/F5/F10 – Figure 2.16. Total known extent 92 x 84m. Bricks 430 x 185mm. The remains, as visible on the surface and following the gradiometer survey, appear to consist of three main elements designated here from east to west F4, F5 and F10, which may all be contemporary along with other structures which may be later additions. With the two large rooms or enclosures on the south side of the complex one appears to run across the other and represent two distinct phases of use. F4 to the east is a roughly square structure 39 x 38m in size internally, probably originally an open courtyard. Running parallel to its north wall and 3.8m from it is a row of rectangular mud-brick structures, probably the lower parts of piers supporting a colonnade.⁷ For the excavations of two of these see Welsby this vol., 170. Within the courtyard a number of what are probably secondary walls delimit some area but no coherent plan is visible. The courtyard may have been entered via a gateway towards the north end of its east wall where two parallel walls (2.5m apart) project a further 3.2m to the east. F5, which abuts the west wall of F4, is rectangular in plan and contains a number of smaller rooms. However it is difficult to interpret as its north wall appears to extend beyond its west wall. The plan of the western element, F10, is more incomplete and hence even less understandable. Particularly curious are the three roughly parallel walls in its north-west corner. The alignments of each of the three elements differ.

Abutting the north wall of F4 is a rectangular courtyard 30.7 x 17.4m in size internally. Another on the south side is 11.9m north-south by at least 17.9m east-west. This appears to be overlain by another courtyard abutting both F4 and F5 with maximum internal dimensions of

25.3 x 16.1m.

All the walls are of 1½-brick construction apart from the central of the three parallel walls in F10 which is of 2-brick build.

F7 – Figure 2.15c. 5.24-5.32 x 3.64m. Long axis east-west. Bricks 400 x 180 x 90mm. A rectangular kiln very similar to Building F3 with the floor of the firing chamber supported on closely set parallel walls constructed across the short axis of the structure each of which was pierced by a large arch. Access to the sub-surface chamber was via two sloping ramps leading down to small arched openings in the east and west walls. The external walls are of 1½-brick build, the internal walls of 1-brick build.

For the detailed excavation report see Welsby this vol., 158ff.

F8 – Figure 2.15d. 6.4+ x 6.4+m. 1+ room. Bricks *c.* 350-420 x 180 x ?mm. The north-east corner of a building destroyed partly by erosion to the south and by the construction of Building F7 to the west and south west.

The two extant walls are of 1½-brick build and meet at an angle of 87°.

F9 – Figure 2.15e. 11.8 x 11.2m. 3+ rooms. Bricks *c.* 348-383 x 164-179 x ?mm. The building is slightly skewed with walls meeting 5° off the right-angle. It appears to be divided into three areas by north-south walls, the central 5.2m wide, the others much narrower at 1.65m and 1.75m. The external walls were of 2-brick build, the internal walls of 1½-brick build.

F11 – Figure 2.15f. 5.08 x 4.17m internally. A single rectangular room with 1.2m-thick walls. Bricks 400 x 200 x 90mm. Only one course survives; whether the building was ever more extensive cannot be ascertained. There is a centrally-placed doorway in the south wall.

For the detailed excavation report see Welsby this vol., 153.

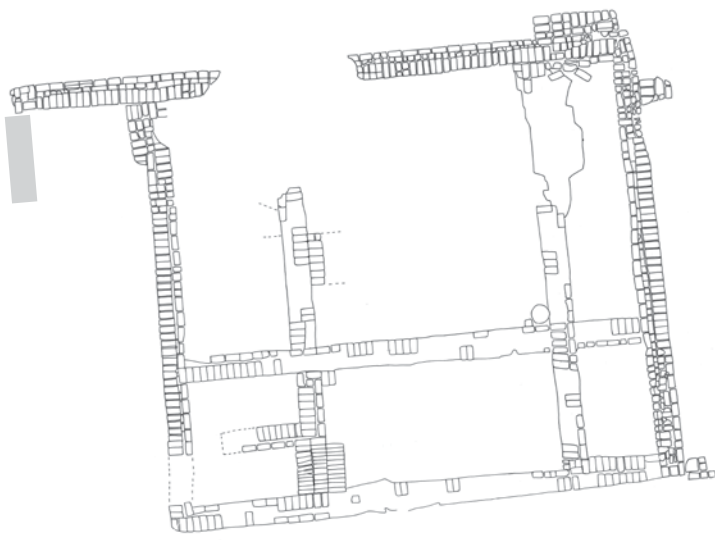
G1 – Figure 2.15g, Plate 2.11. 21.2 x *c.* 11.5m, pylon width *c.* 13.6m. 5 rooms. Long axis east-west. Bricks 350 x 180mm. This structure has a typical temple plan with its pylon to the west with central doorway leading into a forecourt followed by a *pronaos* and then a range of three rooms, the central being the sanctuary chamber. The two walls running east-west through the forecourt and *pronaos*, recorded during the magnetometer survey, presumably are stylobates for columns (see Herbich this vol., 396). The walls were indistinct close to the ground



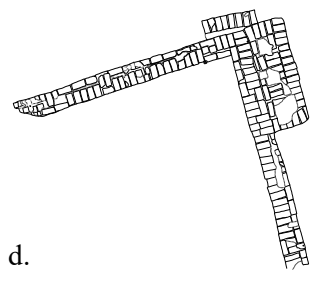
Plate 2.11. Building G1 looking east.

⁷ See also Herbich this vol., 395 and fig. 13.8. He interprets a number of features on the gradiometer survey as indicating that the colonnade extended along the east and south sides of the courtyard.

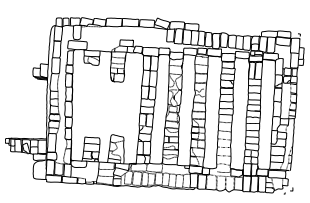
Figure 2.15. Building plans.
 a. Building F2; b. Building F3;
 c. Building F7; d. Building F8;
 e. Building F9; f. Building F11; g.
 Building G1
 (scale 1:200).



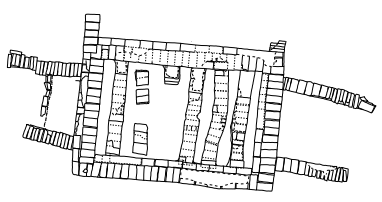
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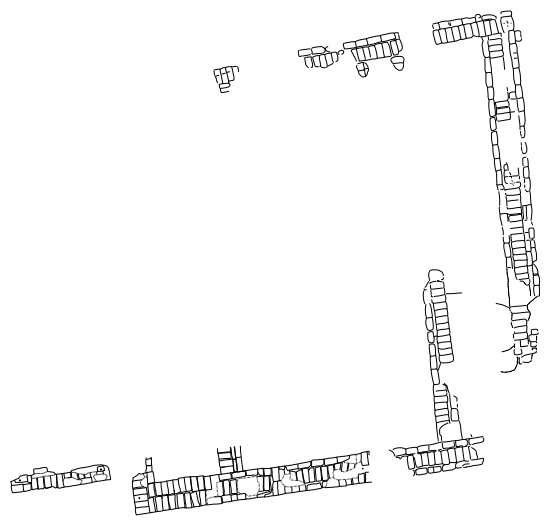
d.



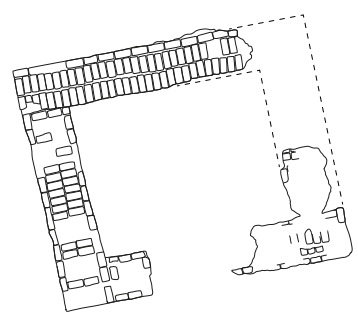
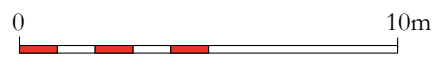
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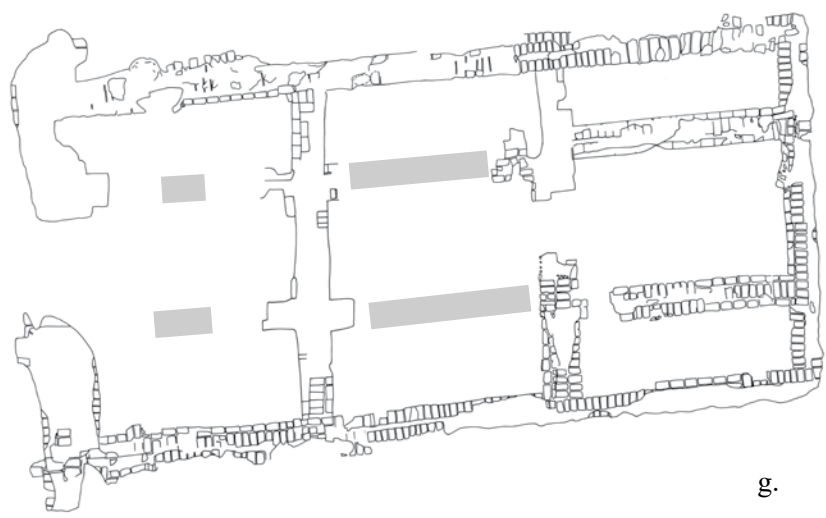
c.



e.



f.



g.

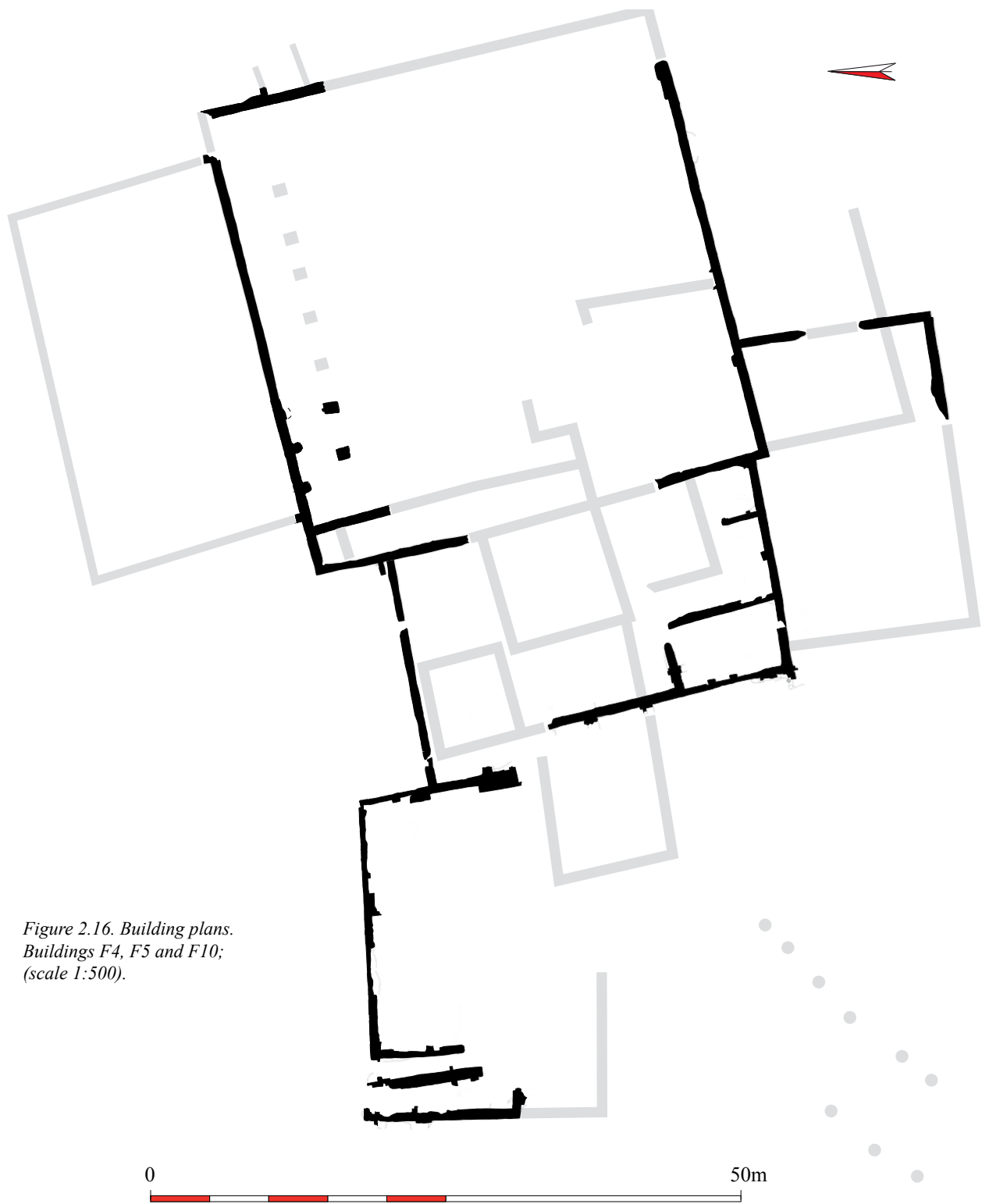


Figure 2.16. Building plans.
Buildings F4, F5 and F10;
(scale 1:500).

surface but some appear to be of 2½-brick build, other internal walls are of 2-brick build. The pylons were indistinct and then badly damaged by metal detectorists around 2010. Many of the bricks have been very heavily burnt taking on the appearance of red bricks. Careful examination indicated that this was not the result of a violent fire within the building as in some cases burnt bricks were immediately adjacent to unburnt examples. The fire-damaged mud bricks must have been reused from some earlier structure and the most obvious candidates are the two kilns, Buildings F3 and F7 which lie 50m and

90m to the south south east.

For a general view of some of the buildings in Area H see Plate 2.12.

H1 – Figure 2.17a. 16.4+ x 11m. 3+ rooms. Long axis east-west. Part of a complex of rooms delimited by walls which either bond or abut. The original form of the building/s cannot be reconstructed at present. The core of the building has 2-brick walls, the projecting room to the east has 1½-brick walls.

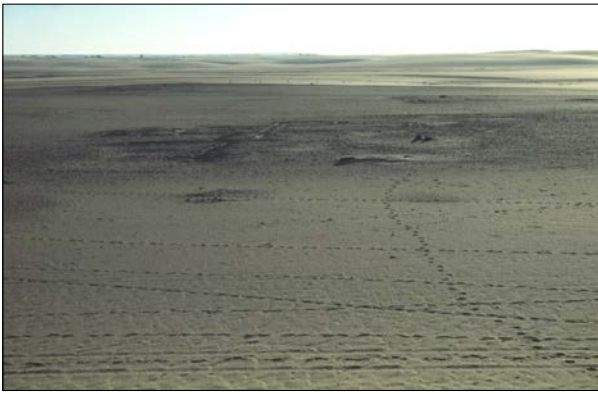


Plate 2.12. Buildings in Area H looking towards Building F10.

H2 – Figure 2.17a. Very little of this building was revealed. The section of wall planned in detail was of 2-brick build.

H3 – Figure 2.18b. 7.2 x 6.4m. 1 room. Long axis north-south. Possibly a single-roomed building abutting the east wall of Building H1. Its walls are very indistinct on the surface but appear to be thin, 1- and/or 1½-brick build.

H4 – Figure 2.18b. 8.3 x 6.4-5.6m. 2 rooms. Long axis north-south. As with Building H3 its walls are very indistinct on the surface but appear to be thin, 1- and/or 1½-brick build. Between Buildings H3 and H4, and utilizing their walls, is a single room 3.8 x 2.1m internally.

H5 – Figure 2.18b. 26.9 x ?m. The west wall of a large structure with returns to the east and both ends. It appears to be of 2-brick build. It shares a similar alignment to Building H11 but differs from the alignment of the other buildings in the vicinity

H6 – Figure 2.17a. A number of 1½-brick walls between Buildings H1/H7 and H2.

H7 – Figure 2.17a. 12 x 6.1-6.7m. 5 rooms. Long axis north-south. This building appears to abut both Buildings H1 and H6. Most of its walls of the northern element are of 1-brick build with one east-west partition of 1½-brick build. The narrow corridor on the east side may be the result of modifications to the building. The alignment and dimensions of the building suggest a comparison with Buildings H8 and H9.

H8 – Figure 2.17b. 13.5+ x 10.4+m. 6+ rooms. Part of what may have been a rectangular building of uncertain form. There is one rectangular room in the south-east corner containing a stone column drum(?).

H9 – Figure 2.17c. c. 11 x 6.2m. 4? rooms. Long axis north-south. Only revealed in the magnetometry survey.

H10 – Figure 2.17d. c. 12.1 x 6.3m. 4? rooms. Long axis north-south. Only revealed in the magnetometry survey.

H11 – Figure 2.18b. 9.4 x ?m. The west wall of a building which appears to be overlain by Building H4. It appears to be of 2-brick build.

Area M is densely occupied by buildings, all extremely poorly preserved on the surface. Many additional walls were recorded by the GPR survey while many of those

planned on the surface were not picked up by that survey. See Kay and Hay, this vol., figs 14.5 and 14.6.

M1 – Figure 2.18c. 18+ x 12.2+m. 6+ rooms. Only the north and west external walls can be identified with certainty. External walls are of 2-brick build, internal walls are of 1½-brick build or 2-brick build – if not the south external wall.

M2 – Figure 2.18a. 13.5+ x 12.6-14.4+m. 3+ rooms. Long axis east-west. A markedly trapezoidal structure with its walls very badly damaged by *sebakhin*. Thickness of external walls uncertain. A later wall of 1-brick build may overlie the south-west corner.

M3 – Figure 2.18c. 12 x 8.3+m. 4+ rooms. The east wall of this building, of 1½-brick build, abuts along its length the west wall of Building M1. Other walls are of 1-brick build and differ in alignment by 6°.

M4 – Virtually nothing of the walls of this building remained on the surface. It appears to be rectilinear and aligned broadly east-west.

M5 – Very small sections of walling aligned north-south or east-west just possibly part of one building.

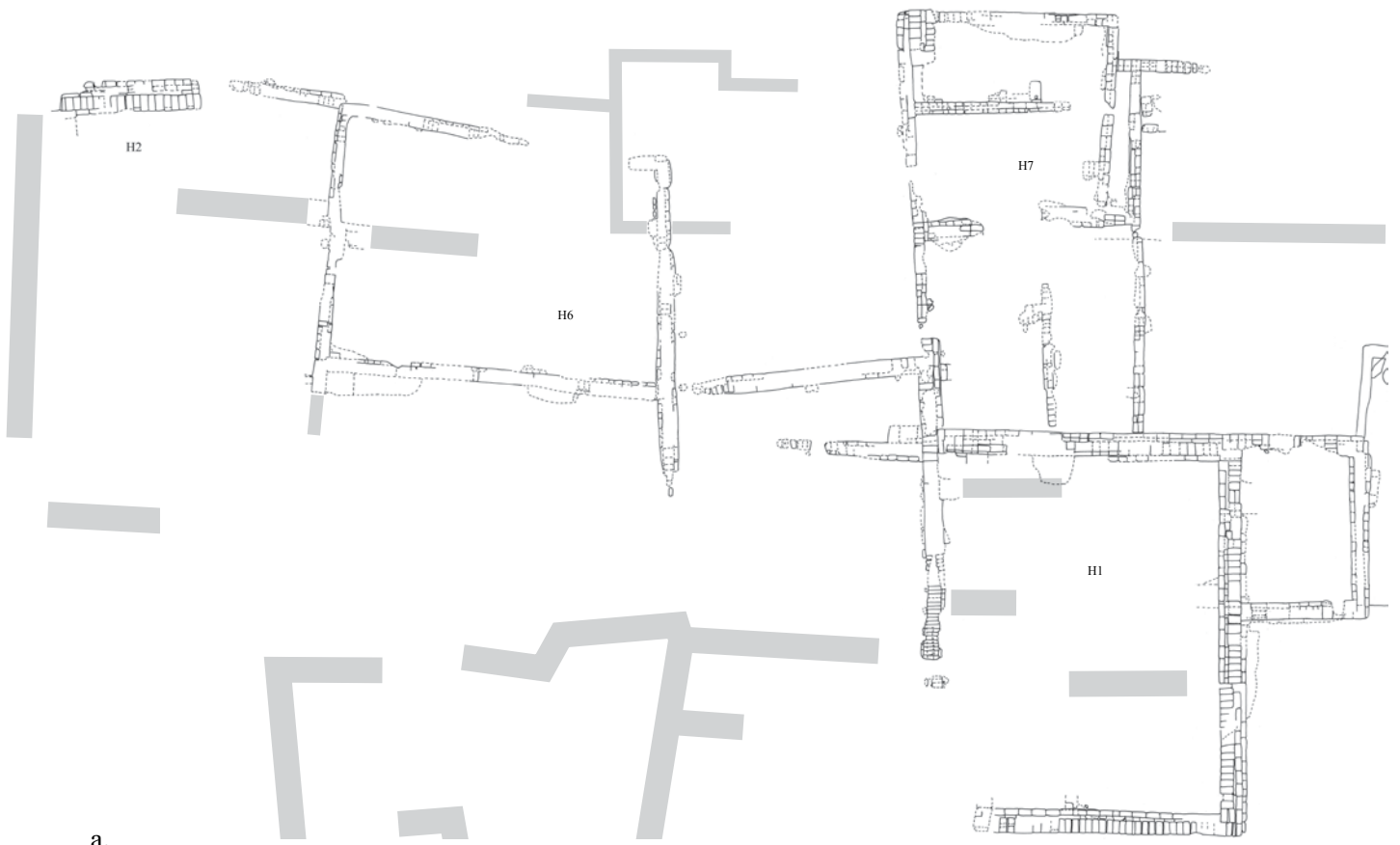
M6 – A mass of small fragments of walling again with similar alignments to those of M5. They probably represent parts of a number of multi-roomed buildings.

T6 – Figure 2.19a. 12.9+ x 4.2+m. Two lengths of 2-brick build walling aligned north-south with one spur wall extending west.

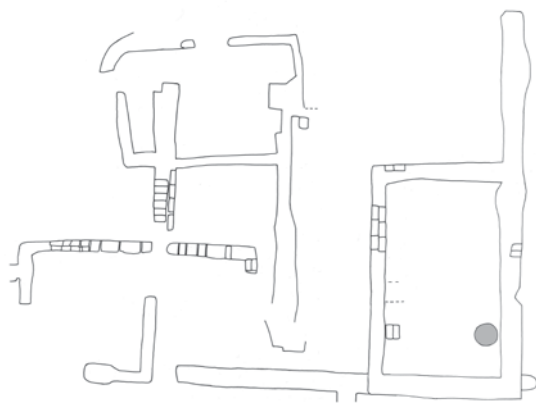
T7 – Figure 2.19a. 4.6+ x 4.3+m. Possibly the south-east corner of a building. One room is preserved in its entirety measuring 3 x 2.5m internally.

T8 – Figure 2.19b. It is unclear whether the walls uncovered in this area, which delimit rectilinear spaces, relate to one or more buildings. It is possible that there are two buildings separated by a narrow north-south alley. The eastern building appears to have abutted the inner face of the *temenos* wall which did not survive up to the present ground level here and was hence not included in the plan of the immediately sub-surface features.

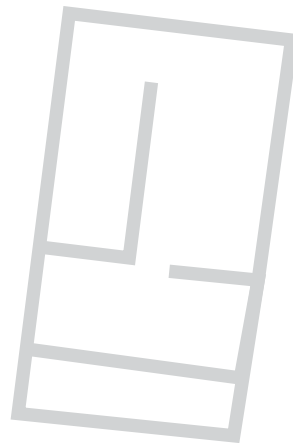
Z1 – Figure 2.19c. 9.9+ x 9.77m. 2+? rooms. Bricks 360 x 170 x 90-110mm. This building was partly excavated. To the west the east-west wall ends perhaps at a doorway while further to the east all traces of the building may have been removed by erosion. However there is no evidence at the corner to the north east of the stairway (Room Z1-II) for any walls continuing to the north or east nor at the south-east corner of Room Z1-I. What survives is a rectangular room, 8.05 x 3.18-3.36m internally, with a stairway on its eastern side 1m wide and with a maximum length of 5.17m. The walls of the eastern part of the building are founded close to the present-day ground surface while the walls of Room Z1-I are terraced into the slope, the east wall of Room Z1-I is founded 750mm below the east wall of the stairway only 1.5m away and the west wall of Room Z1-I is a further 200mm lower than the east wall. The western part of the building, if it continues beyond Room Z1-I, is deeply buried in sand. The building appears to be terraced into the steep slope leading down to the river. The walls of Room Z1-I are of



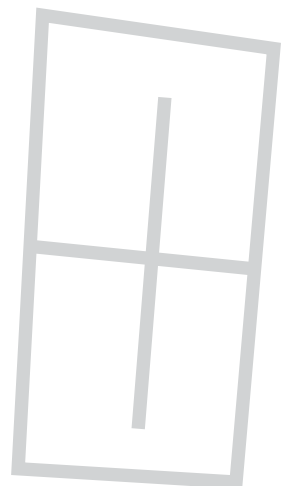
a.



b.



c.



d.

Figure 2.17. Building plans.
 a. Buildings H1, H2, H6 and H7;
 b. Building H8; c. Building H9;
 d. Building H10 (scale 1:200).

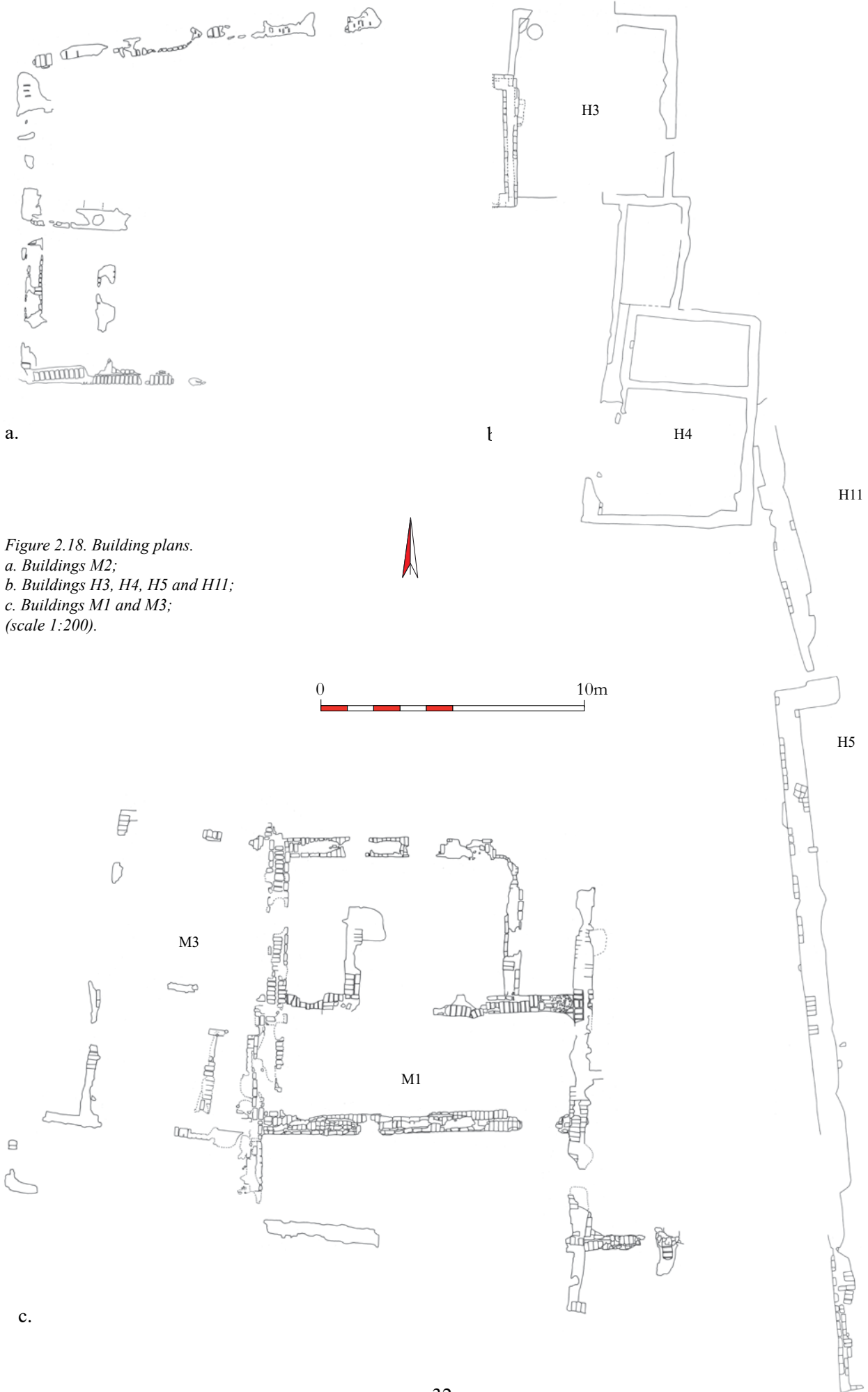


Figure 2.18. Building plans.
 a. Buildings M2;
 b. Buildings H3, H4, H5 and H11;
 c. Buildings M1 and M3;
 (scale 1:200).

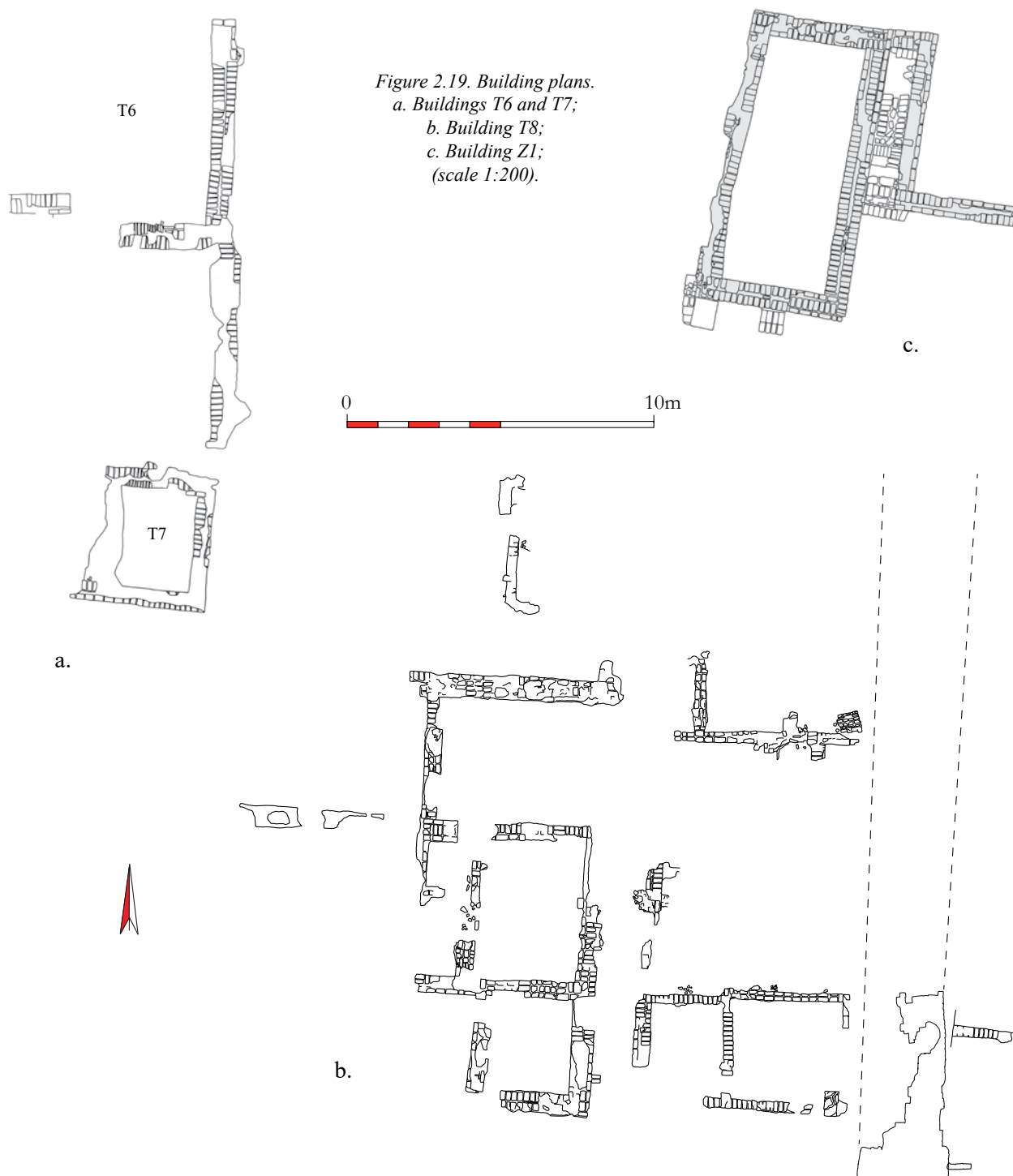


Figure 2.19. Building plans.
 a. Buildings T6 and T7;
 b. Building T8;
 c. Building Z1;
 (scale 1:200).

2-brick build in places being increasing to 2¼-brick build with the addition of either a thick band of mud mortar or of a shiner. The walls of Room Z1-II and the east-west wall are of 1½-brick build.

For the detailed report see Mahmoud Suliman Bashir and Welsby this vol., 189ff.

Streets and alleyways

Very few of the streets and alleyways noted on the site were surfaced. One exception was the roadway within the gateway through the *temenos* wall. That was paved with thick stone slabs but only within the gateway itself. Continuation of the road both inside and outside was on the

ubiquitous sandy-silt surface. Paving was also provided in front of, and on the north side of, the altar in front of the temple, some of the paving stones being re-used column drums as were also used in Temple T (Laming Macadam 1955, 57). In the Meroitic period the avenue between the Western Kiosk, up to and around the altar to the facade of Temple T, was surfaced with stone rubble and provided with stone kerbs (Laming Macadam 1955, 57).

All thoroughfares were made up of straight sections except for what appears to be a second phase street in Grid Square (FZ2) which described a tight curve part way along the section observed. The nature of the streets in Grid Square (FZ2) requires comment. In both phases the broad street is lined by structural elements. On the north-

western side these are well built rectangular ‘bins’, on the south-eastern side they are much more crudely built oval structures probably functionally identical to those on the other side of the street.⁸

The function of these remains a mystery. Prior to excavation it was suggested that they may have been tree pits but their fills were found to be homogenous and the hard flat surfaces at their base had never been disturbed by tree roots. Their soft fills and thin walls indicate that they cannot be the bases of structural piers of a colonnade alongside the street.⁹ Also while all are preserved up to the present ground level no trace of buildings lining the street behind them were found in excavation and nothing shows up on the gradiometer survey.

We have clear evidence for the periodic maintenance of the processional way. An inscription of Irike-Amanote inscribed on the walls of Temple T notes that the king, along with his entourage, cleared the road of the god which had been buried beneath the sand (Eide *et al.* 1996, 412). While the area outside Temple T to the west was kept clear of build-up the same cannot be said of the gateway into the *temenos* which progressively filled to a depth of about 2m before a major rebuilding of the structure took place.

Elsewhere a similar rise in level of thoroughfares was noted, generally the result of an influx of wind-blown sand but on the north side of Buildings B5/B12/B13 aided by the dumping of domestic rubbish against the external wall of those buildings.

TABLE 2.1. DIMENSIONS OF STREETS AND ALLEYWAYS.

Between buildings	Width	Observed over a length of
A1-A2	1.35-3m	8.2m
B1-B2	3.97-3.74m	5.35m
B2-B5	5.45-5.25m	5m
B1-B5/B12/B13	2-1.9m	11m
C20-C21	3.96-4.02m	14m
(FZ2)	5.57-6.6	33m
M1-M2	2.8m	7m
(TG5)	5.6m 5.07m between jambs	4.87m

Form and function of the buildings at Kawa

Religious monuments

Of the Kushite religious monuments known on the site three date to the early Kushite period, three to the Meroitic period and possibly two additional ones are of uncertain date.

⁸ Similar streets lined with structural elements are known in the Royal City at Meroe (Török 1997, 193) and at Sanam Abu Dom (Tucker and Emberling 2016, 53-4, pl. 10; Tucker *et al.* 2019, 87 & figs 7-11).

⁹ The features which appear to be identical on the gradiometer survey in the courtyard of Building F4 were, on excavation, shown to be solid rectangular mud-brick piers.

Early Kushite

The temple built by Tutankhamun certainly survived the demise of pharaonic control of Kawa although whether it remained in continuous use into the early Kushite period is unknown. In the reign of Taharqo it was refurbished and presumably remained in use for centuries thereafter. No other pharaonic buildings are known to have survived into the early 1st millennium BC.

The earliest remains of a temple which may have been built by the Kushites are those found deeply buried in front of, and extending under, Taharqo’s temple. The temple, built of stone, had a pylon *c.* 2.2m thick and the north wall of the forecourt was just over a metre thick. The width of the pylon may have been in the order of 19m. It is aligned west-east facing the river. It might be suggested that it is of Kushite date but this is uncertain. The excavator was of the opinion that it was visible at the time Taharqo began to erect his temple, the construction level of which was 2m above it (Kirwan 1955, 226).

Temple of Shabaqo – All that remains of this temple are stone columns bearing the king’s name which were later reused in Temple B and perhaps some red-brick walling bonded in a thick white mortar beneath the later temple (Laming Macadam 1955, 45).

Temple T – Length 68.5m, Width: *c.* 28m, Width of pylon: 38.7m. Built by Taharqo between 684 and 680 BC it is an entirely new building replacing an earlier, dilapidated temple built of brick, noted by Taharqo two decades earlier. It was constructed by masons imported from Memphis and will have provided an Egyptian template for later Kushite buildings; it was largely replicated at Tabo and Sanam Abu Dom. Facing towards the river it differs from Tutankhamun’s temple and those of New Kingdom date at Dokki Gel but is comparable to the New Kingdom temple orientation at Jebel Barkal.

Shrine of Taharqo – Phase 1, Length 11.3m, Width: 4.55m. This small building, initially of three rooms, was profusely decorated with wall paintings (see Taylor *forth.* b) directly comparable in style and content to those on the contemporary temple built by the king at Qasr Ibrim (Rose 2003). Immediately adjacent to the shrine were extensive deposits of mud bungs while caches of mud sealings were found within the building. Although clearly a religious building with an altar set on its main axis outside the building to the west and a barque stand in the centre of the eastern room, it may also have had an administrative function. Within the western room was a cache of mud sealings bearing impressions of types 70 and 74 (see Vincentelli *forth.*, tab. 6.2). Immediately outside the building was an extensive rubbish dump which included hundreds of mud bungs (see Welsby, *this vol.*, 63; Welsby and Taylor *forth.*). The pottery vessels that these had sealed were not located. It would appear that pottery vessels were brought to this place, opened and their contents used or perhaps more likely, given the quantity, were decanted into smaller containers for use elsewhere on the site. The pottery vessels were then removed from the area – sent back to the source of their contents for refilling – or dumped elsewhere.

A very similar situation has been observed at Dokki Gel where over 1,000 mud bungs, which appear from the limited data published to be of the same types as at Kawa, were found immediately adjacent to the Shrine of Aspelta (Bonnet *et al.* 2021, figs 96 & 97; Ruffieux 2007).

The construction, or at least completion, of Building A1 is securely dated by the epigraphic and iconographic evidence found within it to the reign of Taharqo spanning the years 690-664 BC. One of the three mud sealings bearing stamp impressions with the name Anlamani was found in an occupation layer within Room A1-IV (phase II-III) which sealed the primary mud-brick floor. As it in turn was sealed by further occupation levels the sealing may provide a *terminus post quem* indicating that it remained in use beyond the end of the 7th century BC. The other two sealings stamped with Anlamani's name came from the rubbish deposits to the west (Vincentelli *forth.*, cat. nos S-449 to S-451). The single seal impression bearing the name of Aspelta (Vincentelli *forth.*, cat. no. S-452) was found in the vicinity and may provide the latest evidence presumably for the continuing use of the building for administrative/religious purposes, at least into the early 6th century BC. How long thereafter it was utilised is uncertain. It should be noted however, that neither the names of Anlamani nor Aspelta appear in cartouches nor are they associated with royal epithets. Vincentelli, therefore, suggests that they may not actually be the names of the two Kushite kings but names of other members of the royal family or even of individuals with no connection to the Kushite royal house.

Later Kushite

Three or possibly four temples are known which are, or may be, of later Kushite date.

Temple B – Length: 27m, Width: 15m. This was constructed immediately adjacent to the pharaonic Temple A and aligned north-south opening onto the processional way leading to Temple T (Laming Macadam 1955, 45-52 & pl. 4). The sanctuary chamber, internal columns and door jambs were built of stone, the rest of the building was of mud brick. At least some of the stone blocks and column elements are reused from earlier structures. It consisted of a first court or room, a *pronaos* and a single sanctuary chamber which may be of two periods. The main axis of the temple is off-centre of its facade and one additional room was provided next to the *pronaos*. No evidence was found for a similar room to the east of the first court. This asymmetric layout is reminiscent of that in the 'Eastern Palace' described below.

'Eastern Palace' – whole building, Length: 22.24m (excluding porch), Width: 15.43-15.12m, Width of pylon: 17.89m; the 'temple' Length: 19.88m, Width: 11.34m. This temple was excavated by Griffith who inexplicably named it The Eastern Palace.¹⁰ It was constructed immediately outside the eastern wall of the *temenos* separated from it by a narrow space closed off at the south end by the pylon which abuts the *temenos* wall. It consists of a stone columnar porch, a first court or more likely a room

with two columns, a *pronaos* and a central sanctuary chamber flanked by two rooms. Two narrow rooms are accessible from the temple along its west side. The pylon extends across the main rooms and also these additional rooms, while the stone porch and entrance to the building are set off-centre, on the axis of the temple rooms. Across the back of the building is a very narrow room no access into which was discernible but it may have been entered from the north-western room. All the walls were of mud brick. A sandstone lion statue stood outside the doorway (Laming Macadam 1955, 114-115, & pl. 17).

Building G – Length 21.2m, Width: c. 11.5m, Width of pylon: c. 13.6m. This temple was planned after surface cleaning. It is aligned west-east and consisted of a pylon giving access into the first court or room, then a *pronaos* and a range of three rooms across the east end, the central one much wider than those flanking it.

The latter two temples noted above fit into a well-known Kushite type of which a number of examples are to be found in the Meroe region (for a discussion see Wolf 2006, 244ff.). The footprint of the core rooms of the two Kawa temples are almost identical.

Building D5 – From surface observations and the gradiometer survey it is possible that there is a substantial building here aligned west-east (Figure 2.4b – trapezium enclosed by dashed lines, Plate 2.13). Elements of a stone column remain in this area.¹¹



Plate 2.13. 'Building' D5 with large stone architectural fragments visible on the surface, looking north west.

Domestic buildings

Many buildings which can be identified as houses were revealed across the site. Buildings A3 and A4 were probably the earliest known in detail and are very different from all the others both in plan and construction. The thin mud-brick walls, strengthened at intervals with small mud-brick buttresses, are readily paralleled amongst buildings in the town at Kerma which appears to have been largely abandoned on the conquest of the region by the Egyptians in the early New Kingdom (see, for example, Buildings M200 and M201 (Bonnet and Valbelle 2014, 23, also 14)). The combination of walls laid out to form rectilinear spaces with others forming curvilinear spaces

¹⁰ For a discussion of this issue see Laming Macadam 1955, 114.

¹¹ For two other possible structures of uncertain form, perhaps constructed of stone, see Herbich, this vol., figs 13.15 and 13.16.

is also common at Kerma (see for example Bonnet and Valbelle 2014, 29, 40 and 166).

The presence of buildings constructed in the early Kushite period using techniques and designs which are clearly related to Kerma-period architectural norms is unparalleled elsewhere. The evidence suggests that, in at least some aspects, indigenous architecture remained deeply traditional and the arrival of the Egyptians was not followed by a total displacement of earlier building practices. As in the funerary sphere Kerma-period practices were retained into the early Kushite period. It was the Kushites themselves, when they controlled Egypt, who brought about a wide-ranging Egyptianisation of Kushite culture to a much deeper level than ever effected by the Egyptian conquerors during the New Kingdom (Welsby and Welsby Sjöström 2007). A desire to emulate the culture of their defeated enemy appears to have been a much stronger motive for the Kushites to adopt Egyptianisation than had been the imposition of Egyptian culture by a conquering power. Of course the arrival of the conquerors during the New Kingdom will have impacted much more on the elite section of society.

It would appear that, from at least the time of Taharqa onwards, buildings of rectilinear plan became the norm at Kawa. All are well constructed with walls of mud brick and are regularly laid out but always with a tendency to be slightly trapezoidal in plan. Either the laying out of right angles was problematic for most Kushite builders or a strict adherence to rectilinear planning was not deemed important. The plan of Building B1 may have resulted from its builders seeking to make maximum use of the plot available. Its south wall is parallel to Building B12, its east wall to Building B2 while its north wall is parallel to the building to its north which is on a markedly different orientation to the other buildings just mentioned.

A very broad distinction can be made between houses with substantial stairways, presumably giving access to an upper storey, and those without this feature which may have still had access to a flat roof via a ladder.

Most houses are freestanding structures often modified over time. Buildings B5, B12, B13 and B14 are rather different. In this area buildings were added one to another utilising walls of the earlier structures as part of their own.

Clear unit plans are visible in some buildings. The simplest were two-room structures of long rectangular plan with a large front room and a much smaller room to the rear – Buildings C4, C25 and C27. They are each entered by a doorway placed at the right-hand end of the front wall as viewed from outside.

A little larger were buildings of almost square plan divided into two equal halves by a spine wall running from front to back – Buildings C17 and C20. One of the long rooms was subdivided.

Buildings B5 and C2 may have had a central lightwell otherwise the centre of the building will have received little or no natural light. With two-storey buildings the ground floor plan, all that is available to us, may have been dictated by structural considerations required to support load-bearing walls, columns or piers at first floor level which may have been the most important part of the building.

Buildings A2 and B2 have an almost identical plan. While the latter is likely a house a special function for A2 is postulated below. All the other houses either exhibit so far unique plans or are too little known for meaningful comments to be made. Also nothing can be said about the functional use of space in almost all these buildings. Some rooms do contain hearths or ovens but there is no consistency as to where they are located. The only clearly identifiable kitchen is Room XII in Building F1 with its bank of ovens. As noted below however, this building was very different to those considered to be domestic structures.

The range of variation amongst what are considered to be domestic buildings at Kawa, many broadly contemporary, highlights the difficulty of finding parallels for these types of building on other sites. Compounding this difficulty is the rarity of early Kushite housing. Comparable sites to Kawa with extensive domestic quarters simply are unknown to us. They may well still exist at Meroe, for example, but there they will be deeply buried beneath later Meroitic structures and deposits and are, therefore, highly unlikely to be ever excavated except in small sondages. Sanam Abu Dom has an extensive area of the earlier Kushite town available for investigation but the character of the buildings known so far suggests that it was a major royal, administrative and storage complex and as yet no domestic quarter is known. Jebel Barkal and Dokki Gel are other sites that offer the possibility of discovering the urban fabric of the earlier Kushite town but research away from the religious centre at both places is still in its infancy. The contemporary town at Sedeinga appears to have been totally removed by floods.

Other buildings

A small number of buildings stand out from the rest largely on account of their size. Of these Building F1 was totally excavated and a trial trench was excavated into Building F4/F5/F10. Building F1 is clearly a storage facility at ground level. Its wide eastern entrance will have allowed the easy movement of goods into and out of the building. The presence of large numbers of Egyptian amphorae and of mud bungs indicates that they were being stored and their contents used in the building. Other produce was presumably of much greater value in light of the sealed doorway into the north-western room, the sealing being impressed with innumerable seal impressions. What this material or materials may have consisted of is unknown as no trace of high value goods were found within it.

The *raison d'être* of the building however, may have been the provision of rooms at first-floor level. The two substantial staircases in opposite corners of the building indicate the importance of that floor as do the traces of painted wall plaster which presumably come from that level of the building. Functionally it is comparable with Meroitic palaces as that at Wad ben Naqa.

Similar and broadly contemporary buildings are to be found at Sanam Abu Dom such as SA.C 400 (40 x 31m) and SA.K 300 (39 x 35m). These have a central room or courtyard opening to the exterior and flanked by rooms to either side (Vincentelli 2015, 321-324). Both buildings however, were probably single storey as no trace of

a stairway was found. As in Building F1 columns were provided in most rooms where the roof span demanded it. Many amphorae imported from Egypt were found in both buildings, directly comparable with the forms found in Building F1, as were many mud sealings of the type used to seal doors.

During the use of Building F1 a room was added against its north wall in which were hearths and a bank of ovens. The only doorway into the room was facing away from Building F1 and it is perhaps likely that its use had nothing to do with Building F1. Being to the north of Building F1 any smoke from the hearths and ovens would, in the prevailing north wind, have impacted adversely on the main building.

Apart from observing their plans little further can be said of Buildings D1, F2 and F11. Buildings D1 and F11 are both characterised by their very thick mud-brick walls, 1.38-1.48m and 1.2m respectively. Building F4/F5/F10 is a massive complex over 92m in length. Its eastern part is occupied by a large courtyard apparently with a colonnade or arcade around its sides. Such an arrangement is very difficult to parallel in Kushite architecture. The so-called Treasury at Sanam Abu Dom is of very different shape but does have a long central courtyard 21m wide, with a covered ambulatory 5m deep around it (Vincentelli 2011, 270). Another building with this feature is the so-called Western Palace, a store building at Faras dating from the Meroitic period (Griffith 1926, 21, pl. XIII). However, in both these buildings the courtyard is surrounded by rooms which open off it. This is certainly not the case on at least three sides of the courtyard at Kawa.

Building A2 lies immediately adjacent to, and is probably contemporary with, the Shrine of Taharqo, Building A1. It, like the shrine, had a long period of use with the floor levels rising during its life to at least 2m above the primary occupation. Although it has a number of hearths and ovens within it at many different periods, its identification as a dwelling is problematic. The deposits within it suggest that its use was not continuous; surfaces were strewn with large pieces of animal bone and broken pottery vessels which in many places stood well proud of the surfaces with which they were associated (Plate 3.50). If such surfaces has been in continual use the bone and artefacts would have been crushed or pushed down flush with the surface. Surfaces were frequently separated by thick layers of relatively clean sand. This suggests that the building was used for activities associated with the consumption of large amounts of meat and drink – many of the vessels were beakers – and was then abandoned for some time until the next event. It is possible that these events relate to festivals associated with the adjacent shrine. Some of the liquids consumed may have arrived in amphorae sealed by mud bungs; an explanation for the source of the latter in such quantities in the rubbish deposits adjacent to the shrine.

A number of circular features are known in the town. Among these are the tree pits discovered in the garden associated with Temple T and in its vicinity, and a pit with a brick border one-brick thick (Kirwan 1955, 225ff.). To the north east of Building D1 the gradiometer survey revealed several more which may have been buildings (D4-D8).

Circular buildings are not common in Kushite architecture. Of early Kushite or possibly pre-Kushite date (c. 950 BC) are two within the fortress at Gala Abu Ahmed. These buildings, each slightly oval, range in ‘diameter’ from 7.03-6.74m. The fully-excavated example has a single opening into it. Both were considered by the excavators to be for storage, probably of grain. They are overlain by another circular structure 8m in diameter apparently constructed from stones taken from its ruined predecessors (Flache 2012). At Dorginarti comparable structures range in internal diameter from 2.4m to 4.55m (Heidorn 2023, 313ff). What are probably similar silos have been excavated at Dokki Gel immediately south of the Napatan temple (Bonnet *et al.* 2021, fig. 60). Others, revealed by gradiometer survey, are known at Sanam Abu Dom around, or a little less than, 10m in diameter, one of which certainly appears to have a single entrance (Tucker *et al.* 2019, figs 10 & 11).

These buildings are all of the same order of magnitude as Buildings D4-D6 and suggest a possible function for the structures at Kawa. Their location high on the occupation mound suggests that they were not wells of the type seen at Dokki Gel.

The circular shrine and other large circular religious buildings of Napatan date at Dokki Gel (Bonnet *et al.* 2021, fig. 60) and the thick-walled structures of Meroitic date at Wad ben Naqa (Onderka and Vrtal 2013) and Dangeil (Anderson *et al.* 2019, 104ff) cannot be paralleled at Kawa.

There can be no certainty regarding the suggested plan for Building D7. It is perhaps best to defer any further discussion until the area is excavated.

Kilns

Only two kilns were located with certainty, the rectangular examples, Buildings F3 and F7.¹² Other kilns may be represented by the high magnetic anomalies visible on the slope down to the lower town to the east of Area B (Figure 13.12).

Internal features within the buildings

Cooking installations

By far the most common features found within buildings are those associated with cooking and these take a range of forms. The most basic are areas of burning on the occupation surfaces, sometimes within a shallow depression. The largest, which was probably circular, may have been 1.28m in diameter (in Room B12-VII – Plate 4.26). While these may have been associated with fires used to prepare food they could also have been used to provide heat on those very few cold nights – with the strong north wind it can be bitterly cold during the winter until well after sunrise. Alternatively they may have been created to provide smoke as a way of keeping at bay the small biting flies, the *nimitti* for which Kawa is infamous. In Room A2-III the base of two hearths was a small area ‘paved’ with large pottery sherds (Figure 3.17, Plate 3.45). On the northern

¹² For a detailed discussion of these see Welsby and Welsby Sjöström 2022.

edge of Room F1-XII a hearth was associated with a brazier, a cylinder of ceramic flaring out towards each end and pierced by a roughly circular hole (Plate 6.41).

More sophisticated hearths were made from mud bricks set on edge to delimit small rectangular spaces as the single compartment hearth in Room B5-X/XII (Figure 4.12, Plate 4.40) or the four-compartment hearth which it overlay. The hearth in Room B12-III was curvilinear in plan, its edge marked by a raised ridge of mud (Plate 4.22). A few hearths had a ceramic jar set into the floor surface immediately adjacent to them (Room A1-V – Plate 3.38; Room B12-III – Plate 4.22; Room C25-A – Plate 5.7, pot (CF4)117). These presumably contained uncooked food-stuffs or water conveniently stored for use when cooking. The vessels were open-mouthed jars of types 2025xc, 2022xd and 4624x. In the north-west corner of Room C25-A a rectangular area was delimited by a single row of mud bricks. Set into the floor of this was a pottery vessel of type 4574x (Plate 5.7) with another of type 4625x later inserted within it. The mud-brick feature was filled to a depth of 70mm with sand, silt and ash. The fill of the pots was of sand with some charcoal so presumably fires were not actually set within them.

By far the most elaborate installation was provided in Room F1-XII. Here extending the full length of the room, north-south against its east wall, was a bank of rectangular ovens, each about 390mm wide by at least 550mm in length; a total of seven (Figure 6.7a, Plates 6.43 & 6.44). They were set on top of a *mastaba*. In a secondary phase a thin mud-brick wall, at least six courses in height, delimited the southern part of the *mastaba* overlying five of the ovens which were replaced by at least two new ones (Figure 6.7b, Plate 6.45). They presumably were not associated with normal domestic activities.

Purpose-built ovens took the form of a large cylinder with a plain rim at both ends.¹³ They were placed on the occupation surface or within a very shallow pit. The earliest of these were found in Area A (Plate 3.1 & 3.6) where they pre-dated all the extant mud-brick buildings and must be from the 8th century BC if not earlier. In Building B12 the two ovens of this type, in Rooms B12-II and B12-XXI (Plate 4.20), were set right in the corners of the rooms virtually touching the walls. This was also the case of the first two phases of ovens in the south-west corner of Room A2-III (Figures 3.17 & 3.18). The two in Building B5 were also close to the walls but not exactly in the corners of the respective rooms (Plate 4.38).

In grid square (FS3) immediately to the south of the northern kiln, Building F3, were three ovens set amongst the occupation debris (Figure 7.1, Plate 7.8). These were not clearly associated with a building but short fragments of mud-brick walling were noted in the area. One oven was of two periods, the later oven of slightly smaller diameter being set within the earlier one (Plate 7.9).

Ceramic vessels were also used as ovens. On occasion a wide-mouthed jar was set upright in the surface and the fire laid within it as evidenced by its charcoal and ash fill (Room B1-IV – Plate 4.59). Elsewhere tall narrow-mouthed jars were set upside down in deep pits

and the base removed to allow the fire to be set within them (Room B12-XX – Plates 4.14 & 4.15).

In Building A2, Room III was a number of ovens utilising pottery vessels (Figure 3.17, Plate 3.45). The earliest, dating to phase 1, was directly overlain by another [(AD5)150] in the next phase (Plate 3.43). This was formed from a large jar, 600mm in diameter externally with walls 20mm thick, placed upside down with the base removed. It survived to a height of 560mm. An 'arch'-shaped opening in one side 27mm down from the top was 260mm wide by 130mm high and perhaps acted as a flue. Mud bricks set on end were placed around the outside of the pot sealing the possible flue and the whole was then coated in a layer of mud. This formed a beehive-shaped structure (Plate 3.44) with a maximum diameter of 800mm. In the south-west corner of the room the two phases of cylindrical ovens were replaced by another made from an upturned pottery vessel with a rim diameter of 320mm. (Figure 3.18). Like the oven (AD5)150 it was encased in a thick render of mud without bricks in this case. Cut into the pot rim was an arched opening which passed through the mud render to form a flue (Plate 3.46).

Pots set into the occupation surface

As well as the pots already noted associated with hearths others, set into floor surfaces, were found in a number of buildings. The largest was that in Room F1-IX where a ribbed amphora (type 4337x) was set into a large pit, only its rim protruding above the floor surface. Its base had been removed at some point before it was placed in the pit. At the north end of the corridor, Room F1-VII in the same building close to the wall was a line of three open-mouthed jars and a fourth larger vessel, the upper part of which was missing. They had been set in shallow pits (Plate 6.33).

The two large jars of types 4574x and 2025xb filled with silt, with some charcoal fragments in one of them, were set into deep pits in the floor surface of Room C21-A (Plate 5.17). In Room C25-B a vessel of type 4650x was set in the floor with only its rim protruding above it. Within this pot was a small cup of type 4534x (Plate 5.11). It might be suggested that the small pot was used to scoop out the contents of the larger pot, whatever that may have been.

Immediately to the south of Building Z1 a small deep bowl (type 3083x) contained an oyster shell (Plate 10.7).

The most unusual assemblage of pots set into a surface was found in what was probably an external space immediately to the east of Building F8. Here, in a small area, were 13 vessels, mainly bowls but with one large oval basin with vertical sides and a flat bottom (type 4639x etc.) (Figures 7.2 & 7.3, Plates 7.3 & 7.4). In the latter was one beaker and large and small pottery sherds along with large bone fragments (Plate 7.5). Many of the pots and the basin had fills of compact mud and mud fragments, some of which bore seal impressions (see Vincentelli forth., cat. nos S-15, S-235, S-236, S-581, S-582, S-748 & S-851). Are we to assume that these vessels were used to store the raw material for making seals? Where those bearing seal impressions from an adjacent area in which

¹³ For a discussion of these see Welsby Sjöström 2023, figs 3.3.11 & 3.9.12.

seals and seal impressions were applied but there had been a problem with those seals and they were returned for recycling?

Part way up the slope in the western stoking pit of the kiln, Building F7, was a vessel or bin with thin mud walls and a rounded base (Figure 7.4a, Plates 7.18 & 7.19). The walls have the character of one of the cylindrical ovens, they are either of bunt mud or are ceramic (Plate 2.14). It appears to be of two periods, one vessel nesting within the other.



Plate 2.14. Building F7. Storage vessels or bins [(FQ3)46] in the west stoking pit of the kiln, looking east.

Storage bins

The designation of features as storage bins is not based on any archaeological evidence but is simply used as a convenient term to describe installations which may have been constructed to house goods or objects. What these may have been is unknown. Most of the storage bins found were rectilinear (Table 2.2). Only two circular examples were noted, in Rooms F1-IX and F4-I. That in Room F1-IX (Plate 6.35) had thin mud walls and may be compared to *guseiba* still used in northern Sudan today. In Room F4-I was a circular bin made from seven mud bricks lining a slightly oval pit 1 x 0.9m in size and 120mm deep, with steeply sloping sides and a flat bottom (Plate 8.6).

Most of the rectilinear storage bins abut at least one wall of the room in which they were built and have sides made of a single row of bricks laid as stretchers and with the corners rounded. Their interior faces are frequently revet-

TABLE 2.2. RECTILINEAR ‘STORAGE’ BINS. DIMENSIONS ARE INTERNAL.

Room	Context	L - m	W - mm	H - mm	
B1-IV	(BF3)25	1.294	542		
B1-IV	(BF3)39	2.438+	137-230		
B5-IX	(BE4)55	1.833+	410	500	
B5-X/XII	(BE3)61	?	?	?	
B12-XXVIII	(BF2)58	1.147	523	?	
C25-A	(CF4)160	1.666	731	c. 80	phase 1
C25-A	(CF4)178	1.446	446-588		phase 3
C25-A	(CF4)117	1.168	565-697	600	phase 4
C31-B	(CF3)40	0.22 0.29	190 260	c. 200	

ted in mud plaster which also covers the face of the walls they abut within the confines of the bin and extends across their floors (Plate 4.46). Some bins are also rendered on the exterior (Plate 5.9). While some were shallow others were in excess of 500mm tall, standing proud above their contemporary floor surfaces.

In Room A1-III immediately within, and partly blocking, the doorway from the exterior was a rectangular bin constructed of mud brick of two compartments, one of which was a later addition (Figure 3.9, Plate 3.31). It measured externally 1.2 x 0.8m and was at least 480mm in height. The enclosed spaces, filled largely with clean sand, measured 584 x 330mm and 450 x 351mm. Given the presence of mud sealings elsewhere in this room, and of the large numbers found adjacent to this building, it is tempting to compare this bin with that dating from a much earlier period immediately within the doorway of what has been identified as a palatial structure at Kerma (Gratien 1993, 30). In that case the bin housed seal blanks presumably used when sealing the doorway.

Pits

There are a few examples of pits which by their location or form suggest that they had a specific function within the use-life of the buildings in which they lay.

A little to the west of centre in Room A1-II, set on the main axis of the building in line with the doorways to east and west, was a well-cut slightly oval pit with vertical sides and a rounded base, 560 x 540mm in size and with a maximum depth of 350mm (Figure 3.9, Plate 3.24). Its fill of silt with a few potsherds gives no indication of its function. Nothing was found on the surface to suggest that it was covered over.

In Room F1-Ic extending south from the north wall of the room was an irregular-shaped pit with sloping sides. The stratigraphy in that area was very confused and it proved impossible to define clearly the extent and nature of the pit. Its great interest, however, comes from what appears to have been a lining of textile rather than textile dumped into the pit, clearly visible on its northern side (Plate 6.17). The pit when in use would have totally blocked access from Room F1-II, through Room F1-I into Room F1-VI.

In B5-XIII is a very well-made semi-circular pit which used the east wall of the building to form its vertical side along the diagonal. The rest of its edge has a regular slope of about 45° and is carefully lined with mud bricks set on edge (Plate 4.47). A much smaller pit of the same shape abuts the storage bin in Room B5-IX. Its sides are lined with mud (Plate 4.46). As with the other pits noted above the contents give no hint as to its original use.

Other internal features

In Building C22 were two deep pits lined with mud bricks, nine courses in one case, probably forming sockets rather than storage features (Figure 5.13, Plate 5.25). If they were designed to support structural elements it is unclear why they were needed at this point.

Spacial organisation within the town

Virtually all that we know of the urban centre at Kawa relates to the remains at or immediately under the surface. Excavations down to a much lower level have only been conducted during the excavations of Griffith and Kirwan and more recently in Area A and Grid square (TG5).

Of the pharaonic town we know very little. The only structural evidence definitely of New Kingdom date is the temple constructed during the reign of Tutankhamun. No excavations were conducted below its construction level to ascertain whether it was the earliest building in its location. The temple is aligned north-south parallel to the Nile, a comparable orientation to that seen in the New Kingdom temples at Dokki Gel. Whether the town was comparable to that at Sesebi also founded at the same time, or more correctly, at least in the case of Sesebi, refounded, is unknown.¹⁴ Sesebi was surrounded by a substantial defensive wall delimiting a rectangular area densely filled with buildings arranged along an orthogonal street plan.¹⁵

A little to the north north east of Tutankhamun's temple Kirwan did excavate a sondage to a depth of approximately 4.2m below the foundation level of the Kushite Temple T revealing red-brick walls (Kirwan 1955, 226 & fig. 8). This may be the earliest structure known from the town. The presence of a Kerma-period settlement here is quite possible. Two small Kerma settlements lie a little to the north, another to the south and there is an extensive Kerma-period cemetery 900m to the north east of Temple T.

The date of the stone temple partly revealed by Kirwan in his sondage 2m below the level of Temple T is uncertain, but Kirwan suggested that it has been an upstanding monument at the time that Taharqo began the building of his new temple in 684 BC. Taharqo described the temple compound in c. 702 BC when he passed through Kawa on his way to Egypt – 'it had been built in brick and that the sand-hill around it had reached its roof, it (the roof) being covered with earth' (Eide *et al.* 1994, 139). The presence of a functioning temple on the site is implied from the reference to a priestess of Amun at Kawa under Alara (Eide *et al.* 1994, 141) who is thought to have reigned in the earlier 8th century BC.¹⁶

The temple built in Tutankhamun's reign remained standing and presumably in reasonable condition into the Kushite period and had a lasting impact on the planning of the Kushite structures in this area. Taharqo's temple and its predecessor were set at 90° to the long axis of the Egyptian temple at the end of a processional way which passed immediately in front of Tutankhamun's temple.

There is now abundant evidence for a significant Kushite presence at Kawa predating the reign of Taharqo. The Oxford University excavations had found remains of a temple built by Shabaqo taking Kushite building activities back into the late 8th century BC. During the excavations of the gateway into the *temenos* it was assumed that the

stone phase is contemporary with the construction of Taharqo's temple. Although this is incapable of proof, it is likely. Two metres below this level, at which point the excavations were terminated, the lowermost of many occupation surfaces was recorded associated with pottery apparently of Kushite type. These deposits suggest a considerable period of occupation at Kawa prior to Taharqo. The presence of a substantial gateway, constructed using stout timber uprights, at a level 500mm below that of Taharqo indicates that the *temenos* enclosure was in use at that time.

In Area A excavations were carried below the level of the mud-brick shrine built in the reign of Taharqo. Two metres below it the sterile sand was reached. On the surface of that sand was evidence for intensive occupation including the presence of cylindrical ceramic ovens. This activity was followed by the construction and modification of at least two buildings constructed in an architectural style familiar to that seen in the Kerma period with thin buttressed walls and rooms of curvilinear plan. Throughout the occupation here the pottery is of a type considered to be Kushite.

In Area B erosion had totally removed the early Kushite walls of Building B14 towards its southern end where pure sand was visible immediately below the present ground surface. A sondage dug through that level went through many layers of clean sand but at a depth of 2m, the maximum reached, occupation material was again found. Its date was uncertain.

The Kushite town at the time of Taharqo is a little better known. He built the extant sandstone temple which is aligned west-east facing towards the river, and the shrine Building A1 800m to the south. He was also responsible for refurbishing Tutankhamun's temple. Broadly contemporary with his reign was the construction of the mud-brick *temenos* wall with its stone-lined gateway along with the temple garden and buildings in the north-east corner of the *temenos*. The layout of the religious centre of the town at this time is uncertain as the extent of the *temenos* is unknown. The east wall of the *temenos* can be traced from the north-east angle for a distance of 105m, being pierced by a gateway towards its southern end. The road through this gateway may have passed along the southern side of the temple garden allowing access to the processional way at the front of the temple running up from the river, presumably from a quay. Only 12.5m of the north wall of the *temenos* is known but no trace of the south-east angle, of the south and west walls have been observed. On the gradiometer survey, which must have crossed the line of this wall on the south side of the *temenos*, there is a hint of a broad linear feature (Figures 2.3b & 2.4b) roughly parallel to the south wall of Temple T but if this is actually the south side of the *temenos*, when continued to the east it would meet the east wall part way along its length. If it were extended in a straight line to the west it would abut the east wall of Tutankhamun's temple. No evidence for a thick wall at this point was found in the Griffith excavations (Laming Macadam 1955, 42-43).

The Eastern Kiosk was thought by the excavators to be contemporary with Temple T and was presumably set

¹⁴ For the pre-Akhenaton occupation at Sesebi see Spence 2017.

¹⁵ For a summary of the evidence for earlier Pharaonic occupation see Pope 2014, 41.

¹⁶ See now an alternative reading of the inscription and comments on the situation at Kawa at the time of Taharqo's visit in Pope 2014, 51.

along a processional route (Laming Macadam 1955, 53).

The exact date of the many buildings discovered between Taharqo's temple and his shrine cannot be ascertained but most appear to be of early Kushite date. The majority were probably houses with a few more palatial buildings amongst them such as Buildings D1, F1 and F2. Building F1 was certainly a minimum of two stories high and the substantial stairways in Buildings B4, B7, C2, C3 and Z1 suggest that it was not the only one. To the south of Temple T marked concentrations of buildings were discovered, in Areas A, D, C, F (Building F4/F5/F10) and H. The walls of these buildings were very roughly aligned on the cardinal points (and the Nile) with streets and alleyways recognisable between them but no main thoroughfares could be recognised apart from perhaps near Buildings F2 and F4/F5/F10. In that area there are two periods of street, one running straight over a minimum distance of 33m and aligned north east to south west. At a later period the street was redesigned and sharply curved south towards its south-western end.

Between these concentrations of buildings are empty areas although the whole of the lower town is covered in occupation debris. Both the gradiometer and GPR surveys indicate that these areas are indeed devoid of brick and stone constructions although the possibility of timber structures cannot be discounted. An alternative explanation however, is that these open areas are actually the result of erosion. The impact of erosion is particularly clear in Area F. Building F11 has massively-thick walls, 1.2m, but survives to a height of not more than one course. That one course has survived because the walls of the adjacent Building F1 have proved to some extent resistant to erosion. The later Kushite kiln Building F3 has been eroded to below what was its firing floor level which can be assumed to have been level with the ground surface at its time of use. It is set into a pit cut through earlier Kushite occupation levels which to its south survive to a very low height. Total erosion of walls was also noted in Area B in Buildings B1, B14 and B15 and in Area C in Building C26. The Eastern Kiosk has also been severely impacted by erosion, its stone walls surviving to a height of not more than two courses.

While aeolian erosion may have been responsible for the total removal of structural remains in some parts of the site elsewhere this is not a valid interpretation of the observed data. The walls of Buildings F1, F2 and F4/F5/F10 have resisted erosion to some extent; today their locations are indicated by low mounds. One would expect that their walls would have provided some protection to immediately surrounding buildings. As noted above this is the case with Building F11 but this is of much later date than F1 founded approximately 330mm above its construction level. No buildings contemporary with F1 were found in its immediate vicinity and the same goes especially for the area around Buildings A1 and A2. The walls of those buildings survived well over 1m in height, up to a maximum of 2.2m at the north end of Building A2. The tops of their walls were immediately under the modern ground surface. Part of the east wall of Building A3/A4 also survived in the same way. Given this it is very surprising that the gradiometer survey did not locate any

walls of neighbouring buildings.

It might be suggested that additional mud-brick buildings did once exist in the early Kushite town but that there may also have been some large open spaces within the urban fabric. The component of timber structures within the town is at present unknown but may have been significant. Timber huts have been found in Kerma-period Kerma, in early Kushite levels at Meroe and in early medieval levels at Soba East (Bonnet and Valbelle 2014, 25ff. and 178ff.; Shinnie and Bradley 1980, 29; Welsby 1998, 23 & fig. 3). Their presence at Kawa is to be expected.

The pottery evidence suggests that most of the buildings located in the lower town date to the early Kushite period. The later Kushite occupation in this area is represented by the two kilns, Buildings F3 and F7, and the temple Building G1. The kilns were cut through domestic deposits and earlier mud-brick walls down into what appears to be natural sand deposits. The temple may be the latest of these structures as reused in its walls are many mud bricks which have been heavily fire damaged – they appear to be identical to the heavily-burnt bricks in the walls of the kilns from which they were probably taken.

The excavations in Area C revealed a palimpsest of mud-brick structures indicating a long period of use with modifications and complete replacement of buildings on a number of occasions. These appear to date from the 4th and 3rd centuries BC. Possibly of similar date was Building Z1 which appears to be totally isolated from any other mud-brick building – its nearest neighbour known at present is 160m to the south east.

In the central part of the town the temple built by Taharqo remained in use and the processional way was cleared of sand at least periodically as Napatan and Meroitic features were found at virtually the same level (Kirwan 1955, 225-226). The Western Kiosk was built on the main axis of the temple several centuries later, The eastern gateway into the *temenos* went through a series of reconstructions probably following a period of neglect when the roadway filled with sand and the walls became much denuded. This suggests that the function and importance of the *temenos* was retained. North and east of the Western Kiosk additional walls were built perhaps in an attempt to hold the wind-blown sand at bay so as to retain use of the earlier Kushite ground surface and the processional way leading down to the river.

During the later Kushite period another temple, excavated by Griffith and called by him the Eastern Palace, was constructed immediately outside and parallel to the east wall of the *temenos*. It was oriented south-north.

North and north west of Temple T was an area of dense occupation with many walls of rectilinear buildings planned after surface brushing augmented by the GPR survey. No excavations were conducted in this area and little can be said of the much disturbed remains which may well be the remains of domestic structures.

Immediately to the north and east of the kiln, Building F3, and adjacent to the Eastern Kiosk were dense spreads of bone, each bone smashed into very small fragments (Plates 2.15 & 2.16). These deposits lie on the present-day ground surface. Their date and the activities they resulted from are uncertain.



Plate 2.15. Spread of shattered bone near the Eastern Kiosk, looking north.

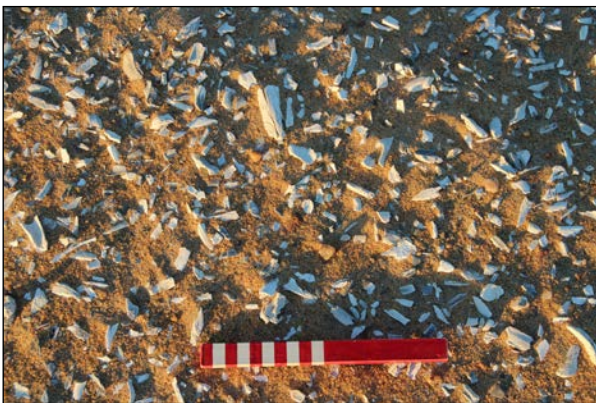


Plate 2.16. Detail of the shattered bone in the spread of this material near the Eastern Kiosk.

Missing from the town plan at all periods are a number of structures which might be expected. As with almost all Kushite settlements there is no evidence for fortifications (Welsby 2005) although the site has few natural defences apart from the steep river bank along its western side. We know from epigraphic sources that the town was attacked on at least one occasion and its must have been extremely vulnerable unless other means, which are not immediately apparent to us, were deemed sufficient to ensure its protection (Welsby 2005, 53; 2014, 224ff). In the reign of Nastasen (c. 335-315 BC) the Meded looted treasure, deposited by Aspelta, from the temple there (Eide *et al.* 1996, 492). The *temenos* wall is not provided with any features to enable it effectively to have functioned both as a ritual and physical boundary which could have withstood an armed attack. Indeed in the gateway in its initial stone-lined phase there is no evidence for the provision of gates (Plate 9.3) although these do appear to have been provided at a much later date (Welsby, this vol., 181).

There is also no evidence for a palatial structure. One might be sought immediately to the right of the main temple, i.e. a little to the north of the temple built by Taharqo. This area is now obscured by Griffith's spoil heaps and

blocks of stone from the temple laid out by the excavators.

In the immediate vicinity of Temple T there must be a bakery for the production of offering bread – vast numbers of bread cones were found in this area. This may have been a substantial installation like that excavated at Dokki Gel (Bonnet *et al.* 2021, 93ff.).

Living with the sand at Kawa

Kawa today is plagued by wind-blown sand (Plate 2.17) which very rapidly buried equipment and infilled excavation trenches. In November 1935 the Oxford Excavation Committee's team returning to Kawa after a four-year gap

“embarked on our first task, the clearing of the vast quantities of sand which had encumbered and, in some places, buried the various monuments since their excavation in 1930-1.”
(Kirwan 1936, 202)

Whether this was a feature of the Pharaonic town we simply do not know but it is clear that this was prevalent in the town in the Kushite period. When the strong north wind blows the build-up of sand happens remarkably quickly particularly on the lee side of any obstruction be it a wall, fence or hedge.¹⁷ The wind, containing its highly abrasive load of sand, is also highly destructive. As well as the epigraphic evidence from the reigns of Taharqo (early 7th century BC) and Irike-Amanote (later 5th century BC) at numerous points in the excavation the impact of the sand was noted.

During its life the shrine, Building A1, lost its external altar which was engulfed in sand and gradually as the surrounding ground level rose it was entered down a sloping ramp and a flight of steps. The adjacent Building A2 saw its floor levels rise internally to at least a height of 2m which may well have necessitated the removal of the roof, the raising of the walls and the re-erection of the roof at a higher level. Whether these buildings were abandoned when the continuing build-up of sand made their use untenable is uncertain but highly likely.¹⁸

In the *temenos* gateway the north jamb was extensively eroded by the wind and 2m of deposits formed above the paved roadway. For some time it appears that the stone lining of the gateway was denuded to the new ground surface and its uppermost course was much eroded. When the gateway was reinstated the new roadway was narrower and the sides of the passage oversailed the earlier remains.

¹⁷ No attempt was made to backfill the excavations of Griffith yet, by the late 1940s the area was again infilled with sand.

¹⁸ For a similar situation, and measures taken to maintain buildings in use, at the Meroitic settlement of Ash Shaukan see Klassens 1967, 82; Jacquet 1971, 129.



Plate 2.17. A sandstorm at Kawa.

Much effort must have been expended in maintaining the level contemporary with the construction of Temple T – the presence of Meroitic retaining walls and of sand against the wall of the Western Kiosk, indicates that the protected area was reduced over time.

Kirwan's sondage immediately to the west of the pylon of Temple T revealed two thick deposits separating phases of occupation and a 2m-thick deposit of clean sand was noted between an occupation deposit and the remains of Building B14. In Area Z erosion had shaved off the top of one wall at an angle of 15° and then sand build-up levelled out the area over its remains.

Another problem with the wind-blown sand was structural. Where there was a substantial build-up of sand against walls it exerted an immense lateral pressure on them. The result was particularly clear in Building A3. Here it was necessary to strengthen the curving east/north-east wall of Room A3-2 with a massive buttress. To the south the east wall of Room A3-5 had begun to lean markedly under the sand's weight before a buttress was constructed to counteract this – the wall subsequently collapsed (Welsby this vol., 51, 53). A similar situation was observed in Building C25 where both the north wall and its substantial buttress were leaning well away from the vertical (Welsby this vol., 119).

Over time the wind-blown sand, along with human building and occupation activities, will have markedly changed the topography. Beside Temple T the current ground level is about 7.5m above the earliest occupation revealed; by Building A1 the present ground surface is about 4m above the natural.

3. Excavations of the painted shrine and other buildings in Area A

Derek A. Welsby

Area A lay towards the southern margins of the lower town where the mound appears to tail off into the surrounding plain. It contained a group of buildings (Figure 3.1). Although Kushite occupation is visible on the surface for several hundreds of metres further south no buildings have been observed south of those described below.

A short time before excavation began in Area A small-scale disturbance of the site occurred with shallow pits being excavated particularly in the corner of rooms of Building A1. During these activities fragments of a ceramic statue were unearthed and were strewn across the surface. Excavations began in this area in December 1997 with further work in January to March 2000 and in the winters of 2001-2, 2007-8 and 2008-9. Excavation included the whole of Buildings A1 and A2 and the street between them. The part of Building A3 to the east was also excavated. To the east of Building A1 an area was investigated down to the level contemporary with the building's construction. Limited excavation was conducted elsewhere to the east, south and west of Building A1 and no excavation beyond the clearance of the very uppermost sand layers was attempted to the north of Building A2 and to the east of Building A3.

In more than 60% of the area excavated what appeared to be the natural was reached and the excavations were terminated. Within Building A1 excavation was not carried below the construction levels of that building as, owing to the serious conservation problems associated with the *in situ* wall paintings, it was necessary to backfill that building as soon as possible.

All major structural elements were left in place, making the relationship of deposits in and beneath the rooms of Buildings A2-A6 often difficult to ascertain. No surfaces were distinctive enough to allow them to be identified where the direct connection was masked by later walls. An attempt has been made to relate such surfaces using their absolute level above the site datum. A similar problem was noted with structural elements pre-dating Building A2 as, for example, the Building A3/A4 wall observed beneath Building A2, Room IV, which does not appear on the other side of the A2 wall. Notwithstanding these

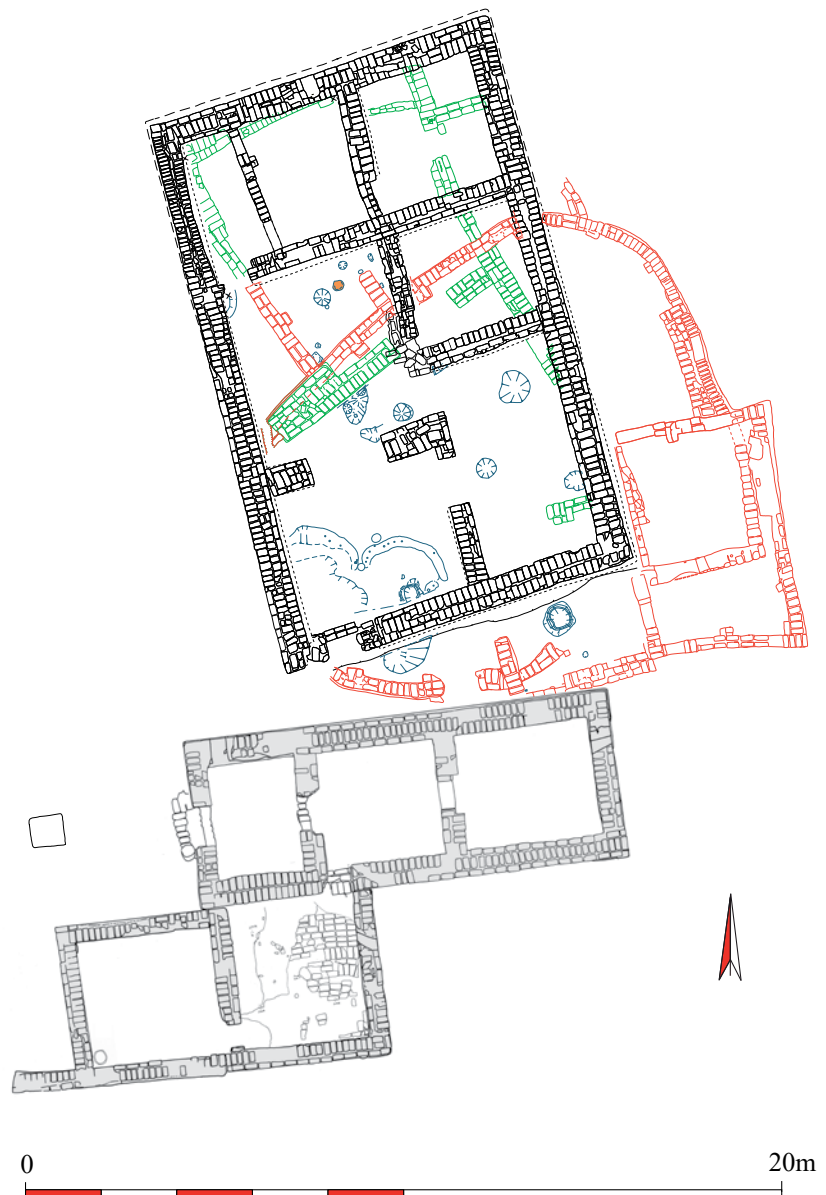


Figure 3.1. Area A, buildings of all periods (scale 1:200).

problems four distinct periods of occupation were noted but the more detailed phasing may associate features and surfaces which, while broadly contemporary, may not have actually been in use at the same time.

Period 1

Phase 1

In a number of places excavation was carried down to what was assumed to be the natural. At the southern end of the later Building A2, Room I an area of 4 x 1m was excavated below the level of the earliest Building A3 floor



Plate 3.1. The earliest feature excavated in Area A, the ceramic oven (AC5)180 – scale bar 500mm.

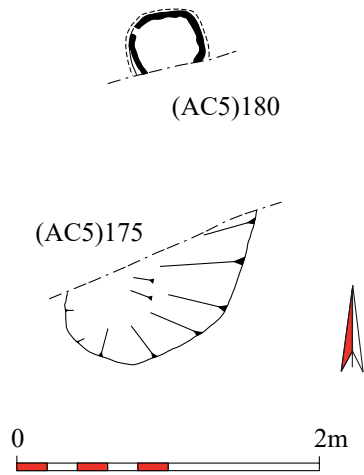


Figure 3.2. Area A, Period 1, oven and pit of various phases (scale 1:50).



Plate 3.2. The ceramic oven (AC5)180 and occupation deposits below the level of Building A2's walls – scale bar 2m.

[(AC5)175], possibly oval but much of it was inaccessible beneath later walls. What was visible was 1.5 x 0.7+m in size and 120mm deep and was filled with ashy sandy silt with a fair amount of pottery and charcoal deposited in a number of shallow layers and capped by a layer of white lime [sample <43>]. The whole area was sealed by a sand and silt layer (AD5)172.

In the area of later Building A3 Room 2 the northern part was excavated to the natural at a maximum depth of 41.31m OSD.

Phase 2

The oven was abutted by generally clean deposits of sand up to surface (AC5)116 which did however, to the south west, contain a lens up to

160mm thick of burning of at least 1.3 x 1.1m in extent.

Cut into this surface, the level on which the walls of Building A3 were constructed, were two very shallow curved gullies (Figure 3.3, Plate 3.3). Although these and

to a depth of between 40.46m and 40.49m OSD, that is about 1.7m below the lowest course of the south wall of Building A2. Set 40mm into this deposit was a circular, frustum-shaped, ceramic oven, (AC5)180, 510mm in diameter (Figure 3.2, Plates 3.1 & 3.2). It survived to a height of 370mm and was filled with 30mm of ash and sand and then 150mm of loose sand with pot and ash before going out of use.

Another sondage 1m wide was cut roughly east-west right across the central part of Building A2, Room II to a depth of approximately 500mm below surface (AC5)167. The upper coarse, sand deposit contained a few sherds of pottery and charcoal flecks, the lowest reached was sterile silty sand.

In the street between later Buildings A1 and A2 the unexcavated silt, at between 41.01m and 41.08m OSD, was sealed by two largely clean sandy deposits but with a few flecks of charcoal and a very small amount of pottery. The uppermost was cut by a shallow depression/pit

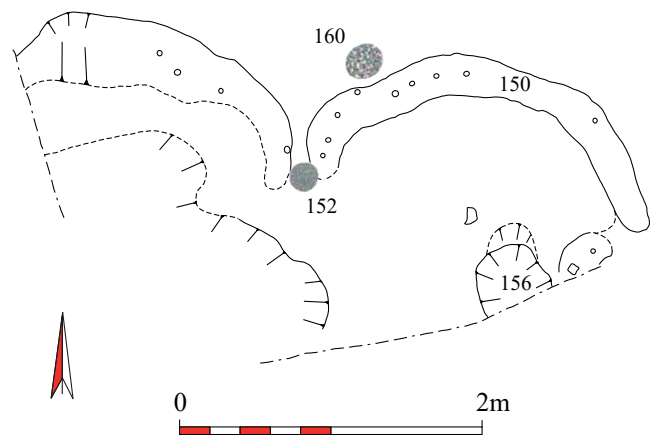


Figure 3.3. Area A, Period 1.2, gullies in surface (AC5)116 (scale 1:50).



Plate 3.3. The shallow gully (AC5)150 in surface (AC5)116 looking west – scale bar 2m.

other features at this level (Figure 3.4) are considered as pre-Building A3 they could relate to its primary phases. The eastern gully was 2.3m in length, a maximum of 250mm wide and 30mm deep. In the bottom was a row of what might be very small stake-holes each about 25mm in diameter and up to 35mm deep. The other feature was more irregular and extended out of the excavation area. To the south was a pit [(AC5)156] 450mm wide directly over the site of the much earlier oven and filled with ashy material. As with the oven in the ‘street’ this suggests that the oven remained in use for a long period as deposits built up around it. This pit may have been the result of removing the upper part of the oven. There were also two small hearths in this area [(AC5)152,160] the former 60mm across. In the



Plate 3.4. Period 1.2. Pits (AD5)305 and 307 cutting surface 308 – scale bar 1m.

northern part of the later Building A2, Room III was a pit [(AD5)314] 450mm in diameter filled with ash, cutting into the generally clean sand layers. A similar pit was (AD5)307 473 x 446mm in size and had been used as a hearth (Plate 3.4). Pit (AD5)305 was partly obscured by a Building A4 wall. It may have been oval with minimum dimensions of 1.2 x 0.6m and was 120mm deep. Within it was a deeper oval depression and a 78mm diameter post-hole. Further to the east were three pits; (AC5)147 was very similar to (AD5)307 and 314, (AC5)149 was a little larger at 940 x 800mm and at 70mm a little shallower, while (AC5)142 was more irregular in shape. The latter contained a distinct lower fill of charcoal covered in clean sand (Plate 3.5). It had not been used as a hearth. Pits (AC5)147 and 149 contained ashy fills. Also cutting the same surface was a stake-hole 80mm in diameter.



Plate 3.5. Period 1.2. Pit (AC5)142 with fills 141 and 140 cutting surface 144 – scale bar 500mm.

Into surface (AD5)172 noted under Phase 1 above was set another cylindrical ceramic oven [(AC5)130] 620-680mm in diameter within a shallow pit. It survived to its full height of 680mm. Although the primary fill was up to 20mm of ashy material with charcoal there was no discolouration of the sand against its exterior.¹

Phase 3

In the areas of Building A2 Rooms II and III, after a build-up of between 200mm and 40mm of sand, were three pits which were only partly visible extending under the lines of Building A2 walls. All appear to have been hearths. Another hearth sits on the contemporary surface (Table 3.1).

Oven (AC5)130 (Plate 3.6) must have remained a prominent feature in this area over a long time as the sand gradually built up against its exterior. As in its primary phase there was no evidence for the burning within it discolouring the surrounding sand deposits. It was filled with ashy sandy silt with bone, lots of pottery and four mud bungs. The deposits against it [(AC5)170,163] were

¹ Such ovens are well represented in Kushite contexts, examples are known from the Kushite houses in Area B as well as from Dokki Gel 55km to the north and site H25 34km to the south (Bonnet 2005, vi; Welsby 2001a, 54).

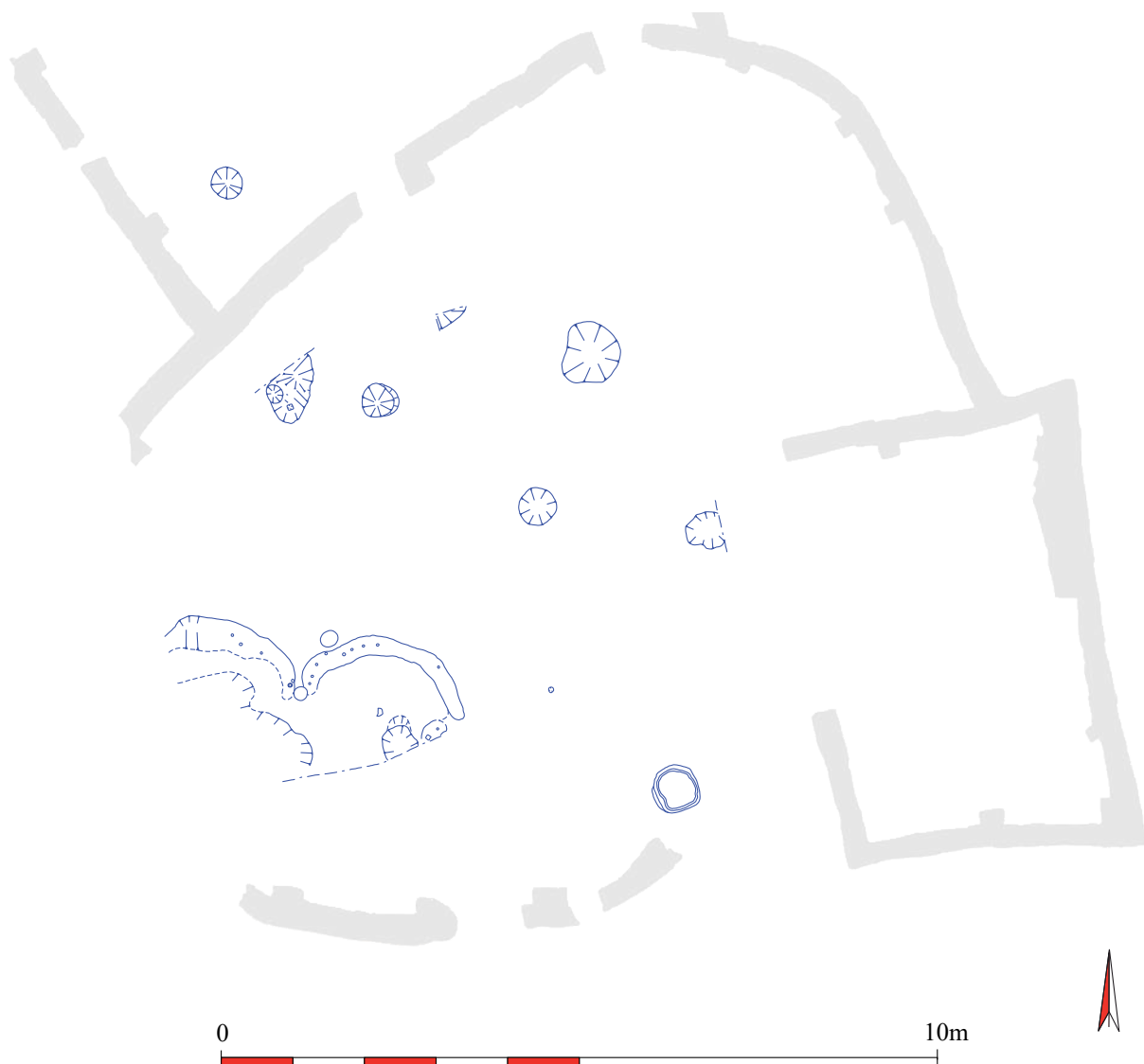


Figure 3.4. Area A, Period 1.2, features. Walls in grey indicate the location of the later Building A3 (scale 1:100).

of sand with some charcoal flecks. Sat on the surface of (AC5)163 was a complete open-mouthed pottery vessel (type 3888x) filled with fine sand and a few substantial pieces of bone, against which was deposited (AC5)162 on



Plate 3.6. The ceramic oven (AC5)130 – scale bar 500mm.

TABLE 3.1. PHASE 3 HEARTHES.

	L	W	Depth	Fill
(AC5)135	900mm	860mm	-	
(AC5)136	210+mm	170+mm	70mm	ash, silt, charcoal
(AD5)301	280mm	?	?	ash
(AD5)303	450+mm	380mm	?	ash, sand

the surface of which at the west end of the ‘Street’ was a substantial deposit of mud-brick rubble up to 220mm thick. Both were sealed by another sand deposit with a firm surface [(AC5)158]. In turn this was sealed by (AC5)145 a similar surface but with occasional pieces of mud-brick rubble within it and flecks of charcoal. All these sandy deposits are probably multiple very thin surfaces however, whether each was laid by the occupants of the area or they were naturally forming deposits is impossible to tell – they were probably a combination of both. The primary walls of Building A3 were constructed on this surface.

Uncertain phase – In the area of later Building A3, Room 1 on a surface at a level of approximately 41.98m OSD was a hearth set into a shallow depression 370 x

320mm in size and 30mm deep. Resting on the contemporary sand surface was what might be a post-pad made from bricks and pottery.

Period 2 – Building A6

The earliest structural remains was a single length of wall [(AC6)74] running north-south (Figure 3.5) which survived to a maximum height of three courses, 340mm. It was constructed of bricks 200 x 150 x 100mm in size. This is all the remains of what was designated Building A6. After some rubble from its collapse accumulated on the floor surface a buttress was built against its eastern face. Resting on the surface above was an extension of this buttress. The relationship of this wall to other early but non-structural elements on the site is uncertain. However taking into account the absolute levels the oven (AC5)130 was set into a surface almost exactly at the same level as that on which the wall was built suggesting that they may be contemporary. Two further ‘surfaces’ formed before the start of Period 3.

Period 3 – Building A5

Two new walls were constructed one of which appears to abut wall (AC6)74 delimiting a probably rectilinear space 2.93m wide by at least 3.44m, designated Building A5 (Figure 3.5, Plate 3.7). The walls were built from bricks 340 x 170mm in size and were one header thick (bond type L). There may have been a doorway in the south wall 1.1m wide. After a build-up of 200mm of sandy silt with mud-brick fragments within it a stone pivot slab (Plate 3.8) was placed at the north end of the



Plate 3.7. Building A5. The east and south walls (AC5)68 are clearly visible while wall (AC6)74 to the west is much less so – scale bar 2m.



Plate 3.8. Building A5. The pivot stone and mud-brick fragments in the doorway – scale bar 500mm.

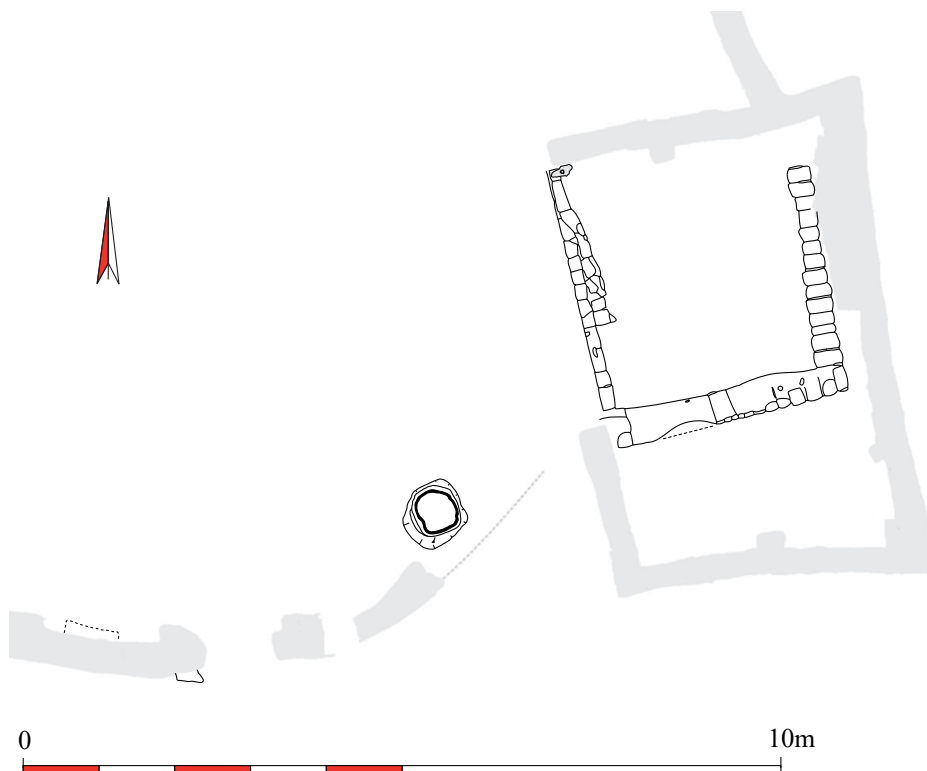


Figure 3.5. Area A, Period 2, wall (AC6)74 of Building A6 and walls of Building A5. The ceramic oven may date to this period. Walls in grey indicate the location of the later Building A3 (scale 1:100).

Period 2 wall, a doorway being created.

Other early structural remains were noted in the north-eastern part of the later A3-4. Here the later Building A3 north-south wall cut through a deposit of mud-brick rubble (AD5)226 (Plate 3.9) and a little to the north, at a stratigraphically slightly earlier date, were the remains of rubble or just possibly a very poorly constructed east-west wall. Also predating the Building A3 walls in this area was a deposit [(AD5)232] of pottery including one complete beaker and large sherds, animal bone and mud-brick fragments (Plate 3.10).



Plate 3.9. Mud-brick rubble predating the construction of Building A3 – scale bar 2m.



Plate 3.10. Deposit [(AD5)232] of pottery including large sherds, animal bone and mud-brick fragments – scale bar 500mm.

Period 4 – Building A3

Phase I

During the construction of the Period 4 building, designated Building A3, the earlier walls were demolished down to below floor level but survived a little better where the east wall ran under later wall (AC6)35. Building A3 extended out of the excavation area to the west and perhaps also to the north (Figure 3.6). Its walls were constructed from mud bricks 330 x 150 x 90mm in size arranged in alternating courses of one header and two stretchers (bond types L & K) and thus having a thickness of 350mm. Spaced at intervals along the walls on one face, for external walls these were on the inner face, were small buttresses two bricks wide bonded into the wall and extending to the full height of the surviving walls, a maximum of 1.31m (Plates 3.11 & 3.12). The faces of the walls were rendered in a fine mud plaster. Most of the walls of the building are curvilinear but the south-eastern part has straight walls, and the south-east corner is a right



Plate 3.11. Building A3. The highest surviving section of wall with the Phase II buttress inserted against the inner face of the east wall – scale bar 2m.



Plate 3.12. Building A3. Section of wall with internal buttresses. Note remnants of what may be a fragment of walling [(AC5)164] contemporary with Buildings A5 or A6 – scale bar 1.5m.

angle. On its north side a curvilinear wall extends out of the excavation area while to the west straight sections of wall disappear under the walls of the later Building A2 but do not appear on the other side of those later walls. The northern part of the wall between Rooms A3-4 and A3-6 [(AD5)228] only remained as a single course of bricks set on edge (Plate 3.13) with a construction trench edge visible along its western side.

The north-south wall (AD5)234 between Rooms A3-2 and A3-3 was terraced into the slope down from east to west to a depth of 90mm. Only one doorway was found, possibly leading through the building's south wall to the exterior (Plate 3.14). It was 940mm wide with a respond on its east side containing a stone socket on which the door would pivot.

In Room A3-3/4 was a ferruginous sandstone post-pad

270 x 250mm in size set into the primary floor surface (AD5)296. It is directly in line with and approximately 1.56m from the buttresses on the south-west wall of the room but is close to the wall between Rooms A3-3 and A3-4 and 1.17m from the south-west room wall. In the south-west angle of the room a rectangular slab had been incorporated into the adjacent walls. Another sandstone post-pad, 370 x 230 x 120mm in size, was noted in Room A3-5 roughly in line with the buttresses on the north and south walls, 2.54m to its centre from the former and 2.62m from the latter. Yet another, 180 x 150 x 110mm in size, was located in Room A3-1, 1.37m from the buttress on the east wall of the room.

Floors of this phase were of sand, as were all floors in the buildings in Area A apart from that in Room A1-I and A1-IV. The floor in Room A3-5 partly consisted of the wall tops of Building A5. It was sealed by a typical



Plate 3.13 Building A3, wall (AD5)228 and its construction trench overlain by a later wall – scale bar 500mm.

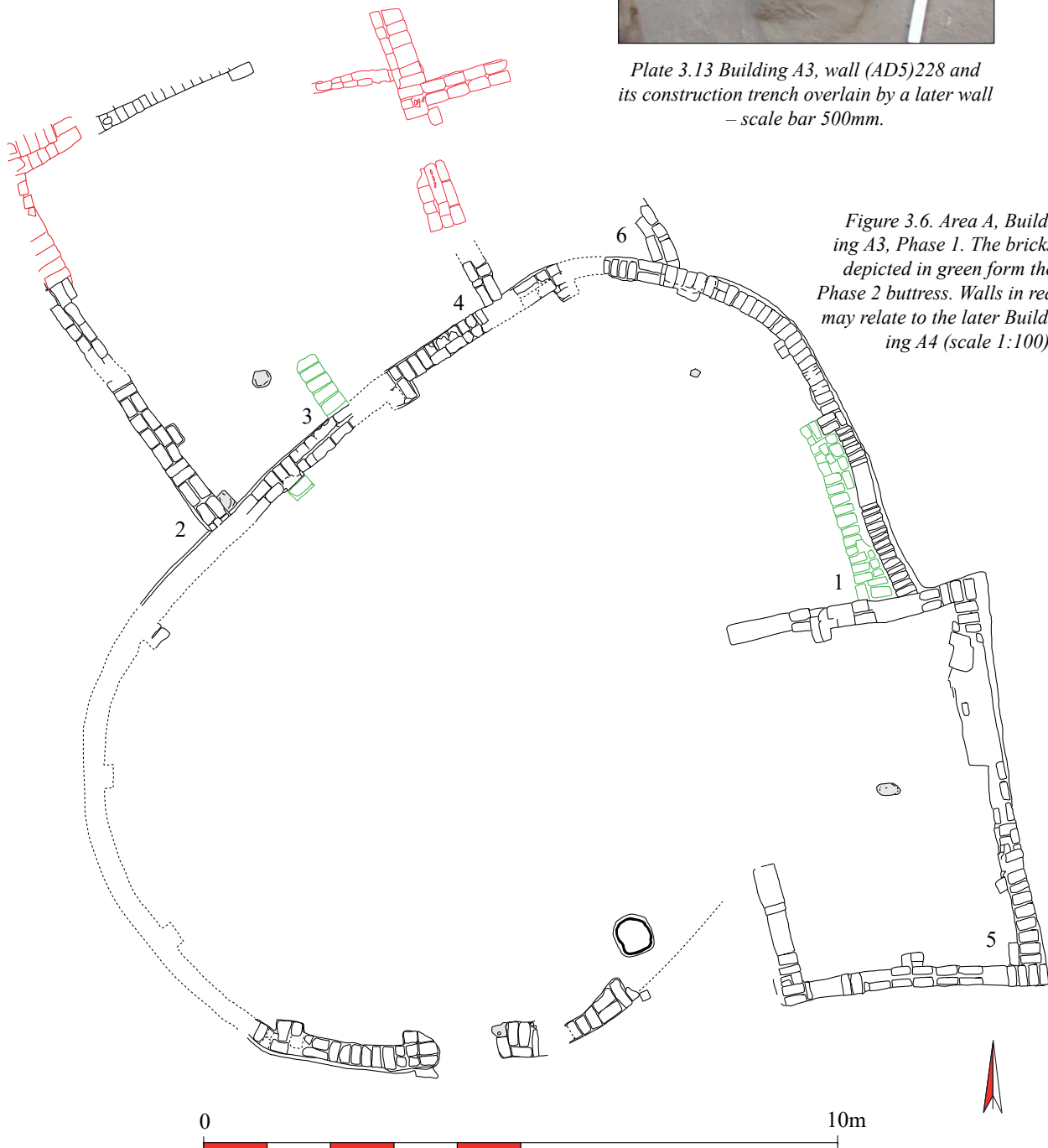


Figure 3.6. Area A, Building A3, Phase 1. The bricks depicted in green form the Phase 2 buttress. Walls in red may relate to the later Building A4 (scale 1:100).



Plate 3.14. Building A3. Doorway through south wall of the building after removal of contemporary floor levels. The pivot stone remains in situ. The wall at 90° is part of Building A4 – scale bar 2m.

floor deposit, a thick layer containing innumerable crusty sand surfaces revealed in discontinuous patches. In the north-west corner of the room it was cut by a pit over 1.05 x 1m in size and 220mm deep. The pit was filled with mud-brick rubble in a matrix of fine sand.

Few internal features were noted relating to this building. In Room A3-1 the oven (AC5)130 noted above which, when Building A3 was constructed protruded through its floor to a height of 260mm, presumably remained in use (Plate 3.15). Again, however, no burning associated with this use was noted within it nor any heat discolouration of the sand against its exterior.

In Room A3-2 there were no occupation deposits associated with the use of the building. A deposit of ash [(AD5)280] up to 30mm filled the room and the burning associated with it had reddened the mud bricks in the wall. The primary floor surface in Room A3-3/4 [(AC5)296] was cut by two small post-holes and had two large pottery sherds on it as well as the post-pads noted above (Plate 3.16). Ash deposits extended across extensive areas in the western and central parts of Room A3-1 [(AC5)112,113,(AD5)279] and in Room A3-3/4 [(AD5)272]. There is some mud-brick rubble within this material which may relate to the destruction of the



Plate 3.15. Building A3. Ceramic oven (AC5)130 in the floor level contemporary with the building – scale bar 2m.



Plate 3.16. Building A3. The primary floor surface in Room A3-3/4 with post-pad and pottery – scale bar 1.5m.

building. Within Room A3-3/4 a hard sandy surface lay between the ash and the rubble which rather complicates the supposition that the burning was associated with the final destruction of the building. Within Room A3-1 a hearth up against the north wall may be contemporary. It had heavily fire reddened the wall face. A hearth placed against the west face of the wall in the north-east ‘corner’ of Room A3-4 had burnt the bricks red.

Phase II

On the eastern side of Room A3-1 a massive buttress 2.9 x 0.45m in size and still standing to a height of 1.21m (Plate 3.11) was built against the inner face of the wall. It rested on a surface on average 100mm thick formed of mud-brick rubble in a sandy-silt matrix [(AD6)14]. This buttress was presumably required to combat pressure from wind-blown sand building up on the exterior of the wall. The same situation developed in the room to the south where the central section of the east wall bowed inwards and had partially collapsed. The central section of the north-west wall of Room A3-1 had begun to lean well to the south before a buttress built of bricks 350 x 160 x 90mm in size was built against it. Room A3-3/4 was partitioned, a wall a single header (390 x 160 x 90mm) in thickness extended northwards for a distance of 830mm.

Uncertain phase

In the central part of Room A3-1 was evidence for intensive activity which could not be assigned to any particular phase. On the primary surface was a maximum of 20mm of sandy silt with charcoal and some ash sealed by up to 200mm of sandy silt with small concentrations of mud-brick rubble. In turn sealed by a loose sandy-silt deposit, this layer was cut by two hearths 350mm and 300mm in diameter and 300mm and 50mm deep respectively. The next sandy-silt deposit was cut by three hearths (ø 320mm, depth 20mm; ø 250mm, depth 35mm; ø 200mm, depth 250mm). The last surface relating to this building, sandy silt with some mud-brick tumble particularly towards the east, has two hearths on its surface (ø 735mm, depth 60mm; 900 x 820mm, depth 30mm).



Plate 3.17. Building A3. The latest floor surface in Room A3-3 – scale bar 1.5m.

In Room A3-3 and extending to the south on the other side of the wall into Room A3-1 the latest surface was a large ashy deposit which includes some burnt mud bricks (Plate 3.17). This is thickest against the walls and fades out rapidly away from them. It formed the surface during the construction phase of Building A4.

Period 5 – Building A4

Phase 1

It is clear that when Building A4 was constructed the walls of Building A3 were still standing. Where appropriate to meet their needs the builders retained the A3 walls but where not required they were demolished down to the new floor levels (Plate 3.18). The building may have extended much further to the north than its predecessor,

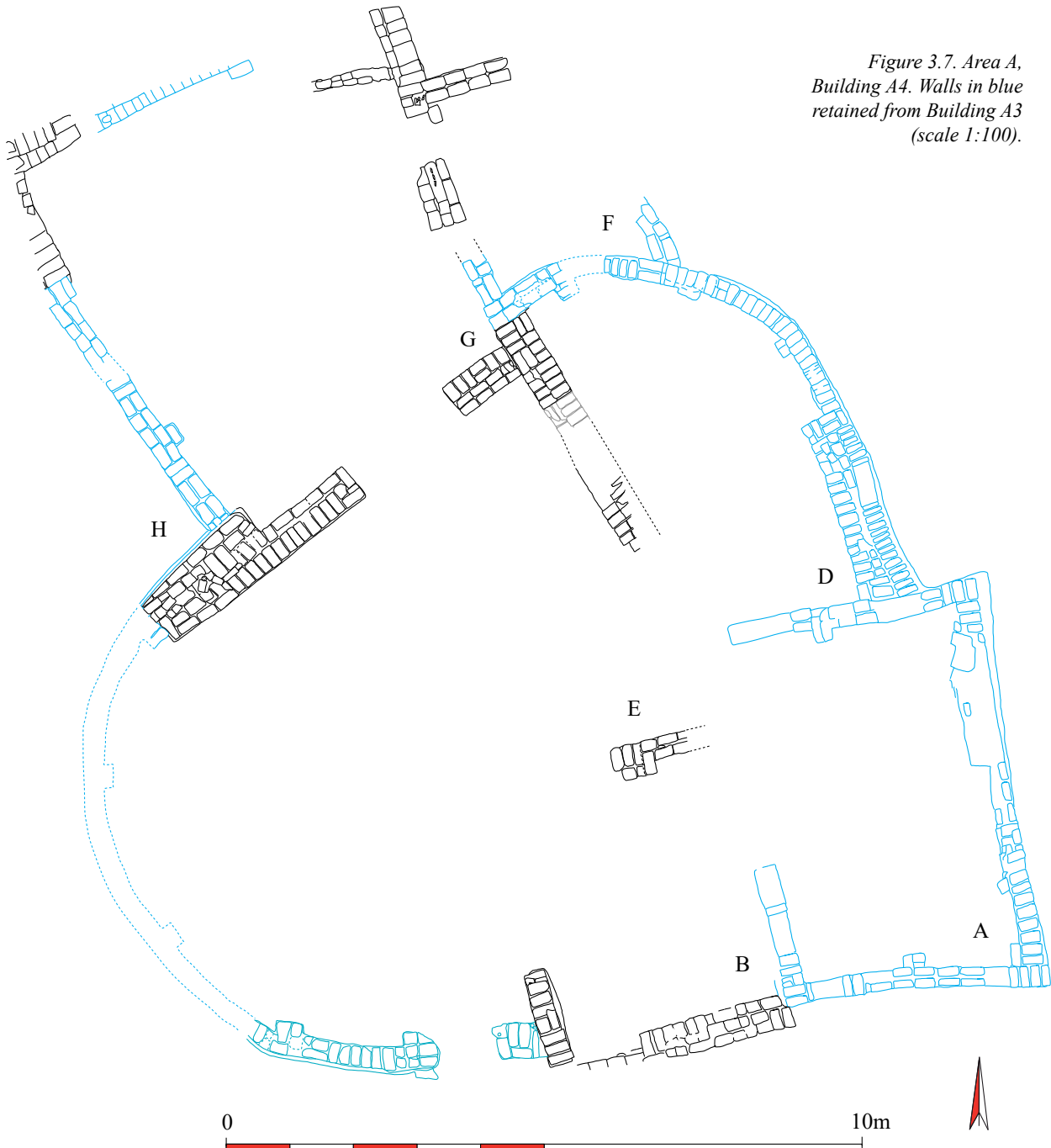


Figure 3.7. Area A, Building A4. Walls in blue retained from Building A3 (scale 1:100).



Plate 3.18. Building A4. Wall 209 is a new build while wall 234 is retained from Building A3. The earlier building's wall 275 has been demolished to floor level, wall 261 has been partly demolished and partly incorporated into the new structure – scale bar 2m. All numbers in grid square (AD5).

its walls extending beyond the excavation area (Figure 3.7). The walls of Building A4, constructed of mud bricks of a range of sizes ((AD5)172 and 173 320 x 160-150 x 90mm; (AD5)209 360 x 160 x 100mm; (AC5)69 300 x 170 x ?mm), varied in build and thickness. The thinner walls had alternating courses generally one header (bond type L) or two rows of stretchers (bond type K) and attained a thickness of 340mm. The thicker walls had courses of one header and one stretcher (bond type H) and were 550mm thick. Part of the wall between Rooms A4-E and A4-H was much thicker where it incorporated part of the A3 wall. The south-eastern part of the earlier building was extensively remodelled. The central part of the south wall was demolished down to its lowest course and a new straight south wall was then extended from the corner of the earlier Room A3-5 to the west to link up with the curvilinear earlier wall which, along with the doorway, remained in use westwards from this point. The doorway in the respond on its east side was provided with a stone socket on which the door would pivot. Another doorway, 750mm wide, gave access from Rooms A4-F to A4-G with a stone pivot 280 x 190 x 160mm in size on its north side indicating that the door opened into the eastern room (Plate 3.19). The pivot was 70mm in diameter, the hole was 30mm deep. Between Rooms A4-E and A4-G was an opening 1.98m wide. The absence of responds to either side suggests that no doors had been provided. The doorway between Rooms A4-D and A4-E differed from the others in having the lowermost two courses of the wall carried across the opening forming a threshold, a feature it has in common with the doorways of Building A2.

Within the rooms were several surfaces made up of sandy silts and mud-brick rubble into which was set a number of hearths including hearth (AD5)95 extending under the later west wall of Room A2-I. A single small post-hole [(AC5)110], 130 x 140mm in size and 80mm deep, was noted close by the south wall of Room A4-B. In the area of the later street the surfaces with an admixture of mud-brick rubble were more compact in room A4-B than the part of A4-E to the west suggesting the possi-



Plate 3.19. Building A4. Doorway between Rooms A4-F and A4-G – scale bar 2m.

bility that the former was an indoor space, the latter an external courtyard. On one surface in Room A4-H was a bovine mandible.

Phase II

Evidence for the later phase of the building's use was sparse having been removed in many places when the site was levelled on the construction of Building A2. Only outside the east wall of the new building were deposits left *in situ* although cut by the construction trench for the new building. In Room A4-A large sections of the east wall which survived from Building A3 had collapsed with many bricks articulated with up to 18 courses being present [(AC5)14].² Together with the wall face remaining in place this indicates that the wall had a minimum height of 22 courses, approximately 2.2m. Further north the collapse seems to be more gradual with layers of mud-brick rubble [(AC5)36,34] separated by wind-blown sand [(AC5)58].

The collapse of this wall will have been the result of a build-up of wind-blown sand on its eastern side. This must have been a long term problem here which had been partly addressed with the building of the substantial but-tress within Room A3-1.

Period 6

This period saw a major reorganisation of the area with the construction of two new buildings, Buildings A1 and A2 which were separated by a street between 1.43m and 3.02m in width.

Pre-Building A1

Very little excavation was conducted below this building on account of it being necessary to backfill it as soon as possible to preserve the wall paintings. Beneath it layers of compact sand were observed containing some occupation material, in the area of Room A1-I including charcoal and a little animal bone as well as gravel. For possible traces of earlier walls see below. To the north the external

² Each course was of one brick 90mm thick plus the mud-mortar bonding about 10mm thick.

wall of the building rested partly on the denuded walls of Building A4 (for a detailed description see above).

To the west of the building the latest pre-building deposit was (AB5)226, with a good mud surface in places, but in others hardly discernable. Visible through the surface was a deposit of mud-brick rubble and large potsherds which was not fully excavated. It was only visible over an area of 980 x 600mm.

Building A1, phase I

Following the demolition of Building A4 a three-roomed rectangular building aligned east-west was constructed measuring externally 11.3 x 4.55m (Figure 3.8). It was a well-constructed regular structure with wall built throughout of mud bricks 280-340 x 140-180 x 80-90mm in size, containing organic material including bone, pebbles and pottery sherds, and surviving at the time of excavation to a height of 1.66m at the west end of the building where it was flush with the present ground surface. The east end of the building survived to a maximum height of 900mm. The difference in preservation is mainly the result of the structure being built on a slope, the ancient and the modern ground surfaces being closer together towards the east. The thinner north-south walls (Room A1-III west

course of headers extending less from the wall face (Plate 3.20). The lower course is only to be found in the western two-thirds of the room levelling up the slope down from east to west. After the laying of these two foundation courses a deposit of silty sand and mud [(AB5)355] formed a level surface in the room and then the rest of the south wall and the east wall of the room were built. The west wall of the building had a foundation course [(AB5)356]



Plate 3.20. The foundation courses of the south wall in Room A1-II – scale bar 2m.

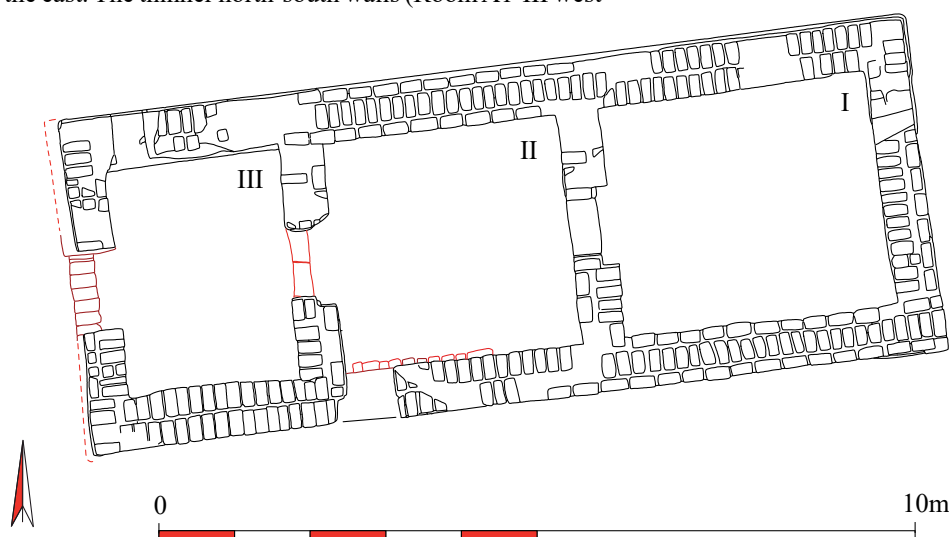


Figure 3.8. Building A1. Construction level (scale 1:100).

wall – 500mm; Room A1-III/II – 600mm; Room A1-II/I – 600mm; Room A1-I east wall – 580mm) were built in 1½-brick construction, alternating courses of headers and stretchers being visible on each face (bond type H). In the centre of the east wall on its inner face in the middle of the row of stretchers in the third course were five headers. Here and in the course below the bricks extend 40mm beyond the wall face. The north and south walls attained a width of between 700mm and 740mm and were built of alternate courses of two headers (bond type G) and of a single header flanked to each side by a single row of stretchers (bond type C). Both in the central and eastern rooms in the lower courses some bricks had been placed as rowlocks perhaps to help even out the courses.

In the western section of the south wall, in Room A1-II, the lowest course of headers extended 100mm beyond the wall face and this was surmounted by another foundation

narrower than the superstructure. This did not extend the full length of the wall but may have served to level up the slope down from north to south (but see below). The external face of the wall was between 100mm and 210mm lower than the east wall's face. The south wall was also built on a gentle slope down from east to west, the base of the wall stepping down 70mm a third of the way along the wall in Room A1-III. Like the west wall of the building the wall

between Rooms A1-II and A1-III also had its lowest course narrower than the superstructure which overhangs it to the east. This 'course' consisted of mud bricks, mud-brick rubble, pottery and pieces of mud render. A step must have been cut in the underlying sand into which the west face of the wall was placed, the east face resting at a higher level on the undisturbed sand. The primary floor in Room A1-III was at the base of this lowest course the material of which was rendered to mask the shoddy construction employed. On the inner face of the eastern wall the lowest course of headers protruded 20-30mm from the wall line and the stretchers in the lowest course of the south wall do the same. They were not covered by plaster but masked by the primary floor. A similar situation was noted in the north wall of Room A1-II where the lowest courses stepped down twice east to west. All the external and internal walls of the building were bonded.

The centrally placed doorway communicating with the exterior was originally 1.9m wide but was narrowed by 450mm on each side apparently during the construction phase but after the original jambs had been rendered and whitewashed (Plate 3.21). On the south side of the doorway the uppermost two surviving courses, approximately 1.6m up the wall, were added after the doorway had been narrowed. Immediately in front of the doorway was a step formed of a large mud brick (370 x 330mm) at its north end laid as a stretcher and then five headers (300 x 150mm). It gave access over what was interpreted as a raised mud-brick threshold, formed of a single course of headers 330 x 165 x 90mm in size, into a room with



Plate 3.21. The doorway leading into the building from the west looking into Room A1-III – scale bar 2m.

was demolished at the time of the building's construction. The single brick running under the walls in the north-west corner of the room [(AB5)362] may be related. Two headers, 150mm wide and 80mm thick protruding from under the south wall in Room A1-I [(AB6)31] may also predate the building.

Another centrally-placed doorway 880mm wide (1.18m between the rebated jambs) allowed access with a step up of about 150mm into the central room, Room A1-II, 3 x 3.1m in size. This has a two-piece white sandstone threshold, with a total length of 1.06m and width of 280mm, constructed along with the wall's foundation and partly sealed under the superstructure. The edges of the threshold have become rounded through wear. On the south side of the doorway in the rebate was the impression of a stone, presumably the pivot. A stone of a suitable size, bearing a pivot hole in its upper surface, was found nearby reused in structure (AB5)238. In the inner corner of the rebate a plaster fillet bears wear marks from the wooden door turning on its pivot. At some time after the right-angled rebated north jamb was plastered and white-washed it was remodelled with the addition of a thick layer of mud plaster which effectively moved the timber door frame about 120mm into the room and reduced the doorway by the same amount. The impression of the door frame indicates that it was approximately 50mm thick.

A similarly placed doorway 770mm wide (1.08m between the rebated jambs), again

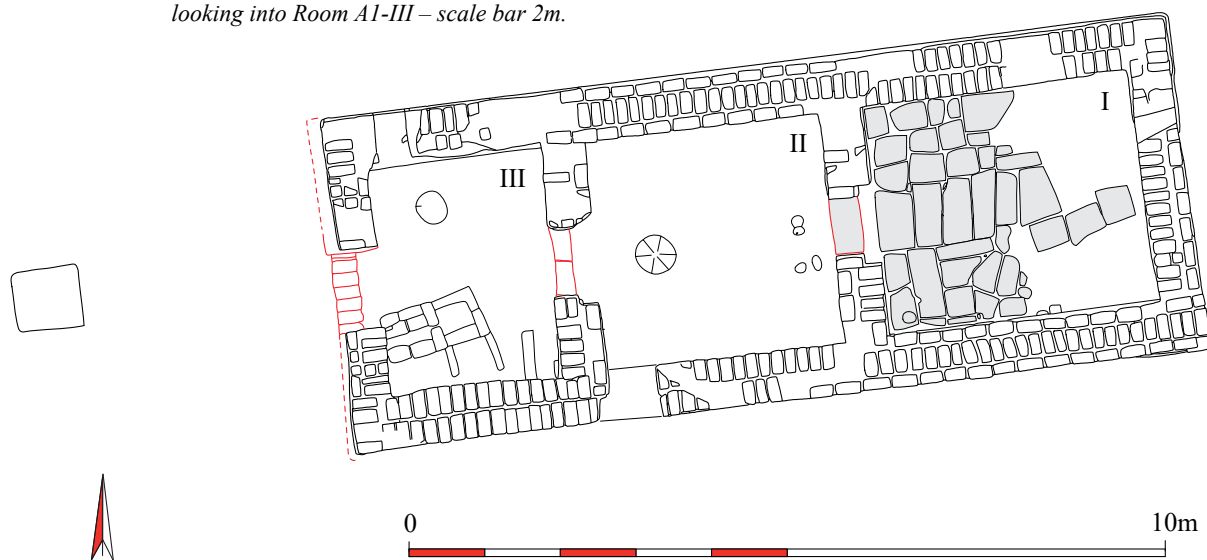


Figure 3.9. Building A1. Phase I with the mud-brick altar to the west (scale 1:100).

dimensions of 3.05m north-south by 2.35m east-west. The bricks of this threshold were in good condition suggesting that the building had been little used before they were covered by a small and thin patch of floor [(AB5)342] in the doorway (Plate 3.22). The threshold seems to be part of what was considered to be the foundation of the wall (AB5)356 but, in light of the many earlier walls excavated a little to the north, it is possible that these bricks bear no relation to Building A1 and the wall to which they belong

with a step up of 170mm in height, communicated with the eastern room, Room A1-I, 3.45 x 3m in size. The threshold (AB5)240 was of stone, a single slab 750mm long and 330mm wide set into the wall. The doorway had well-formed rebated jambs and on the plaster render of the northern one could be seen the impressions of the timber frame 85mm wide. This eastern room had a floor made of irregularly-shaped and sized white sandstone blocks which stopped 110mm from the threshold (Figure 3.9).

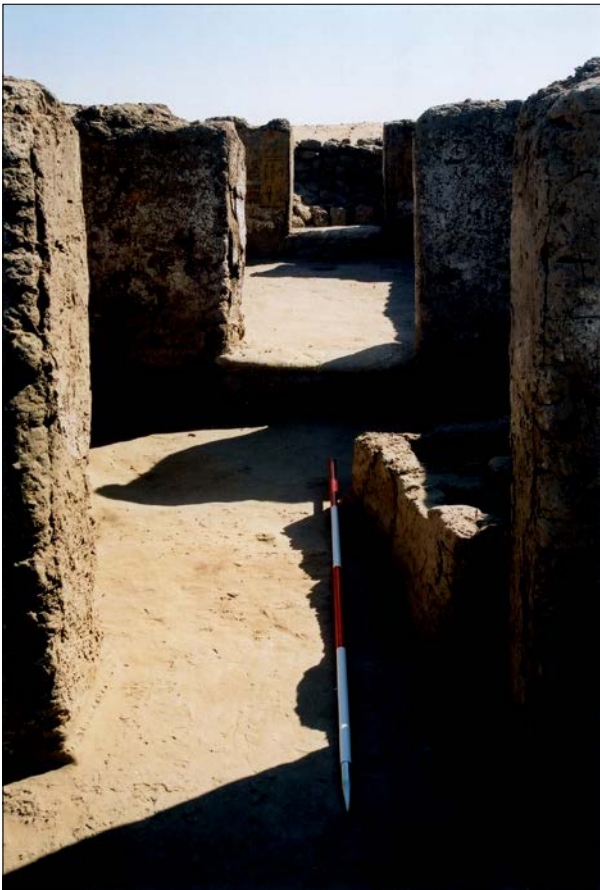


Plate 3.22. The interior of Building A1 as seen through the western doorway – scale bar 2m.

Presumably the timber door frame occupied this space. Leading from the doorway was a line of large roughly rectangular slabs highlighting the axis while the flags to north and south were smaller and of more irregular shape. This floor was left *in situ* but where robbing activities had dislodged some of the flags it could be seen that they were very thick (up to 300mm). The flags had an irregular upper surface with rough chisel marks visible. In the south-west corner of the room one flag had a shallow circular depression in its surface. Many of the flags were partly covered in a pink mortar suggesting that they were all reused from an earlier building. Towards the centre of the room resting on the floor was the top of a white sandstone barque stand (Plate 3.23) and the two lower blocks of the stand (cat. no. F-2411) were recovered from within the disturbed rubble in the room along with fragments broken off the larger elements. In the uppermost surviving course of the east wall was a small niche, its sides with two coats of render and whitewash.

The primary floor in Room A1-II [(AB5)295] sloped down slightly from east to west. Presumably of sand little of it survived. Cutting through it, on the long axis of the building but towards the western end of the room was a well-cut slightly oval pit [(AB5)352] with vertical sides and a rounded bottom (ø 560 x 540mm, depth 350mm) (Plate 3.24). It was filled with silt containing only a few fragments of pottery. In front of the doorway to Room A1-I were three small post-holes/depressions (ø 160-140mm, depth 50mm, ø 190mm, depth 40mm, ø



Plate 3.23. The top of the barque stand (cat. no. F-2411) resting on the stone-flagged floor in Room A1-I – scale bar 500mm.

230-150mm, depth 50mm). The function of these features, which were all shallow and bowl-shaped in section, is uncertain. All were filled with silt and charcoal flecks; one also had burnt mud fragments. One appears to be cut by a similar feature (ø 150-140mm, depth 40mm). In the north-west corner of the room was a hearth which had extensively burnt the adjacent walls. No ash or charcoal remained, just a dark red/brown powder over an area of 700 x 300mm on the floor surface.

In the western room the primary floor [(AB5)340] was again of compacted clay/silt and it extends through the west doorway a little to the exterior. This floor was in place when the outside of the building and the western doorway were whitewashed; by the north wall it also had flecks of blue paint on its surface. In section it appeared to be formed of innumerable very thin layers, a build-up of surfaces over time to a thickness of 10-40mm. In the north-west corner of the room, cut into it or possibly through the surface above, was a circular pit 250-260mm in diameter containing the base of a heavily-burnt pottery vessel. This hearth seems to have remained in use for a considerable time and was periodically cleaned out, the burnt material deposited close by.

Rendering and painting of the walls

All the walls of the building were covered in a mud-plaster render. This happened on a number of occasions, in some cases the rendering and painting were not contemporary and neither occurred when the building was first con-

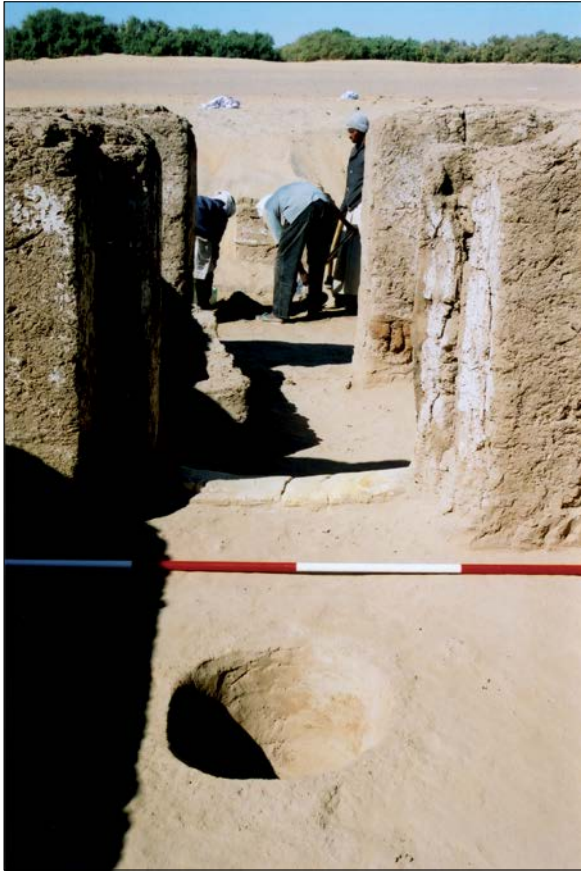


Plate 3.24. The oval pit [(AB5)352] in the centre of Room A1-II looking west – scale bar 2m.

structed. For convenience all these episodes are gathered together here while other activities in the building appear in the description of the relevant phases. On the exterior north wall the render was covered in a whitewash which had been applied on many occasions, each repainting bearing testimony to the gradual build-up of wind-blown sand against the building. A similar situation can be seen on the southern section of the west wall where it is clear that whitewash continued to be applied after sand built up against the Phase III walls delimiting Room A1-V (see below). The surface of the interior plaster had been covered in whitewash on which was applied the painted decoration (for details see below and, in particular, Taylor forth. b).

In Room A1-III the walls had been rendered from the level of floor (AB5)280. This surface was then covered by a deposit a maximum of 100mm thick [(AB5)277] before the walls were whitewashed for the first time. Very little painted decoration survived in the western room which had been whitewashed at least twice and on the north wall replastered and painted at least once. Very few fragments of fallen painted plaster were found within it and the condition of the wall surface made it impossible to ascertain whether one or both layers of whitewashed render had been painted. To the north and south (Plate 3.25) of the doorway into Room A1-II patches of red paint could be seen but not the design they had formed a part of. Towards the east end of the south wall traces of a red painted torso and extended arm bent at the elbow survived. On the west wall of Room A1-III the whitewash



Plate 3.25. Traces of wall paintings on the east wall of Room A1-III to the south of the doorway – scale bar 1m.

was applied subsequent to the laying of floor (AB5)250.

In Room A1-II the painting was much better preserved right to the top of the walls, a maximum of about 1.4m above floor level. Running around the walls delimiting the top of the white dado was a triple horizontal band consisting of a dark blue stripe, surmounted by one of red and another of dark blue, the blue stripes *c.* 35mm high, the red *c.* 40mm high, and separated by the white background. The top of the upper stripe formed the base line for the main decorative panels. Little can be seen of the painted decoration on the west wall. The primary layer of plaster with its painted surface had been covered by a second coat of plaster the painted surface (traces of red and yellow pigments are visible) in its turn covered by another coat of whitewash. On the north wall figures were preserved up to their waist. On the left (west) we have a figure of the king with red skin, a yellow tail outlined in and banded with red lines, wearing fine golden sandals and a yellow kilt processing east towards Amun. Amun is painted blue with a white tail outlined in black and banded in red and dressed in a yellow kilt, holding a blue *was* sceptre. Behind the god are two barefooted goddesses (Plate 3.26) with yellow skin and clothed in a narrow red gown with blue dots. At the ankle are wide bands outlined in red, on the left hand figure they are infilled in blue, on the other in white. They both also hold what were probably *was* sceptres. At the east end of the scene in the corner of the room is a narrow vertical register perhaps with rectangular blocks of colour, turquoise, yellow, white and red visible between vertical bands of blue outlined in red. Traces of what may be a similar vertical register remain in the western corner.

On the south wall two layers of plaster are clearly visible, a thick lower layer and a finer top layer. The scene on this wall is much less well preserved partly because a



Plate 3.26. Wall paintings of the north and east walls of Room A1-II.

later doorway has been cut through the wall. It appears to show a similar scene but behind the single goddess with blue anklets is another red-skinned bare-footed figure with a yellow tail very similar to the two figures on the east wall, one of which is immediately adjacent (Plate 3.27). No decoration remained on the west wall which retained only small patches of whitewash but that on the east wall was well preserved. Flanking the doorway through into the eastern room is a mirror image of a red-skinned bare-footed figure with a yellow tail and kilt facing to-



Plate 3.27. Wall paintings on the south and east walls of Room A1-II – scale bar 1.5m.

wards the doorway which is framed by a vertical yellow register outlined in blue. That on the north side (Plate 3.28) contained the lower part of an inscription in large hieroglyphs, in blue outlined in red).³ On this wall the dado bands appear to be outlined in narrow yellow lines.

The painted decoration in the east room is less well

preserved on account of the walls being preserved to a height of only about 300mm above the top of the dado band, the floor level in the room and the dado being closer to the present-day surface. The dado bands were outlined in yellow. On the west and south walls the dado bands were preserved but nothing of the scene above. The north wall has a figure of the king again with red skin, but in this case with a blue tail outlined in yellow and golden sandals facing a bare-footed red-skinned god holding a white *was* sceptre outlined in red and with white anklets outlined in yellow. Behind him is a yellow-skinned goddess with a narrow red gown and white anklets holding a staff,

perhaps another *was* sceptre. Fallen fragments from the decoration include the hand and forearm of the king who is offering a figure of Maat to Amun.

Little remains on the east wall. Towards the centre is a red and diagonally blue-banded slightly-tapering object to the right of which is a large block of yellow containing some motifs outlined in red, the forms of which are unclear.

Amongst the rubble in the doorway of this room was a large piece of fallen plaster bearing a winged sun disc flanked by *uraei* which presumably had adorned the lintel.

Outlined in fine black lines the sun disc is red, the wings and *uraei* infilled in yellow with pale blue feathers towards the lower edges of the wings.

Outside the building, to the west, surface (AB5)346, made up of numerous thin layers of silt/clay, had traces of whitewash on many of these layers. It sloped down a little from east to west. The uppermost layer abutted the west wall of the building and was in place when it was whitewashed. It did not extend into Room A1-III but overlies the threshold where an edge is visible, perhaps where it abutted a wooden door sill. It was sealed in the doorway by a patch of surface 100mm thick [(AB5)342] and both are sealed

by wind-blown sand 500mm thick.

Probably contemporary with the construction of the building was an altar, set on surface (AB5)226. It was placed slightly to the north of the main axis of Building A1 and 3.4m to its west. The altar was built from mud brick, had been rendered in a fine mud plaster at least six or seven times and was whitewashed (Plate 3.29). It was 940-950mm square and attained a height of 880mm. In

³ For details and the translations of the inscriptions see Taylor forth. b.



Plate 3.28. Building A1, Room II, the painted inscription on the north side of the doorway into room A1-I – scale bar 1m.

the top was a rectangular depression, 630 x 570mm in size by 200mm deep, its edges formed by a single row of stretchers on all sides. The base of the depression was not plastered. It was rendered in a mud plaster which lapped onto surface (AB5)226. A short distance to the north (850mm) was a sandstone column drum 450mm in diameter and 405mm high.



Plate 3.29. The mud-brick altar to the west of Building A1 with the fill in its recessed top half sectioned – scale bar 500mm.

Building A1, phase I-II

Following on from the construction of the building a number of deposits were noted connected with its use apart from in Room A1-I. The later history of this room appears to differ from that of the rest of the building. While the floors and thresholds were raised in Rooms A1-II and A1-III the stone floor and threshold of Room A1-I appear to have remained in use throughout the life of the building.

In Room A1-II in the north-west corner was a small hearth [(AB5)294]. Sealing the pit and depressions cut into the primary floor were a series of deposits which appear to have been many localised repairs collectively designated (AB5)273. Between 80mm and 150mm thick these deposits were in places sandy, in others very hard with a high proportion of mud. Pottery and animal bone was scarce but a number of small finds were recovered (cat. nos B-317 to B-326, F-96, F-215, F-283, F-290, F-296, F-363, F-368, F-431, F-491 & F-2331). Adjacent to the doorway leading into Room A1-I was a deposit of ash but no evidence for burning *in situ*. It may have been swept out of Room A1-I. These deposits were sealed by a very thin skim of earth [(AB5)275].

The primary floor in Room A1-III was sealed by a deposit 20-30mm thick forming surface (AB5)336 which thinned out towards the western doorway merging with sand layer (AB5)332. It had traces of whitewash on its surface. Set in this surface in the south-west corner was a spherical space 90mm in diameter which had been lined with silt on which finger impressions could be seen (Plate 3.30). A small hole in the surface gave access into the void which was filled with very soft fine silt/sand with occasional charcoal flecks.



Plate 3.30. Building A1, Room III. The pit in surface (AB5)336 – scale bar 200mm.

Immediately to the south of the exterior doorway, resting on this surface and abutting the west wall of the room, was a rectangular feature 1.2 x 0.8m in size constructed of a single or double row of stretchers to the course and surviving to a height of three courses (290mm) although it had certainly been at least two courses higher originally. It appears to be a bin with two compartments, the eastern one a later addition (Plate 3.31), It was poorly constructed, was markedly off alignment with the building, partly blocked the external doorway into the building and its position left an awkward space between it and the south-west corner of the room. Ridges of mud 120mm and



Plate 3.31. Building A1, Room III.
The mud-brick bin – scale bar 2m.

130mm thick partly delimited another rectangular space to the south. The walls of the bin were slightly overlain by the mud-brick step (AB5)246 in the doorway. Both compartments were filled with largely clean sand which did however contain one mud brick, occasional fragments of mud, pot and charcoal. Adjacent was a low wall parallel to, and 770mm from, the east wall of the room.

The bin must have been contemporary with surface (AB5)336; when surface (AB5)280 was laid, the mud ridges had been demolished down to the level of that surface. Resting on surface (AB5)336 was a very thin (5mm) layer of dirt between it and the make-up of surface (AB5)280. This later surface, which lapped up against the walls of the room and of the bin, was compacted silty clay with occasional small stones, charcoal fragments and pot sherds including a fragment from a ceramic oven. It sloped gently from the doorway, where it attained its maximum thickness of 60mm, to the east, a slope exacerbated by the several localised repairs [(AB5)318,321,323,327,330] in the western doorway. There was no threshold in this doorway at this phase, the floor tailing off to the west amongst the wind-blown sand. In the east the floor abutted the threshold and then mud plaster was added to mask the junction of the two. On the floor by the west doorway was an area of burning 480 x 270mm in size. In the northern half of the room a circular depression 400mm in diameter and 180mm deep had presumably originally contained a pottery vessel. Abutting the north and east walls was a deposit of rubble [(AB5)284] in a sandy matrix with some fragments of whitewash, 1.2 x 0.6m in extent and from 20-70mm thick. Within it were about 40 mud seal impressions.

A layer of clean sand [(AB5)279] covered the northern and central part of the room sloping down from the western doorway and from the exterior of the building. It contained very occasional pieces of mud, pottery and bone. In the western part of the deposit were a number of mud seal impressions. Against the north wall it was cut by a shallow semi-circular pit, 550 x 420mm in size and 130mm deep, filled with sand and fragments of mud. In the north-west corner was a quadrant-shaped depression 730 x 670mm in size and 100mm deep with a rounded bottom. This was the site of intensive burning which extended up the adjacent walls to a height of about 400mm. It was filled with compacted ash, burnt sand and traces of wood under

an upper fill again of ash, charcoal fragments in a matrix of sand, pieces of burnt mud including burnt mud seal impressions. A mud brick, its lower end burnt, had been placed on end in the ash leaning against the wall. Levelling up the eastern part of the floor against the threshold into Room A1-II was a deposit of compacted and decayed mud [(AB5)277], up to 100mm thick, in the south-east corner of which were two small painted fragments of plaster with blue, yellow, red and white paint. The top of the surface was at the level of the top of the Room A1-III/II threshold.

Outside the building deposits of what appeared to be wind-blown sand formed against the altar. The lowest [(AB5)225] contained some pottery sherds, charcoal and burnt bone. On this against the south face of the altar was a concentration of charcoal and ash 10mm thick, presumably from the altar top but deposited while it was still hot enough to burn the mud render of the altar. The whole area was then sealed by another layer of wind-blown sand with some burnt and unburnt bone and potsherds particularly around the altar. On its surface against the south side of the altar was another deposit [(AB5)222] again hot enough when placed there to burn the altar face. This and the surrounding surface were covered by yet another wind-blown sand layer again with finds concentrated by the altar.⁴

Building A1, phase II

After a build-up of 90-110mm of compacted sand with mud in places in Room A1-II the building was extended to the south (Figure 3.10) with the addition of a room (Room A1-IV) measuring 3.31m east-west by 3.88m north-south internally, its walls abutting the south wall of the primary building and entered through a doorway 590mm in width (860mm between the rebated jambs) cut through the west end of the south wall down to the level of the third course of the original wall. The northern face of the wall was left in place to act as the threshold 100mm high and 350mm wide while the wall to the south became a part of the brick floor. The recessed jambs were designed to accommodate a door closing from within the room. The sides of the doorway were plastered and whitewashed. An oval pit 330 x 150mm [(AB5)313] in the west jamb rebate may have been connected with a door pivot. On the east side of the doorway was the remains of a wooden jamb 40mm wide and 80mm thick surviving to a height of 900mm. The walls of the new room were constructed of mud bricks 320-330 x 150 x 90mm in size, these containing bone, pottery, charcoal and rounded pebbles. The walls were of alternating courses of 1½-brick construction (bond type H) with a total width of 520mm (west wall), 530mm (east wall) and 550mm (south wall). The rows of headers and stretchers in each course were separated by a 50mm-wide band of mud mortar. The east and west walls were built on a slope, to the east of about 10°, to the west of about 5°, south to north and the courses follow this slope. The east and south walls are bonded and rendered in mud mortar. The lowest full course of the south wall was of headers widely spaced with sand between and with part of an additional similar course below.

⁴ The deposits described in this paragraph date to between Phases I and III.

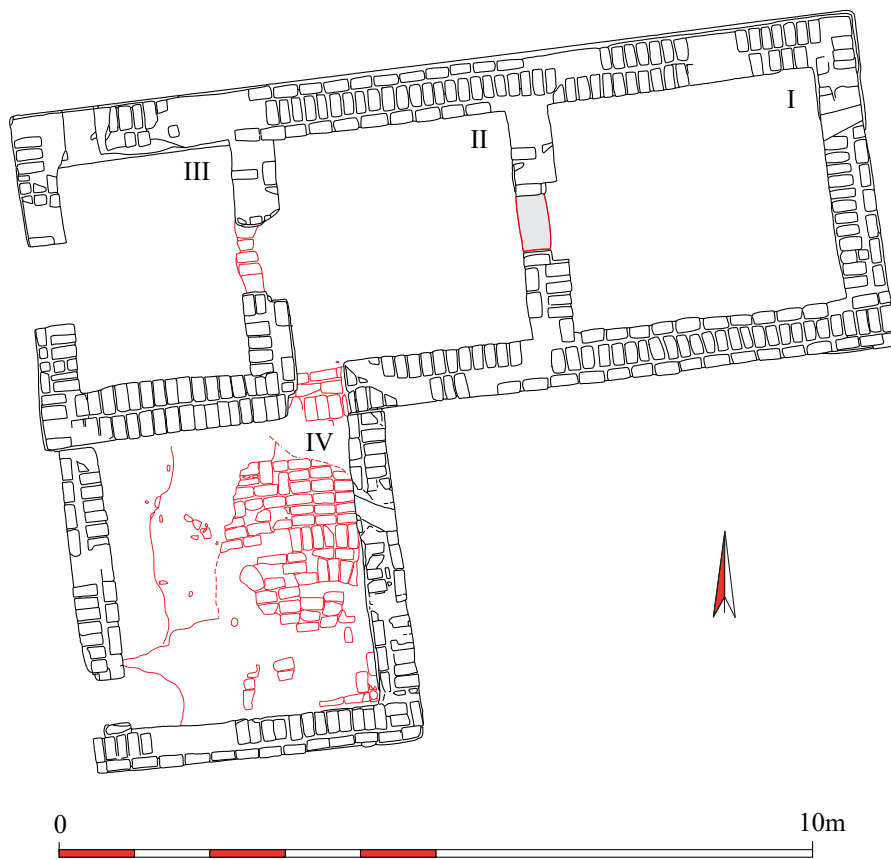


Figure 3.10. Building A1. Phase II (scale 1:100).

Building A1, phase II-III

A new threshold [(AB5)247], approximately 70mm above the primary stone threshold, was inserted into the doorway between Rooms A1-II and A1-III consisting of a single row of six headers set flush with the west face of the wall, its other face in line with the rebated door jambs. The eastern part of the floor in Room A1-III was then levelled with a layer of sand abutting the new threshold. The threshold had been plastered and whitewashed, the whitewash merging into the layers of whitewash on the adjacent walls. The mortar lapped onto floor (AB5)250 in Room A1-III and the threshold was abutted by floor (AB5)239 in Room A1-II which was level with the tops of its bricks. The floor in Room A1-III was 90-130mm lower.

The compacted mud floor, (AB5)239, in Room A1-II 20-30mm thick contained large amounts of pottery sherds, bone and charcoal. Small pieces of broken sandstone were laid in the south-east corner. This surface partly overlay the mud-brick threshold in the doorway leading through into Room A1-IV. In the Room A1-II floor was a circular shallow depression (330 x 300mm, 80mm deep) perhaps where a large ceramic vessel had been placed. Close by, in the south-eastern quadrant of the room, were several other shallow depressions ranging in size from 200 x 190mm to 80 x 70mm and from 50mm to 30mm deep. Resting on the surface and abutting the threshold into Room A1-I was a very thin deposit of earth [(AB5)278] containing beads (cat. nos B-329 & B-330). This was sealed by a localised repair of the floor in front of the threshold, the step down

from which may have caused the floor to deteriorate more rapidly than elsewhere in the room. The repair was of mud with a maximum thickness of 300mm.

In Room A1-III the tops of the walls of the mud bin (AB5)259 were worn smooth from the time when they formed a part of surface (AB5)250, a thick mud floor which only survives in patches and was absent in the western doorway. Part of the floor appears to have had a whitewashed surface and is contemporary with at least one phase of whitewashing of the east wall. In the north-west corner of the room was a bowl-shaped hearth 800 x 700mm in size and 120mm deep filled with ash and sand. In the opposite corner a squat ceramic beaker (type 3011x) was set into the surface.

The newly constructed Room A1-IV was floored with mud bricks in its eastern half. This floor slopes down a little towards the west where it merges with a mud surface. The mud-brick section of the floor is carefully laid with most bricks placed as 'stretchers' but with a row of 'headers' running east-west across the middle of the room. On both the mud-brick and mud parts of the floor were many small patches of burning. Sealing these surfaces was a 80-100mm-thick layer [(AB5)86] with a muddy consistency, a lot of pottery sherds and bone, small finds and seal impressions. In the centre of the room was hearth (AB5)88. This surface in its turn was sealed by a rough surface [(AB5)40] composed of silty sand with small amounts of pottery sherds and bone. At this level against the walls were three hearths [(AB5)81, 83 & 85] which had burnt the walls but were not readily visible on the floor surface. In the centre of the room at, or immediately below, this level was an irregular depression 570- c. 500mm in size filled with a fine brown dust – it was probably a hearth. A 150mm-thick layer of sandy material containing small lumps of mud [(AB5)58/245], which formed another surface across the whole room, extended over the threshold for a short distance into Room A1-II. Set into it level with the surface was a white sandstone window grille (cat. no. F-2508, Plate 3.32) and a ceramic pot stand (type 2601x), while resting on it and leaning against the south wall were two pairs of ceramic plates (all type 2603x; Plate 3.33) and a complete pottery dish (type 2109x) was upsidedown in the north-west corner. Also set into this surface was an oval wooden post (200 x 160mm, surviving height 800mm) 200mm west of the doorway into Room A1-II. Its function is unclear. Contemporary with this surface an oval grinding base (160 x 150 x 60mm) was set upright and across the rebated doorjamb on the east side of the



Plate 3.32. Building A1, Room IV, surface(AB5)58/245 with a white sandstone window grille set into it – scale bar 500mm.



Plate 3.33. Building A1, Room IV. Four ceramic plates on surface (AB5)58/245 resting against the south wall of the room and a ceramic pot stand – scale bar 2m.

doorway into Room A1-II and was plastered in place.

In the Phase II floor surface in Room A1-II, just a little south of the centre of the room, was a circular bowl-shaped depression (ø 330-300mm, depth 60mm) perhaps the impression of a round-bottomed pottery vessel. In the

south-eastern quadrant of the room were five roughly circular shallow depressions of uncertain function. On the floor was a very thin deposit of earth [(AB5)278] containing a number of beads by the doorway into Room A1-I.

Phase III

In this phase another room (Room A1-V), 3.56 x 3.36m in size internally, was added onto the building, on the west side of Room A1-IV entered by a doorway 600mm wide, with recessed jambs on its west side, cut through the south end of the earlier room's west wall, its threshold at the level of the top of the earlier wall's first course (Figure 3.11). The ends of the earlier wall are heavily plastered in mud, that to the south projecting from the wall line by 170mm and 380mm in width. In the north rebated jamb the impression of the timber door frame measured 60 x 90mm and survived to a height of 1m. The base of the north wall was 250mm above that of the phase I wall. The south wall of this new room extended 2.1m further to the west beyond its west wall, on a slightly different alignment, where it turned through 90° and continued north but only for a distance of 230mm. The north-south wall, bonded into its neighbour, only survives to a height of one course and was 530mm thick. No indication was found to suggest that this wall had ever extended further north and, therefore, it does not appear that these walls had enclosed a sixth room. The walls of Room A1-V were constructed of mud bricks containing pottery, bone and charcoal inclusions, the west wall of bricks 280-320 x 140-170 x 75-90mm in size, the south wall of bricks 300 x 160 x 90mm, generally arranged in alternating courses of one header and one stretcher (bond type H) and attaining a width of 480-500mm. The two lowest courses of the west and north walls displayed headers on the exterior face, in the former arranged in header bond, in the latter with the bricks widely spaced with thick mud mortar between. The walls are bonded in a mud mortar up to 30mm thick horizontally and 5-10mm thick in the vertical joints. On the lowest courses of the west wall on the exterior were traces of whitewash. The two lowest courses on the north wall are much better preserved than those above suggesting that they were covered very soon after the wall's construction.

The north and south walls of the room abut the west wall of Room A1-IV. The north wall is bonded into the west wall which abuts the south wall. The extension of the south wall beyond the building line is roughly keyed into the south wall of the room.

Extending across most of the room was a deposit of sand with fragments of mud and containing mud bungs [(AB5)98]. It merges with deposit (AB5)97 in the south-west corner which is presumably also pre-Room A1-V. These deposits appear to pre-date the Room A1-V walls and extend to the south where they were designated (AB5)15. In the south-west corner of the room, set into the pre-room deposits, was a ceramic oven 350mm in diameter and 300mm high. Its lower fill resting on the bowl-shaped base was 30mm of ash and charcoal [(AB5)204], the upper fill was of sand.

The construction of Room A1-V appears to be con-

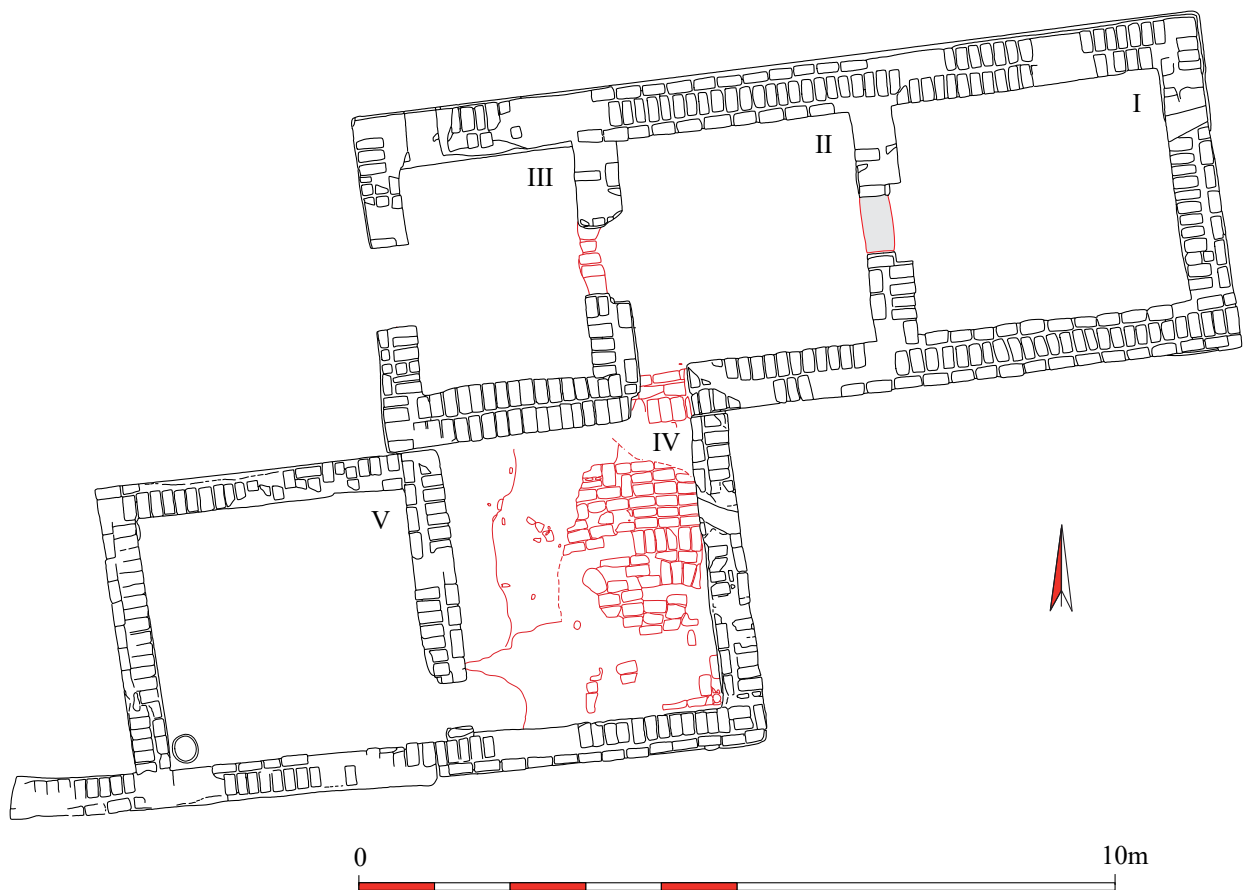


Figure 3.11. Building A1. Phase III (scale 1:100).

temporary with the use of surface (AB5)96b in Room A1-IV. The primary surface in the room may have been (AB5)89, a deposit of fine silty sand containing a lot of pottery, bone, mud bungs, charcoal and ash, including two small concentrations of ash against the east and west walls. These do not appear to have been hearths as there is no evidence of burning against the adjacent walls. This surface appears to be contemporary with surface (AB5)58 in Room A1-IV.

Building A1, post-phase III

It appears that at the time of the construction of Room A1-V the ground surface by the altar outside the building had already risen by 380-420mm. Above that level the sides of the altar were given a thick mud-plaster coating which was whitewashed. The last use of the altar was represented by the remains of an offering in the depression on its top consisting of a compact homogenous deposit of ash with some pottery sherds, lumps of mud, sealings and a little charcoal [(AB4)19]. Subsequently the whole altar was engulfed by drifts of wind-blown sand⁵ ultimately sloping steeply down from the west towards the doorway of the shrine. Within these deposits in the angle between the walls of Rooms A1-I and A1-V was a deposit 70-90mm thick of very fragmentary mud-brick rubble in a sandy matrix [(AB5)212]. This was partly sealed by a rubbish deposit [(AB4)20] sloping down from west to east

and abutting the walls of Room A1-V. It contained a large amount of pottery, mud-brick rubble, many broken mud bungs, seal impressions and a fair amount of charcoal. Set on its surface against the wall was a hearth, a 750 x 500mm patch of ash 10mm thick. At a higher level a little to the north was another 100mm-thick deposit of mud-brick rubble over an area of 850 x 760mm.

As the sand built up around the altar, and while it probably remained in use, the building was approached down the sloping surface of the sand with a flight of three steps (Figure 3.12, Plate 3.34) being constructed of mud brick in the doorway allowing access down approximately 500mm into Room A1-III. At the southern end of the steps they incorporated a frustum-shaped stone object with a maximum diameter of 480mm and height of 320mm, which was set upside down (cat. no. F-2402). The steps were heavily plastered and originally whitewashed. They show much evidence for wear. The altar was finally engulfed by sand when the 50-200mm thick deposit (AB5)207 formed over the whole area investigated to the west of the building.

Limited excavations were conducted outside the building to the west of Room A1-V and to the south and east of the building. Around the west side of Room A1-V and to its south was a rubbish deposit overlying the sloping surface of a sand drift against the wall of the building. This deposit [(AB4)11], of which only a part was excavated, consisted mainly of mud bungs; approximately 300 were recovered, along with a large amount of pottery including some complete bread cones (Plate 3.35). Against the south wall of Room A1-IV a 1m-square sondage was

⁵ Deposits (AB5)214, 215, 211, 208 and 210.

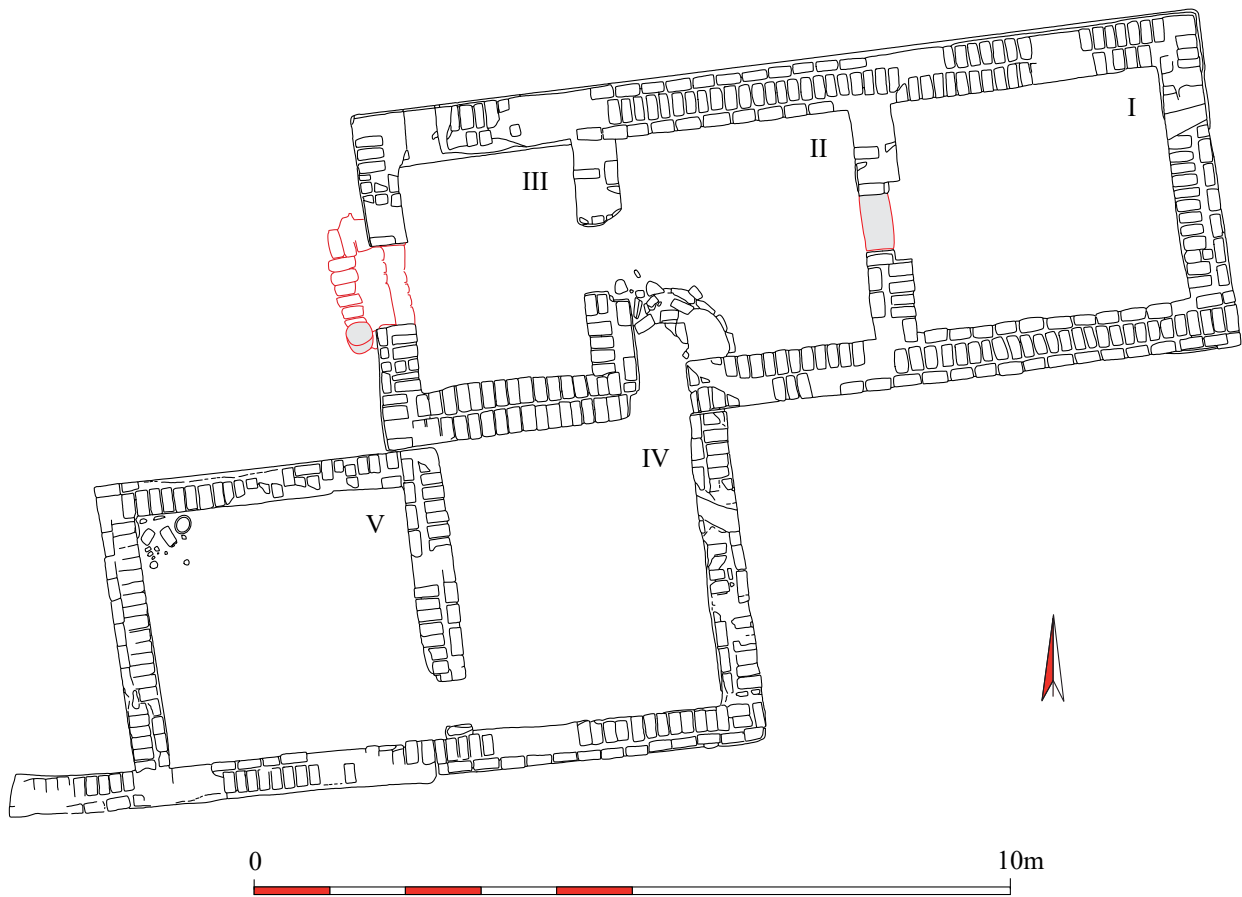


Figure 3.12. Building A1. Post-phase III (scale 1:100).



Plate 3.34. Building A1, steps descending through the doorway into Room III from outside the building – scale bar 500mm.

excavated to the base of the wall, located at a depth of 1.45m below the wall top (the present-day ground surface). The lowest layer was 250mm thick and of sand. It was sealed by 180mm of silty sand forming a surface on which was a sub-circular hearth. A further deposit of wind-blown sand had another hearth within it with three distinct phases of use. Interleaved with the wind-blown sand above was one layer of rubbish material, ash, silt, charcoal flecks and much pottery, bone and a few mud bungs up to 250mm thick which may have been dumped from inside Room A1-V.

To the south and east of Rooms A1-I and A1-II the lowest feature noted was a surface adjacent to the south wall

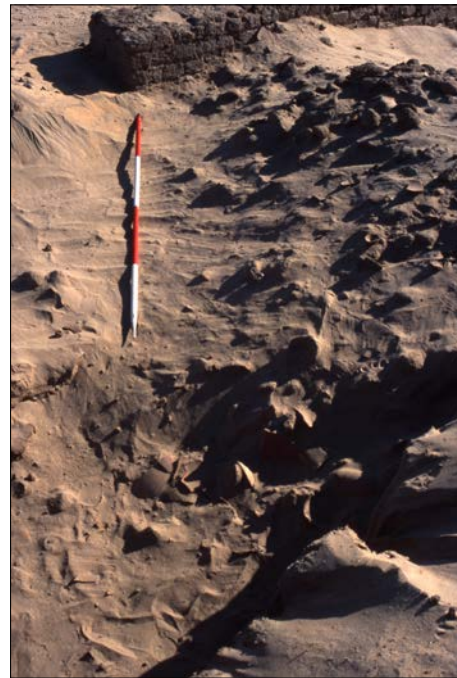


Plate 3.35. Thick rubbish deposits containing many mud bungs to the south of Building A1, Rooms V and VI – scale bar 2m.

of the building and running up to the east wall of Room A1-IV. On its surface, abutting the east wall of Room A1-IV near its southern end, was a rounded lump of mud 620 x 520mm in size and standing 180mm high. This and the

surface were sealed by a rubbish deposit up to 530mm thick [(AB5)25/32] tailing off from the walls against which it abutted. To the east of Room A1-I were layers of hard sand some containing a large amount of pottery, bone and charcoal fragments.

The floor of Room A1-III contemporary with the construction of the steps [(AB5)250] lay approximately 25mm above the primary floor surface. On this floor was some pottery and bone, a mud brick, two blocks of sandstone and one of granite. The surface was partly sealed by a deposit of wind-blown sand only stretching a short distance into the eastern part of the room. In the eastern part of the room a thin floor surface (10mm) ran over the mud-brick threshold and merged with floor (AB5)239 in Room A1-II. A deposit of wind-blown sand up to 400mm thick extended into the room from the west sloping down to the east and south but did not cover the whole of the room. It covered the two lower steps in the west doorway. Sloping down from the north walls it was sealed by fine sand and mud-brick rubble, many of the bricks bearing impressions of irregularly patterned straight grooves, perhaps having been laid on top of the palm fronds of the ceiling. Thereafter wind-blown sand filled the room.

Room A1-I

When the barque-stand was dismantled the uppermost block, and many of the stone blocks removed from the floor in the north-east and south-east corners of the room, came to rest directly on the stone floor (Plate 3.23). Other blocks rested on fragments of painted wall plaster. The number of blocks found in the room suggests that, although the floor had been disturbed, no blocks were removed from the building. The blocks were abutted, and the floor was covered by a layer of wind-blown sand [(AC6)16] from 10-150mm thick, at its thickest where it had drifted against the walls and the sandstone blocks. In the south-west corner of the room this wind-blown sand was covered by a thin (10-60mm thick) deposit of mud. Extending into the room through the doorway from Room A1-II was a sandy deposit [(AB5)254/(AB6)21] containing a number of small finds. It was 550mm thick in the doorway but rapidly diminishing to the east indicating that Room A1-II filled with sand before Room A1-I. At least one of the pits dug to remove the floor blocks was sealed by (AB5)59, probably a series of deposits (max. thickness 660mm) formed from the collapse of the south wall of the building, which settled around the large stone blocks but tailed off towards the south. Some sections of mud-brick rubble were articulated. In the lowest layers, particularly in the south-west corner of the room, was a large amount of painted plaster, with the lowest layer face down. Thereafter the room filled with wind-blown sand (Plate 3.36), interrupted by the digging of a number of robber pits, the largest 1.75 x 1.1m in size and 250mm deep, against the east wall.



Plate 3.36. Building A1. Room I, blocks from the barque stand lying amongst the robber upcast material and wind-blown sand – scale bar 2m.

Room A1-II

Burning against the wall in the north-east corner of the room indicate the presence of a hearth, its base at a level of 42.57m OSD.

Following the construction of the blocking wall (AB5)238 (see below) there was a hearth placed close to its base which had burnt the wall but no trace of it on a contemporary floor surface was noted. In the centre of the room was a roughly rectangular area, 950 x 750mm in size and 300mm thick, of fine sand [(AB5)232] with occasional pottery sherds and one large sandstone block (425 x 190 x 100mm). Overlying floor (AB5)239, later in date than the blocking wall (AB5)238 and surrounding the sand (AB5)232, was a deposit of soft sand 400mm thick within which were large stone blocks and mud-brick fragments [(AB5)233]. Among these was a column shaft 270mm in length and 260mm in diameter at the top and 330mm diameter at the base. In the doorway between this room and Room A1-III the deposit abuts (AB5)234 but the chronological relationship of the two is uncertain. Resting on the sand and rubble deposit along the south wall of the room and sloping down to the north and west is a deposit of mud-brick rubble and painted wall plaster and sandstone fragments in a sandy matrix [(AB5)230].

Extending throughout Rooms A1-II and A1-III overlying deposits (AB5)234 and (AB5)230, 232 and 233 was 950mm of wind-blown sand [(AB5)229/231] filling both rooms. It contained a small amount of mud fragments, pottery, bone and charcoal.

Room A1-IV

Covering surface (AB5)58 was an undulating deposit of wind-blown sand on which lay a swathe of rubble [(AB5)52/255] in the north-eastern part of the room extending from the doorway into Room A1-II. It appears that it was a dump of material tossed through that doorway. The main constituent of the deposit was mud-brick rubble, both complete (300 x 200 x 100mm) and fragmentary bricks along with some pottery and occasional mud bungs. Within this deposit, set face down, was a large fragment of a ceramic Bes statue (cat. no. F-1045). In order to stop this

and subsequent deposits slumping back into Room A1-II, which must have remained in use after Room A1-IV was abandoned, a structure [(AB5)238] describing an arc across the corner of Room A1-II was constructed (Plate 3.37), its northern face resting on the floor (AB5)239, its southern face on the rubble. This structure, approximately 500mm thick, was built of mud brick, small sandstone blocks and a fragment of mud bung, liberally infilled with mud. Its north face is battered at an angle of approximately 30°. It survived to a height of 350mm; the rubble from its upper part may partly form the rubble layer (AB5)230.



Plate 3.37. Building A1, Room II, rough barrier constructed to hold back the fills in Room IV – scale bar 1.5m.

Over more wind-blown sand was another deposit of mud-brick rubble in the south-east corner of the room, up to 650mm thick, which appears to have been dumped into the room over its walls from outside the building and there was another deposit of similar character in the opposite corner. Both had been cut into by later robber pits. Above wind-blown sand filled the room to the modern ground level. In the sand [(AB5)45] between 20mm and 400mm below the surface near the north doorway was a group of six mud bungs.

Room A1-V

Sealing what may have been the primary surface [(AB5)89] was a silty-sand deposit [(AB5)87], containing small lumps of mud, lots of pottery, bone and small pieces of charcoal, forming a surface sloping down a little from north to south. It was sealed by up to 100mm of greyish-brown silt across the whole room containing much pottery including several complete vessels, a pot stand, several mud bungs, animal bone, charcoal and ash. A patch of ash 500 x 320mm occupied the centre of the room and another ill-defined patch was in the south-west corner. In the northern half of the room was another sandy-silt surface on which were two hearths (Plate 3.38) against the north wall separated by a rubble deposit (AB5)38 100mm thick beneath which was the remnants of a sandy surface. In the western hearth, 600 x 500mm in size, was a complete pottery vessel (type 2025xc) set 120mm into the surface, in the other which was the same size was the base of a pot set 40mm into the surface. Other rubble deposits against the west wall, a maximum of 310mm thick, and against the east wall, a maximum of 330mm thick, appear to have been dumped into the room over its walls



Plate 3.38. Building A1, Room V, hearths, pots and rubble in the north-west corner – scale bar 500mm.

or had been heaped up against the walls. The latter dump contained many fragments of mud plaster on its surface.

By the north wall were small patches of flooring, of grey-brown silty sand. Above this was an extensive deposit of ash up to 100mm thick with three concentrations where hearths were placed. These had intensively burnt the adjacent wall and contained pottery sherds blackened by fire, charcoal and burnt camel dung. Thereafter the room filled with wind-blown sand interleaved with some deposits of rubble [(AB5)6, 14, 21 & 23]

Post-building A4/ pre-Building A2

In the area of the later Building A2, Room IV there is a hint of a phase of occupation after the demolition of Building A4 but before the construction of Building A2. A surface of mud-brick rubble and sand [(AD5)162] incorporated the uppermost courses of Building A4's walls which showed traces of wear. It was sealed by another surface upon which rested the threshold between A2's Rooms A2-III and A2-IV. The same(?) surface [(AD5)157] extends over much of Building A2's Room A2-VII to the north.

Building A2, phase 1 – construction

This building was constructed over the remains of Buildings A3 and A4. On its eastern side the walls of the earlier buildings were well preserved but were demolished down to the base of the new building's foundations which in places rested directly on their remains (Plate 3.39). In places the earlier walls survived to a greater height where they were incorporated into the new walls, but were demolished further within the rooms as is clearly seen in Room A2-II. Building A2 was a slightly skewed rectangle the corners deviating from a right angle by approximately 2.7°. It had external dimensions of 15.1 x 9.6m (Figure 3.13). All its walls were constructed of mud bricks most with dimensions of 330-360 x 140-170 x 80-100mm although in the west wall there were some much smaller bricks of 260 x 160 x 80mm in size. External walls were between 730-760mm thick with in many places alternate courses of two headers and one header flanked by one stretcher on each side (bond types G & C). In some places



Plate 3.39. The walls of Buildings A3 and A4 demolished to make way for the east wall of Building A2 – scale bar 2m.

however, parts of the wall were not as thick. In one of these there appear to have been two headers, the bricks set on edge with a stretcher on edge down the centre (Plate 3.40). In another case there appear to be two headers of bricks a little shorter than the norm with a row of stretchers along the inner face. Internal walls, of alternating 1½-brick construction (bond type H) were thinner with some variability at between 550mm and 650mm. The wall between Rooms A2-II and A2-IV for example had

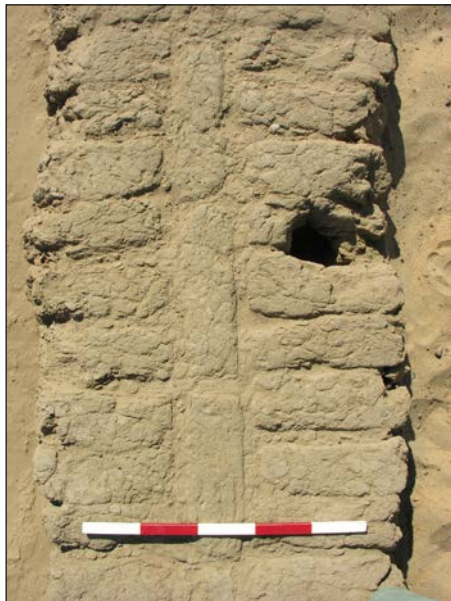


Plate 3.40. Building A2: two rows of headers with a row of stretchers between in the west wall – scale bar 500mm.

a wider mud-filled core than usual while that between Rooms A2-I and A2-II had an upper course of two short headers. No special foundations were noted; none of the walls had the lowest course of bricks set on edge. Foundation/construction trenches were only observed on the exterior face of the south wall and associated with the wall between Rooms A2-V/VI and A2-VII [(AD5)185]. Only the external faces of the south and much of the east wall were cleared, elsewhere only the upper parts of the walls on the exterior were exposed. Brick coursing was

usually horizontal but partial courses of headers/saw-tooth headers, set at varying angles, were used for levelling as required (Plate 3.41).

The walls were best preserved in the north-western corner where they attained a height of approximately 2.05m. Visible in the uppermost courses of the wall in Room A2-VII was a pair of very small slit windows with their sills 1.35m above the base of the wall. Each window was 150mm wide, separated from its neighbour by a single brick 170mm wide and surviving to their full height of about 200mm (Plate 3.42). A little further to the west in Room A2-VI was a similar pair of windows which had at a later date been knocked into one and then later still blocked flush with the exterior face with mud bricks.

The building was entered by a doorway in its south wall towards the west end, c. 1.6m in width.



Plate 3.41. Building A2: the south wall with levelling courses of headers/saw-tooth headers – scale bar 2m.



Plate 3.42. Building A2: the windows in the north wall of Room A2-VII – scale bar 2m.

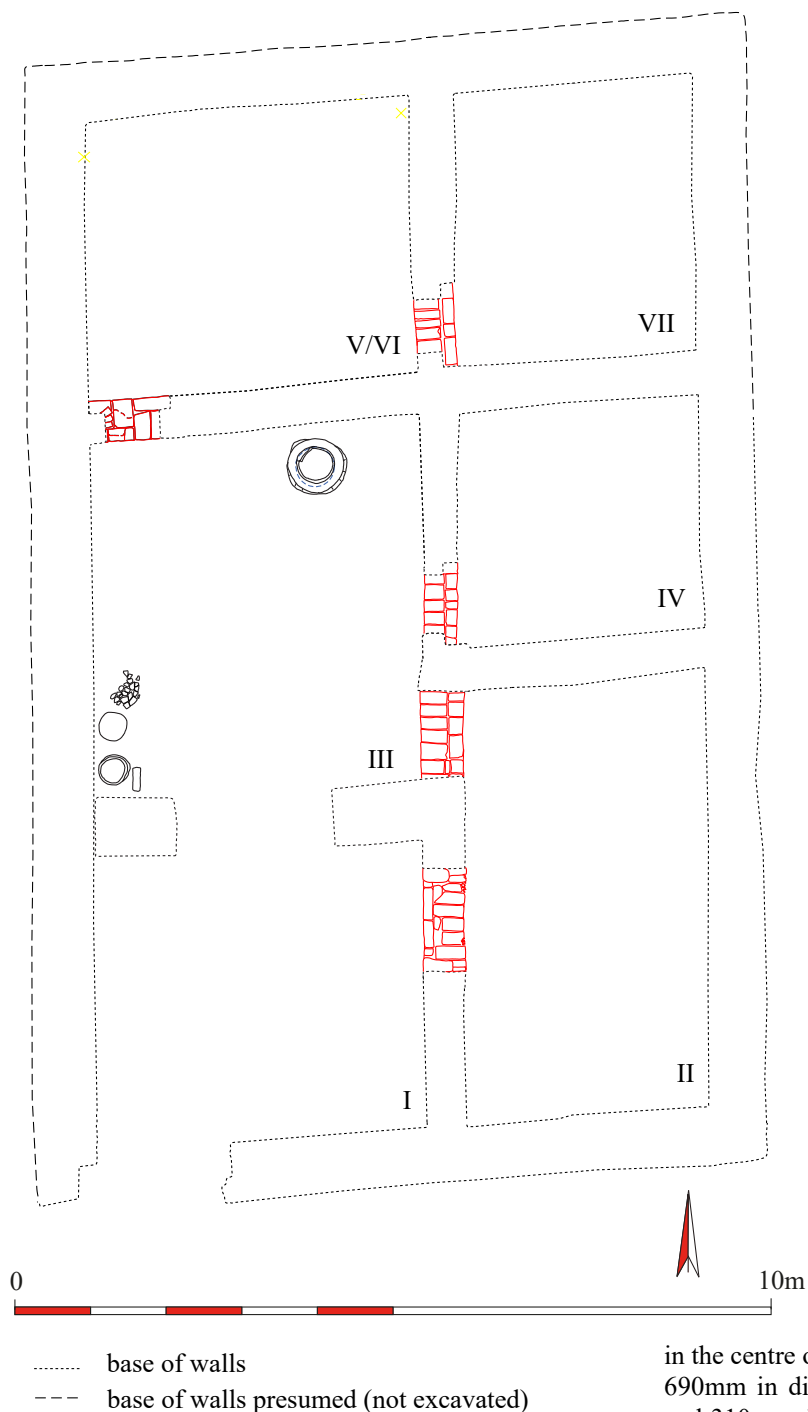


Figure 3.13. Building A2, phase 1 with primary thresholds visible (scale 1:100).

This led into a large rectangular room 9.4 x 4.3-4.4m in size partly partitioned by rectangular masonry piers against its east and west walls. The southern part, 3.8m north-south, was designated Room A2-I, the northern, 4.9m north-south, Room A2-III. From the southern part of the room a doorway 1.36m wide gave access into Room A2-II and another doorway 1.12m wide gave access from Room A2-III into it. Room A2-II was rectangular 5.7m north-south by 3.2m east-west. To its north lay Room A2-IV entered through a doorway from Room A2-III, 776mm, wide with a rebated jamb on its north side indicating that the door opened inwards. Room A2-IV was roughly square 3.2 x 3.1m in size. A doorway 719mm

wide in the north wall of Room A2-III at its eastern end allowed access into Room A2-V/VI, 3.8m north-south by 4.3m east-west. The doorway had a rebated jamb on its east side indicating that the door opened inwards. A further doorway 640mm wide (1.05m behind the jambs) in its east wall (Figure 3.14) led to Room A2-VII, measuring 3.1m east-west by 3.6m north-south. This doorway preserved the socket, on its east face to the north of the door, of a timber lintel extending 200mm into the wall.

In all of the doorways except that from the street the lowest course of the walls was carried right across the opening.

Phase 1 – primary floors and features

The primary floors in many of the rooms were of sand.

Room A2-I

A compact floor surface [(AC5)67] without any additional features (Plate 3.54).

Room A2-II

On the floor surface (AC5)64 by the north wall was a shallow depression, 1.52 x 0.7m in size and 50mm deep, containing a hearth [(AC5)62] – filled mainly with ash, some charcoal, burnt bone and pottery sherds. Heat from the fire has burnt the bricks on the adjacent wall.

Room A2-III

The first surface [(AD5)207] appeared to be a demolition/construction level.

Set on the surface was a stone post-pad in the centre of the room and it was cut by a circular pit, 690mm in diameter at the bottom, 580mm at the top and 310mm deep, into which was set the ceramic oven (AD5)212. This was filled with ash and then a layer of ash and fragments of the upper part of the oven, all sealed by another very similar oven associated with the next floor surface (AD5)198 (Plate 3.43).

Room A2-IV

In Room A2-IV floor (AD5)151 was a smooth surface in the northern part of the room but more rubbly to the south. Although perhaps the primary surface in the room, the mud-brick threshold between Rooms A2-III and A2-IV rested upon it.

Room A2-VII

This room had very compact floor layers of sand cut by a circular pit (ø 330mm, depth 110mm) filled with ash, sand and charcoal.

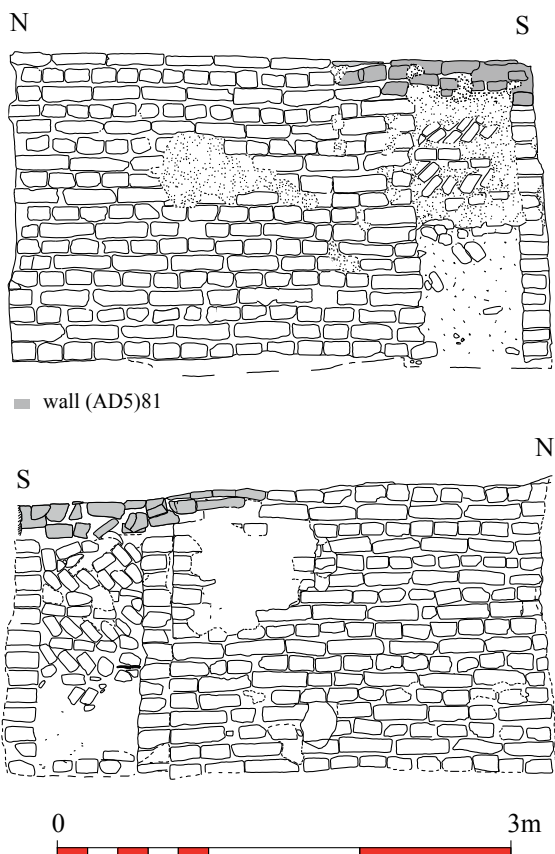


Figure 3.14. Building A2: elevations of the party wall between Rooms VI and VII (scale 1:50).



Plate 3.43. Building A2: oven (AD5)212 overlain by the later oven (AD5)150 – scale bar 200mm.

Phase 2

During this phase there was a gradual build-up of deposits throughout the building although in many cases it was impossible to be certain of their contemporaneity from one room to another.

Room A2-I

Set centrally on the second floor in the room was a hearth, a circular area of ash and charcoal 280mm in diameter and 20mm thick. In the doorway out into the street a new threshold (AC5)56 sat on this surface, a single brick course formed of two rows of fine, pale-grey stretchers.

As the floor surfaces built-up, as detailed for Room A2-III below, there were few features of interest, a high concentration of pottery and bone on surface (AC5)51 in the south-east corner and a hearth on the same surface by the west wall. The doorway into the building from the exterior was reduced in width by a wall on one side and rubble on the other to 800mm.

At the same level was an area of mud-brick rubble in the doorway leading into Room A2-II. At some point thereafter a linear deposit of rubble formed across the external doorway. Deposits above contained an amount of mud-brick rubble as well as in some cases pottery and bone suggesting that they were occupation surfaces.

Room A2-II

On the second floor in this room [(AC5)59] was an area of burning against the west wall. A possible hearth in the centre, set in a shallow depression, appeared to continue in use with the surface above on which rested another hearth in the south-east corner. Midway along the east wall a deposit [(AC5)57] of mud-brick rubble, a mud bung and other material sat on the floor.

Room A2-III

A small number of features were set on floor (AD5)198 including the threshold in the doorway leading into Room A2-IV. Towards the north-east corner was a substantial oven of two phases (Figure 3.15). The earliest, (AD5)212, was noted above. It was replaced in exactly the same position by another ceramic oven (AD5)150, its sides curving inwards towards the top. It was 600mm in diameter externally with walls 20mm thick and survived to a height of 560mm. An 'arch'-shaped opening in one side, 27mm down from the top, was 260mm wide by 130mm high, perhaps a flue. Packed around the outside of the oven and sealing the possible flue were mud bricks set on end and the whole was then coated in a layer of mud forming a beehive-shaped structure (Plate 3.44) with a maximum diameter of 800mm. In the south-west corner of that room were two installations, (AD5)194 and 199, the former a reused pottery vessel 400mm in diameter and 300mm high (type 3129x) filled with sand, ash and charcoal, the latter probably a ceramic cylindrical oven 430mm in diameter. Immediately to the north was a small area, 500 x 400mm in size, paved with pot sherds to form



Plate 3.44. Oven (AD5)150 – scale bar 500mm.

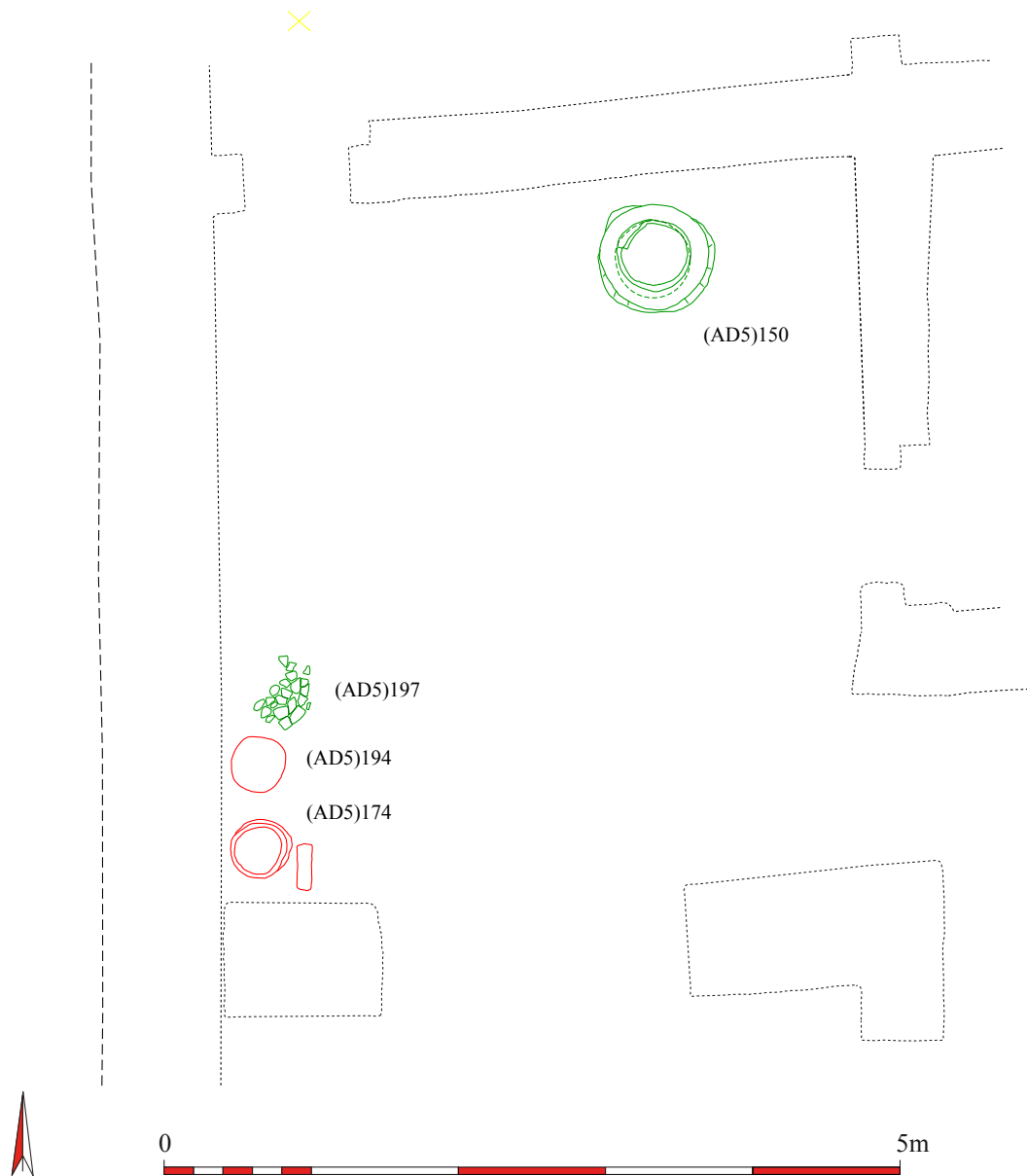


Figure 3.15. Building A2, Room III. Features of phase 2. The earliest features are the 'pot-sherd' hearth (AD5)197 in the south-west corner and to the north oven (AD5)150. In the next sub-phase the hearth went out of use but ovens (AD5)174 and (AD5)194 replaced it (scale 1:50).

a hearth [(AD5)197] and covered with a spread of ash and charcoal (Plate 3.45).

With the next floor (AD5)167 (contemporary with phase 2.1 in Room A2-IV) the pot-sherd hearth went out of use as did oven (AD5)199 but this was replaced by a very similar oven (AD5)174, 400mm in diameter and 160mm high, set directly over it. Adjacent to it was a single mud brick 180 x 100 x 80mm. The reused pot continued to function. Ovens (AD5)150, 174 and 194 (Figure 3.14), remained in use for some time and ashy deposits and at least one floor surface built up around them. In the upper fill of (AD5)150 was ash and fragments of the upper part of the oven. With the laying of floor (AD5)134 these features were sealed, but another oven (AD5)90 was set directly on top of (AD5)174, the third to occupy this site (Figure 3.16). Oven (AD5)90 was a large ceramic jar (type 3385x) set upside-down with the bottom knocked off and an arched opening (flue) cut through the rim. The whole thing was encased in mud, had a total diameter of



Plate 3.45.
Ovens
(AD5)194
and 174
and hearth
197
— scale bar
500mm.

480mm, an internal diameter at the base of 320mm and stood 400mm high (Plate 3.46). Adjacent to it was another pot-herd hearth with extensive fire damage on the wall next to it. There were two further hearths – patches of burning – in the north-east corner of the room and by the east wall.

Ash deposits built up around oven (AD5)90, at least one probably from a cleaning out of the installation, and sandy lenses with charcoal elsewhere in the room followed by another hearth towards the north-east corner. Towards the centre of the room two mud bricks were placed next to each other for some reason.

The surface above [(AD5)67] had a hearth right in the north-east corner of the room which had caused fire damage to the walls. It was also cut by the construction trench for the steps leading down into Room A2-IV making it contemporary with Phase 2.4 in that room.

In the doorway between Rooms A2-III and A2-V a mud-brick threshold [(AD5)51] was inserted and five mud bricks were set flat on the surface in the south-west corner of the room. With the build-up of more floors in



Plate 3.46. Building A2, Room III.
Oven (AD5)90 – scale bar 500mm.

Room A2-III an additional step (AD5)44, of two courses – 380mm thick, 230mm high – was added to the flight leading down into Room A2-IV. Contemporary with this



Figure 3.16. Building A2, Room III. Features of phase 2, oven (AD5)90 and feature (AD5)137 (scale 1:50).

were two small hearths, one against the north wall, the other in the north-west corner of the room.

Room A2-IV

Phase 2.1 (Figure 3.17a)

In Room A2-IV a good-quality mud surface [(AD5)128] was cut by a shallow circular bowl-shaped pit 45mm deep and 440mm in diameter [(AD5)147]. It was lined with pottery sherds and filled with sand (Plate 3.47). In the south-west corner of the room was a quadrant-shaped area of burning. Resting on the surface adjacent to the north wall were two square mud-brick ‘pillars’ one course in height and another abuts the west wall near the doorway (Plate 3.48).



Plate 3.47. Building A2, Room IV, bowl-shaped pit [(AD5)147] lined with pottery sherds – scale bar 200mm.



Plate 3.48. Building A2, Room IV. Surface (AD5)128 with mud-brick features – scale bar 2m.

Phase 2.2 (Figure 3.17b)

A build-up of mud and sand surfaces with an area of burning towards the centre of the room 340mm in diameter. As these levels accumulated the mud-brick features against the north wall began to disappear while two very similar ‘pillars’ were constructed towards the centre of the south wall and that against the west wall was heightened.

Phase 2.3 (Figure 3.17c)

Another mud surface [(AD5)102], sealing the mud fea-

tures, had a hearth in its centre. Mid way along each wall was a square ‘pillar’ made from two bricks. That on the south wall was three courses high and remained visible into phase 2.6.

Phase 2.4 (Figure 3.17d)

Like its predecessor, surface (AD5)88 had a centrally-placed hearth and further mud-brick features – two ‘pillars’ along the west and south walls and a square single ‘pillar’ south of centre on the east wall. For some reason the build-up of material within Room A2-IV was slower than in Room A2-III and instead of levelling up the floor in the former room a flight of steps was provided. Sat on this surface in the doorway was a mud-brick step projecting into the room and not parallel to the west wall’s face. It was overlain by a further two steps each with a riser a single brick in height and a third ‘step’ with a riser two bricks high. These were covered by a mud-plaster render which ran onto the faces of the adjacent walls. The third ‘step’ may actually be a raised threshold or the lower courses of a blocking wall. If this is the case the steps attained a maximum height of 400mm. Contemporary with the construction of the steps the south jamb of the doorway was roughly rebuilt.

Phase 2.5 (Figure 3.18)

The steps into Room A2-IV were partly covered by a deposit up to 120mm thick with a compact mud surface. Resting on this were more mud-brick features abutting the walls of the type described above, each formed of two mud bricks, two courses high and plastered. They measured 300mm square. In the north-west corner of the room was a deposit up to 150mm thick of mud-brick rubble.

Phase 2.6

In the doorway was a deposit of mud and mud-brick rubble [(AD5)48] (Plate 3.49) which abutted the 150mm-thick sand deposits over the rest of the room which lapped around the mud-brick features of the previous phase. Particularly towards the south-west corner of the room were substantial amounts of large pottery sherds.

Phase 2.7

A further deposit of sand with some patches of a mud surface extended across the room and through the doorway.



Plate 3.49. Building A2, Room IV, rubble (AD5)48 in the doorway leading to Room III – scale bar 500mm.



Figure 3.17. Building A2, Room IV. Features of phase 2. a. Phase 2.1 – surface (AD5)128; b. Phase 2.2 – surface (AD5)110; c. Phase 2.3 – surface (AD5)102; d. Phase 2.4 – surface (AD5)88 (scale 1:50).

It again contained large concentrations of pottery sherds along with bone.

Phase 2.8

After the formation of a deposit of tumble in the doorway, presumably the result of the failure of the lintel, the room filled with wind-blown sand. During this filling a deposit of mud-brick rubble, pottery and bone had been dumped

into the south-west corner of the room. While the walls still stood to at least 200-300mm in height, the wind-blown sand partly overlying this rubbish deposit contained frequent pieces of bone and large pottery sherds, many almost complete vessels (Plate 3.50).

Room A2-V/VI

Several different floor surfaces were noted in the room. On

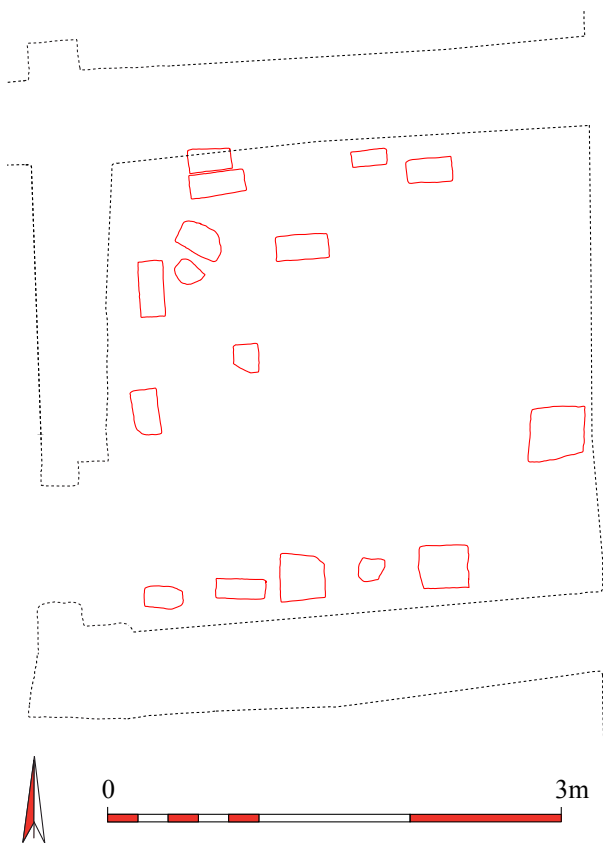


Figure 3.18. Building A2, Room IV. Features of phase 2. Phase 2.5 – surface (AD5)59 (scale 1:50).

the earliest [(AD5)190] were three complete mud bricks and some mud-brick rubble presumably associated with the construction of the building, resting on the surface on which the walls of Building A2 are founded.

After a build-up of about 400mm of deposits in Room A2-V/VI it was divided into two by a slightly oblique wall of a single row of headers alternating with rows of two stretchers forming a wall 280mm thick. This sat on floor



Plate 3.50. Building A2, Room IV, deposit containing pottery and bone with rubble (AD5)48 beyond – scale bar 2m.

surface (AD5)80/84. Towards its north end it was pierced by a doorway 520mm wide with a mud sill on the south side of which, in Room A2-VI, was a small projecting buttress. On the north side of the doorway a doorjamb was constructed against the north wall of the room.

There also appears to have been a doorway at the southern end of the wall although the observed data is very confusing. Here a very deep pit dug from the level of the seventh course of the wall has removed any possible threshold. Resting on the sand fill of the pit the doorway has been blocked by a mud-brick wall which is overbuilt by a single surviving course of a new wall; an identical situation to what is observed in the wall between Rooms A2-VI and A2-VII discussed in more detail below. Features on the following surfaces may be mentioned:

(AD5)107 – The primary surface in Room A2-VI after the construction of the partition wall which rests on it. Immediately adjacent to the buttress by the doorway is a flat stone slab and in line with it against the east wall of the room is a setting of two mud bricks plastered on the top (Figure 3.19).

(AD5)84 – The partition wall between Rooms A2-V and A2-VI rested on this surface as did a stone post-pad and a mud-brick post-pad against the east wall of the latter room (Figure 3.20).

(AD5)30 – Also set on the sand fill of the pit in Room A2-VI was a hearth [(AD5)32], a shallow depression lined with pottery sherds (Plate 3.51) and two ferruginous sandstone slabs laid flat.



Plate 3.51. Building A2, Room VI. The pottery sherd lined hearth (AD5)32 – scale bar 500mm.

Room A2-VII

Very soon after the construction of the building the threshold was covered by floor deposits but was soon replaced by another, a lowermost course of three headers with two stretchers above and traces of a further course. It may be contemporary with surface (AD5)152; it was covered by surface (AD5)129. This was followed by a series of sand and mud-floor deposits [(AD5)152, 135, 129, 124, 123, 117, 97, 92, 77, 76, 69, 61, 41, 28], in total approximately 1.3m thick, with little to distinguish them. Features on the following surfaces may be mentioned:

(AD5)152 – a single mud brick against the west wall of the room.

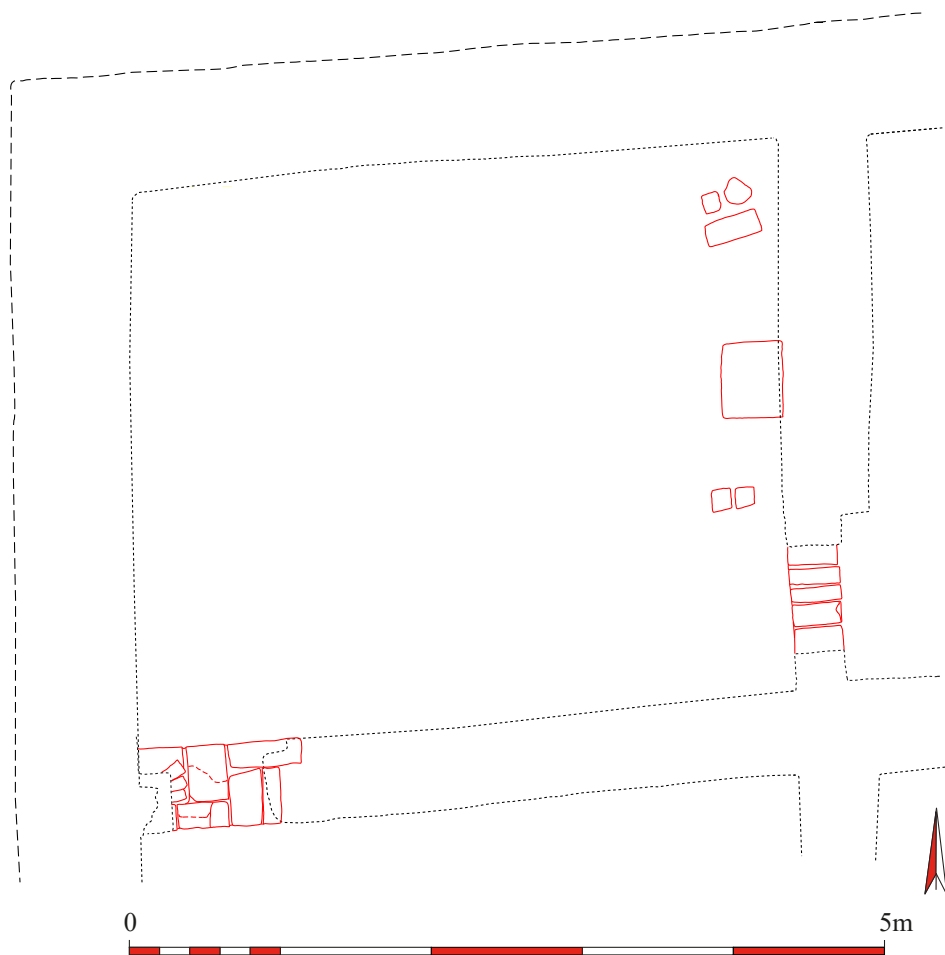


Figure 3.19. Building A2, Room V/VI – mud-brick features on surface (AD5)107 (scale 1:50).

(AD5)135 – an area of burning towards its centre 530 x 380mm in extent and up to 25mm thick. Several mud bricks sat on the surface including a rough alignment of four running at right angles and partly into the doorway.

(AD5)123 – it was probably while this surface was in use that the doorway between Rooms A2-VI and A2-VII was blocked, at which time the doorway will only have been approximately 900mm in height. The blocking wall was crudely constructed and consisted of alternate courses of headers laid flat with headers at 45° (Figure 3.14). With the blocking of the doorway it is far from clear how the room was entered; perhaps from above via a trapdoor?

(AD5)117 – some burnt mud bricks and fragments of a ceramic oven and similar bricks are found on (AD5)97.

(AD5)97 – a hearth associated with grinding bases, grinders and a mud bung, and several mud bricks, two against the north wall forming a ‘pillar’ of the type seen in Room A2-IV (Figure 3.21a, Plate 3.52).

(AD5)92 – three almost complete shallow bowls set upright in the surface and mud bricks against the east wall.

(AD5)69 – a single row of mud bricks forming a partition extending approximately 1.3m from the west wall. Other mud bricks are on the surface to the south (Figure 3.19b).

(AD5)41 – a large stone slab and three mud bricks, bovine skulls in the south-west corner and a hearth in the south-



Plate 3.52. Building A2, Room VII – surface (AD5)97 with feature 96 and hearth 98 – scale bar 2m.

east corner, burning in the north central area and rubble on the west side.

(AD5)28 – a hearth in the north-west corner.

The uppermost of these surfaces was sealed by wind-blown sand containing much pottery and bone as well as occasional mud bricks.

Throughout the life of the building fires were lit against the walls which have burnt the mud bricks to a bright red colour. This indicates that as the floor levels rose the build-

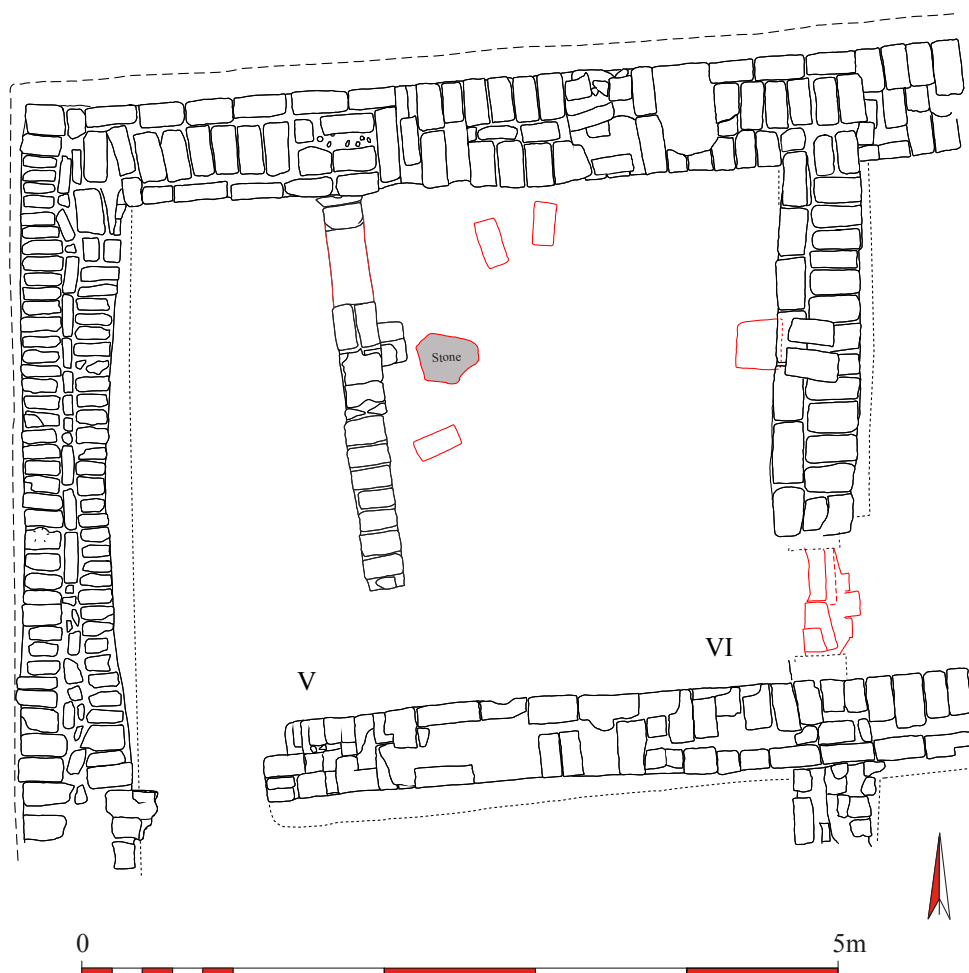


Figure 3.20. Building A2, Rooms V and VI – mud-brick and stone features on surface (AD5)84 (scale 1:50).

ing remained in occupation. The highest level of burning to survive was approximately 2m above the primary floor surface suggesting that by that date the roof had either been removed or the walls had been extended upwards and the roof was inserted at a higher level. A few traces of what may have been such a wall rebuild survived in the party walls between Rooms A2-V and A2-VI and that between Rooms A2-VI and A2-VII (see wall (AD5)81 on Figure 3.14; see also Figure 3.22). However, in both these cases this may be a localised repair of the wall over blocked doorways. Since the final abandonment of the building the rubble from its collapse along with those walls protruding above the ground surface had been totally removed by aeolian erosion. When excavation commenced the wall tops were found immediately below a very thin dusting of sand as were the latest archaeological deposits of sand, pottery and hearths.

Period 7 – Post-Buildings

Running across Building A1, at the level of the ground surface before excavation began, was a number of shallow irrigation canals which had cut down into its walls to a depth of approximately 450mm. The north wall of Room A1-III however was cut by a trench [(AB5)236] tapering from north to south from 800-610mm with a depth of 280mm. It had been lined with sandstone and contained water-deposited silt.

In the angle of the external walls of Rooms A1-II and A1-IV was a robber pit probably of very recent date, of quadrant-shape with maximum dimensions of 1.6 x 1.05m and 800mm deep. It was filled with wind-blown sand. The fragments of the statue of Beset found in this area on the surface before excavation began may have been unearthed by its digging.

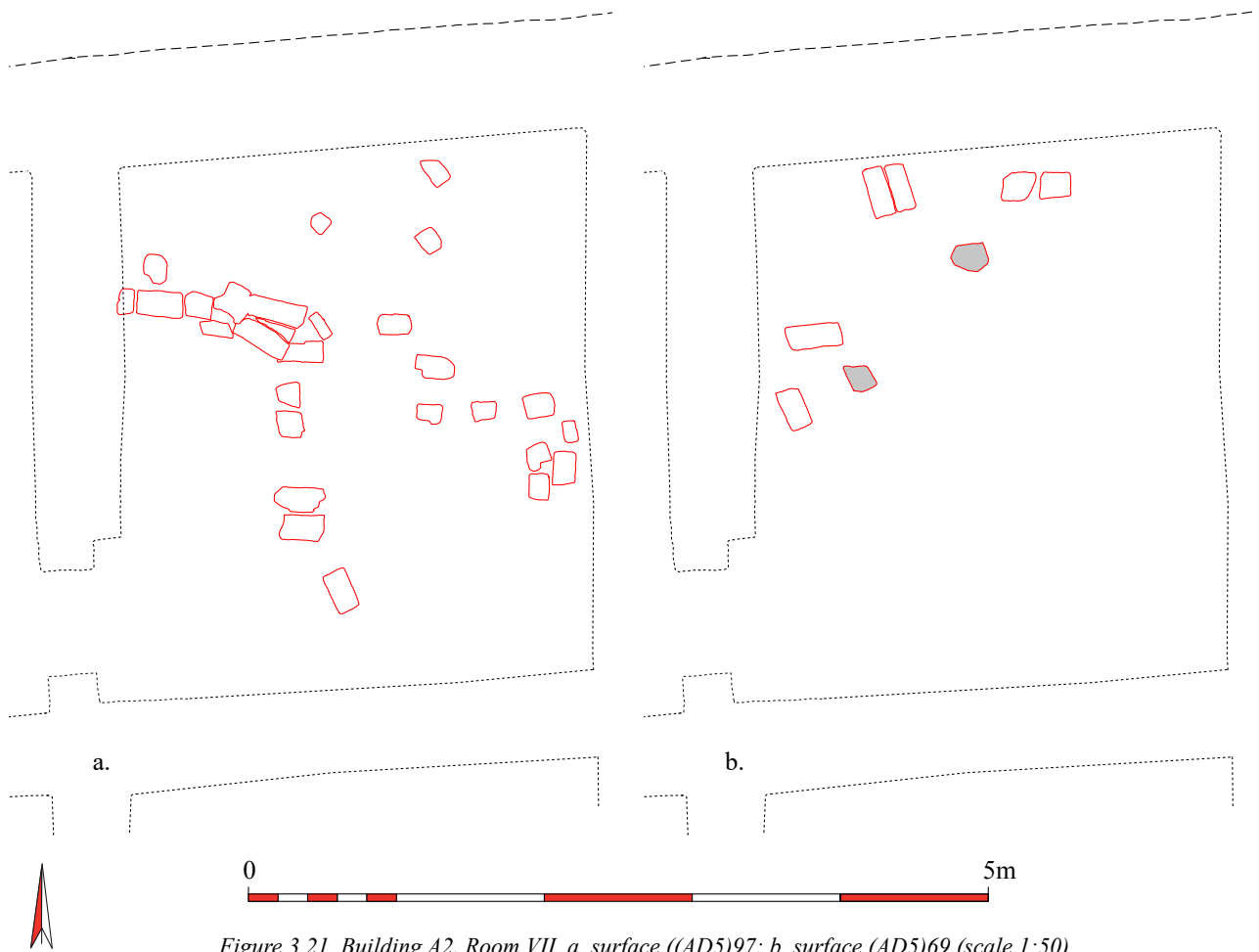


Figure 3.21. Building A2, Room VII. a. surface ((AD5)97; b. surface (AD5)69 (scale 1:50).



Plate 3.53. Buildings A2-A4, Rooms I-III at the end of excavation.



Plate 3.54. Building A2, general view looking north.

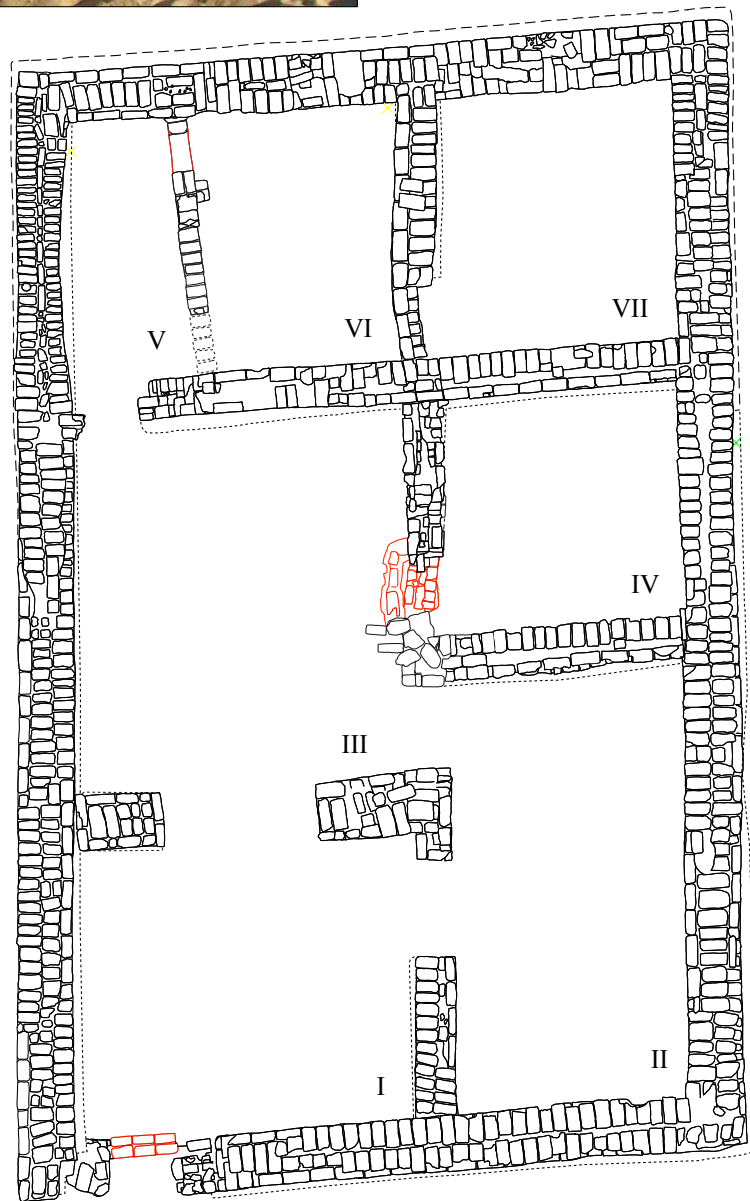


Figure 3.22. Building A2, features of the final structural phase (scale 1:100).



4. Excavations in Area B

Derek A. Welsby

Introduction

Excavations were begun in this area in the winter season 1997-98, continued in the January to March 2000 season and completed in the December 2000 to February 2001 season (Welsby 1998; 2000; 2001). Area B lay on the southern slope of the upper town mound in an area where there were extensive remains of buildings immediately below the surface, many of which were planned after their wall tops were brushed. The area was also investigated by the Fluxgate Gradiometer and GPR surveys. Several buildings were excavated along with part of one alleyway and a street (Figure 4.3 Plate 4.5).

Throughout the report the original room numbers, as designated as the excavations progressed, are retained. In some cases parts of a single room were given separate room numbers. Where this has been the case, in the report the single room is referred to as, for example, Room B5-X/XII. For details of the brick bonds see Figure 1.2.

Pre-building deposits

In the area of Room B14-XXV was a large number of extensive and deep robber pits which provided a window into a number of deposits which certainly pre-dated Buildings B12, B14 and B5 and almost certainly pre-dated Building B13. These suggest that there was extensive occupation in this area before the construction of the mud-brick buildings. A sondage (Sondage B) was excavated in this area to clarify and further explore deposits which had been visible in section in the pit sides. Also at a point where aeolian sand was visible on the surface predating Buildings B12



Plate 4.1. Sondage A with Sondage B beyond, looking north – scale bar 2m.

and B14 towards the southern limit of excavation, another rectangular sondage (Sondage A) was excavated reaching a depth of 45.49m OSD (Figure 4.1, Plate 4.1).

Sondage A

At the point where excavation was terminated was a surface of fine sand [(BD2)100] with patches of homogenous clay-silt with some areas possibly of burning. Within it were many pottery sherds, burnt bone and charcoal. It was sealed by a thick deposit of aeolian sand which formed a prominent mound with coarse sand on its northern slope and a deposit of charcoal and ash [(BD2)111] on its north-western slope (Plate 4.2).



Plate 4.2. Sondage A. Looking south with surface (BD2)100 visible in the bottom. At the far end of the sondage the mound on which rested the deposit (BD2)111 is clearly visible overlain by the sand of (BD2)32 – scale bar 1m.

The full extent of this mound could not be ascertained. Resting on it was a further deposit of aeolian sand [(BD2)32] up to the surface at the time of excavation, gently sloping from north to south. This surface, which is below the level of the walls of Building B12, was a maximum of 2.66m above (BD2)100.

Sondage B

This sondage (Figure 4.2) was created by excavating in the area of later Room B14-XXV to the north and west of the robber pits in its centre. The earliest deposit reached [(BD2)116], probably equivalent to (BD2)32 in Sondage A, was of sand. It was a minimum of 200mm in thickness. Resting on it was a patch on medium-grained sand underlying a deposit of ash and charcoal 120mm thick. Sealing part of these deposits was a compacted layer of fired- and unfired-brick fragments [(BD2)94 & 96]. This deposit slopes markedly towards the north and appears to be successive

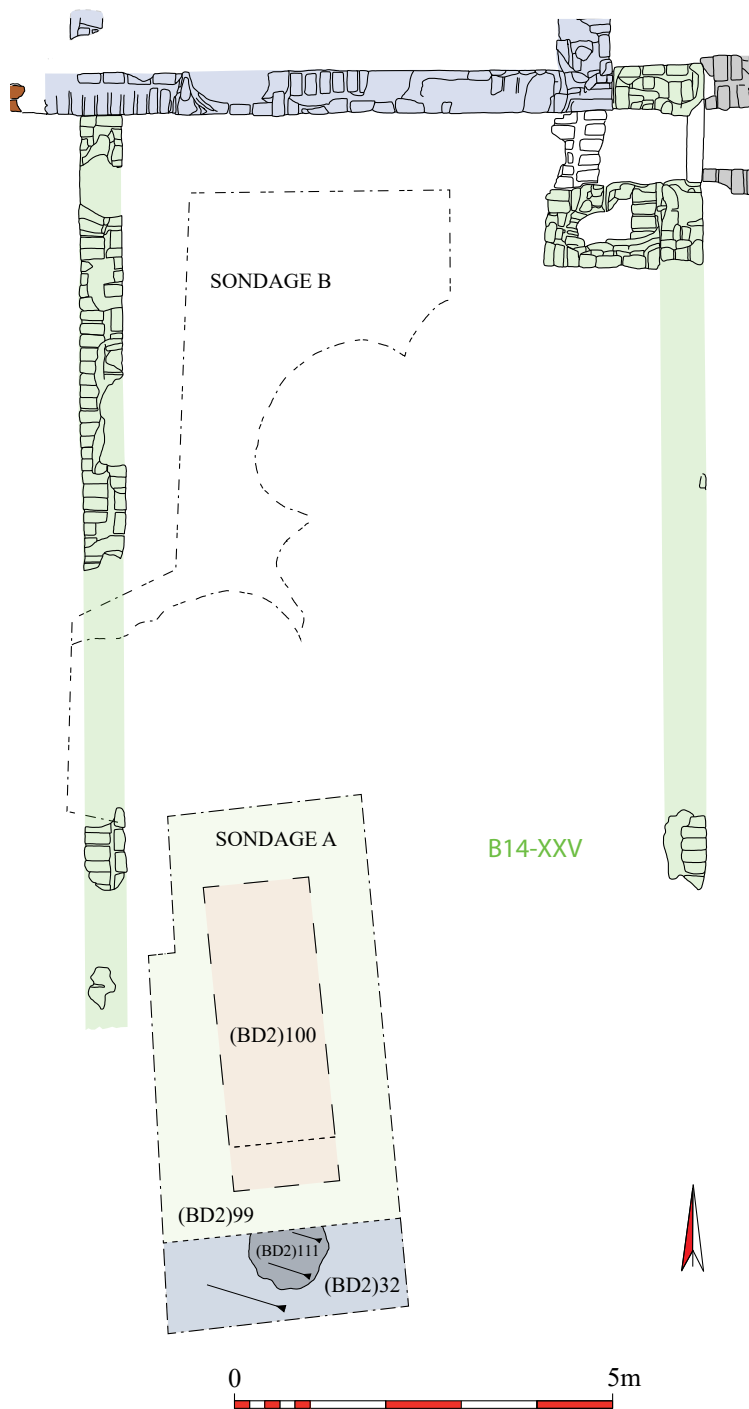


Figure 4.1. The location of the sondages in the area later enclosed by the walls of Building B14, Room XXV (scale 1:100).

dumps of material perhaps to form a levelling layer (Plates 4.3 & 4.4).

At the south-western edge of the sondage it partly sealed a small patch of ash and charcoal [(BD2)98, thought to be a dump rather than the remains of *in situ* burning. Elsewhere (BD2)116 was partly overlain by fine sand with some pieces of charcoal within it [(BD2)95] and then by aeolian deposited medium-grained sand [(BD2)89] which partly extended over the rubble layer. Further deposits of sand which, although not showing laminations are presumably aeolian, perhaps represent three separate events [(BD2)113, 114 & 112]. The surface of these deposits is probably

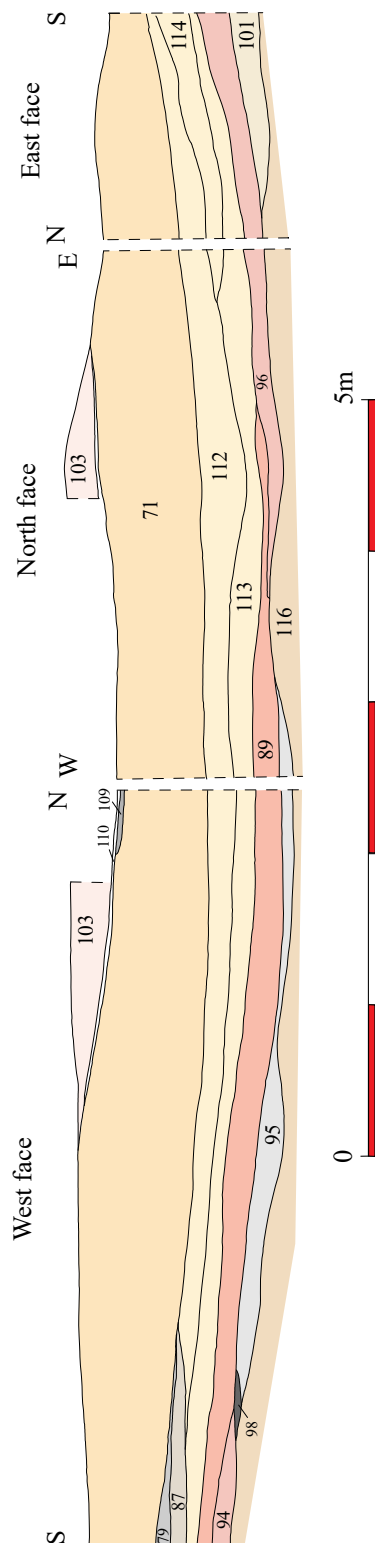


Figure 4.2. Sondage B. Section of the east, north and south faces – all contexts in grid square (BD2) (scale 1:50).

equivalent to the fine-sand surface (BD2)80 elsewhere in the sondage.¹ on which lay large fragments of red and mud brick – a much less dense deposit than (BD2)94 /96. This was sealed by another thick layer of medium-grained sand containing small charcoal fragments [(BD2)71]. At the

¹ On this surface lay large fragments of red and mud brick. Their similarity to much later deposits probably associated with the digging of the robber pits and their disturbance and redeposition of deposit (BD2)94/96, suggests that it may also be much later pit fill – no such pit was however, noted.



Plate 4.3. The surface of the brick rubble deposit (BD2)96 looking north west – scale bar 500mm.

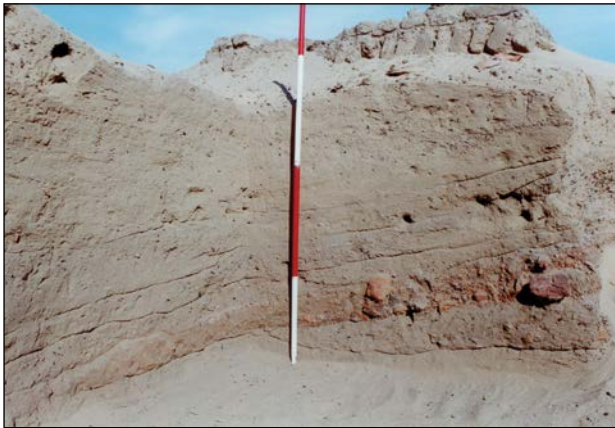


Plate 4.4. The east and part of the north face of Sondage B. The brick rubble deposit (BD2)96 can be clearly seen overlying (BD2)101, looking east north east – scale bar 2m.

interface between these deposits were two small deposits, one [(BD2)79] containing pottery sherds which may represent an occupation surface. Resting on (BD2)71 was a thin deposit of homogenous clay-silt and another of fine sand

laminated with decayed palm fronds. These may in some way be associated with the construction of the south wall of Building B12.

The relative chronology of Buildings B1, B5 and B12-B15

The earliest of these buildings would appear to be Building B13. Its external walls are significantly thicker than any of the other walls in the area. Against its east wall Building B12 was subsequently constructed, using the wall of Building B13 as its west wall. The north wall of Building B12 is on a slightly different alignment from that of Building B13, differing from it by 2.72° . As Building B1 is on exactly the same alignment as Building B12 this suggests that it was broadly contemporary. When Building B14 was added it used the south wall of Building B12 as its north wall. A 350mm-thick deposit of aeolian sand had formed against the B12 wall before the primary floor of B14, in Room XXV, was laid. The last building to be added to this ensemble was Building B5. Its west wall abutted the east wall of Building B12 along its entire length and using it for support the builders economised by constructing the new wall only about 419mm thick, one header or two stretchers plus associated bonding mortar. It abutted onto the north-east corner of Building B14 and it was presumably at this time that a doorway was cut through its east wall to provide a link between the two buildings. The north wall of Building B5 differs from the alignment of B12 by 2.37° perhaps influenced by the orientation of Building B2 to its north.

It was not possible, in most cases, to relate internal use and changes within each building to what was happening in other adjacent buildings.

Building B13

Little of this building survived at the time of excavation (Figure 4.4). It was the westernmost of those excavated in



Plate 4.5. General view across Buildings B13 to B5, looking north east.



Figure 4.3. Area B. Plan of the excavated buildings, B1, B5 and B12-B15 (scale 1:200).

the area and was on the slope west down towards the river bank and south towards the lower town. As such it has suffered much from erosion with most of the building having been totally removed. The entire length of its east wall survives apart from its very southern tip, but the location of this is clear as the wall of Building B12 laps around it. A little over 4m of the north wall remains, the south and west walls are entirely absent. In light of this it is impossible to determine what its original dimensions were; from what survives it can be suggested tentatively that it was rectilinear measuring 14.427m north-south by a minimum of 4.2m east-west. The uppermost surviving course in the south face of the north wall is a levelling course of saw-tooth headers.

The east side of the building is divided into a long rectangular room, Room B13-I, in the north east and another smaller one, Room B13-II, in the south east separated by a well-built mud-brick wall a little thinner than the external walls. Two further fragments of what may be north-south walls forming the western sides of these rooms were noted, the southern one a little to the west of the line of the northern one suggesting that Room B13-I was narrower than Room B13-II. All walls were of mud brick (Table 4.1).

TABLE 4.1. BUILDING B13. WALL THICKNESSES, BRICK SIZES EMPLOYED AND BRICK LAYOUTS IN THE WALLS, THE LATTER AS OBSERVED IN PLAN OF THE UPPERMOST COURSES.

ALL DIMENSIONS ARE IN MILLIMETRES.

	Context no.	Wall thickness	Brick sizes	Bond type
North wall	(BF1)23	737		G
East wall	(BE1)11	771		C, G
Wall Room I-II	(BE1)90	559-620		H
Wall in Room I	(BF1)93	740		
Wall Room I-W	(BE1)92	177?		M?
Wall? Room II-W	(BE1)94	177?	? x 170 x ?	M?

Room B13-I

In the south-east corner of the room was a short section of wall abutting the south wall of the room and running north-south. It lies very close to the inner face of the external wall of the building and is possibly to be interpreted either as a buttress or perhaps the base of a stairway which would have been about 740mm wide. The extension of this feature to the north is destroyed by a later pit. Set into the north wall of the room at the same horizontal level are two sockets for timbers 300mm and 350mm deep.

Deposits within the room are of sand and sand mixed with rubble. No occupation surfaces or related features were noted.

Room B13-II

The fill was entirely of wind-blown sand (Plate 4.6).

Pre-Building B12

In many rooms of the building robber pits penetrated into pre-building deposits. In Room B12-II four horizontal deposits were noted (Table 4.2) down to the limit of excavation,

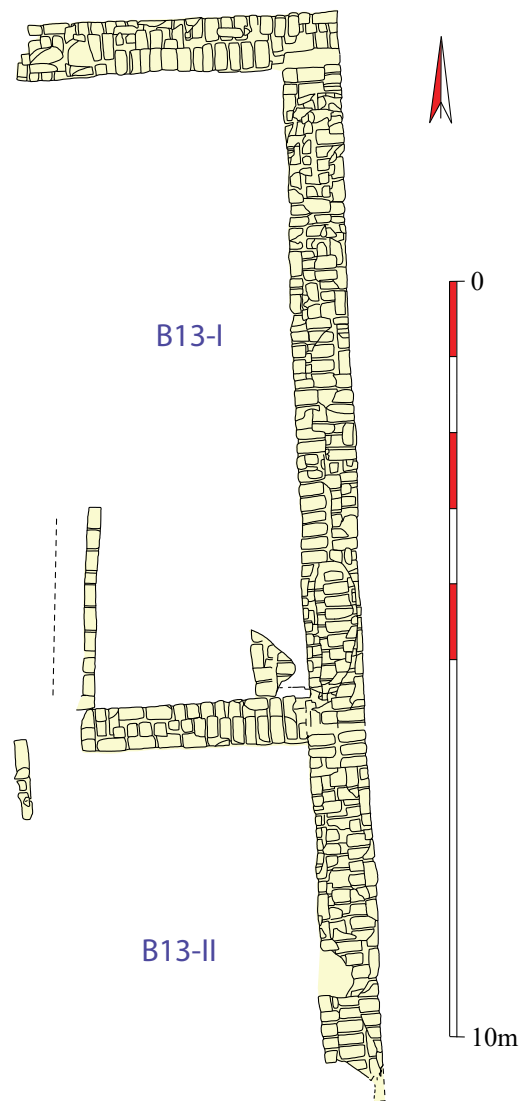


Figure 4.4. Building B13, plan (scale 1:100).

a depth of 520mm below the base of the room's north wall.

Building B12

Period 1

Phase 1 – construction

This building was slightly trapezoidal with its corners approximately 2° off a right angle. It measured over its walls 18.87-19 x 14.48-14.61m, giving an area of 553m². It abutted the east wall of Building B13 which it utilised as its west wall but, as it was of slightly greater dimensions, the east wall of the earlier building was extended by the width of a single brick. All the other walls, both external and internal, were of similar thickness (see Table 4.3).

Walls were constructed of mud bricks some of which contained an amount of charcoal and occasional sherds of pottery (Plate 4.7). No special foundation courses were laid in all the walls except in the south wall of Room B12-XVIII.² The first course of that wall was of bricks laid

² Whether this wider foundation extended into Room B12-XXI is uncertain. The south wall of that room did not include any saw-tooth headers.



Plate 4.6. Building B13. Sandy deposits in Room II, looking north east – scale bar 2m.

TABLE 4.2. DEPOSITS PRE-DATING BUILDING B12.

	Context	Thickness	
Latest	(BE2)122	90-120	sandy deposit containing charcoal, mud-brick fragments, pottery & bone
	(BE2)123	100	sandy deposit containing charcoal & bone
	(BE2)124	50-90	sandy deposit containing charcoal, mud-brick fragments & bone
Earliest	(BE2)129	200+	sandy deposit with 1 bone fragment

TABLE 4.3. BUILDING B12. WALL THICKNESSES, BRICK SIZES EMPLOYED AND BRICK LAYOUTS IN THE WALLS, THE LATTER AS OBSERVED IN PLAN OF THE UPPERMOST COURSES. ALL DIMENSIONS ARE IN MILLIMETRES.

Wall between rooms	Context no.	Wall thickness	Brick sizes	Phase	Bonding type
North wall	(BF1)3/(BF2)55/(BE2)16/20/49	550-570		1.1	H
South wall – east	(BE2)7	500-550	320 x 160 x 80	1.1	H
South wall – west	(BE2)98 - foundation	588		1.1	?
South wall – west	(BE2)98 - superstructure	494		1.1	H
East wall	(BE3)4/8	500-560	340 x 170 x 80 320 x 150 x 80	1.1	H
XVII-XX/I	(BE2)8/9	580	340 x 150 x 70		H
XVII/XIX-XX	(BF1)21/24			?	H
II/XXVIII	(BE2)2	560			
I/XXVIII	(BF2)57/99	550			
II/III	(BE2)3	570	320 x 150 x 80		H
II-III/VII	(BE2)4	580	350 x 170 x 80 340 x ? x 90		H
XIX/XX	(BE1)14	570		2.1	
XIX/XXI	(BE2)6				
XIX-XX-I/XXI-XVIII	(BE2)6	540	340 x 170 x 80		H
XXI-XVIII	(BE1)30			1.1	H
XVIII/VII	(BE2)5	500-560	320 x 150 x 80 340 x 160 x 70	1.1	H

flat on which was a course of saw-tooth headers. What is particularly unusual here is that these two courses form a wall about 94mm thicker than the superstructure above

(Plate 4.8). This thickening on the north side of what is an external wall of the building may reflect its dual purpose; it also acted as a terrace wall and hence perhaps the perceived



Plate 4.7. Building B12. Detail of the brickwork – scale bar 200mm.



Plate 4.9. Building B12. The west wall of Room XVIII, looking north west – scale bar 2m.



Plate 4.8. Building B12. Foundation course of the south wall visible in Room XVIII, looking south east – scale bar 2m.

need for a much stronger wall than usual where it supported the deposits at a higher level within the rooms.

Walls were either bonded into their neighbours or butt jointed in most cases. The wall between Rooms B12-II and B12-III however, was set into a recess in the wall to its south. While the bricks were most commonly laid as headers and stretchers, saw-tooth headers were used as levelling courses in some walls. The wall [(BE1)30] between Rooms B12-XXI and B12-XVIII had bricks at a slight angle in the second course only on its east face (Figure 4.5a, Plate 4.9). There were saw-tooth headers in two course of the south wall [(BE2)98] of the building (Figure 4.5b, Plate 4.8). This

wall also contained a horizontal timber beam approximately 3m in length set into the wall face. It is not clear why this was deemed necessary at this point. A number of the walls were rendered in a mud mortar. This was particularly well preserved on the west and north walls of Room B12-XVIII (Plate 4.9) and on the west wall in Room B12-II.

In period 1 the building consisted of seven rooms and a courtyard along with a narrow space to the north of Room B12-I (Figure 4.6). Each room is of a different size (see Table 4.4). All rooms were presumably roofed using timber

TABLE 4.4. BUILDING B12. INTERNAL AREAS OF THE SPACES WITHIN THE STRUCTURE.

Room	Area (m ²)	Room	Area (m ²)
XVII	29.30	III	43.26
XXVIII	8.53	XXI	29.70
II	16.29	XVIII	62.08
III	22.46	VII	153.67
XIX/XX	40.20		

beams which will have been supported entirely by the surrounding walls except in Room XVIII which, owing to its greater size, 5.25 x 6m, required additional supports. Almost exactly in the centre of this room was a post-hole 160mm in diameter which will have contained a vertical post serving to support a beam which in turn will have supported one end of the joists.

As with other buildings in the area it had suffered greatly

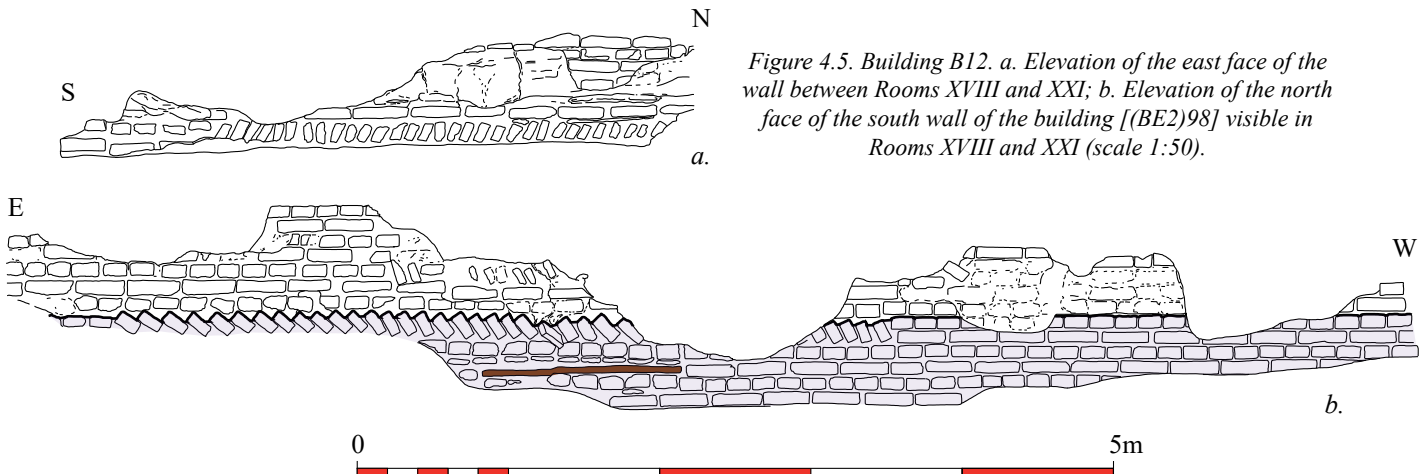


Figure 4.5. Building B12. a. Elevation of the east face of the wall between Rooms XVIII and XXI; b. Elevation of the north face of the south wall of the building [(BE2)98] visible in Rooms XVIII and XXI (scale 1:50).

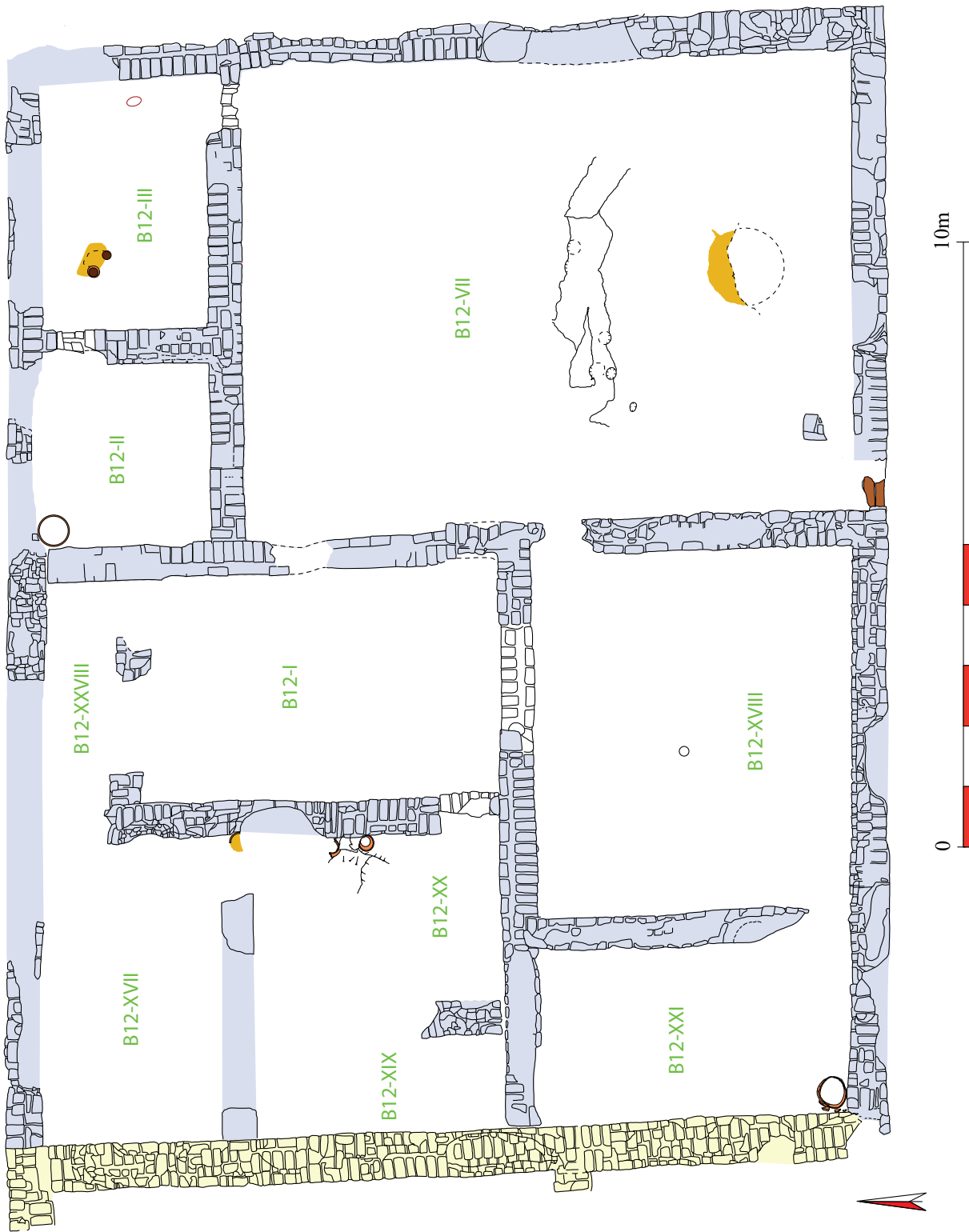


Figure 4.6. Building B12, plan (scale 1:100).

from robbing activities which have removed substantial sections of walling perhaps, in some cases, removing evidence for doorways. Only one external doorway survived, in the south-west corner of Room B12-VII, but others could have been present in the north wall potentially allowing access to the street from Rooms B12-XVII, B12-XXVIII and/or B12-II. The wall on its western side was inturned for a distance of 835mm.

On entering the courtyard the two separate parts of the building could be accessed. In the north-east corner a doorway led into Room B12-III which had a doorway through

into Room B12-II. Mid-way along the west wall a doorway gave access into Room B12-XVIII and then through into Room B12-XXI to the west and Room B12-I to the north. Towards the north-west corner of the courtyard a gap in the wall is possibly another doorway giving direct access into Room B12-I. Of the well-preserved doorways (Table 4.5) those into Rooms B12-III, B12-XIX/XX and B12-XVIII have jambs indicating that the doors were closed from inside those rooms. The doorway between Rooms B12-XX and B12-I has a jamb only on its south side – it was closed from within Room B12-XX; that between Rooms B12-I and

TABLE 4.5. BUILDING B12. DOORWAYS.

Between rooms	Width between jambs	Width inside jambs
Exterior-VII	-	756mm
VII-III	700mm	979mm
VII-XVIII	618mm	1.05m
II-III	613mm	1.065m
XX-I	835mm	984mm
I-XVIII	1.73m	2.17m

B12-XVIII probably only on its west side – it was closed from within Room B12-XVIII. No jambs are visible in the external doorway from the courtyard. In the external doorway two timber planks survived forming the threshold and another timber threshold, resting on the lowermost course of the wall and inset by about 300mm into the jambs on each side, was preserved in the doorway between Rooms B12-XX and B12-I (Plate 4.10). In probably all cases the lowest



Plate 4.10. Building B12. Doorway with timber threshold between Rooms VII and XVIII, looking south west – scale bar 500mm.

course of the wall was continued across the doorways with a thickness equivalent to one header in line with the jambs. Whereas most doorways were quite narrow and set in the corner of rooms, that between Rooms B12-XVIII and B12-I was much wider and centrally placed, opening up those two rooms. The wall at its full width and three courses in height was carried across the doorway (Plate 4.11).

The external walls of the building did not survive to a sufficient height to preserve any parts of windows. How-



Plate 4.11. Building B12. The wide doorway between Rooms XVIII and I, looking north – scale bar 500mm.

ever, in the street to the north discrete piles of domestic refuse against the exterior face of the wall suggests that this material was dumped through windows. If so this indicates that there was a window mid-way along the north wall of Room B12-III.

Towards the southern end of the east wall of the building is a channel approximately 100mm wide which passes through the wall. It was presumably constructed to allow water to drain from the courtyard, Room B12-VII probably along the gully (BE2)164 (see below).

The eastern end of the south wall had a clearly visible construction trench approximately 800mm wide with a flat bottom. Owing to the slope of the ground at the time of construction the trench had a depth of 300mm on the north side but only 50mm on the south side. The construction trench of the east wall, approximately 1.15m wide, was also dug into a surface sloping down from west to east. It was dug to a depth of 320mm below the surface on the west side of the wall and 50mm on the east side (Figure 4.7). The lower fill of the trench was composed of fragments of mud brick along with mud mortar. This filled the cut on the east side of the wall and was sealed by floor surface (BE2)95 on the west side.

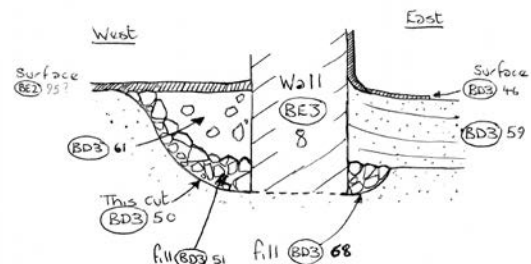


Figure 4.7. Building B12. Sketch drawing of the section through the east wall of the building.

Phase 2 – Use of the building

Rooms B12-XVII, B12-XXVIII, B12-XIX, B12-XX, B12-I, B12-XXI and B12-XVIII

These rooms are interconnected. In Room B12-XVII a large number of robber pits has removed virtually all traces of its use contemporary with the building. Extending across the east end of Room B12-XXVIII was a rectangular mud-lined storage bin [(BF2)58] (Plate 4.12) built against the north, east and south walls. On its west side are two bricks aligned north-south which may form its edge. There was no direct stratigraphical link between Rooms B12-XVII and B12-XIX and B12-XX as deep robber pits and remnants of the party wall separated them. The earliest surface [(BF1)69] (Plate 4.13) noted in Room B12-XX, extensively cut by robber pits, was of a sandy silt. It was cut by, and was presumably contemporary with, the use of three ovens located very close to the east wall of the room. The two southerly ovens [(BF1)25 & (BE1)28] (Plates 4.14 & 4.15) were set within the same pit and were of a similar character, formed from a tall jar placed upside down with the base removed. The pit around them was filled with sandy silt containing small pieces of rubble and some pottery sherds. Sealing this fill and on the surface was a layer of ash capped by one of



Plate 4.12. Building B12, Room XXVIII. Mud-storage bin (BF2)58, looking south east – scale bar 500mm.



Plate 4.13. Building B12, Rooms XIX and XX. Surface (BF1)69 abutting the south face of the north wall of the room (BF1)21. It is cut by robber pits in the foreground. In the background is pit (BF1)9 cutting into the east wall (BE2)8/9 – scale bar 500mm.

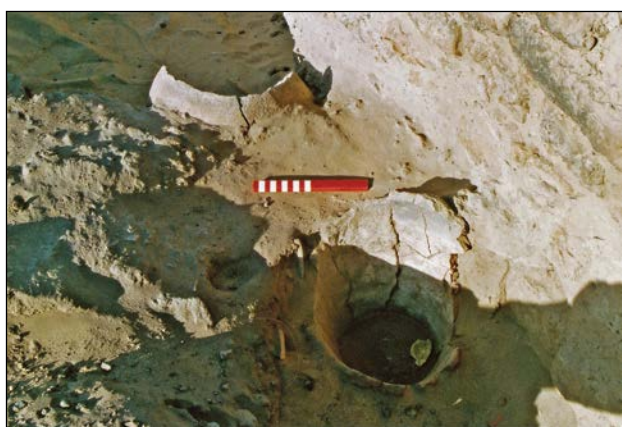


Plate 4.14. Building B12. Pottery vessels re-purposed as hearths in Room XX, looking north north east – scale bar 200mm.

clay which also had ash above it suggesting various phases of use of the ovens. Most of the northern oven [(BF1)26] had been removed by a later pit. Only a small part of its wall remained which may be from a cylindrical purpose-made oven rather than a reused pot. It appears to be set within the doorway between Rooms B12-XVII and B12-XX.

As noted above a wall [(BE1)14] (Plate 4.16) set on sand well above the base of the south wall of the room divided it



Plate 4.15. Building B12. Pottery vessel (type 2719xb) re-purposed as a hearth in Room XX, looking south – scale bar 200mm.



Plate 4.16. Building B12. Wall (BE1)14 between Rooms XIX and XX, looking south east – scale bar 500mm.

into two unequal halves. It is unclear how it is to be related chronologically with the ovens and the associated floor.

Two isolated patches of what may be the primary surface in Room B12-I were noted. On this was a fireplace [(BF2)62] against the east wall and delimited on its south and part of its west side by a row of mud bricks. It was infilled with ash (Plate 4.17). An area of burning lay in the north-east corner of the room up against the south face of the north wall and had reddened some of its bricks.

In Room B12-XVIII the stratigraphy was particularly clear. The earliest surface [(BE1)59], of hard-packed grey silt/mud, was preserved over much of the room and survived for a short distance through the doorway into Room B12-XXI. It was contemporary with surface (BE2)83/95/165 in the courtyard to the east. Although relatively flat it sloped down markedly from north to south (Plate 4.18).

In the north-east corner it was at 48.338m osd; towards the south-west corner it was at a level of 47.595m osd. No features were noted on this surface nor on any of the later ones within the room. It was sealed by a compacted layer

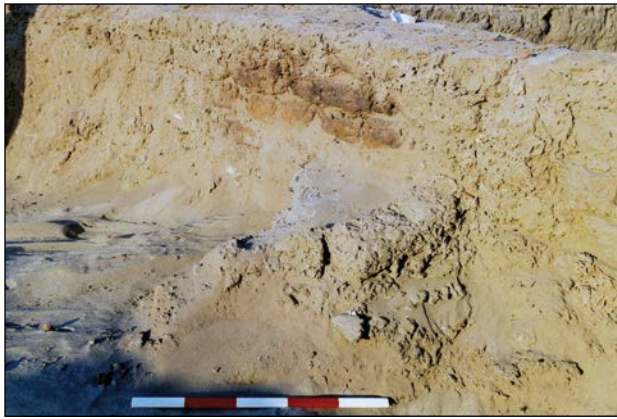


Plate 4.17. Building B12, Room I. Fireplace [(BF2)62] on the primary floor surface against the east wall.



Plate 4.19. Building B12, Room XVIII. The penultimate floor surface [(BE1)46] surviving in the northern part of the room and extending through the doorway in the foreground into the courtyard, Room B12-VII, looking west – scale bar 2m.



Plate 4.18. Building B12, Room XVIII. Surface (BE1)59 looking north east towards the doorway into the courtyard, Room B12-VII, where the contemporary floor surface [(BE2)95] can be seen – scale bar 2m.

of fine silty sand [(BE1)61] within which was much ash and occasional fragments of bone and pottery. The surface of this deposit basically followed the slope of the one below. Thereafter five horizontal deposits, listed below from earliest to latest, were placed in the south-eastern part of the room which ultimately levelled up the surface, surface (BE1)61 remaining in use in the north-east corner throughout.

(BE1)76 – compacted and friable ash containing much very fragmented animal bone

(BE1)74 – compact silty sand and ash containing very few finds

(BE1)73 – grey/brown coarse silty sand with some bone, pottery and charcoal.

(BE1)72 – yellow/brown silty sand with a few pieces of charcoal, bone and pottery sherds

(BE1)71 – compacted surface of silty sand and ash with charcoal

On surface (BE1)61/71 was occupation debris and two further floors [(BE1)46 & 48] (Plate 4.19), the latest surviv-

ing as a small patch, about 700 x 450mm in size, amongst the robber pits. During the use of the room its floor levels had risen a maximum of about 1m.

On the primary surface in Room B12-XXI rested another, probably the same as (BE1)61. It was covered by occupation debris [(BE1)49], with ash, organic material and some cloth. Sat on or amongst this layer was a cylindrical oven in the south-west corner of the room very close to the adjacent walls (Plate 4.20) filled with ash and charcoal. It was slightly oval, 520 x 400mm in size and survived to a height of 360mm – the top was missing. Deposit (BE1)49 was cut by an oval pit 1.25 x 1.07m in size and 620mm deep filled with a grey silty sand containing small quantities of



Plate 4.20. Building B12, Room XXI. Cylindrical oven, looking west south west – scale bar 500mm.

bone, pottery and charcoal. Throughout the room was then deposited 100-150mm of silty sand containing fragments of oven wall, presumably from that in the south-west corner. On this, in the centre of the room, was a narrow oval mound (1.7 x 0.4m) containing many large pottery sherds. The walls of the room in its north-west corner were, in their

upper parts, heavily burnt (Plate 4.21) but no trace of this burning survived in the adjacent stratigraphy.

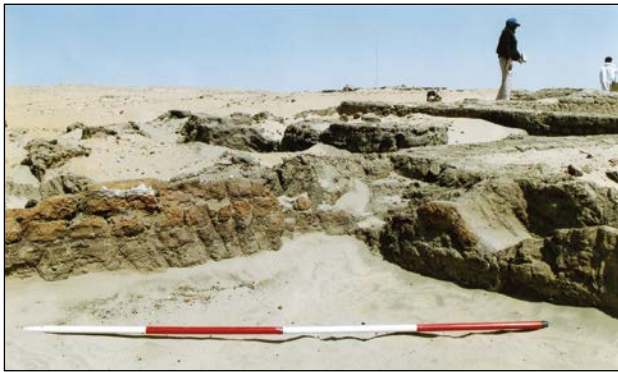


Plate 4.21. Building B12, Room XXI. Heavily burnt walls in the north-west corner of the room, looking north west – scale bar 2m.

Rooms B12-II and B12-III

The earliest surface in Room B12-II [(BE2)118] was formed of a layer of soft sand on which, in the north-west corner sat a cylindrical oven [(BE2)111] 520mm in diameter surviving to a height of 300mm. The fill consisted of layers of charcoal and sand. The north wall had been very badly damaged by robber pits but the fragment of walling which survived midway along the room and the position of the oven suggests that part of this wall was thinner than elsewhere, perhaps as little as 400mm thick. It was contemporary with the hard sand surface (BE2)128 in Room B12-III but separated from it by the robber pit immediately to the west of the doorway between the rooms. Resting on this surface was an oval grinding base (cat. no. ML-54) which is perhaps *in situ*. It had been used for grinding ochre. Towards the doorway into Room B12-II was one, and probably originally two, jars (types 2000x & 2237x) set into the surface and associated with a roughly oval area delimited to north, east and west by a raised border of mud which abutted the two pots (Plate 4.22). It was infilled with ash.

Whereas in Room B12-II the primary floor was overlain by a thick deposit of mud-brick rubble, in Room B12-III there were two further occupation surfaces [(BE2)110 & 109] each associated with a hearth overlying that on the primary floor (Plate 4.23). The rim of the complete pottery vessel associated with the primary hearth protruded from each of these surfaces and may have remained in use. (BE2)110 was a sand deposit about 150mm thick with bone



Plate 4.22. Building B12, Room III. Pottery vessel set into the floor surface and a hearth, looking north east – scale bar 500mm.



Plate 4.23. Building B12, Room III. The three hearths on surfaces (BE2)128, 110 and 109 with the heavily robbed remains of the room's north wall beyond, looking north north east – scale bar 500mm.

and some large pottery sherds scattered across its surface (Plate 4.24) on which sat the ash of hearth (BE2)107. The surface above, also of sand, again had pottery sherds scattered across its surface.



Plate 4.24. Building B12, Room III. Sand deposit (BE2)110 with large pottery sherds scattered across it. The upper part of one of the pottery vessels from the primary hearth is visible in the lower right. View looking east south east – scale bar 2m.

Room B12-VII, the courtyard

As no internal roof supports were found here this must have been an unroofed space. As already noted it is likely that access from outside the building into its rooms was only possible via the courtyard. The primary floor surface [(BE2)83/95/165], which sat on a rubbish deposit, was of compacted mud and survived over much of the courtyard but was cut by many later pits (Plate 4.25). It sloped down from north to south, the maximum height difference being 247mm. Contemporary with its use was a large shallow pit [(BE2)162], of which only the northern part survived the later pitting. Its sides were heavily burnt and it was filled with white and grey ash, charcoal, burnt mud brick and grey and black silty sand (Plate 4.26). Close to the north-west corner of the courtyard, set into the surface, was a row of three mud bricks – there may have been more on its western side – perhaps forming a linear feature oriented east-west with the bricks set as headers. Also probably contemporary



Plate 4.25. Building B12, Room VII. The primary floor surface (BE2)83/95/165, looking north north east – scale bar 2m.

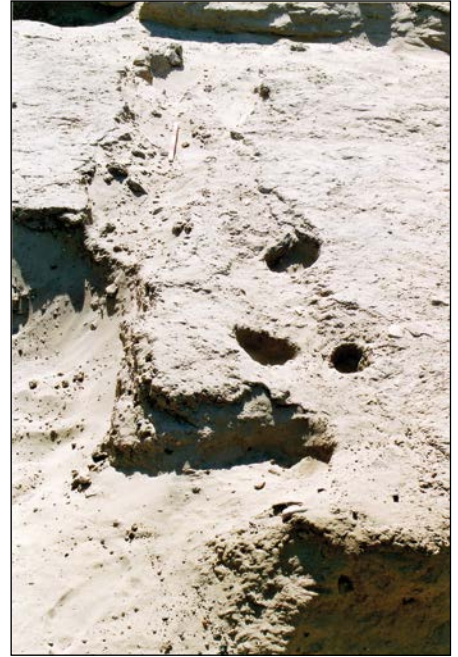


Plate 4.27. Building B12, Room VII. Gully and post-holes, looking east – scale bar 500mm.



Plate 4.26. Building B12, Room VII. Pit (BE2)162, its southern part removed by a later robber pit, looking west – scale bar 500mm.

with the floor was a linear feature running east-west perhaps originally the full width of the courtyard: it is truncated by pits towards both ends. It appears as a shallow depression 800mm wide perhaps deepening towards its eastern end where it turns to run a little towards the south (Plate 4.27). It may represent a drainage gully connected with the channel through the east wall described above. Several post-holes along its edges may be associated with it. Resting on the surface was a deposit of much fragmented mud brick. It was cut by a small pit, 440mm in diameter and 150-200mm deep, in the centre of the courtyard filled with ash and charcoal. The many later pits cutting the primary surface, some of which were intercutting, were generally filled with silty sand, some containing pottery sherds, bone, charcoal and a few fragments of mud brick.

These pits were, according to the excavator, all sealed by (BE2)73, a layer of greyish-brown sand, possibly an occupation layer as it contained a lot of pottery sherds and

bone. If the relationship of the pits and layer (BE2)73 was correctly observed the pits must relate to a phase when the courtyard deposits were being quarried for material. These was presumably to spread on the fields as the sandy deposits were ill-suited for making mud bricks although they could have been used in an architectural context as makeup elsewhere, perhaps to level up surfaces in this or in adjacent buildings. As it would seem illogical to dig pits which would subsequently need to be filled, presumably the pits were dug at a time when, at least this part of, the building was abandoned for a time. On its subsequent reoccupation the pits were then filled.

On (BE2)73 was a patch of hardened sand and what may be other remnants of surfaces in mud [(BE2)65 & 66]. There was also a shallow depression (650 x 500mm, max. 100mm deep) containing a hearth [(BE2)64] filled with much burnt organic material (Plate 4.28).

All were sealed by a coarse silty sand deposit [(BE2)52].

Phase 3

In Rooms B12-XIX/XX thick deposits of occupation rubbish collected. These were a mass of charcoal, pottery sherds and bone along with bits of stone and rounded bits of mud brick (Plates 4.29 & 4.30). It is difficult to see how these could have formed if the room was still occupied. They may represent rubbish dumped into the room when it had gone out of use. Similarly in the courtyard several discrete mounds of rubbish (Plate 4.31) containing charcoal, ash, decayed palm fronds, pot and bone sat on surface (BE2)52. Set in one of these by the north wall was a complete pottery vessel filled with sandy silt and ash.

Area immediately to the south of Building B12

Overlying the fill of the construction trench for the eastern part of the south wall was a deposit of sand [(BD2)103]



Plate 4.28. Building B12, Room VII. View across the north-eastern quadrant with remnant surfaces (BE2)65 (centre) and 66 with hearth 64 beyond – scale bar 2m.



Plate 4.31. Building B12, Room VII. View of surface (BE2)52 with rubbish deposits 38, 50 and 55. The rim of the pottery vessel can be seen protruding from the mound of rubbish in the centre of the photograph against the north wall – scale bar 2m.



Plate 4.29. Building B12, Rooms XIX-XX. Deposits of occupation debris – scale bar 500mm.



Plate 4.30. Building B12, Rooms XIX-XX. Deposits of occupation debris cut through by a robber pit – scale bar 500mm.

which formed against the south side of the wall. It was the upper surface of this deposit which was cut by the construction trench for one of the walls of Building B14.

Building B14

It is not clear what proportion of this building survived at the time of excavation. Like the others in this area it sat on a terrace presumably created by cutting back into the slope. To the south and west its contemporary ground surface has been eroded away taking all traces of the building in that area with it. The northern parts of three walls, two of which about the south wall of Building B12, extend for a length of 1.73m, 11.85m and 10.37m. The two eastern walls can be assumed to be a part of one building. Their relationship with the westerly wall is uncertain. A very small fragment of what may be a fourth wall lay at the far west of the excavation area. No deposits associated with the building were recognised in Rooms B14-XXII and B14-XXVII.

Period 1

Phase 1 construction

Owing to erosion, combined with the very large number of pits dug over much of Room B14-XXV, very little can be said about its plan (Figure 4.8). It makes extensive use of the south wall of Building B12 against which possibly two of its north-south walls abut. However, as it extended a little further to the east than its neighbour, the south wall of the earlier building was extended for 1.2m to line up with the building's east wall. The wall between Rooms B14-XXII and XXV had a foundation course with shiners visible on its eastern face. All its walls were of mud brick (Table 4.6).

The only doorway noted was at the northernmost end of the east wall. It was approximately 842mm wide and had a timber threshold. It gave access from the exterior into a short passage 1.3m in length and 971mm wide between the north wall of the building and a thickening of the east wall, which projected into Room B14-XXV by 765mm and was approximately 766mm north-south (Figure 4.9a). The face of this wall in the passage was mud rendered. The floor

TABLE 4.6. BUILDING B14. WALL THICKNESSES, BRICK SIZES EMPLOYED AND BRICK LAYOUTS IN THE WALLS, THE LATTER AS OBSERVED IN PLAN OF THE UPPERMOST COURSES. ALL DIMENSIONS ARE IN MILLIMETRES.

Wall between	Context no.	Wall thickness	Brick sizes	Bonding type
North wall	'(BD3)34'	559-585	?	H
East wall	(BC3)4/(BD3)34/37	550	340 x 160 x 100	H
Room XXII/XXVII	(BE1)60	525	?	H
Room XXII/XXV	(BD2)30/57	550	320 x 160 x 80	H

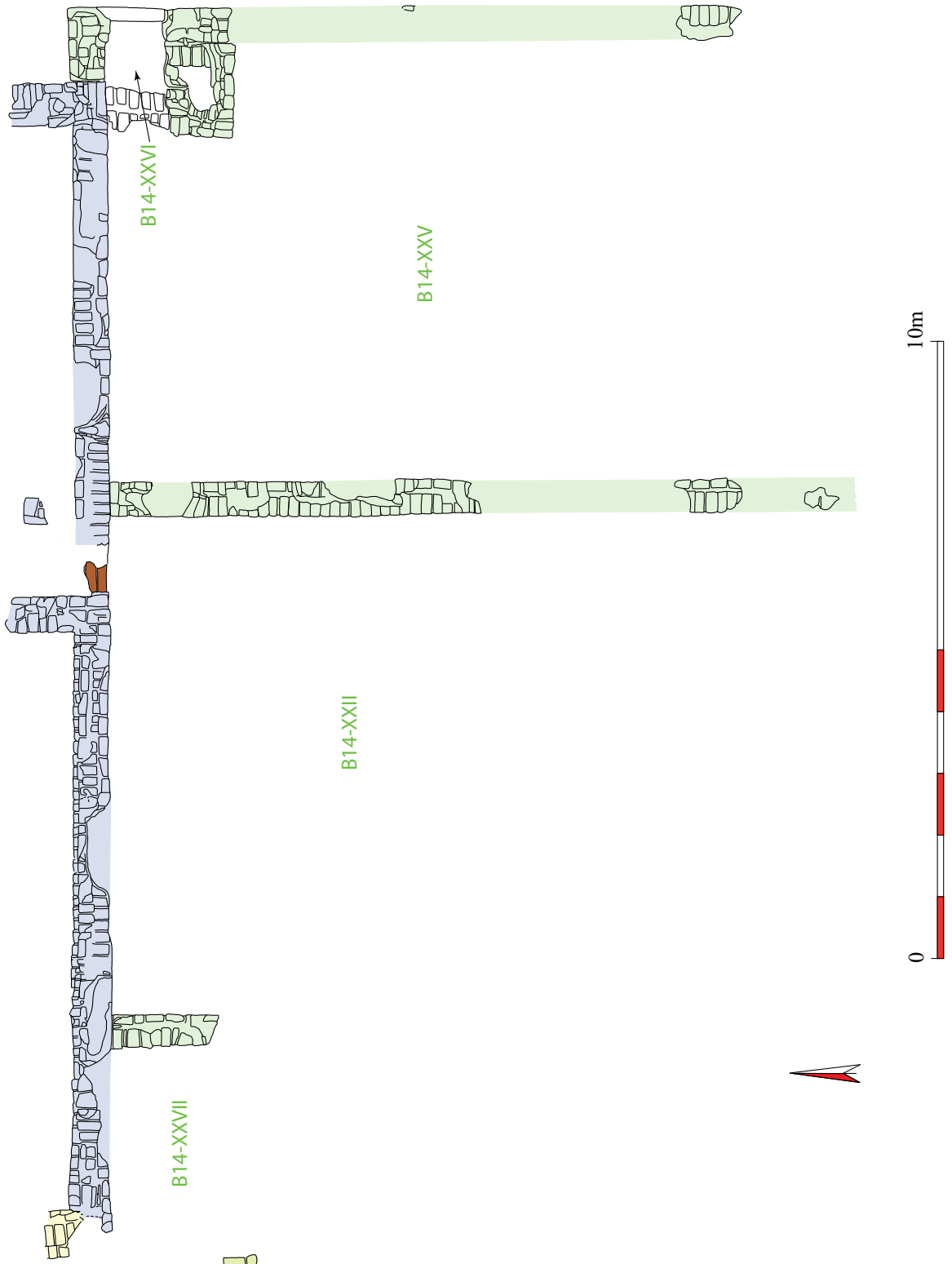


Figure 4.8. Building B14, plan (scale 1:100).

of the passage was of rowlocks covered in a 30mm-thick layer of mud which extended into the doorway. It bore the impressions of two timbers forming the threshold – a third timber probably underlay the later timber threshold. On the inner edge of the threshold was a prominent wooden sill the socket for which embedded in the south wall was clearly visible (Plate 4.32).



Plate 4.32. Building B14, Room XXVI, looking south. The external doorway is on the left, the primary surface with the impressions of the timber threshold and the socket for the sill in the south wall can be clearly seen. The masonry to the right is the extension of the vestibule and the later mud-brick threshold.

Phase 2 – use

Room B14-XXV

A small fragment of a floor surface, of homogenous clay about 20mm thick, survived in the north-east corner of the room contemporary with that in the passageway noted

above. Fragments of the same surface also survived against the north and west walls of the room, in the latter case directly sealing the construction trench fill.

Period 2

Phase 1 construction

Evidence for a second period of construction was only noted in the north-east corner of the building. Here the passage, Room B14-XXVI, was lengthened by 807mm, its southern side being now 1.524m in length and 1.142m thick north to south (Figure 4.9b). The threshold at its western end, of one build with the south wall, was formed of a course of rowlocks overlain by a double row of headers (bond type G) (Plate 4.33). There were no jambs in the inner doorway which was 800mm wide.



Plate 4.33. Building B14. Threshold of the doorway between Rooms XXV and XXVI, looking east – scale bar 500mm.

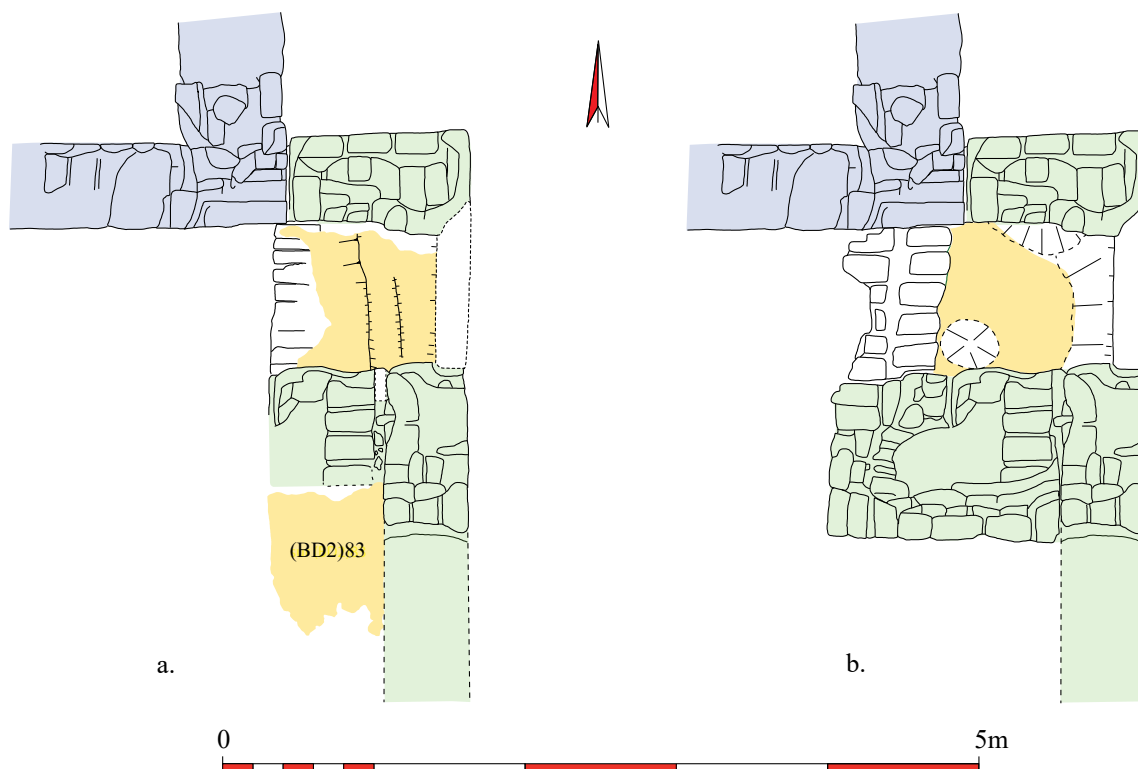


Figure 4.9. Building B14, Room XXVI. a. Period 1; b. Period 2 (scale 1:50).

Phase 2 – use

Room B14-XXV

Directly on the surface of the previous period was a compacted deposit of mud-brick fragments in the north-east corner of the room. It was thought to be part of an infill layer to raise the surface in the room up to that in the vestibule. Extending across the northern part of the room, and truncated to the south by the robber pits, was a charcoal-rich sand deposit [(BD2)27] which may be an occupation surface.

Area immediately to the north of Building B14

On the exterior of the building in the angle between its north wall and the east wall of Building B12 which it abuts, is a quadrant-shaped pit with a radius of 1m, and a maximum depth against the walls of 200mm. It was filled with sand and mud-brick fragments. It was sealed by a sand deposit and then by a surface 50mm thick abutting the wall of Building B14 and extending to the north. What appears to be a naturally formed sand deposit 200mm thick accumulated on this surface before the construction of Building B5.

Area to the east of Building B14

In this area (designated Room XXIV during excavation) a sequence of three surfaces was noted. The earliest, (BC3)5, a slightly undulating homogenous clay silt layer 40mm thick, did not survive towards the walls of Building B14 to the west and Building B5 to the north so its stratigraphical relationship to them is unclear. It was partly overlain by surface (BD3)26, loosely compacted sand and charcoal, from which it was separated by a deposit of wind-blown sand 300mm thick. This later surface appears to have abutted the east wall of Building B14. It was overlain by a small remnant of the third surface of similar character to that below it.

Building B5

Pre-building

Beneath the walls between Rooms B5-IV, B5-V, B5-XI and B5-X is a deposit of fine sand [(BE3)143] containing charcoal, pottery and bone. It overlies a layer [(BE3)144] which might have been associated with a hearth which itself overlies another layer, at the limit of excavation, similar to (BE3)143. These deposits may have been contemporary with the early use of Building B12 lying a short distance to the west. See also the discussion of the area to the north of Building B14 above.

Period 1

Phase 1 construction

The building formed a slightly irregular rectangle with its long axis close to north-south. The north and south walls are parallel, the east and west walls are set at an angle of 89.5° and 88.8° respectively from the north wall. Over the walls it is 15.8m in length by approximately 12.8-13.1m wide with an area of 404m². All walls were of mud brick bonded in a mud mortar. No trace of render or plaster was noted internally; the external face of the north wall was covered

in a mud render (Plate 4.34). The two lowermost courses of the north wall are made from bricks 340 x 160 x 85mm in size, with one row of headers and one of stretchers visible in the south face. Above this the bricks used were 320 x 165 x 70mm in size. It is possible, but uncertain, that the wall was of two periods of construction. Very little remained of the west wall which appears to have been largely demolished. It had a maximum width of 419mm, much narrower than the other external walls on the building on account of it abutting the east wall of Building B12 (Plate 4.35).



Plate 4.34. Building B5. Mud render on the external face of the north wall, looking west – scale bar 2m.



Plate 4.35. Building B5. The west wall of the building abutting the wall of Building B12 in the north-west corner of Room IV, looking north north west – scale bar 2m.

In the central section of the east wall within the southern part of Room B5-VI/IX was a course of bricks set as saw-tooth headers which presumably served as a levelling course. Such levelling courses have been noted elsewhere and formed a wedge with the angles of the headers being progressively reduced to form a level surface on which the upper courses could be laid.

In most sections of the wall the arrangement of the bricks

at foundation level was the same as in the superstructure. What may be part of the foundation of the wall between Rooms B5-IX and B5-XIII is a single row of rowlocks. It is disturbed on all sides so its original total width and relationship to the other section of walling a little to the west is unclear. The foundations of the wall between Rooms B5-X/XII and B5-VIII/XIV was visible in plan over a distance of 1.8m where the superstructure may have been removed in Phase 2. Here the foundation course was of a single course of slightly-angled rowlocks on its eastern face (Plate 4.36) and shiners on its west face (Plate 4.37).



Plate 4.36. Building B5. Foundations of the wall between B5-X/XII and B5-VIII/XIV on its eastern face, looking north west – scale bar 500mm.



Plate 4.37. Building B5. Foundations of the wall between B5-X/XII and B5-VIII/XIV on its western face, looking north east – scale bar 500mm.

The wall between Rooms B5-V and B5-X [(BD3)51], although probably contemporary with the walls to either side of the room, is founded at a slightly higher level (100mm) – it meets the wall to the west at the level of its second course. During its construction the builders departed from the standard bond, fitting in headers or stretchers as required to fill the available space as the wall's construction approached the already built north-south wall at its western end. Likewise wall (BE3)42, which joins wall (BE3)3 on its western side, is founded at the same level as wall (BE5)51, 100mm above the foundations of (BE3)3.

The bonding types visible in plan are displayed in Table 4.7. These include walls of both periods 1 and 2. Where the

period 1 walls are overbuilt by those of period 2 the actual arrangement of the bricks cannot be determined.

No trace of an external doorway was found but in the centre of the south wall is a late robber pit which may have removed all traces of a doorway which would have had a maximum width of 994mm. In the south-west corner of the building the narrow corridor tapering east to west from 1.04m to 785mm may have been a small storage room or may have led to an external doorway at the south end of the west wall. As no trace of the external walls remained in this area such a suggestion cannot be confirmed. A doorway 1.2m wide allowed access from the building via the corridor, Room B5-XXIII, into the north-east corner of Building B14. It had a wooden threshold [(BD3)7] 350mm in width. The doorway into Building B14 is a little wider than that from Building B5 and presumably was already in existence before Building B5 was constructed.

Slightly to the west of centre of the north wall, roughly half way along the wall in Room B5-V, is the lower part of a slit window 240mm wide. Elsewhere the walls were not preserved to a sufficient height for traces of windows to remain. However, a little to the east on the north wall in Room B5-VI the inner face of the wall is eroded quite likely the result of rainwater entering through a slit window at this point.

The arrangement of rooms within the building is a little uncertain as in Period 2 the arrangement was modified masking in places the original layout (Figure 4.10). There appears to have been a long central room against the south wall surrounded on the other three sides by rectangular rooms of similar size apart from Room B5-VI/IX which was double size. The western range of three rooms were narrower east-west than those on the other side and to the north of the central room. Not all rooms were interconnected but subsequent damage to the walls makes it impossible to be certain of exactly where doorways were provided. The clear doorway between Rooms B5-V and B5-VI was about 800mm wide.

During the life of the building its north-western and south-eastern corners were severely impacted by erosion, both being rounded by the sand-laden north wind as was also observed in the stone jambs of the gateway into the *temenos* (see Plate 9.4).

Phase 1 use

Room B5-IV

The primary floor was of fine sand. It was the only deposit noted which can be associated with the use of the building itself. It is contemporary with, and probably the same as, surface (BE3)28/45 in Room B5-XI to the south.

Room B5-V

No internal features were noted. It appears to have had a flat and smooth primary-floor surface.

Room B5-VI/IX

No stratigraphic connection could be made between the deposits in the northern and southern parts of the room; the intervening later wall was not removed. The northern part of the room had a hard smooth surface [(BE4)65] into

TABLE 4.7. BUILDING B5. WALL THICKNESSES, BRICK SIZES EMPLOYED AND BRICK LAYOUTS IN THE WALLS, THE LATTER AS OBSERVED IN PLAN OF THE UPPERMOST COURSES. ALL DIMENSIONS ARE IN MILLIMETRES.

Wall between	Context no.	Wall thickness	Brick sizes	Period	Bonding type
North wall	(BE3)2	750-800	340 x 160 x 85 320 x 165 x 70		C, G, N
South wall	(BE3)7 (BD4)20	820	320 x 140 x 80		C, G
East wall	(BE4)3 (BE4)5	680	340 x 150 x 90		C, G, H
West wall	(BE3)35 (BE3)156	400+?	320 x 160 x 80		?
Room IV/V	(BE3)3	570	330 x 165 x 70		H
Room IV/XI	(BE3)42	600			?
Room V/VI	(BE4)2a	580	320 x 160 x 80	1.1	?
Room V/VI	(BE4)2b	700	340 x 150 x 110	2.1	H
Room V/X	(BE3)51	560			H
Room VI/IX	(BE4)4	718-765	240 x 200 x 100	2.1	C, G
Room IX/XIII	(BE4)31	560			H, ?,
Room X/XI	(BE3)5	760	340 x 170 x 70		C, G
Room XI/XIV	(BE3)43	710	320 x 160 x 90		C
Room IX/X	(BE4)2a/b	?			H?
Room XII/XIII	(BE4)83	760			?
Room XII/XV	(BE4)83	559			?
Room VIII-XIV/XII	(BE3)157	550		1.1	N
Room VIII-XIV/XII	(BD3)62	773	340 x 170 x 70	2.1	G, H
Room VIII/XXIII	(BD3)64	?	?	1.1	?
Room VIII/XXIII	(BE3)6	693		2.1	C?, G,
Room XIII/XV	(BE4)8	562	340 x 170 x 120		H, O



Plate 4.38. Building B5, Room VI/IX. Surface (BE4)65 and the cylindrical, ceramic oven, looking east – scale bar 1m.

which, by the north wall, was set a large, slightly oval, ceramic oven of the cylindrical type (Plate 4.38). Against the east, and west walls pottery vessels were also set into the surface (Figure 4.11, D – max. D:280mm; E – max. D:340mm). By the north wall at C was a pot lid (D:170mm). In the northern part of the room was a circular timber post (A – D:120mm) (Plate 4.39).

To the south of the later wall excavations were not continued below the Period 2 floor.



Plate 4.39. Building B5, Room VI/IX. Surface (BE4)65, timber post (A) and pottery vessel (E), looking west north west – scale bar 500mm.

Room B5-XI

The earliest surface in this room [(BE3)28/45] was hard-packed fine sand. Set within a pit cut into it was a ceramic cylindrical oven 700mm in external diameter and 530mm in height.

Room B5-X/XII

In the centre of the southern part of the room, slightly angled from the room's long axis, was a large rectangular

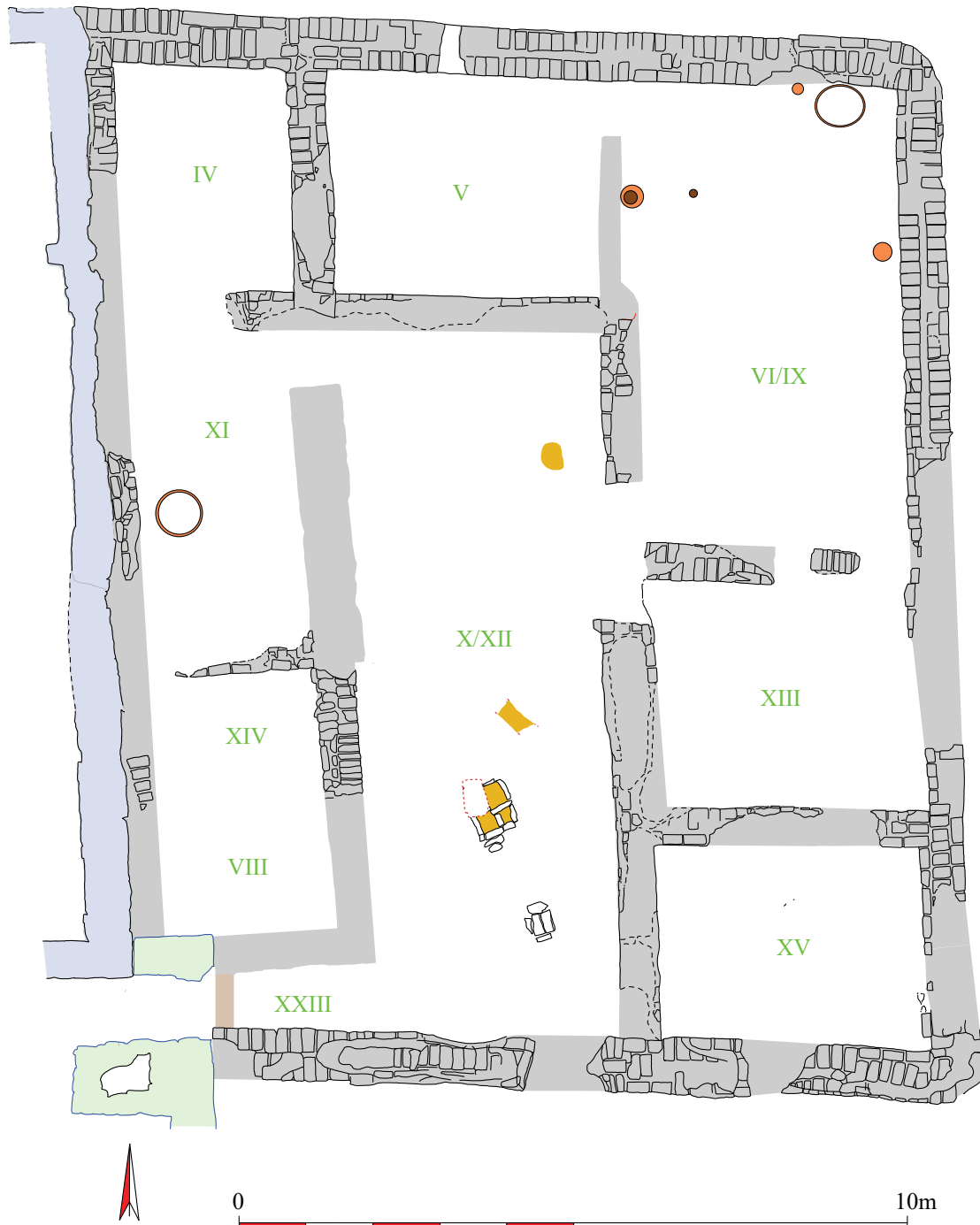


Figure 4.10. Building B5, period 1 plan (scale 1:100).

hearth [(BD3)38] formed by a row of mud bricks set on edge and divided by further bricks into four compartments measuring externally 796 x 667mm. The north-western compartment has been largely destroyed by a later hearth, the others measure internally 342 x 280mm, 293 x 244mm and 205 x 137mm (Plate 4.40). Each was filled with charcoal and ash. A short distance to the south south east was a mud-brick structure [(BD3)57] consisting of two 'headers' and one 'stretcher' delimited on one side and at one end by a rowlock (Figures 4.12 & 4.13). The rowlocks protrude above the surface of the other bricks as though forming an edge. The bricks measure 320 x 150 x 100mm in size; the overall dimensions of the feature as preserved are 570 x

400mm. Both features were cut into the first surface in the room which relates to the construction phase. Two hearths [(BE3)114 & 121] represented by areas of burning sat on this surface in the northern part of the room. It was overlain by a sand deposit [(BD3)58] 80-150mm thick which abuts the mud-brick features and may represent the primary floor in the room. A little to the north of the hearth was a patch of ash [(BE3)133], perhaps another hearth. This was truncated to north and south by much later pits.

Room B5-VIII/XIV

No features or deposits were recognised.

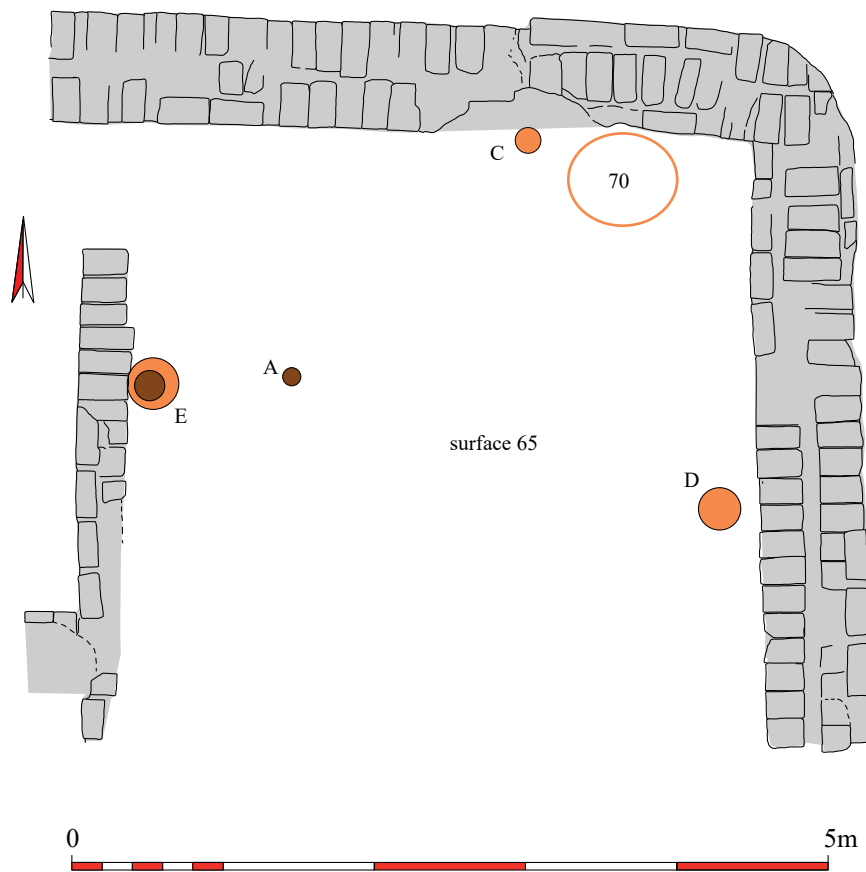


Figure 4.11. Building B5, Room VI/IX. Features on and set into surface (BE4)65 (scale 1:50).

Room B5-XV

The earliest surface revealed in the room was of clay/silt. It rested on an unexcavated deposit of sand.

Period 2

Phase 1 construction

Cutting the latest Period I floor in Room B5-X/XII [(BD3)58] along its western edge was a construction trench for the walls dividing the room from Rooms B5-XI and B5-VIII/XIV. The construction trench for the northern part of this wall was also continued through the Period 1 wall on the line of the wall between Rooms B5-XI and B5-VIII/XIV. The new walls were a little thicker than those of Period 1 but appear to be set on top of them. In the northern part of the wall, between Rooms B5-XII and B5-VIII/XIV, the foundation level of



Plate 4.40. Building B5, Room X/XII. The large rectangular four-compartment hearth (BD3)38 with the later single-compartment hearth (BD3)15 overlying its north-western part, looking south – scale bar 500mm.

Room B5-XIII

Excavation was not carried below the Period 2 floor in this room.

Room B5-XXIII

A very small section of a sandy surface survived in the doorway leading to Building B14 on which rested a wooden threshold [(BD3)7]. The stratigraphy over the whole of the rest of the room had been removed by a robber pit.

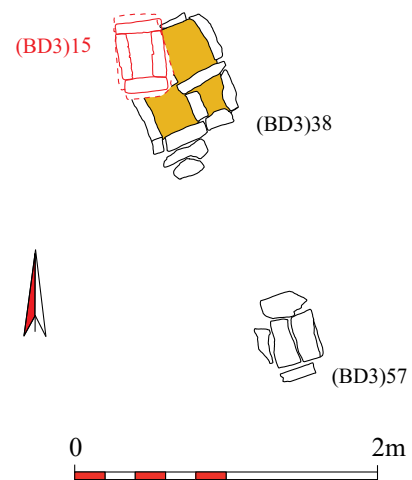


Figure 4.12. Building B5, Room X/XII. Period 1.2 hearth and brick pavement, the former overlain by hearth (BD3)15 (scale 1:50).

the Phase 1 wall was probably used as a threshold through a doorway approximately 1.8m in width (Plate 4.36). The north side of the doorway was flush with the south face of wall (BE3)43. On its south side the wall was inturned into Room B5-VIII/XIV for a distance of 420mm.

The north-eastern room, Room B5-VI/IX, was divided by a wall [(BE4)4] (Figure 4.14). At its west end was a doorway 1.02-0.97m wide across which the two lowest courses of the wall were continued (Plate 4.41). Resting on the top of this was a timber threshold, the impressions of two timbers remain in the mud-bonding layer as do the sockets for the total of four timbers forming the threshold cut into the walls on either side. At the same time the upper

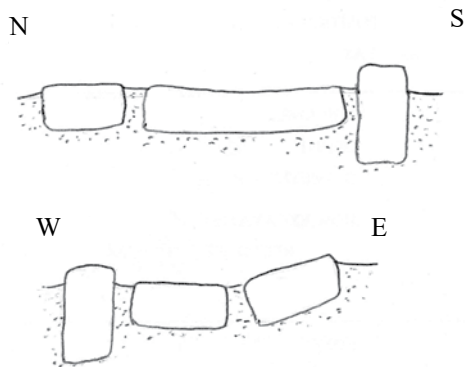


Figure 4.13. Building B5, Room X/XII. Sketch sections, north-south and east-west, through feature (BD3)57.

part of the west wall [(BE4)2b] was rebuilt. The new wall was flush with the western face of the earlier wall, but as it was 120mm wider it oversailed it on its eastern side, in so doing covering the top of the pot, similar to a type 2792x but without handles or grooves below the rim, set in the Period 1 surface (BF4)65 (Plate 4.42). At its north end was a doorway 832mm wide with a timber threshold, the timbers, roughly 'D'-shaped in section, set into the north wall of the building. This threshold consisted of two steps 200mm wide, with risers of 120mm and 110mm, leading up from west to east (Plate 4.43). A timber post a little over 200mm in diameter was placed a little to the west of the room's centre. It presumably helped to support the timber roof.

In the southern part of Room B5-VI/IX a deposit of rub-

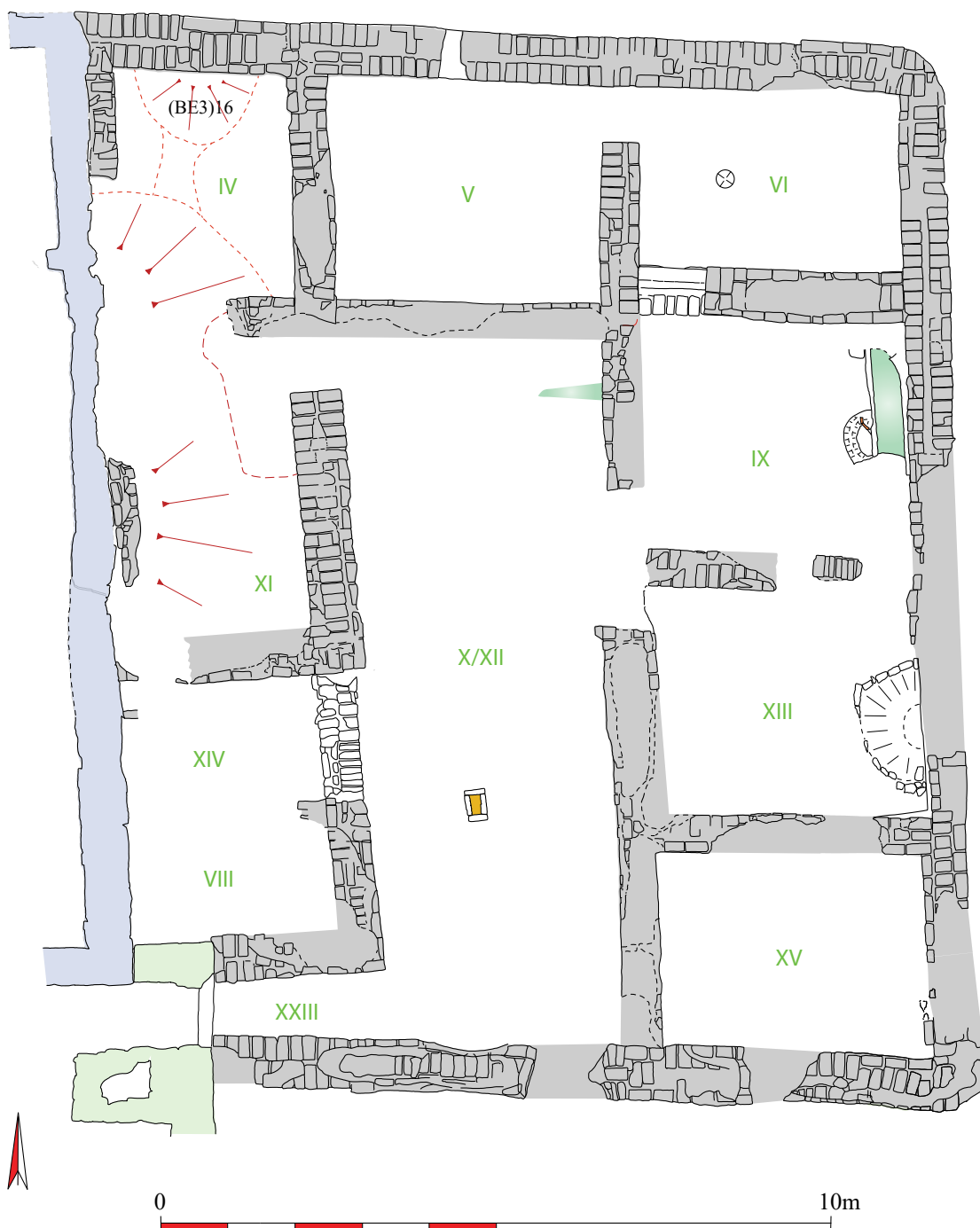


Figure 4.14. Building B5, period 2 plan (scale 1:100).



Plate 4.41. Building B5, Room VI-IX. Doorway through wall (BE4)4 with the sockets for the timber threshold visible in the north-south wall, looking south west – scale bar 500mm.



Plate 4.42. Building B5, Room VI. The Period 2.1 wall over-sailing the east face of the earlier wall and sealing the Period 1.2 pottery vessel, looking north west – scale bar 500mm.



Plate 4.43. Building B5, Rooms V- VI. Sockets for the Period 2.1 stepped threshold timbers in the north wall of the building, looking north west – scale bar 500mm.

ble approximately 500mm in thickness was noted against the east wall and extending at least 1m to the west. The Period 2 floor was sat directly upon it suggesting that the room had been infilled to form a level base for the new floor. The availability of the mud-brick rubble perhaps indicates that the building was in some state of disrepair before the beginning of Period 2 as evidence elsewhere suggests.

Amongst the rubble from the collapse of the building were fragments of roofing material. It is assumed that this was a single-storey structure although the roof, which was presumably flat, may have been accessed by a wooden ladder: no staircase existed. The roof was presumably supported by timber beams; one in the rubble was 260mm in diameter. Pieces of mud among the rubble bore impressions of palm fronds and a coarse weave matting, both presumably elements of the roof construction.

Phase 2 use

Room B5-IV

In this phase Rooms B5-IV and B5-XI (see below) appear to have been used to dump rubbish [(BE3)10] from Building B12 to the west, but also rubble and refuse were dumped from the north [(BE3)16], that is from the street between the building and Building B1 (Plates 4.44 & 4.45).



Plate 4.44. Building B5, Rooms IV and XI. Rubbish deposits, looking north west – scale bar 2m.



Plate 4.43. Building B5, Room IV. Rubbish deposit (BE3)16 dumped over the north wall of the building, looking north west – scale bar 1m.

Room B5-V

No features and deposits relating to this phase survived the intense robbing in the room.

Room B5-VI

A hard and smooth surface extended across the room.

Room B5-IX

Contemporary with smooth floor across the room were two features (Figure 4.15, Plate 4.46). A long rectangular bin

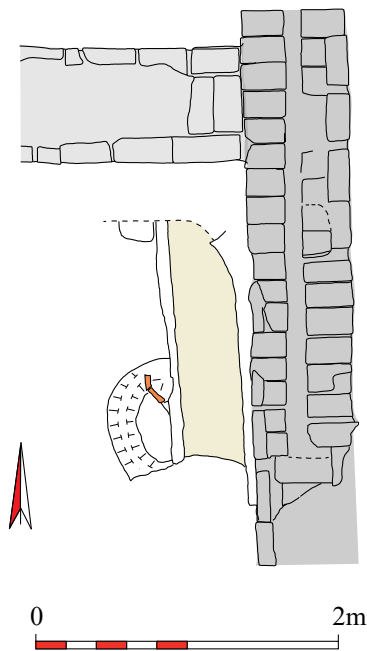


Figure 4.15. Building B5, Room IX. Rectangular bin (BE4)55 and 'D'-shaped pit (BE4)55 (scale 1:50).



Plate 4.46. Building B5, Room IX. Rectangular bin (BE4)55 and 'D'-shaped pit (BE4)55, looking north east – scale bar 500mm.

[(BE4)55] was constructed against the east wall which had been truncated by a large pit to the north, its northern end could not be revealed as deposits were left in place during excavation to avoid the collapse of the wall between Rooms B5-VI and B5-IX. However, at this point its eastern side was curving away from the east wall of the room, so it probably did not abut the north wall of the room. Its west side was delimited by a single row of stretchers. It was floored with a thin layer of smooth mud which lapped onto its west wall and also extended up the face of the room's

east wall for approximately 500mm. There is a hint on the east wall that the south end of the feature may have been also a single course of mud brick which appears to have also been approximately 500mm in height in which case the structure was a prominent feature standing well above the contemporary floor surface. The internal dimensions of the structure were 1.833+ x 0.410m. Abutting its west side was a 'D'-shaped pit [(BE4)55] delimited by mud bricks covered in a thick layer of plaster forming a rounded edge to the pit. The base of the pit measured c. 483 x 232mm. It was filled with grey sand amongst which two fish vertebrae were noted. Elsewhere on the floor was a small patch of ash 100mm in diameter.

Floor (BE4)29, of hard grey silt, sealed all these features and lapped up against the walls of the room.

Room B5-XI

Directly overlying the Period 1 floor and its associated oven in the south-west corner of the room was mud-brick rubble [(BE3)44], probably from the collapse or demolition of the west wall of the building. It was overlain by another deposit [(BE3)18] formed of two distinct layers of small pieces of mud brick mixed with sand, charcoal, pottery sherds, bone and stones which also in places sat directly on the Period 1 floor. Among the finds from this deposit was the lower part of a steatophagus figurine (cat. no. F-1083). This material was presumably dumped over the partly denuded west wall of Building B5, across what must also have been the partly denuded east wall of Building B12, presumably from continued occupation of at least some rooms of the latter building. The rest of Building B5 also appears to have continued for domestic activities at that time.

Room B5-X/XII

Following the laying of a surface [(BD3)58] which covered the four-compartment hearth of period 1.2, a new hearth was constructed with four mud bricks set on edge forming a rectangular structure [(BD3)15] (Plate 4.40) measuring 473 x 283-303mm externally. It directly overlay the earlier hearth.

In the northern part of the room, against the east wall, are remains of what may have been a storage bin [(BE3)61], its sides and base coated in a mud render which extends some distance up the wall face. Only a small part of the bin remains as it has been cut away on three sides by robber pits. Which surface it was associated with is uncertain.

Room B5-VIII/XIV

It does not appear that this room went out of use and was filled with rubble and domestic refuse as occurred in Rooms B5-IV and B5-XI to the north. However no deposits and features associated with its use were noted. At this period it was connected by the wide doorway with Room B5-X/XII to the east.

Room B5-XIII

The roughly horizontal sand surface was cut by, and probably associated with, the use of two features. Up against the east wall of the room was a 'D'-shaped pit [(BD4)43] with regular, slightly concave, angled sides carefully revetted in mud bricks on the curved side and with a vertical face

formed by the east wall on the straight side; the bottom was flat (Plate 4.47). Between the mud-brick revetting and the edge of the cut was a layer 30mm thick of brown sand. This



Plate 4.47. Building B5, Room XIII. 'D'-shaped pit (BD4)43 lined with mud bricks and abutting the east wall of the building, looking north east – scale bar 500mm.

is possibly the result of activity in the pit which stained its sides before the revetment was added. At the level of the contemporary surface it measured approximately 1.812 x 0.967m, at the base 659 x 279mm and was c. 560mm deep. The other feature was a circular pit [(BE4)40] containing a ceramic cooking pot with a thickened base associated with charcoal and ash.

Room XV

No activities which could be associated with contemporary features and deposits elsewhere in the building were noted.

Room XXIII

Whatever features and deposits there may have been relating to this phase have been totally removed by a robber pit.

Period 3 collapse

As already noted in the discussion of the Period 2 Room B5-XI the west wall of the building appears to have collapsed while the rest of the building remained in use. Elsewhere all the walls survived up to the ground surface at the time of excavation and their flat tops indicate that the immediately superimposed brick courses had been removed by aeolian erosion. In Room B5-IV the rubbish tipped in from the north was covered by wind-blown sand on which lay mud-brick rubble presumably from the collapse of the building after it had gone out of use. In Room B5-V one deposit of wind-blown sand partly sealed by mud-brick rubble contained much pottery, bone and stone fragments. It is unlikely that such material could be transported by the wind. More likely they come from occupation deposits and perhaps from the decayed mud bricks of the walls, the finer material being removed by the wind, the heavier objects being left behind.

The streets

Parts of two streets lay within the excavation area. That running north-south between Buildings B1 and B2, 3.888-4.088m wide, extends up to Building B5 where it turns at 90° to the east with a width of 5.539-5.29m. At that point

is it met by an alleyway between Buildings B1 and Buildings B12 and B5 1.964m in width along most of its length.

In the alleyway excavation was terminated at a layer of wind-blown sand with an admixture of small fragments of mud brick [(BE2)31]. This surface abutted the wall of Building B1 to the north and of Building B12 to the south. Resting on its surface were four discrete piles of rubbish, three of which were up against the walls (Plate 4.48). It is possible that they were formed from rubbish being tipped



Plate 4.48. The street between Buildings B1 and B12. Rubbish deposit against the south wall of Building B1, looking north north west – scale bars 2m and 500mm.

out of the windows of the buildings. The surface was sealed by 300mm of silty sand forming another surface under the topsoil sand.

In the street the earliest surface was hard and gritty with some rubble within it. Immediately outside the doorway into Building B1, Room IV it is covered by, or has been worn and compacted into, a hard smooth surface [(BF3)60] which extends to the west as surface (BE2)31. Later deposits do not extend right across the street but generally fade away as one moves south and east from the east wall of Building B1. The sequence above (BF3)60 is as follows:

- (BF3)57 – gritty sand, contains much charcoal, mud-brick fragments, pottery and bone bonded by a water-deposited silty crust
- (BF3)58 – ash lenses on surface (BF3)57



Plate 4.49. The street between Buildings B1 and B2. Successive crusty surfaces designated (BF3)56 against the east wall of Building B1, looking north west. Note the severe damage caused by erosion of the outer face of the wall – scale bar 500mm.

- (BF3)56 – a succession of crusty surfaces with a total thickness of about 250mm (Plate 4.49) preserved against the east wall of Building B1
- (BF3)51, 52 and 54 – mud-brick rubble against walls
- (BF3)53 – mud-brick rubble in middle of street
- (BF3)55 – a small patch of mud-brick rubble along with bone and pottery adjacent to the south wall of Building B2
- (BF3)50 – wind-blown sand filling the whole street

It appears that many of the deposits in the centre and along the eastern side of the street had been removed by erosion before the wind-blown sand layer (BF3)50 levelled up the area.

Building B1

This building was separated by a street from its neighbour, Building B2 lying to the east, and by an alley on its south side between it and Buildings B5, B12 and B13 (Plate 4.50). In the area of the building the ground surface at the start of excavation sloped down from north to south and also from east to west towards the river bank. This has adversely affected its preservation. While the eastern wall stands to a maximum height of 900mm the walls to the west gradually reduce in height until the pure sand on which the building was constructed lies immediately below the surface. At little further to the west are two walls forming an ‘L’-shape. These may be part of the same building if its walls were terraced down the slope but more likely are part of an adjacent building, designated Building B15, set on a slightly lower terrace.

Period 1

Phase 1 construction

The presence of a building lying beneath the extant structure was only recognised during the writing of this report and, therefore, its identification remains to some extent speculative. In Room B1-IV the inner faces of the south and west

walls were three courses high below the level of the thresholds in the doorways. The mud feature (BF3)39 was founded at the base level of those walls. There is a clear line in the walls at the level of the doorway thresholds and this is the level to which the mud-brick feature survives. At the north end of that feature is a stub of walling bonded into the west wall which again only survives to the level of the threshold. Immediately to the north of this the Period 2 extant wall sits on a layer of clean sand (Plate 4.57). The situation with the east wall is unclear as it was not fully investigated but it was noted that its foundation at its southern end was bonded into that of the south wall of the room. The full extent of the building at this time is uncertain. The south wall certainly extends to the west of Room B1-IV but the wall between later Rooms B1-I and B1-II appears to date from Period 2. Both faces of a Period 1 wall were only uncovered in the south-west corner of Room IV and the south-east corner of Room B1-III. Here in the south doorway the wall though damaged appears to be the same thickness of the later wall of Period 2 building (Plate 4.51).



Plate 4.51. Building B1 – The wall visible by the doorway from the Period 2 buildings Rooms III-IV, looking east – scale bar 500mm.



Plate 4.50. General view across Buildings B15 and B1 looking east – scale bar 2m.

Phase 1 use

Within Room B1-IV all the walls and feature (BF3)39 rest on a relatively sterile sand layer [(BF3)42]. Set against the west wall was a sub-rectangular ‘trough’ with low walls of mud brick abutting the wall face and coated with mud (Figure 4.16, Plate 4.3). It was filled with a grey silty sand containing some mud-brick rubble. It had a total length probably of 3.28m externally and was a maximum width of 415mm. Internally it varied in width from c. 93-230mm. Elsewhere on this surface was a small patch of rubble. The room, thereafter, filled with two interleaved deposits, one of sterile sand, the other containing small fragments of mud brick, charcoal and pottery.

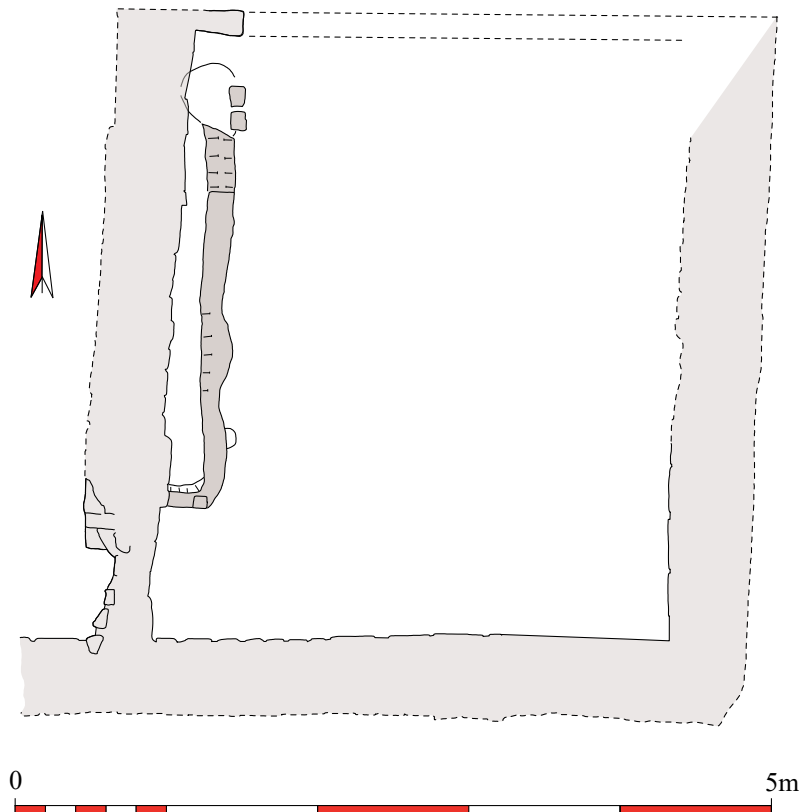


Figure 4.16. Building 1, Period 1 with feature (BF3)39 (scale 1:50).

the west wall of Room B1-III survived, a single row of rowlocks and two of shiners (bond type N). The south wall of that room in its western part had a similar foundation but of saw-tooth headers. The walls on the south, east and west sides of Room B1-IV and in the south-east corner of Room B1-III are set directly on top of, and are flush with, the walls of the Period 1 building (Plates 4.52, 4.53, 4.56 & 4.8).

The building consisted of at least four rooms, with certainly at least one, and probably two or more, external doorways. The evidence for a doorway in the north wall of Room B1-III is suggested by the smooth end to the wall but if this was a doorway there does not appear to have been a jamb. There was a well-preserved doorway in the south-eastern corner of Room B1-II/IV giving access to the alley. It is 688mm wide between the jambs, and 975mm wide within them. In the western jamb at floor level is a socket made of mud. In itself it is probably too soft to have acted as a pivot socket. As no stone pivot socket was found within the mud surround it may have been of wood (Plate 4.54 & 4.55). Adjacent to the doorway is a 'D'-shaped pit [(BF3)44] partly lined with two large fragments of grinding bases (cat. nos ML-96 & ML-97) and containing pieces of

Period 2

Phase 1 – construction

As already noted the western end of the building has been totally removed by erosion. What survives is trapezoidal in plan (Figure 4.17, Plate 4.50). All the walls are well-built of mud brick varying a little in size (L:310-340mm, W:140-160mm, T:70-90mm) and of alternating courses of a single row of headers and stretchers, bond type H, giving walls between 500mm and 550mm in thickness. They are generally well bonded into each other. Only the foundation course of



Plate 4.52. Building 1, Period 1 – surface (BF3)42 and mud-brick feature (BF3)39 abutting the east face of the building's wall on which rests the wall of Period 2, looking north west – scale bar 2m.



Plate 4.53. Building B1 – The south wall of the Period 1 and 2 buildings in Room II/IV, looking south – scale bar 2m.



Plate 4.54. Building B1 – The doorway leading from Room II/IV into the street, looking south east – scale bar 500mm.

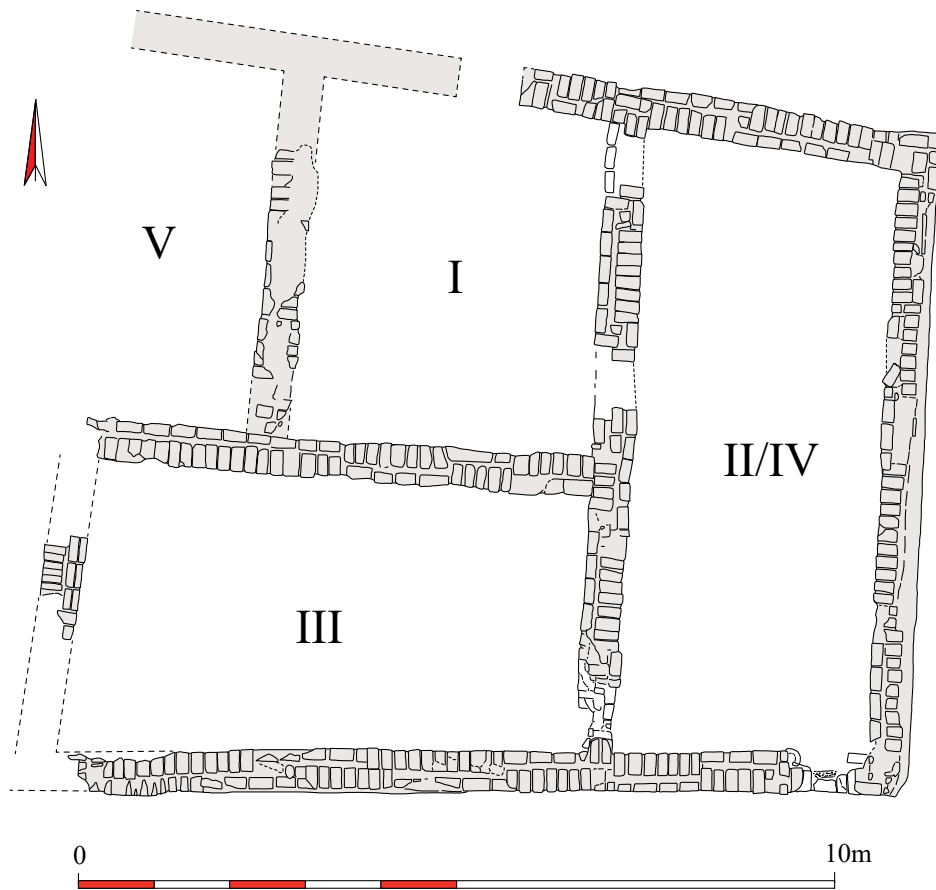


Figure 4.17. Building 1, Period 2, Phase 1 (scale 1:100).



Plate 4.55. Building B1 – The mud 'socket' – scale bar 200mm.

wood, fine sand and fragments of rubble (Plate 4.56).

The west wall of Room B1-II/IV [(BF3)6] is pierced by three doorways, two giving access into Room B1-I, one by its south-west corner into Room B1-III. The two doorways leading into Room B1-I are 650mm wide between the jambs and 988mm (north doorway) and 961mm (south doorway) wide within them. The doorway into Room B1-III was a little wider at 680mm between the jambs and c. 1.08m within them. The doors were all closed from the west. That at the south end of the wall seems to have been much used as the bricks of its jambs are rounded through wear. In the other two doorways this was not the case. The thresholds that have survived were of mud brick. Those in



Plate 4.56. Building B1 – Pit (BF3)44 adjacent to the doorway leading from Room II/IV into the street, looking south east.

This photograph was taken after excavation down to the level of the Period 1 floor – scale bar 500mm.

the doorways communicating from Room B1-IV are laid directly on the uppermost surviving course of the Period 1 building's walls.

Phase 1 – use of the building

It is difficult to assign any activities to this phase apart from the presence of a layer of compact sand 120mm thick beneath the door blocking walls in the east wall of Room B1-I. It would appear that the structural modifications of Phase 2 happened very soon after the construction of the Period 2 building.

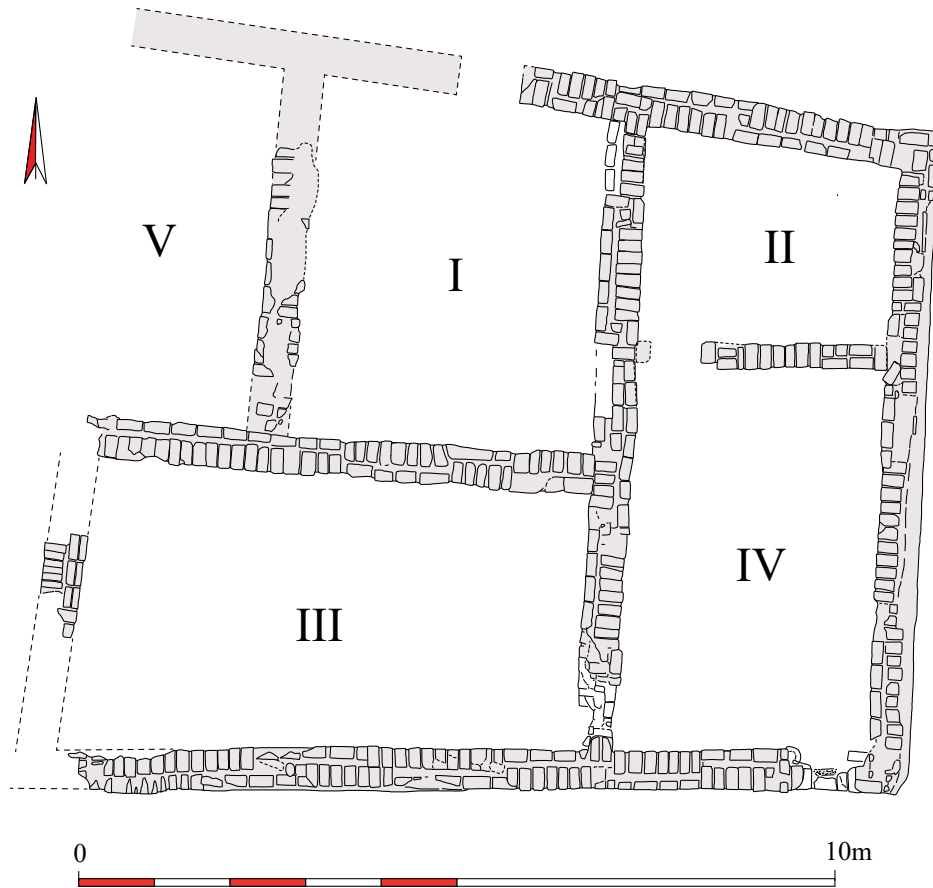


Figure 4.18. Building 1, Period 2, Phase 2 (scale 1:100).

Phase 2 – modifications

This phase was ushered in with the blocking of the eastern doorways from Room B1-I leading into Room B1-II/IV (Figure 4.18) The blocking walls were only 310mm and 300mm thick, the thickness of the jambs, and were set flush with the eastern face of the wall dividing these rooms (Plate 4.57). The east face was well-laid and finished off to the same quality as the earlier wall but on the western side no attempt was made to provide a smooth face (Plate 4.58).



Plate 4.57. Building B1 – The east face of the blocking wall in the doorway between Rooms I and IV, looking west. The photograph was taken after excavation to the level of the Period 1 floor and clearly shows the thick layer of sand underlying the wall and threshold of the Period 2 building – scale bar 500mm.

Clearly the visual appearance of the blockings from Room B1-I was of no concern and it is probable that Room B1-I had by this time gone out of use. Brick sizes employed



Plate 4.58. Building B1 – The west face of the blocking wall between Rooms I and II, looking east – scale bar 500mm.

were 320 x 140 x 75mm and 300 x 140 x 80mm. Probably following on directly from the blocking of these doorways Room B1-II/IV was divided by a cross wall with a doorway at its western end. The western jamb of this doorway abuts the blocking of the southern doorway. The new wall sat directly on the occupation build-up within the room.

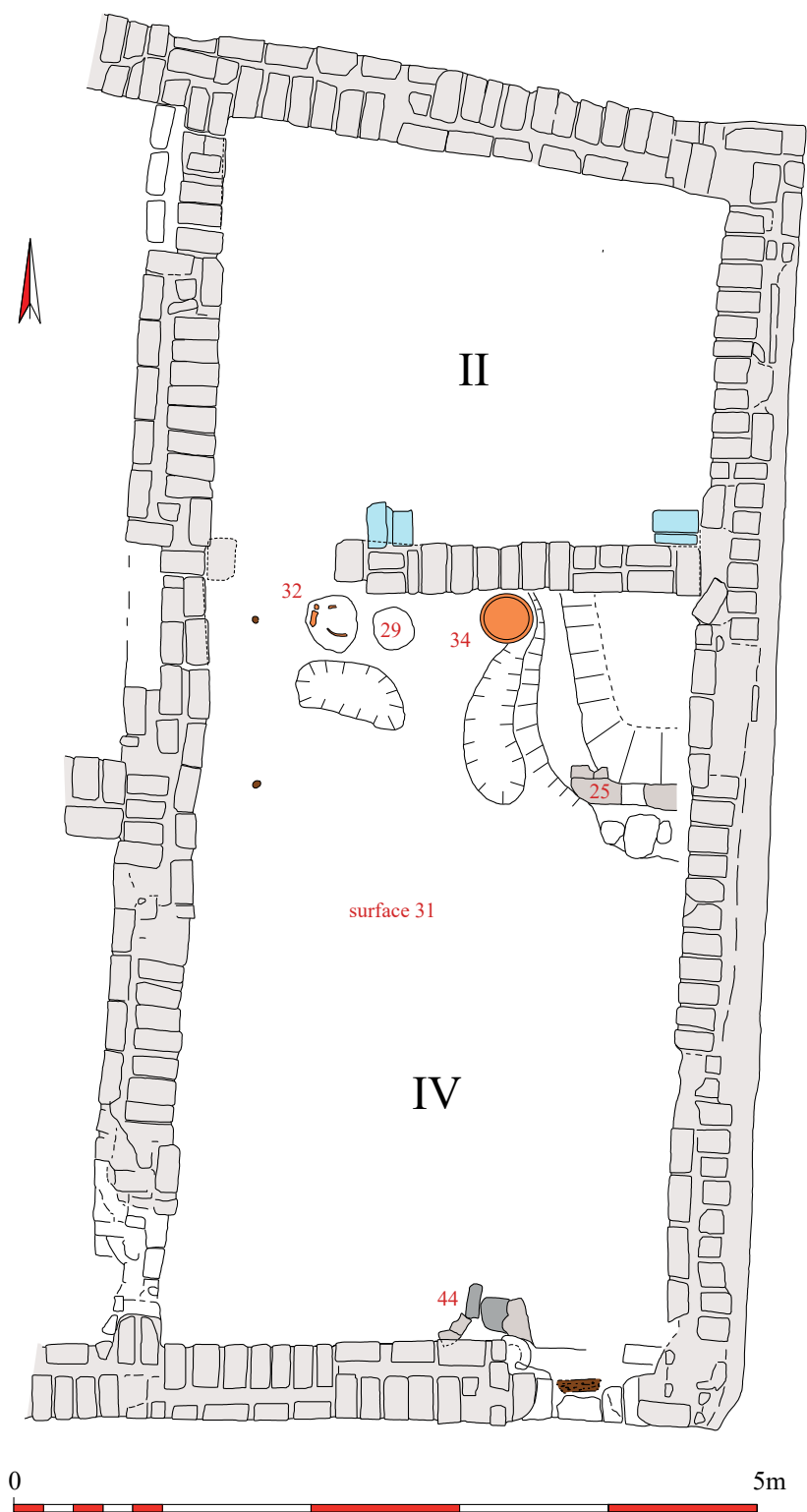


Figure 4.19. Building 1, Period 2, Phase 2. Features dug into surface 31 and the Phase 3 buttresses in Room II (scale 1:50). All context numbers are in grid square (BF3).

Phase 2 – use of the modified building

Features associated with this phase were only recognised in Rooms B1-II and B1-IV (Figure 4.19). In Room B1-IV surface (BF3)31 was cut by a trapezoidal pit, (BF3)25, 1.28 x 0.92-0.53m in size, bounded on the surface by a edging of a single row of mud bricks (Plate 4.59). Immediately to

the west, close to the base of the north wall of the room, were three further features. The first [(BF3)34] was a circular pit containing a complete ceramic wide-mouthed jar, type 2353x. Next was a roughly circular patch of pale grey ash on the surface [(BF3)29] and then a roughly circular pit [(BF3)32] which contained the broken remains of another pot, type 2299x along with a small rim fragment type 2300x. The pit and pot fills were charcoal and sand.³ By these three features there was much evidence for burning with soot on the first six courses of the wall.

Over this surface there was another deposit containing much ash, pottery and bone sealed by surface (BF3)23 which lapped up against the sides of the pottery vessels noted above. It in turn is overlain by the ash dump (BF3)20 which also covers the remains of the pot in pit (BF3)32. Over this lay multiple hard and smooth crust surfaces, the result of laying new thin deposits of sand and then pouring water on them. This is the current method of renewing sand floor surfaces in the region today. These surfaces slope a little from south to north. Further similar surfaces [(BF3)11], extending over the northern part of the room, seal the pottery vessel and lap up against the surrounding walls. Towards the southern end of the room a mud surface [(BF3)16] sloped up to the wooden threshold in the doorway leading into the street (Plate 4.60). It was sealed across the southern part of the room by a fill deposit of compact rubble – small mud-brick fragments in a grey silt matrix. This was sealed by surfaces [(BF3)10], probably contemporary with surfaces (BF3)17 and (BF3)11, and of similar type. No such surfaces survive in the room's centre. In the south doorway resting on the surface was a single mud brick (Plates 4.54 & 4.60). These surfaces represent the latest floors in the room and were covered by mud-brick rubble in a matrix of fine grey dust with charcoal and pottery sherds.

No occupation deposits were noted in Room B1-II but there was a smooth sand surface extending right across the room on which the south wall was built. While the east and west walls are founded at a lower level the north wall also appears to be set on this level although this makes little sense.

It is likely that the north wall was actually set at a higher level that the other contemporary walls, the building being terraced up the slope and that the different layers of sand

³ According to the archaeologist supervising the work there were also clay sealings, some with impressions, at the level of the surface. No such finds were registered.



Plate 4.59. Building B1, Period 2, Phase 2 – The wall dividing the eastern room of the Phase 1 building and features dug into surface (BF3)31 which abuts that wall in Room IV, looking north – scale bar 500mm.



Plate 4.60. Building B1, Period 2, Phase 2 – Surface (BF3)16 in the doorway leading from Room IV into the street, looking south – scale bar 500mm.

failed to be recognised during excavation. After a build-up of 300mm of sand, containing flecks of charcoal and pottery sherds, two structural features were added against the north face of the south wall. Both were small brick buttresses, one in the angle of the wall adjacent to the east wall of the building (Plate 4.61), the other close to the doorway.

Occupation in the other rooms

Room B1-I

Apart from two possible surfaces of sand there was a number of piles of mud-brick rubble adjacent to some of the walls.

Room B1-III

Extending across the line of the west wall of the room and at a level below the adjacent walls is a deposit with occupa-



Plate 4.61. Building B1, Period 2, Phase 3 – The buttress in the south-east corner of Room II abutting the Phase 1 and 2 walls, looking south east – scale bar 1.5m.

tion material. It may be the lower fill of a shallow pot. No clear floor surfaces were found in this room.

Room B1-V

Two possible surfaces of sand were noted, the uppermost partly covered by mud-brick rubble.

Robbing of all the buildings excavated in Area B

The buildings had suffered extensively from robbing. There were two styles of robbing. In one, pits were dug into the wall tops which were, in shape, very reminiscent of graves being long and rectangular with rounded ends (Plates 4.62 & 4.63).⁴ In no case was any skeletal material recovered. The



Plate 4.62. Robber pit dug into a wall (BE3)3 between Rooms IV and V in Building B5, looking north – scale bar 500mm.

robbing of the east wall of Building B14 was more systematic with a trench following the line of the wall removing it in its entirety over a distance of 2.8m right down to the base of its foundations (Plate 4.64). At least some were dug using a tool, presumably a mattock/*toria*, one with a blade 75mm in width and with a rounded cutting edge, others with blades 100mm and 120mm wide (Plate 4.65). Clearly the intention was to recover the material from which the mud bricks were made and equally clearly the bricks themselves were not being extracted for reuse. This material may have been used as fertilizer or to make new bricks. The latter suggestion is perhaps unlikely as the Nile silt from which the bricks are made is ubiquitous across the Nile Valley floor and one would expect that it could be sourced much more locally to the site of the new constructions. The extractors of the mud were often careful to retain a narrow piece of walling on the sides of their pits to retain its edges and stop the ingress of sand from adjacent rooms.

⁴ Cf. Medieval graves dug into the walls of a Kushite building at Abu Erteila (Lebedev and Reshetova 2017) and Muweis (Ardagna and Mailhot 2020, 200ff.).



Plate 4.63. Robber pits dug into a wall in Building B5, looking north – scale bar 2m.



Plate 4.64. Robber pit removing part of the east wall of Building B14 along with its foundations, looking north – scale bar 2m.

The other robbing style resulted in the digging of large circular or oval pits within the rooms which often also cut into, and in some cases removed, substantial sections of walling and door thresholds (Figure 4.20, Plates 4.66 & 4.67).

Some of these pits were of considerable depth (pit (BD2)64 is 1.4m deep) extending down into the sterile sand layers beneath the building. In some rooms there were multiple episodes of pitting, one cutting into another. Many contained artefacts in their fills, presumably from



Plate 4.65. Building B14, Room XXV. Toolmarks in the side of a robber pit – scale bar 500mm.



Plate 4.66. Building B12, Room XX. General view across the room looking towards the south-east corner showing the numerous robber pits, here seen at the level of the rubbish deposits – scale bar 500mm.



Plate 4.67. Building B12, Room XVIII. Robber pits, looking north west – scale bar 2m.

the deposits they cut through. In Building B5 pit (BE3)25 was dug in the doorway between Rooms B5-XI and B5-X/XII and cut through the southern face of part of the walls between those rooms and Rooms B5-IV and B5-V to the north down into pre-building deposits. In the bottom of it was a substantial heap of pottery sherds with a few pieces of mud brick and stone (Plate 4.68). The nature of this



Plate 4.68. Building B5. Robber pit in the doorway between Rooms VII and X with its primary fill of pottery, stone and mud-brick fragments, looking west north west – scale bar 500mm.

deposit indicates that this pit was dug as, or certainly used as, a rubbish pit although it has exactly the same character as those pits assumed to be the result of robbing activities. It indicates that there was some occupation in the area long after Building B5 had gone out of use and that this occupation was by people who would take the time and trouble to dispose of their rubbish in a deeply-dug pit.

In Building B14, Room XXV was a very large shallow pit (BD2)25], with maximum dimensions of 10 x 6.3m, which may actually have been a number of intercutting pits (Plate 4.69). Subsequently, probably before any fill had accumulated within the large pit smaller pits were dug down through

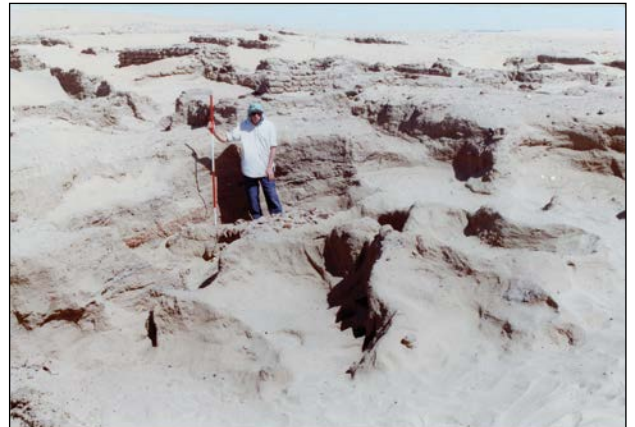


Plate 4.69. Building B14, Room XXV. General view of the robber pits, looking north east – scale bar 2m.

its base cutting through the red- and mud-brick rubble layers (BD2)94/96. Some of this rubble was redeposited on the bottom of the large pit (BD2)25 ((BD2)28, (BD2)49 and (BD2)50 – which also contains a large quantity of pottery sherds), being subsequently cut by later pits into which the rubble had partly subsided (Plate 4.70).

All the pits in B14-XXV were filled with aeolian sand intermixed with other materials presumably collapsed from the pit sides. They were sealed by aeolian sand deposits containing pottery, quern fragments and pebbles, material either eroded from the walls of the building or representing occupation at higher levels which have been totally eroded away.

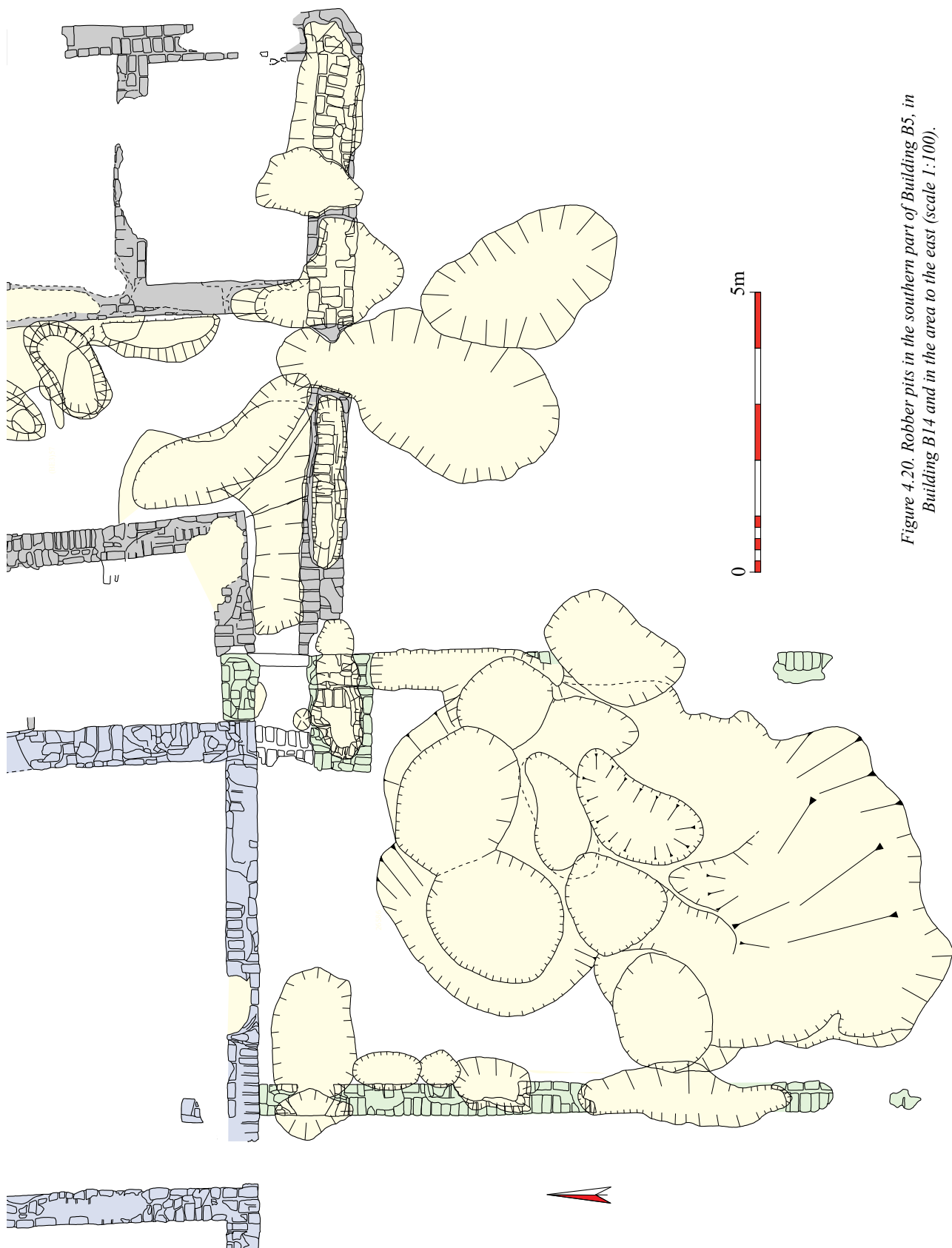


Figure 4.20. Robber pits in the southern part of Building B5, in Building B14 and in the area to the east (scale 1:100).



Plate 4.70. Building B14, Room XXV. Burnt-brick rubble [(BD2)49] redeposited by the robbers from layers (BD2)94/96 – scale bar 2m.

5. Excavations in Area C

Derek A. Welsby

Introduction

The excavations in Area C were located on the summit and extending onto the eastern slope of the town mound close to its highest point (Plate 5.1). Walls were visible



Plate 5.1. Location of the excavations in Area C as seen from the south east.

on the surface and a number of them had been planned in earlier seasons. The excavations covered an area of approximately 380m². At no point was the subsoil approached – its is estimated that it may be located at a depth of over 11m in this area of the site unless the town is set on a natural mound. Only buildings C20, C22, C23, C24 and C25 were totally or almost totally excavated (Plate 5.2). In Buildings C27 and C31 the primary floors were not reached and excavation ceased at an arbitrary level. With buildings C29, C31 and C32 walls extended outside the excavation area with a number of these planned on the surface in a subsequent season.

The excavation area has suffered much in the past from robbing activities and from erosion which have combined to make the interpretation of some of the observed structures and deposits difficult. To the north west of the street there is a clear and readily understandable sequence of buildings. On the other side of the street however, the sequence is far from clear and many walls cannot be related to any others in the vicinity. There are also problems relating whole buildings to each other, in particular Building C24 with regard to what may be the earlier building C20 and the later building C23. Figure



Plate 5.2. General view over the excavations looking south east.

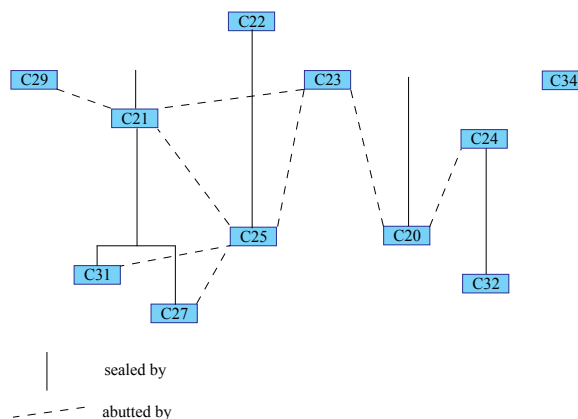


Figure 5.1. Chronological sequence of the buildings excavated in Area C.

5.1 attempts to order the buildings chronologically and also to indicate which buildings co-existed.

Below the buildings (Figure 5.2) are described in chronological sequence and then Buildings C24 and C26 are considered separately. Finally Building C22 is described. It is probably later than all the other buildings observed during excavation in this area of the site.

Building C27

Building C27 was, as observed during excavation, a two-roomed structure (Figure 5.3) and may have been the earliest located in the excavation area. How it relates chronologically to Building C32 could not be established.

Phase 1 construction

All the external walls were substantial and well-built, of mud bricks 330-360 x 170 x 77mm in size, laid as one row of headers and one of stretchers to the course (bond type H). The north wall was 470mm thick, the east and west walls, having a wide mud-mortar core, were 570mm thick. Only the northern side of its south wall was excavated, the south face of the wall being masked by the later south wall of Building C21. At no point was the base of the building's walls reached during excavation but the inner face of the south wall was revealed to a height of 11 courses, 1.4m. The building was entered by a doorway at the east end of the south wall 980mm wide. Room C27-B was separated from the room to the north by a wall of a single row of headers (bond type L), 340 x 180 x 76mm in size, of which five courses were revealed. The wall was only visible in the eastern part of the building, further to the west the section of wall which may have contained a doorway was not excavated as it lay under a wall of Building C21.

Phase 2 – use of the building

Room C27-A had a sequence of three floors of compacted silt and ash. In its north-west corner the adjacent walls had been fire-reddened – presumably there had been a hearth



Figure 5.2. Buildings excavated in Area C (scale 1:600).

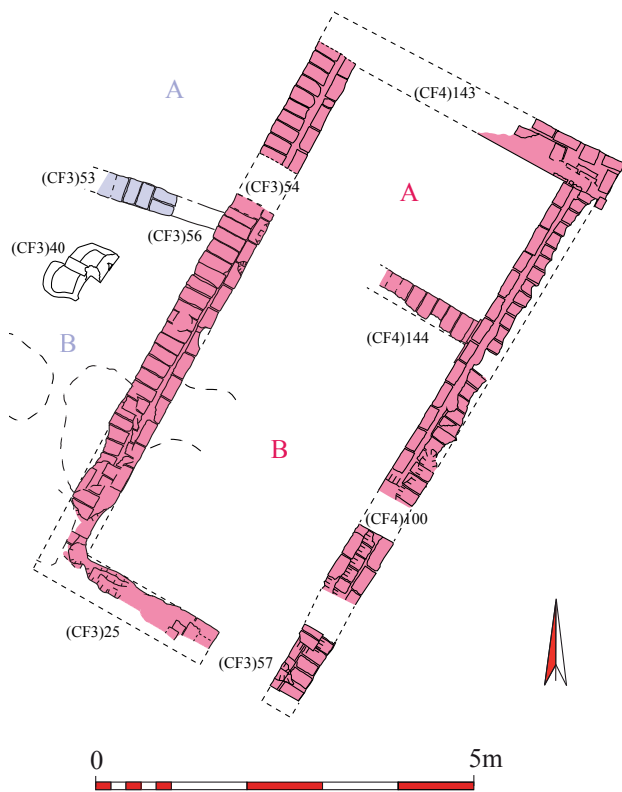


Figure 5.3. Buildings C27 and C31 (scale 1:100).

here. Room C27-B was excavated to the bottom of the much later robber pit and no surface related to its use was noted.

Building C31

Only a small part of this building was revealed by excavation so little can be said of its plan. It consisted of at least two rooms, the eastern wall of which was the west wall of Building C27. That it was a separate building from C27 is suggested by the fact that the east wall of C27 is unbroken along its length; there is no doorway communicating between the two buildings. The two rooms are separated by an east-west wall, a single row of headers (bond type L) 330 x 160 x 73mm in size, with a doorway at its eastern end 590mm in width, the east jamb being formed by the Building C27 wall. The threshold in this doorway is a little above the level of the adjacent floor surface (CF3)42 in Room C31-B but flush with that [(CF3)55] in Room C31-A.

Use of the building

The floor in Room C31-A [(CF3)55/162] is of compact silt with an admixture of ash with some charcoal on its surface. There may have been a hearth close to the east wall of the room mid-way along.

The floor in Room C31-B is of the same character as that in Room C31-A. Set on it was a 'figure-of-eight' shaped mud-storage bin [(CF3)40] (Plate 5.3) with internal dimensions of 190 x 220mm and 260 x 290mm. It was filled with silty sand and mud-brick rubble but no finds.

Resting on the floor surface in Room C31-A was a deposit of silt, sand and ash forming a rough surface amongst which were large sherds from a ceramic storage vessel. On the floor surface (CF3)42 in Room C31-B was a 180mm-thick layer of mud-brick rubble [(CF3)41]



Plate 5.3. Building C31, Room B. Surface (CF3)42 with storage bin (CF3)40 looking north – scale bar 2m.

sealed by the floor of Building C21. As it sits directly onto the floor this suggests that the transition from Buildings C31 to C21 was rapid; it may be demolition debris or the make-up for the floor of the new building. A rapid transition is also suggested by the continued use of part of the mud-storage bin (CF3)40 by the occupiers of the next building.

Building C32

Protruding from the north-west face of the south-east wall (CE4)60 of Building C24 along the entire length of Room C24-B was the uppermost course of a wall which may have been a single row of headers (bond type L) – the other face of the wall was masked by that of Building C24 (Figure 5.9). It was constructed of bricks 200+ x 170 x 70mm in size and was abutted by a deposit of sand containing some pottery sherds and flecks of charcoal. This deposit [(CE4)112] was not excavated but it was observed extending under the south-east wall of Building C20 and predated the south-east wall of Building C24.¹

Building C20

This building (Figure 5.4, Plate 5.4) was terraced down the slope. The south wall is set on a surface at a height of 50.19m osd. The base of the wall is thus approximately 1m lower than the base of the west wall of the same building.



Plate 5.4. Building C20, general view looking north – scale bar 2m.

¹ The same material was designated (CE4)97 in the area of Room C24-A and (CE4)98 beneath Building C20.

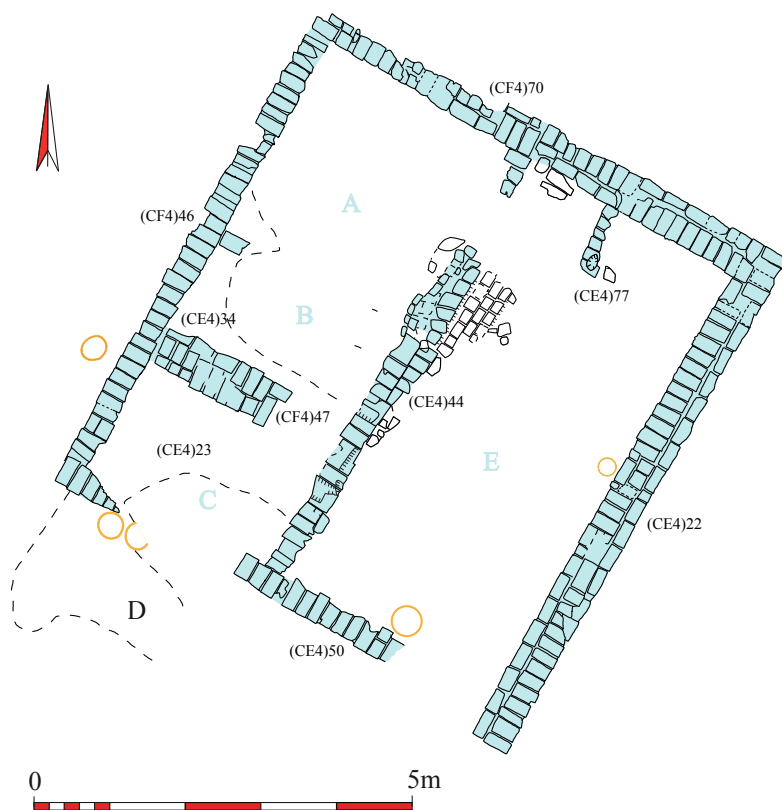


Figure 5.4. Building C20 including 'Room' D – see Building C26 (scale 1:100).

Much of its plan was recovered but the interpretation of the observed remains is problematic. It is possible that the whole building was excavated but, if so, the north and east walls are much more substantial than the south and west walls. These latter are very similar to the internal wall (CE4)44 suggesting that they may also be internal walls. This is possible to the south but there is every indication that the west wall, notwithstanding its narrow width, was the external wall flanking the street against which the later Building C23 abutted in part.

Phase 1 construction

All the walls are built of mud bricks (Plate 5.5) approximately 350 x 180 x 60mm in size and appear to be set directly on the ground surface. The south wall survives to a maximum height of 540mm. The more substantial walls are about 530mm thick, one row of headers and one of stretchers to the course (bond type H). The other external walls, and at least the southern part of internal north-south partition walls, are built of a single row of headers (bond type L) giving a thickness of c. 350mm. Towards the north the form of the internal wall was unclear but it appears to widen. Another stub of walling partly divided its western part in two (Rooms C20-A & C20-B). This wall survived to the limit of the primary floor in this area and both were removed further to the east by a large pit. There is no point of junction surviving between the south and east walls and the east wall extends a little south of the line of the south wall. This suggests that the building originally was much longer north-south but none of the wall fragments found to its south look like they may have been a part of this building. The south wall was extensively cut by pits; it is to be assumed that one or two doorways were provided



Plate 5.5. Building C20, the north-west wall looking north east.

through this wall. There were no doorways in the other external walls.

Phase 2 – primary use of the building

Room C20-A was accessible from the east, from Room C20-E and perhaps from the south via a doorway in that wall which has not survived. In its south-west corner a small section of the primary floor remains [(CE4)52], a very compact surface containing, ash, charcoal, animal bone and pottery sherds.

Room C20-B preserved much of its primary floor [(CE4)52] identical and contemporary with that in Room C20-A. In part the floor survived right across the room up to the internal partition wall to the east.

Room C20-E. No floor surfaces survived within it at the time of excavation. Being further down the slope all its internal surfaces, if they were at the same elevation as those in Rooms C20-A and C20-B, will have been removed. If this is the case the surrounding walls at this level will have acted as terrace walls. Only two internal features were noted, one a short section of wall [(CE4)77], a single line of headers set at 90° to, and abutting, the north wall of the room. It may have turned at its south end enclosing a space about 850mm deep. The other is a pottery vessel, 370mm in diameter, [(CE4)109] set in the sand adjacent to the south wall of the room.

Phase 3

In Rooms C20-A and C20-B the primary-floor surfaces were sealed by another compact surface [(CE4)23 & (CE4)34] on 100mm of fill.

Phase 4

Room C20-B was divided by a centrally-placed east-west wall which abutted the west wall of the room and rested on the phase 3 surface. It survived to a maximum height of two courses, each of a row of one header and one stretcher (bond type H), giving a total width of 660mm.

There was probably a doorway at its eastern end with a rebated jamb for a door opening to the south. The doorway would have been about 930mm wide if there was no rebated jamb to the east.

Building C25

This building (Figure 5.5) abutted against the north side of Building C27 along its full width. At its eastern end it followed the building line of C27's east wall but to the west it extended far beyond perhaps abutting the north wall of Building C31 which was not revealed in excavation.

Phase 1 construction

The standard of construction was markedly inferior to that of Building C27. Walls were generally a single row of headers (bond type L) but the south wall does have some sections with two rows of stretchers (bond type K). Mud plaster survived, at least in part, on all the interior wall faces. The building was entered by a doorway 930mm wide at the south end of its west wall (Plate 5.6). The



Plate 5.6. Building C25, the wooden threshold in the external doorway with the tops of the stone steps visible in surface (CF4)148, looking north – scale bar 500mm.

walls appear to have been built on the slightly sloping surface formed of wind-blown sand without any construction trenches. It was divided by an internal wall into two rooms, the larger, Room C25-A to the west. The partition wall was made of bricks 300 x 160 x 69mm in size laid as alternate rows of one header and two stretchers. It has a doorway at its northern end c. 960 mm wide. A large block of stone on its north side may have supported a timber door jamb – there is a curved depression on the face of the north wall at this point, perhaps the impression of the door jamb – as may the much smaller stone to the south.

Room C25-A

Phase 1

The primary floor was a compact silt with ash [(CF4)170]. Resting on this and abutting the west wall was a storage bin or a low partition [(CF4)160] made from a single row of stretchers, including some halfbricks, which is roughly rectangular in shape surviving to a height of one course (Plate 5.7). Within it and set into the floor surface was a pottery vessel [(CF4)166 (type 4574x)]. Subsequently a pot 230mm in diameter [(CF4)123 (type 4625x)] was set

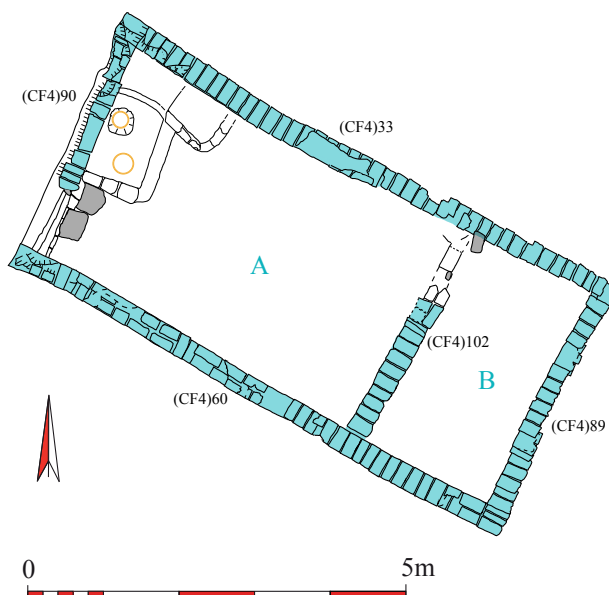


Figure 5.5. Building C25 with phase 1 and 3 storage bins and pots (scale 1:100).



Plate 5.7. Building C25, surface (CF4)170 with the phase 1 storage bin (CF4)160 and pottery vessel (CF4)166 (Type 4624x), the phase 2 stone steps and the phase 4 storage bin and pot – scale bar 500mm.

into the fill of pot (CF4)166. The 'bin' was filled with a compact deposit of sand, silt and ash 70mm thick; pots (CF4)166 and 123 had sandy fills with lumps of charcoal.

Phase 2

When the room was refloored, again with a compact silt and ash surface [(CF4)155], the new floor extended over the remains of bin (CF4)160. At or before that time the upper part of pot (CF4)166 had been smashed and it, and pots (CF4)180/123, were sealed by the new floor. Resting on the floor was a single stone step with a riser of 140mm at the north end of the threshold with a double height stone step in the centre (a step up of a further 70mm), the upper block of which had a centrally-placed hole in it (Plate 5.7). They gave access up to the threshold at a higher level again (220mm above) which presumably is a secondary feature. The timber of the threshold survived in part, a plank 120mm wide and 930mm in length remaining.

Phase 3

The next floor [(CF4)148] (Plate 5.8), of the same char-



Plate 5.8. Building C25, surfaces (CF4)148 and 149 looking south east. The phase 4 thickening of the north wall is clearly visible on the left side – scale bar 500mm.

acter as the earlier ones had a patch of burning on its surface in the centre of the room 450 x 360mm in size. Resting on it, and overlying the north-east corner of the earlier bin, was another sub-rectangular bin [(CF4)178] of similar construction which presumably abutted the north wall of the room.

Phase 4

Before the laying of the next floor a substantial buttress extending most of the full length of the north wall in this room was built, against the inner face of the north wall presumably to provide additional stability to the wall against the north face of which wind-blown sand will have accumulated (Figure 5.6, Plate 5.9). When

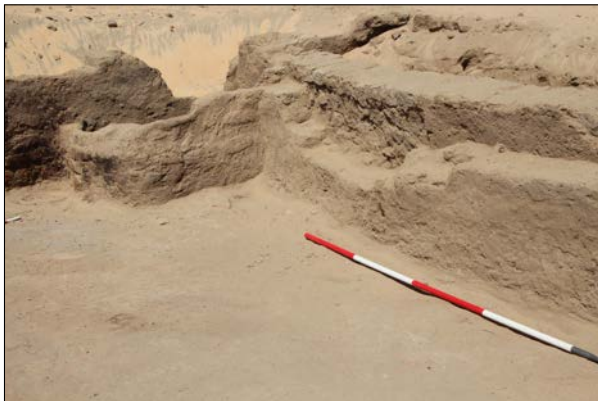


Plate 5.9. Building C25, Room A, storage bin and thickening against the north wall, looking north north west – scale bar 2m.

excavated both the wall and the buttress were leaning to the south well away from the vertical (Plate 5.10). The buttress partly overlay bin (CF4)178. Surface (CF4)108 abutted the buttress. It was a compact sandy silt 50mm thick pockmarked with shallow depressions – from wind erosion or wear? On that surface a new mud-brick storage bin was built measuring 1.16 x 0.68m and surviving to a maximum height of 600mm (Plate 5.10). It was mud plastered inside and out. Immediately to the south a pit was dug into which was set pot (CF4)117 (type 4624x), its rim almost flush with the floor. Around it was much evidence for burning which had discoloured the west wall of the room and the south side of the storage bin.

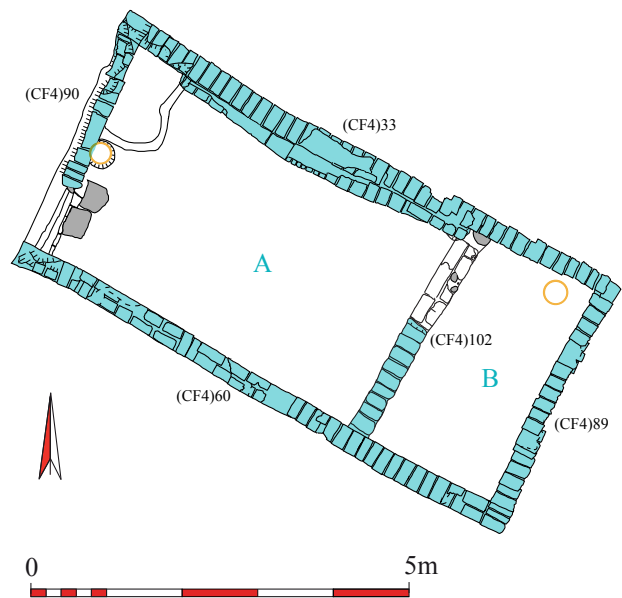


Figure 5.6. Building C25 with phase 4 storage bin and pots (scale 1:100).



Plate 5.10. Building C25, the north wall, looking north west – scale bar 2m.

Phase 5

This floor was covered by a 50mm-thick layer of silt and sand containing mud-brick fragments [(CF4)107].

Phase 6 abandonment

After the building went out of use the storage bin filled with sand, mud-brick rubble and some charcoal in its lower strata. The surface within the room was partly sealed by mud-brick rubble collapsed from the north wall of the room.

Room C25-B

Phase 1

The earliest deposit was loose wind-blown sand.

Phase 2

The first floor [(CF4)156] was only preserved in the north-east corner of the room and against the west wall. It was of compacted silt with ash.

Phase 3

The next floor [(CF4)149], of silt and ash, was contemporary with surface (CF4)148 in Room C25-A. It had a shallow, bowl-shaped depression towards its centre.

Phase 4

With the construction of the buttress in Room C25-A, which stopped in line with the west face of the partition wall, the doorway will have been partly blocked. To compensate for this the doorway was widened to the south by demolishing part of the wall to form a new doorway 1.23m in width. The surface (CF4)109 was more patchy than that in Room C25-A and had two areas of ash on it, in the south-east corner and south of the doorway. Towards the north-east corner a pottery vessel (type 4650x) was found, its rim protruding a little above the surface. No cut was noted so it is possible that this pot relates to an earlier surface. It was filled with loose sandy material, occasional fragments of charcoal and a small complete pot (type 4534x) (Plate 5.11).



Plate 5.11. Building C25, Room B, pottery vessel set into, or abutted by, surface (CF4)109, looking north east – scale bar 200mm.

Phase 5

A fairly loose sandy silt deposit 100mm thick with some small mud-brick fragments covered the room. On its surface was some occupation debris.

Building C21

This building (Figure 5.7; Plate 5.12) abutted the south wall of Building C25 along most of its length and directly overlay the walls of Buildings C27 and C31. The walls of the earlier buildings appear to have been systematically demolished to approximately the same height across the area and the walls of C21 rested directly on the earlier walls. The north wall used the earlier building's north wall as its foundation. The east wall of the building was set a little to the east of that of Building C27 (Plates 5.12 & 5.14).

Phase 1 construction

It is likely that prior to construction commencing the remains of Buildings C27 and C31 were levelled to form



Plate 5.12. Building C21, general view, looking south west – scale bar 2m.

a flat surface on which the new building was erected. The tops of all the earlier building walls, although at least in the southern part of the area surviving to a height of over 1.4m above the primary surface of that building, were reduced to the same height and in Rooms C27-A and C31-A the rooms were infilled with silt and rubble [(CF4)139/140] flush with the wall tops. Only in Room C31-B was an internal feature allowed to remain and this was repurposed in the new building.

All the external walls had a foundation of one course made up of one row of rowlocks and two of shiners (bond type N). Those of the north wall for much of its length rested directly on the top of the north wall of Building 27 (Plate 5.13) or, towards the eastern end, on a fill deposit (Plate 5.14), while the northern face of the eastern part of the south wall rested on the south wall of Building C27. The east wall had a foundation a little wider than the superstructure, the westernmost row of shiners resting on the very edge of the Building C27 east wall. Along the south wall's foundation as one moves west the bricks are

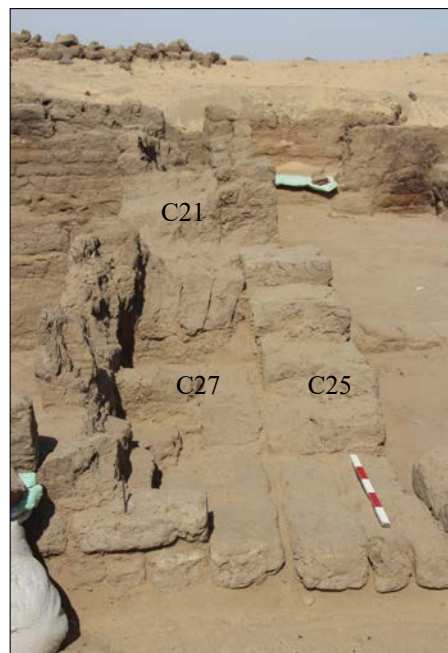


Plate 5.13. Building C21, the north wall sat over the north wall of Building C27 and abutting the south wall of Building C25, looking north west – scale bar 500mm.

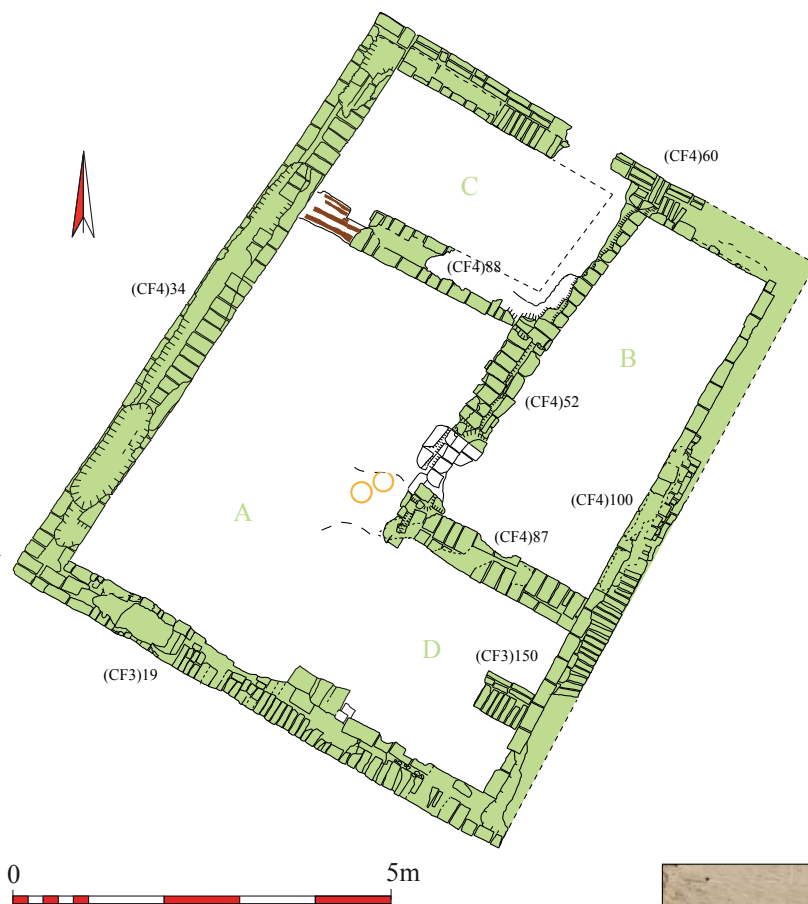


Figure 5.7. Building C21 (scale 1:100).



Plate 5.14. Building C21, the north wall sat on a fill layer over the north wall of Building C27. On the right the south-east wall of the building with its projecting foundation course site on the wall of Building C27. View looking north east – scale bar 2m.

increasingly angled to maintain the horizontal top of the foundation on the rising slope. Traces of a construction trench were visible in places along this foundation cut into the earlier wall top. The superstructure was of alternate courses with one row of headers and one of stretchers to the course (bond type H). Bricks sizes varied a little in the range 320-340 x 150-180 x 70-78mm. Walls were between 480mm and 570mm in thickness, the thick west wall having a wide mud-mortar core.

The internal walls were of similar construction to those of the exterior but that between Rooms C21-A and C21-C

was wider than usual at 610mm.

The north wall along its entire length butted directly against the south face of Building C25. The only possibly entry to the building must have been through the centre of the north wall leading via Room C25-A to the exterior. No traces of the doorway survived, just an irregular gap in the walls of the two buildings. Building C21 was a three or possibly four-roomed structure measuring over the wall from 6.67m to 7.41m in width and 7.58m to 8.81m in length. The first to be entered was Room C21-C from which a doorway 790mm wide communicated with Room C21-A. Room C21-A had a doorway into Room C21-B and a slightly restricted entrance into the space, Room C21-D, in the south-east corner of the building. Projecting into Room C21-D and of one build with the east wall was the stub of a wall 430mm thick, which rests directly on the east wall of Building C27, surviving as one course of two rows of shiners and one of rowlocks (bond type N) (Plate 5.15). It extends out for 650mm at which



Plate 5.15. Building C21, looking south east from Room A into Room D. The stub of what may be the newel of a staircase can be seen flanked by mud-brick rubble. The sand fills one or more robber pits – scale bar 2m.

point it may have been cut by a robber pit. If it originally extended much further into the room it will have created two narrow rooms and, in that case, may have been the newel of a staircase for which no other evidence survived. Rooms of this form containing stairways are known in a number of other buildings at Kawa, for example, Buildings C2 and C3.

The lower courses of the dividing wall between Rooms C21-C and C21-A was carried across the doorway, the timber threshold, of three planks each about 120mm wide set partly into the walls forming the jambs and flush with the south face of the wall, resting directly on the wall bricks (Plate 5.16). The form of the doorway through into Room C21-B was unclear but it was probably 800mm in width.

Most phases of use could not be associated with certainty from one room to another.



Plate 5.16. Building C21, timber threshold in the doorway between Rooms A and C, looking north east – scale bar 500mm.

Room C21-C

Deposits only survived in the western half of the room, those to the east having been removed by a large pit which had also cut deep into the walls to the east and south. The primary floor in the room, (CF4)133, a compact silt and ash, overlay the fill of the semi-circular pit (CF4)146 1.5m in diameter and 900mm wide dug into deposits associated with Building C31. It was overlain by a similar floor 50-100mm thick [(CF4)132] on the surface of which, and within its makeup, was a number of objects:-

- Rubber – cat. no. ML-545
- Grinding bases – cat. nos ML-308 & ML-309
- Pestles – cat. nos ML-649 & ML-650
- Spear-head or knife – cat. no. F-211
- Fragmentary objects, copper alloy– cat. nos F-135 & F-148–F-150
- Beads of faience, stone and glass(?) – cat. nos B-933 to B-941
- Pendant, faience – cat. no. F-445
- Ivory object – cat. no. F-2324

The next floor [(CF4)95], of the same character as the earlier floors, had one pounder and two grinding bases on its surface. It was sealed by floor (CF4)81, 11-50mm thick, which abuts the wooden threshold in the doorway. On it was a grinding base found upside down and a hearth against the west wall of the room set in a shallow depression [(CF4)85] 270 x 170mm in size and 60mm deep. This in turn was sealed by surface (CF4)53 which extended over the wooden threshold and was the same as surface (CF3)7 in Room C21-A. Resting on this surface was a step extending across the doorway, made of mud-brick fragments up to 180 x 170 x 70mm in size set in a very compact mortar.

Floor (CF4)53 was covered by an occupation material 50mm thick, of organic material (dung?), silt and a few lumps of charcoal [(CF4)48] and a further deposit containing abundant mud-brick rubble [(CF4)31] much of which had been removed by later pitting. At a higher level a hearth had been placed against the west wall which had been much reddened by fire. The surface associated with this burning had been removed by later pits.

Room C21-A

This room had also suffered from extensive and deep pitting which had removed virtually all deposits in the

southern part of the room and alongside the north-south wall between Rooms C21-A and C21-B. The primary-floor surface sealed the walls of Buildings C27 and C31 but only partly covered the mud-storage bin (CF3)40 which remained in use in a modified form. The surface appears to have been cut by two pits into which were set large pottery jars (CF3)34 and (CF3)36 (Plate 5.17; types 4574x & 3393x(?)) although it is possible that these were associated with Building C27 and that the Building C21 primary floor abutted against them. Both were filled with silt, one with a little charcoal. Surface (CF3)31, of silt and ash, sealed the two pottery vessels and most of the mud-storage bin (CF3)40. Towards the centre of the room an area had been used as a hearth, the burning affecting an area 280mm in diameter. With the next floor the mud-storage bin finally disappeared from view. On this floor developed an occupation deposit of sandy silt, ash and animal dung 110-30mm thick, thickest against the north wall. It was sealed by a compact floor [(CF3)27] of silt with some charcoal fragments (Plate 5.18). At the level



Plate 5.17. Building C21, Room A, pottery vessels (CF3)34 and 36 set in floor (CF4)32, looking south – scale bar 1m.

of this floor was what appeared to be a mud-brick step in the doorway between Rooms C21-A and C21-B abutting the wall and bonded to it by mud mortar. The two latest floors [(CF3)7/12 & 6] were only preserved in isolated islands of stratigraphy which had survived the late pitting.

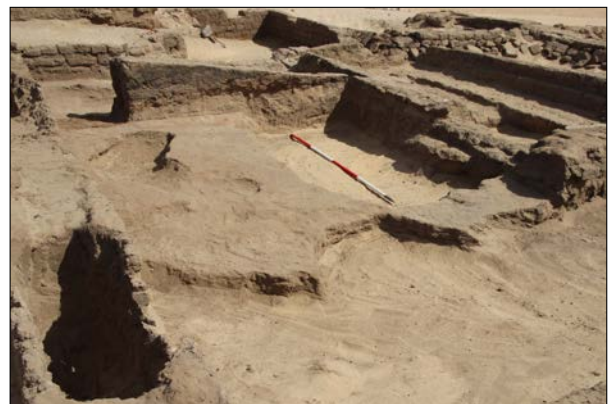


Plate 5.18. Building C21, Room A, surface (CF3)27 looking north east – scale bar 2m.

Room C21-B

The primary floor (CF4)138, compact silt and ash, abut-

ted the denuded remains of the Building C27 east wall which acted as the floor in the eastern part of the room (Plate 5.14). This, and most subsequent deposits in the room, only survived in its northern half, the southern half had been cut by a pit dug down from the modern ground surface through Building C21 into deposits within the earlier Building C27. The floor was sealed by what may have been a patchy surface containing some rubble, the latest to survive in the room.

Activities post-dating the use of the building.

The deposits within the building had been extensively destroyed by pitting: the pits dug at more than one time, Elsewhere pits were dug into the core of walls preserving their faces which revetted the surrounding deposits as the mud-brick matrix was quarried out. One pit may have removed the western end of wall (CF3)100. In Room C21-A the last surviving floor was sealed by layers of sand interleaved with mud-brick rubble. In the eastern part of that room was a deposit of mud-brick rubble cut to the west by pit (CF3)23 which is infilled with wind-blown sand.

Street between Buildings C27-C25-C21 and C20

This street was first defined after the construction of Buildings C20, C25 and C27. At that time it varied in width from 3.96m to 4.02m. The deepest levels reached were of silty sand with some occupation material. Set into one of these, close by the wall of Building C20, was a pottery vessel *c.* 355mm in diameter filled with sand. The construction of Building C21 resulted in the street being reduced in width to 3.4-3.1m. Towards its northern observed extent adjacent to the north and east walls of Building C25 was a rich occupation deposit containing pottery, animal bone, pebbles and charcoal. This was the surface on which some of the walls of Building C23 were built.

Building C23

This building was constructed in the street between Buildings C21 and C25 to the north west and Building C20 to the south east totally blocking it (Figure 5.8; Plate 5.19). It consisted of three rooms with a possible extension to the south west. Some of its walls had been robbed out but it appears to have been provide with its own walls in the northern rooms, C23-A and C23-B while Room C23-C had its own walls on three sides but utilised a wall of Building C20 for its fourth side. It was entered via a corridor 454-600mm wide adjacent to Building C25 which allowed access



Plate 5.19. Building C23, general view along the building from Room C to Room A, looking north east.

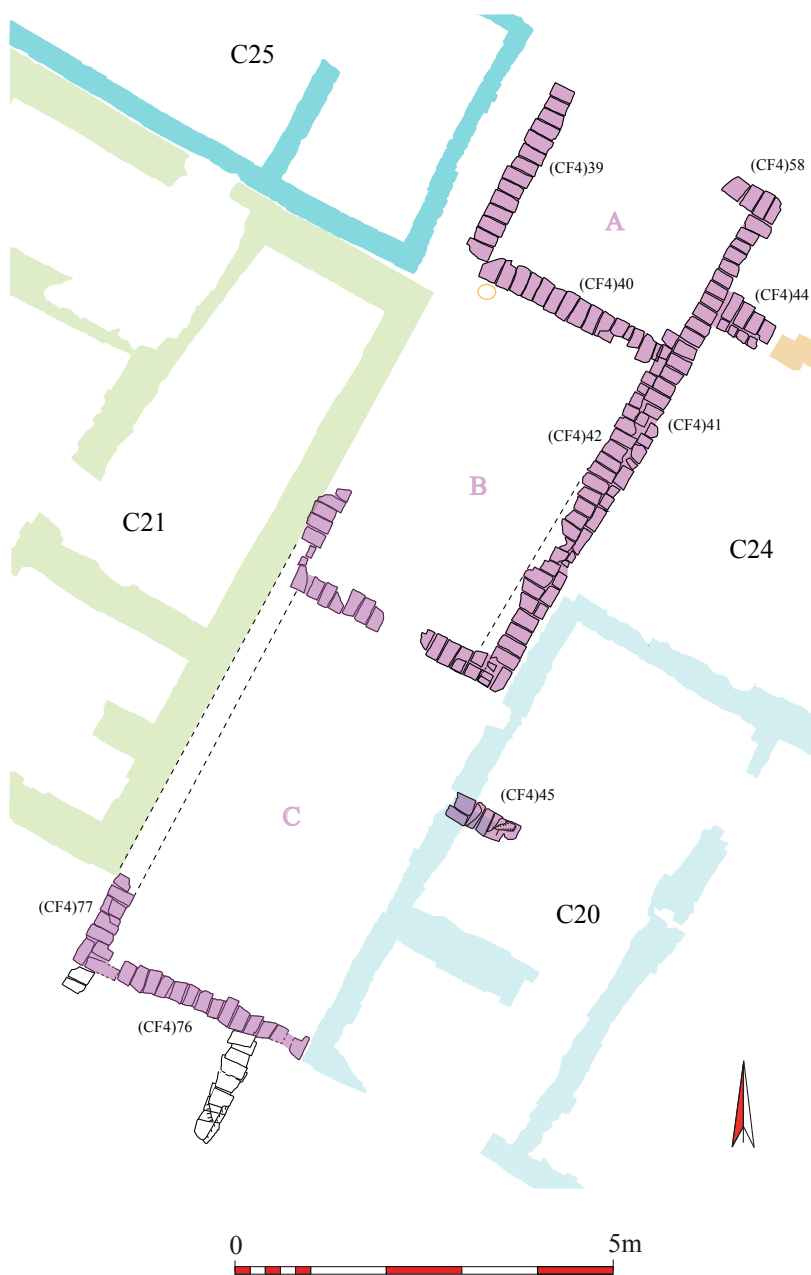


Figure 5.8. Building C23 (scale 1:100).

into Room C23-B and then via a centrally-placed doorway through the party wall into Room C23-C. Room C23-A is partly open to the north; there was no evidence for a doorway from it into Room C23-B. Most of the walls were constructed of a single row of headers (bond type L) giving a thickness of not more than 350mm. The south-east wall of Room C23-B however, was thicker, one row of headers and one of stretchers to the course (bond type H). This partly abutted the outer face of Building C20's north-west wall and the north-west walls of Rooms C23-B and C23-C abutted the wall of Building C21 along its entire length. Two walls extend to the south west of Room C23-C and appear to be associated with other walls in that area. Whether these should be classed as part of the building or relate to an adjacent structure is unclear. Two walls also extend to the south east, one sitting on top of the north-west wall of Building C20, the other in line with the north-east wall of Building C24 but resting on a deposit of sand. Being very close to the surface they were both soon truncated by erosion. Walls only survived to a maximum of two courses; bricks used ranged in size from 290-350 x 160-170 x 60-90mm. As it survived, the north-eastern wall [(CF4)44] had a row of headers and half bricks to the course.

Within the rooms occupation surfaces or floors could not be recognised with any confidence. The only internal feature perhaps to be associated with the use of the building was a pottery vessel set into the sand in Room C23-B. Its fill was also sand.

Activities post-dating the use of the building.

A large robber cut had been dug along the line of the south-east wall of Building C21 removing much of the wall face down to, and in places including, the foundation course. The same trench almost removed most of the wall of Building C23 where it abutted the wall of the earlier building.

Building C29

This number has been given to the walls to the north west of Building C21 many of which were only observed on the surface and planned after cleaning. Several walls abut

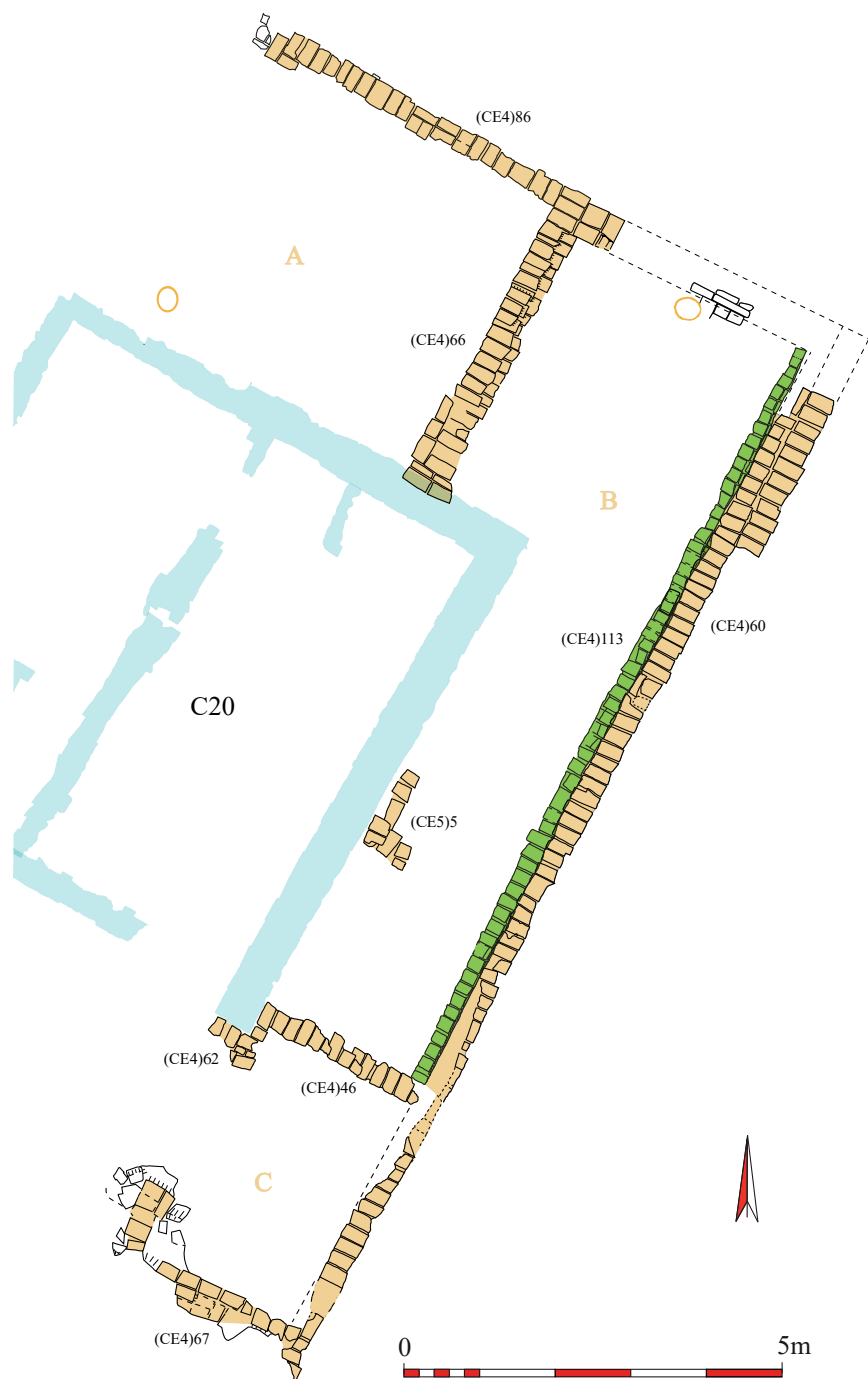


Figure 5.9. Buildings C32 (green) and C24 (yellow) (scale 1:100).

Buildings C21 and C25 but beyond that little can be said. One pottery vessel set into a surface was noted.

Building C34

Probably broadly contemporary with Building C23 were two mud-brick walls meeting at a 90° corner which largely lay outside the excavation area.

Building C24

The interpretation of this building is problematic. As observed it appeared to wrap around the north and east sides of Building C20 but no communicating doorways between the two structures were visible. At its south 'corner' the

wall extends into the area designated as Building C26. This latter building has been designated for convenience to include a number of disconnected lengths of wall which may or may not be associated with a single structure. It is entirely possible that Buildings C24 and C26 were actually a single structure.

Phase 1 construction

The north-east wall is formed of a mixture of a single header and two stretchers (bond types L & K) giving it a total width of 310mm. Spaced along the wall on its inner face were three rectangular buttresses, the central one two headers in width, that to the east probably a little wider, one header and one stretcher as may be that towards the western end of the wall. The south-east wall was a single row of headers (290 x 190 x 90mm) and survived to a height of two courses. Towards its northern end it was thickened on the outside by another row of headers. What may be the south-west wall was thicker than the others with a mixture of three rows of stretchers and one header plus one stretcher to the course. The relative date of the wall between Rooms C24-B and C24-C is uncertain but it does appear to overlie the brickwork abutting the south corner of Building C20. The wall between Rooms C24-A and C24-B is certainly secondary. Over most of its length it has a single row of headers (bond type L) to the course with lower courses that appear to be stepped out to the east, perhaps to strengthen what may have acted as a terrace wall. Internal features were few.

Room C24-A

Set into the pre-building surface within the room and perhaps to be associated with it was a pottery vessel [(CE4)88] 330mm in diameter filled with sand, some ash, charcoal and occasional pottery sherds. Abutting the walls of the room were sandy occupation deposits with pottery, some charcoal and bone. These were sealed by a small remnant of floor, hard and compact [(CF4)37], above which were two further sandy deposits with some occupation material within. All these later deposits were truncated by the slope of the mound.

Room C24-B

Clear floor surfaces were not found in this room. It contained soft sandy deposits with some occupation material (Plate 5.20). Set into one of these was a pottery vessel close to the room's north-east wall. Sat on deposit (CE4)102 was an 'L'-shaped section of mud-brick wall (bricks 310 x 180 x 80mm) one side abutting the south-east wall of Building C20. It was formed of an apparently random arrangement of headers and stretchers. Its function is unknown.

Room C24-C

No obvious features survived in this room, as being



Plate 5.20. Building C24, general view along Room B, looking south.

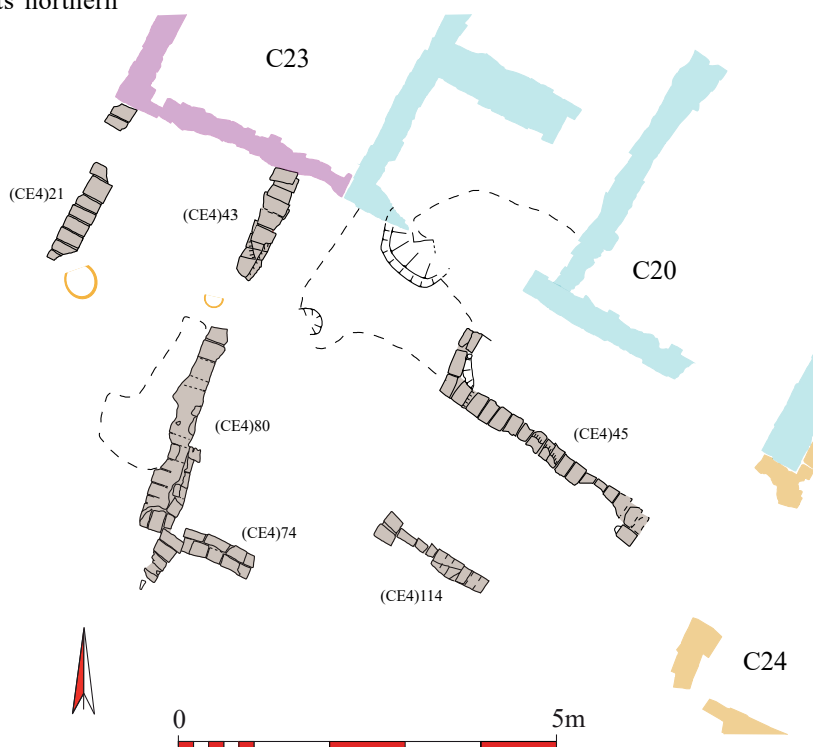


Figure 5.10. Building C26 with fragments of surviving floors and pits (scale 1:100).

very close to the present ground surface, they had been denuded along with sections of the surrounding walls. A bone deposit and make-up layer were noted under the south-west wall but not further investigated.

Building C26

To the south west of Building C20 was a number of isolated sections of walling, remnants of floors and pottery vessels set into the ground (Figure 5.10). The walls were either one header or two stretchers thick (bond types L & K). Two of these walls abut the south-west wall of Building C23. Whether they were all contemporary or not is uncertain nor is their relationship to Building C24 clear.

Contemporary with the primary floor in Building C20, (Room C20-B), but outside that building, surface (CE4)82 survived over an area of 2.13 x 2.31m abutting the outer wall of the building to the north and truncated

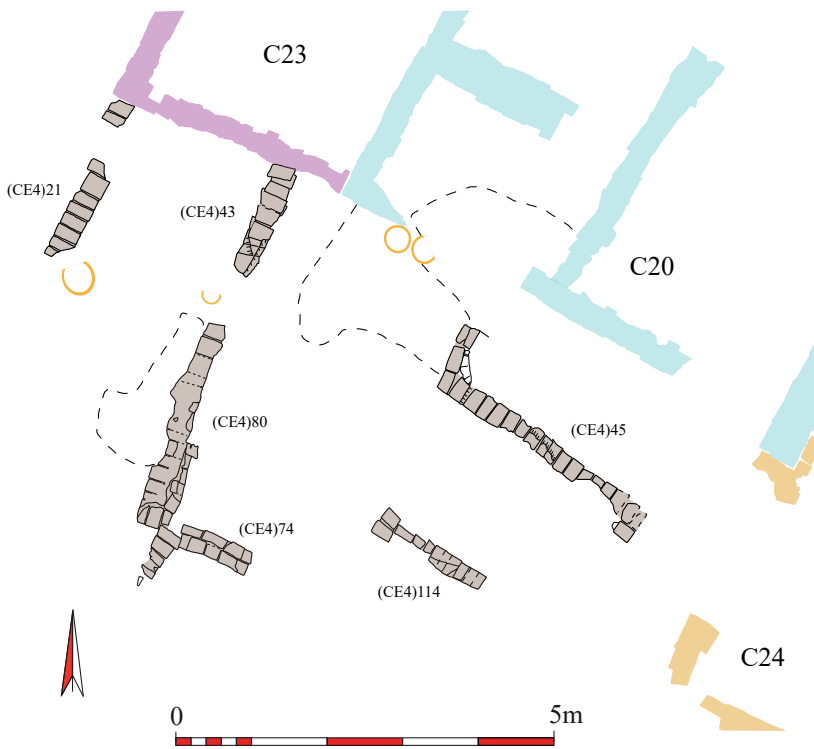


Figure 5.11. Building C26 with pottery vessels set into the floors (scale 1:100).

by much later pits elsewhere. It was compacted sandy silt with ash and may have had localised repairs. It was cut by a pit which may have been oval, 850mm by at least 580mm in size and 400mm deep [(CE4)79], dug to accommodate two pottery open-mouthed jars (Figure 5.10, Plate 5.21; types 2348x & 4399x). Another similar pit lay a few metres to the south but the associated pot which it

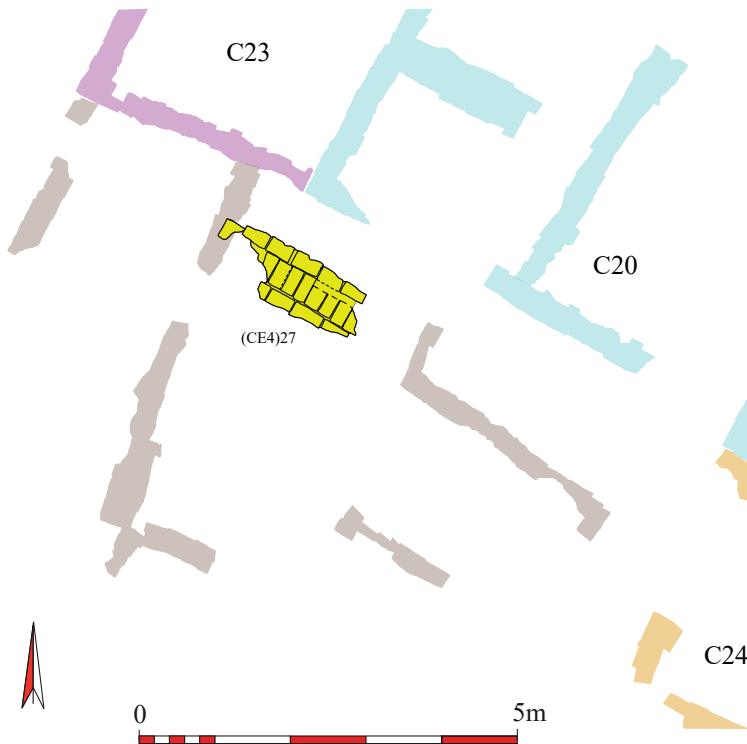


Figure 5.12. Isolated wall fragment (CE4)27 overlying Building C26 (scale 1:100).

undoubtedly contained was removed by a later intrusion. The pots were abutted by many very thin surfaces some of coarse and some of finer sand designated collectively (CE4)32 (Plate 5.23). The vessels were filled with charcoal and ash and similar material lay on the surrounding surfaces as well as on the surface by the southerly pit. Pit (CE4)79 and one of the pots within it extended some distance across the line of the south wall of Building C20 indicating that there was an opening at that point. Later floor surfaces sealed the pottery ovens, one of which incorporated a similar vessel with a fill containing charcoal.

Resting on these surfaces, and almost certainly of later date than the Building C26 walls in the vicinity, was a short length of wall [(CE4)27], the most substantial of all the walls found in Area C (Figure 5.12). It survived as a single course of brick with the faces of stretchers flanking the core of headers (bond type C) giving a total width of 898mm (Plate 5.23). How this relates to any of



Plate 5.21. Building C26, the two pottery vessels set in pit (CE4)79 – scale bar 500mm.

the other walls in the vicinity is uncertain. It does respect the alignment of the other walls but is of such a different character as to suggest that it is the only surviving fragment of a building all other traces of which have been eroded away.

Building C22

This is certainly the latest building in the sequence in the north-western part of the ex-



Plate 5.22. Building C26, surface (CE4)82 with the possible robber trench on the left, the area of burning associated with pit (CE4)92 and the later pots (CE4)65 and 69 in the background, looking north east – scale bar 500mm.

cavation area overlying the denuded and infilled remains of Building C25. Although similarly oriented as the walls of Building C25, possibly only the south-west wall of the latter can have been standing above the construction level. Little of the building remained (Figure 5.13, Plate 5.24) but it does appear to have had a minimum of two rooms. Its walls were built over those of Building C25 and rested on the abandonment phase fill (CF4)96. The north-west wall [(CF4)82] was constructed of a single row of headers (320 x 160 x 69mm) set on a foundation of rowlocks towards its western end. Of the south-west wall very little remains but it appears to be built directly on the Building C25 wall (CF4)60 which may have been partly reused. Severe robbing of the wall has made any certainty impossible. What may be an internal wall [(CF4)32] abuts the north-west wall. It is a single row of headers (350 x 180 x 72mm) (bond type L) with two offsets to the south along its length. It terminates in a large stone block, 400 x 350 x 80mm in size, of red sandstone, on which are traces of bricks. If this marks the terminus of the wall Room C22-A will have been approximately 4.8m in length

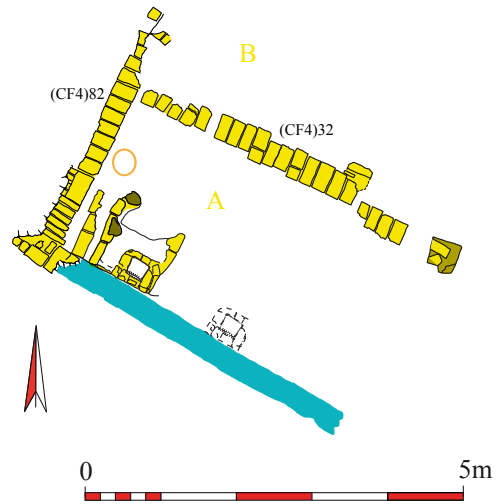


Figure 5.13. Building C22 (scale 1:100).



Plate 5.24. Building C22, general view looking east – scale bar 2m.

by between 2.17m and 2.22m wide. The primary floor, compacted silt and ash, was between 30mm and 70mm thick. Towards the east it had been totally removed by robber pits. Sat on it were two row of three stretchers



Plate 5.23. Building C26, surfaces (CE4)32 with pots (CE4)65 and 69. The surfaces are overlain by the late wall (CE4)27. View looking west – scale bar 500mm.

extending out from the south-west wall which appear to form a narrow channel of uncertain purpose, and cut into it were two features (Plate 5.25). Both features consisted of a deep sub-square pit, one side of each formed by the Building C25 south-west wall. Set in each was a rectangular lining of mud bricks, nine courses in the eastern pit, delimiting a rectangular void. One half of a grinding base had been placed in the upper fill of one of these features, the other half was placed in a similar position in the other suggesting that both may have been modified and provide with a post-pad at a higher level at some point.

The function of these features is uncertain. If they were designed to contain vertical timbers they must have had a very special purpose as they



Plate 5.25. Building C22, the western of the two mud-brick lined features looking west – scale bar 500mm.

are much too substantial to have acted as roof supports. No similar features have been found elsewhere at Kawa.

The floor was sealed by a thick deposit immediately under the present ground surface into which was set a pottery vessel containing silt, some pottery sherds and occasional fragments of charcoal.

6. Excavations in Area F – Building F1, adjacent streets and Building F11

Derek A. Welsby

Building F1¹

The building was first observed, and its wall tops planned, in 1993 (Plate 6.1). Excavation took place over two seasons, the first between December 2010 and February 2011, the second from December 2014 to February 2015.



Plate 6.1. Building F1. View across the building in Jan.-Feb. 1993 prior to excavation, looking south west over Rooms I-III – scale bar 2m.

The stratigraphic sequence of the excavation has been divided into pre-building activities, two phases associated with Building F1 and post-building activities.

Period 1 – Excavations below the foundation level of the building were carried out in several areas and a number of phases were defined.

Period 2, phase 1 – features and deposits associated with the initial construction of the building.

Period 2, phase 2 – occupation of the building and modification necessitated by changing circumstances.

Period 3 – features and deposits post-dating the abandonment of the building – its collapse followed by depredations in more recent times, by treasure hunters and local farmers.

Period 1: Pre-building

Features of this period are described in relation to the rooms and structural features of Building F1 for convenience (see Figure 6.1).

Room F1-Ic

In the north-east corner of the later room was a smooth white/grey mud surface [(FP7)189] with a compact layer of sand above. It was masked to north and east by Building F1 walls and to the south and west was cut by a much later pit.

¹ The first draft of this report was compiled by Monica Fombellida; it was revised and completed by Derek Welsby.

Room F1-II

Extending right across the later room was a smooth mud surface (FO7)132 which was cut by the foundations trenches of the north, south and west walls of Building F1. No features were preserved on its surface.

Room F1-VI

An area of 4 x 2m was excavated below the foundation level between the two post-pads, in the middle of the room and this was subsequently extended over the western part of the room attaining an area of 4.85 x 4m. Three different phases were distinguished in this area.

Phase 1

Related to this phase was the layer of sand (FP6)110 which was cut by three post-holes. Two were located by the south end of the trench and were close together, the third was in the centre of the trench (Table 6.1).

TABLE 6.1. BUILDING F1. POST-HOLES IN ROOM VI PERIOD 1, PHASE 1.

	Diameter	Depth
(FP6)112	240mm	180mm
(FP6)114	220mm	170mm
(FP6)116	230mm	250mm

Phase 2

This level of compact sand [(FP6)102] was cut by two post-holes. Both post-holes were located at the south end of the trench (Table 6.2).

TABLE 6.2. BUILDING F1. POST-HOLES IN ROOM VI PERIOD 1, PHASE 2.

	Diameter	Depth
(FP6)106	290mm	150mm
(FP6)108	230mm	290mm

Phase 3

The surface [(FP6)98] of compact sand, was cut by two post-holes located close to the west side of the trench. A hearth [(FP6)101] sat on this surface in the centre of the trench between the two post-pads, discolouring the surface to a depth of about 50mm (Table 6.3).

TABLE 6.3. BUILDING F1. FEATURES ROOM VI, PERIOD 1, PHASE 3.

		Length	Width	Dia.	Depth
(FP6)101 ¹	Hearth	350mm	300mm		
(FP6)122	Post-hole			150mm	70mm
(FP6)124	Post-hole			150mm	130mm

Phase 4

A further surface predated the construction of the building. In the area excavated no associated features were noted.

Room F1-VII

Below the surface on which Building F1 was constructed, a level of sand (FO6)185 was exposed which was cut by two shallow pits containing hearths, partly under the western wall (FO6)81. Set partly in the surface was a pottery vessel upside down. Another, also set in the surface, had been used as a hearth and contained an ashy deposit (Table 6.4). Ashy deposits were also found across the surface perhaps indicating the location of other hearths.

TABLE 6.4. BUILDING F1.
HEARTHES IN ROOM VII, PERIOD 1.

	Dia.	Depth	Fill
(FO6)187	300mm	70mm	ash, charcoal
(FO6)189	220mm	30mm	ash, charcoal, pot

These were sealed by four isolated fragments of what was probably a single mud surface (FO6)167.

Room F1-IX

At the west end of this room, between the post-pad and west wall (FO6)23, a trench 4.5 x 1.5m was excavated 2m below the construction level surface (FO6)168. No evidence of earlier occupation was found in this sondage, apart from a very few pottery sherds and animal bones.

Room F1-XII

In this room, a level below the construction surface was

south wall² and the other two next to the northern wall. The diameters of these three features are the same and the shapes very similar: steep, convex-sided pits with a flat base (Table 6.5).

TABLE 6.5. BUILDING F1.
HEARTHES IN ROOM XII, PERIOD 1.

	Dia.	Depth	Fill
(FP6)184	400mm	50mm	183 – ash
(FP6)185 ²	400mm	90mm	179 – ash
(FP6)186 ³	400mm	40mm	182 – ash

Period 2, phase 1: Construction of the building

Building F1, with its long axis roughly aligned east-west, was slightly trapezoidal varying in length from 27.2m to 26.91m and in width from 15.15m at its eastern end to 16.16m at the other. It has a total of 11 rooms divided into two interconnecting groups (Figure 6.1, Plate 6.2). The eastern part of the building had three long rooms the central of which is accessed from the exterior by a wide entrance and may have been a courtyard. The western rooms were smaller and were mostly entered from an entrance from the south giving on to the corridor, Room F1-VII. Room F1-IV is anomalous appearing to form a part of the western suite but only entered from the east. Only the ground floor plan is visible but the two large staircases and the additional roof supports in several rooms indicate the presence of at least one upper storey. In total the building occupied an area over its walls of 424m².

At an early stage in the life of the building a room was added on to its north side but, at least at ground level, there was no means of direct communication from it to the main building.

The walls and foundations of the building were constructed of mud bricks bonded in mud mortar, many of



Plate 6.2. Building F1 during excavation looking west.

exposed, with a total dimension of 6.6 x 4.28m. This was a compact sand level (FP6)181 cut by three pits containing hearths. One hearth was located next to the

² Burning of the north wall of Building F1 must relate to the presence of a later hearth in a very similar location. The level of surface (FP6)181 is almost identical to that of Period 1, phase 3 surface beneath Room F1-VI immediately to the south.



Figure 6.1. Building F1, phase I plan with the additional room, Room XII (scale 1:200).

TABLE 6.6.
BUILDING F1.
WALL THICKNESSES
(EXCLUDING
PROJECTING FOUNDATIONS
WERE PRESENT) AND
BONDS EMPLOYED.

Wall	Type	Between	Thickness	Bond types	
(FP7)24, (FP6)18, (FO6)20	External	I/VI/VIII – ext.	780-850mm	A, B, C, D, GA	North wall
(FO6)23	External	VIII/IX/X/XI – ext.	800mm	C, G	West wall
(FO7)8	External	III/IV/VII/XI – ext.	900mm	D, E, F, G	South wall
(FO7)9, (FP7)4	External	I/II/III – ext.	900-940mm	D, E	East wall
(FP7)3	Internal	I – II	900mm	B, D	
(FO7)10	Internal	II – III	900mm	D, GA, I	
(FP6)16, (FO7)7	Internal	I/II/III – VI/V/IV	740mm	C, G	
(FO6)128	Internal	IV/V – VII	800mm	D	
(FO6)127, (FP6)19	Internal	VI – V/VII	880-950mm	D	
(FO6)82, (FO6)83	Internal	VIII – IX	750mm	C, GA	
(FP6)17	Internal	IV – V	820mm	C, D?	
(FO6)21	Internal	VI – VIII	950mm	D, F	
(FO6)81	Internal	IX/X/XI – VII	900mm	F	
(FO6)80	Internal	IX – X	750mm	B, G/GA	
(FO6)84	Internal	X and XI	720mm	C	

which were covered in a mud-mortar render, in places 20-30mm thick. The average brick, 320 x 150 x 100mm in size, was made from a mixture of mud, sand, organic material, small stone inclusions and pottery sherds. A variety of different bonds were observed and these were

alternated and modified from one course to the next. In some cases, however, repeating bonds were found in adjacent courses. In one section of the building's west wall, for example in the east face, the sequence is stretchers, headers, stretchers, headers, headers. Walls varied in

thickness (Table 6.6) for no obvious structural reason.

The wide range of brick bonds noted are described and illustrated in Chapter 1 of this report along with the terms used to describe the orientation of individual bricks (Figure 1.1).

Timber was used for doors, door thresholds and jambs, in the steps of the two staircases, for timber posts supporting the first-floor ceilings and for those ceilings.

Foundations

In many parts of the building the foundations lay directly on the sand surface. There is no clear evidence that suggests intentional levelling of the surface prior to construction. In Rooms F1-I and F1-II shallow construction trenches were observed. In Room F1-Ib the surface [(FP7)138] was cut by the construction trenches of the south wall of the room and the wall that acted as the newel for the staircase. However, this surface appears to abut the east external wall suggesting that deposits were placed into the building during the construction phase.

Many walls had no special foundation, the width and bond type being identical to the superstructure. In other walls a foundation was provided much wider than the wall which it supported. This is particularly the case with all the walls of Room F1-VIII where the foundations projected up to 300mm from the wall face and were constructed of bricks laid mostly as headers on the upper course sometimes with a second course of stretchers visible on the face. In the foundation for the north wall of that room some of the bricks towards the western end are angled rowlocks. Along the west wall, towards the southern end, there are standard rowlocks adjacent to the headers to the north. These changes presumably reflect differing levels of the surface on which the bricks are laid. Similar projecting foundations were found associated with some of the walls in Rooms F1-I, F1-III, F1-IV-VI, F1-IX and F1-X. The foundation level was not revealed in Room F1-XI. In Room F1-Ib the foundation of the east wall projected from the inner wall face and was four courses high, alternating courses of headers and stretchers being visible. In the south-east corner of the room the foundations of the internal wall did not project but consisted of a course of rowlocks with a course of stretchers above. In Room F1-Ic the foundation of the north wall – a course of stretchers are visible beneath two courses of headers – projected beyond the wall face (Plate 6.3). The foundations of the external wall, visible at the east end of Room F1-III [(FO7)108], was of two courses, headers above stretchers. In Room F1-IX the foundations of the west, external, wall was of three courses, on the inner face the lowest course was faced with stretchers, above were rowlock, some angled, and above that headers.

All foundations were carried across doorways, their upper surface forming a part of the threshold. The foundation course, the full width of which was only visible in the doorways, varied in the type of bond employed. The most common, observed in the doorways between Rooms F1-I/II, F1-II/III, F1-III/IV, F1-V/VI and F1-VIII/IX, is bond type G. In the doorway between Rooms F1-V and F1-VII the bond type is J.

The full width of the foundation course of the external walls was only visible in the entrances. The threshold



Plate 6.3. Building F1. Foundations of the north wall in Room 1c – scale bar 1m.

(FP7)117 between Room F1-II and the area to the east of the building was of bond type B. In the walls of Rooms F1-III, F1-IV, F1-VIII and F1-IX it was 1.13m wide. In the interior walls, the foundation courses observed were of soldiers under the walls dividing Rooms F1-I/II and F1-II/III; and of headers under the other walls.

Walls

Exterior Walls

North wall – (FP7)24, (FP6)18 and (FO6)20. This wall is 25m long, 780mm thick and survives from 100mm at its lowest end in the east to a height of 700mm at the west end. It survived to a height of seven courses over the foundation level.

West wall – (FO6)23 is 16.16m long with an average thickness of 800mm although in places it is thinner. It survives to a height of up to five courses (600mm) alternating different types of bonds, the uppermost largely of bond type C but with one section of bond type G.

South wall – (FO7)8 is 26.87m long, and survives to a height of 100mm in the east and to 430mm in the west. It is 900mm thick. The stair platform [(FO6)73] in Room F1-XI abuts this wall. The first course observed at the east end of the wall is of bond type E, after that alternating course of bond types D and F to a height of up to four courses in Room F1-IV.

East wall – (FO7)9 and (FP7)4. The wall to the south of the entrance [(FO7)9] survives to a height of one course above the foundations. The construction of the section of wall to the south of the entrance, which continues part way along the south wall, is very unusual in that it uses rowlocks and shiners in its superstructure. It is very common at all periods in Nubia to use bricks in this way in foundations but highly unusual in the superstructure of a wall. The measurements of this wall were 15.16 x 0.94 x 0.12m. To the north of the entrance the wall [(FP7)4] survives to a height of two courses.

Internal Walls

Between Rooms F1-I and F1-II – wall (FP7)3 running east to west. The wall was 9.3m long and 900mm thick. It survives to a height of 160mm in the west at its lowest to 630mm and seven courses in the east at its highest. The type of bond used for the construction of this wall is not

very clear, it seems to be bond type B alternating with F. Between Rooms F1-1a, F1-1b and F1-1c – Wall (FP7)176 acted as the newel of the staircase. At its west end it abutted wall (FP7)176. This wall formed the south side of the doorway from Room F1-1c to the stairway. To its south its foundation extended across the entrance to Room F1-1b leaving a doorway with a projection jamb on its south side. Subsequently all traces had been removed across the full width of the room. On the south wall the scar of the wall's removal and a gap in the mud render indicate its one time existence (Plate 6.4).



Plate 6.4. Building F1. Scar of the doorjamb on the south wall between Rooms 1b and 1a, looking south west – scale bar 2m.

Between Rooms F1-II and F1-III – wall (FO7)10 running east to west and parallel to wall (FP7)3. The wall was 9.2m long, 900mm thick and the height varied between 140mm in the west and 620mm in the east. The bond used seems to be type B alternating the position of the headers in the south or in the north in every course. At the eastern end however, the bond is type I.

Between Rooms F1-I/II/III and F1-VI/V/IV – wall (FP6)16/(FO7)7 running north to south. The total length was 11.15m and a width of 740mm. The wall survived to a height of up to five courses (440mm) visible from inside room five. The last visible course was bond type C.

Between Rooms F1-IV/V and F1-VII – wall (FO6)128 running north to south. The total length was 9.25m. The width was 800mm and it survived to a maximum height of 600mm. The bond of the last course observed was type D.

Between Rooms F1-VIII and F1-IX – wall (FO6)82/(FO6)83 running east to west. The total length of this wall was 5.14m, it was 750mm in width and surviving to a height of seven courses or 750mm.

Between Rooms F1-VI and F1-V/VII – wall (FO6)127/(FP6)19 running east to west. The total length of this wall was 7.64m, it was 880-950mm in width and surviving to a height of five courses or 600mm.

Between Rooms F1-IV and F1-V – wall (FP6)17 running east to west. It was 4.3m in length, 820mm thick and survived to a maximum height of 460mm.

Between Rooms F1-VI and F1-VIII – wall (FO6)21 running north to south. It was 6.2m in length, 950mm thick and survived to a maximum height of 700mm, up to five courses.

Between Rooms F1-IX, F1-X and F1-XI from Room F1-VII – wall (FO6)81 running north to south, in line with

wall (FO6)21. The dimensions were 5.95 x 0.90 x 0.60m. Between Rooms F1-IX and F1-X – wall (FO6)80 running east to west. The dimensions were 3.98 x 0.75 x 0.63m. The uppermost surviving two courses of this wall were of bond type G but with a wide mud core, overlain by bond type C which only survived in a small area. Where the bond type G was visible there appeared to be a number of wooden elements set into the core; traces of what may have been a timber beam with perhaps a post at the east end. As no such timber elements were noted elsewhere in the building the interpretation of these elements is uncertain. It is possible that they were actually tree roots – substantial tree roots were found within Room F1-IV. Between Rooms F1-X and F1-XI – wall (FO6)84 running east to west. The dimensions were 5.5 x 0.72 x 0.63m.

Stairs

Room F1-I

This room was divided into three functional areas. At its western end was a roughly square space into which access was gained through one doorway in its south wall and one in its west wall. To the east doorways opened onto two long narrow rooms divided into two roughly equal parts by wall (FP7)42, 7.33m long by 740mm thick, running east to west. The wall survived to a height of up to four courses (360mm) above the foundation level. In the northern of the two rooms, measuring 7.21 x 1.37m internally, was a stairway. Immediately inside the door the floor (1.2 x 1.38m) was paved with rowlock mud bricks terminating against the first of the three surviving steps. The front of each tread was formed by a timber beam embedded in the wall to either side, each timber approximately 230mm wide and forming a riser approximately 125mm high. The rest of each step was formed by a row of headers, the whole thing supported on a well-laid mud-brick platform with eight rows of bricks as headers running east-west which filled the whole of the room up to its east wall. The two steps which are fully preserved are 400mm and 390mm deep.

If one extrapolates from the spacing of the steps and allows for a landing of the same dimensions as that at the base of the stairs then it is possible to reconstruct a flight of 10 steps rising to a height of approximately 1.25m above the ground floor. Another flight of the same size returning over the adjoining room, which was presumably supported on timber beams, would have provided access to the first floor at a height of about 2.5m (Figure 6.2).

Rooms F1-X and F1-XI

These rooms were designed to accommodate a staircase [(FO6)73], Room F1-XI containing the first flight and the walls of Room F1-X presumably supporting the return of the staircase at a higher level. In this room no elements of the staircase survived. Access from Room F1-VII to Room F1-XI was over a threshold with a course of bond type G. In front of the threshold a timber beam, part of the door frame, was exposed. A floor 2 x 1.5m in extent, paved with mud bricks, two rows of headers and two rows of rowlock, gave access to the flight of steps 1.5m in width, of which only two survived in their entirety with

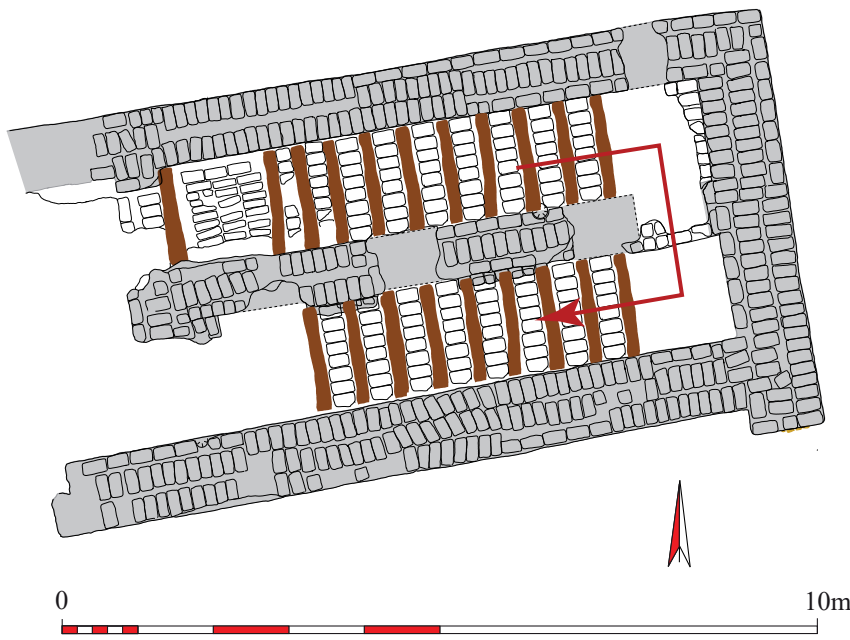


Figure 6.2. Building F1. Suggested reconstruction of the stairway in Room I (scale 1:100).

treads 406mm and 438mm deep.³ Each step was formed of eight mud bricks laid as headers and reinforced by a timber beam at the front set into the walls to north and south. At the level of the uppermost surviving step the core of the stairway was visible, at that point consisting of eight rows of mud bricks laid as headers. The presumed return of the stairway over Room F1-X may have been narrower at about 1.19m. In the context of the staircase the timbers noted above in the core of the north wall of Room F1-X are of interest. If these were associated with a timber balustrade then the steps here would again be about 1.5m in width.

Plaster

Almost every wall of the building had been plastered. On the walls in some rooms mud plaster is more obvious and predominant than in others. The plaster starts in the lower part, above the foundation courses, presumably at the level of the primary floors. The plaster observed was applied continuously over the wall faces and the corners were rounded carefully and had a smooth texture. On the exterior east wall of the building plaster was preserved which retained clearly-visible finger impressions of the workman who applied it. A short distance to the east of this wall, set in amongst the loose sand, was a shallow mud-mortar mixing pit again preserving finger impressions left as the mud was scooped up by hand. For the painted plaster see Taylor forth. b.

Doorways, jambs and doors

As noted above in all the doorways (Table 6.7) the foundation course or courses of the adjacent walls were carried across the opening. Most, and presumably originally all,

³ Inexplicably the height of the risers was not recorded by the excavator nor the difference in height between the floor inside the room and the top of the third step so it is impossible to estimate the original height of the stairway.

doorways had a timber sill beam which extends across the doorways up to the rebated jambs and was set flush with the inner face of the walls. The sill beams varied in width with examples noted at 350mm and 250mm. Remains of door jambs and doors *in situ* were also revealed.

The following doorways had features of particular interest.

Rooms F1-Ic/II – nothing remains of this timber sill beam which will have been on the north side of the doorway. On the south side a single row of irregularly-shaped stones was placed against the face of the mud-brick threshold.

Rooms F1-Ic/VI – The door jamb (FP6)27 survived abutting the wall [(FP6)16] over the threshold.

Room F1-II/exterior – The main entrance of the building was from the east into Room F1-II. The foundation

of the east wall [(FP7)117] was sealed by a single course of pink sandstone blocks set on a bed of mud mortar. Many of these blocks had been uncovered during the survey of the site and at that time they were photographed and planned. Unfortunately these were very soon thereafter robbed out. The description that follows combines the observations made during the survey and excavation seasons.

The north jamb was revetted with thin vertical slabs of sandstone (Plate 6.5). After a gap of approximately



Plate 6.5. Building F1. Room II. The north jamb of the entrance with revetting slabs of stone, looking north west – scale bar 200mm.

390mm from each jamb was a circular stone block, the southern one 520mm in diameter, the northern one of similar dimensions, set flush with the outer face of the wall. Immediately to the east of each of these was a large sub-rectangular block with a smooth upper surface 680 x 600mm and 740 x 500mm in size, resting on surface (FP7)79. They were both bonded with mud mortar into the threshold, their upper surfaces a little below the level of its top.

Covering the entire threshold between the two circular blocks were three rectangular sandstones of 1 x 0.5m and uncertain thickness (Plate 6.6). The position of the fourth



Plate 6.6. Building F1, Room II. Stone blocks in the doorway presumably forming a threshold rather than being part of a blocking of the entrance, looking south west – scale bar 2m.

block was taken by an 'L'-shaped block and a smaller rectangular one filling the space. One of the blocks had been used as a *mancala* board with six rows of four shallow depressions in its surface. The surface of the threshold was now well above that of the floor surface within Room F1-II. To allow easy access a short ramp (maximum width 520mm) was constructed made of rubble, including several pieces from a sandstone basin (cat. no. F-2399), covered in a thick layer of mud (Plate 6.7).

Rooms F1-II/III – As with the other doorways the foundation of the wall was carried across it but, in this case, only partly. The foundation of rowlocks overlain by headers ceases a third of the way across the doorway leaving a gap which was subsequently plugged by headers, some burnt red, and the awkward gaps filled by a saw-tooth header and a brick fragment (Plate 6.8). On top of the first foundation course and rising flush with the second was placed the timber sill beam, 130mm thick, which was well preserved and formed a step down into Room F1-III to the



Plate 6.7. Building F1, Room II. Mud ramp leading up from within the building to the mud-brick/stone threshold, looking south – scale bar 2m.



Plate 6.8. Building F1, Rooms II-III. Threshold of mud brick, looking south east – scale bar 500mm.

south. Hard up against the face of the rebated jambs, and extending across between them, was the door formed of almost certainly eight vertical planks 40mm thick, varying in width from 140-190mm with gaps between from 20-50mm. The door, 1.6m wide, survived to a maximum height of 140mm. A flat stone slab immediately under the door at its west end may have acted as a pivot stone. Rooms F1-III/IV – The timber jamb on the north side of the doorway survived to a height of 240mm and was of 200 x 200mm scantling. It filled the whole of the rebate. The timber sill, flush with the inner face of the wall, was much narrower. Some remains of the timber door like that between Rooms F1-II and F1-III, of six planks, survived to a height of 150mm.

Room F1-VII and the south street – The timber sill beam was set flush with the exterior face of the wall. A step [(FO6)139] within the doorway with a riser of mud brick, gave access down into the interior (Plate 6.9).



Plate 6.9. Building F1, Room VII. Step leading up from within the building into the 'street' to the south, looking south – scale bar 2m.

Room F1-VII/IX – On the south side of the doorway the timber jamb set into the wall was well preserved to a height of 610mm. It was of 100 x 190mm scantling.

Another door jamb (FO6)95 survived in the threshold between Rooms F1-VII and F1-IX abutting wall (FO6)81.

Post-pads and posts

In Rooms F1-II, F1-IV, F1-VI, F1-VIII and F1-IX were pink sandstone post-pads, all of them circular in plan (Table 6.8). On several of these, a timber post survived, the best preserved attaining a height of 530mm. To these

TABLE 6.7. BUILDING F1. DETAILS OF DOORWAYS.

	Between rooms	Width	Rebated jamb?	Door closing from within room?
	Ic-Ia	c. 1.09m	Yes	Ia
(FP7)134	Ic-II	1.27m	Yes	Ic
(FP6)27,51,(FP7)190	Ic-VI	1.22m	Yes	VI
(FP7)56,117	II-exterior	4.03m	No	?
(FO7)81,95,111,112	II-III	1.26m	Yes	III
(FO7)71,87,97,109	III-IV	1.29m	Yes	IV
(FP6)55	V-VI	1.28m	Yes	VI
(FO6)166	V-VII	1.13m	Yes	V
(FN6)108,139	VII-exterior	1.9m	Yes?	VII
(FO6)95,161	VII-IX	1.45m	Yes	IX
	VII-XI		Yes	XI
(FO6)153	VIII-IX	1.11m	Yes	VIII
(FO6)171	IX-X	1.15m	No	?
	XII-exterior	906mm	No	?

TABLE 6.8. BUILDING F1. POST-PADS AND THEIR ASSOCIATED TIMBER POSTS.

Room	Post-pad			Timber post	
		Dia.	Height		Dia.
II	(FP7)180	500mm	240mm		
II	(FP7)181	540mm	230mm		
II	(FP7)182	500/590mm	230mm		
II	(FP7)183	530mm	200mm		
IV	(FO7)116	450mm		(FO7)13	250mm
IV	(FO7)117	500mm		(FO7)14	320mm
VI	(FP6)62	550mm		(FP6)35	300mm
VI	(FP6)63	500mm		(FP6)59	230mm
VIII	(FO6)124	500mm			
VIII	(FO6)141	500mm			
IX	(FO6)123	500mm		(FO6)43	250mm
IX	(FO6)136	500mm		(FO6)69	260mm

post-pads must be added the two in the east entrance to the building.

Post-pads were only provided in those rooms where roof spans exceeded 3.2m. Where spans of 4.1m and more were required clearly the builders considered that the timbers they had available to produce roof beams were inadequate to the task. We can readily assume that all rooms of the building apart from Room F1-II to be discussed below, were roofed. In Room F1-IX large sections of the roofing was found in the centre of the room where it had collapsed. The remains of the ceiling [(FO6)42] consisted of three

TABLE 6.9. BUILDING F1. ROOM IX: TIMBER ROOF BEAMS.

	Section	Width	Thickness
A	Rectangular	200mm	400mm
B	'D'-shaped	130mm	100mm
C	Rectangular	?	?

beams running east-west on which rested palm fronds up to 10mm thick at right angles (Plate 6.10). The beams were spaced approximately 980mm and 480mm apart, centre to centre (Table 6.9).

The post-pads in the main entrance to the building presumably supported posts which in their turn helped support the timber lintel over the entrance. In Room F1-II the centre point of the post pads is a little under 1m from the north and south walls, a very different arrangement to most of the post-pads noted in the other rooms. Were these designed to support the posts of verandas or balconies with the central part of the room

open to the sky or to support the roof/ceiling? Either are possible although the arrangement of the post-pads towards the side of the room may have been to allow unimpeded access down the centre of the room in line with the wide entrance. This would have been obstructed to some extent had only two post-pads been provided down the centre of the room, as in the other rooms to the west.

The Upper Storey/s

The substantial mud-brick walls of the building, along with the two large stairways, suggest that the building was of more than one storey. The provision of posts to support the ceilings over the ground-floor rooms again suggests that a strong first floor was deemed desirable. Although mud-brick walls at first floor level will only have been provided where ground floor walls were available to support their weight, not all ground floor walls need have been replicated at first-floor level. Also

it is possible that stud walls may have been provided else-



Plate 6.10. Building F1, Room IX. Articulated roof timbers – scale bar 500mm.

where. It is thus impossible to be certain of the plan of the building at first-floor level. A few hints remain to suggest that the first-floor rooms were decorated with painted wall plaster, at least in one place bearing a hieroglyphic inscription, elsewhere patterned on a blue background (see Taylor *forth. b*). The painted inscription fragment was found in Room F1-VI; the blue painted fragments had been reused in the secondary threshold between Rooms F1-V and F1-VI (see pg 141).

Period 2, phase 2: Utilization of the building

During the excavation, the intention was to follow the level of the surfaces from one room into the next. In that way, it would have been possible to distinguish and relate the levels across the whole building. This was achieved between some rooms, but in others the presence of walls and thresholds made it impossible. For this reason, the discourse that follows is divided by room. In each room the different levels of surfaces observed and the features related to them are described.

It is clear that the building was occupied for a considerable period of time with the build-up of many surfaces and deposits in most rooms. Although, at least at the level preserved, the walls were not modified in some doorways secondary thresholds were inserted but it is impossible to suggest whether these were contemporary in different parts of the building.⁴

Room F1-I

This room (10.8m long and 3.5m wide) was actually three separate, functional spaces. Room Ia contains the lower flight of stairs which will have been returned over Room F1-Ib. What Room F1-Ib was used for at ground level is uncertain. Room F1-Ic acts as a corridor allowing access from Room F1-II through into Room F1-VI, to the first floor via the stairway in Room F1-Ia or into the closed-off Room F1-Ib. The surfaces within Rooms F1-Ib and F1-Ic had suffered major damage through pitting. Following the remains of surfaces throughout those rooms during excavation was a difficult task.

The earliest surface [(FP7)138] in Room F1-Ib (Plate 6.11), as noted above appears to date within the construc-



Plate 6.11. Building F1, Room Ib. The earliest surface, looking east north east – scale bar 2m.

⁴ For a discussion of the basketry and matting from this building, see Wendrich *forth.*

tion phase.⁵ In Room F1-Ic a fragment of a fine smooth surface [(FP7)135], actually a series of very thin surfaces (Plate 6.12), appeared to abutted the mud bricks of the



Plate 6.12. Building F1, Room Ic. Fragment of floor abutting the threshold of the doorway leading into Room II, looking south – scale bar 2m.

threshold in the doorway leading to Room F1-II and may be contemporary. The threshold formed a shallow step up from the floor. Up against the eastern jamb of the doorway between Rooms F1-Ic and F1-II are remnants of a sequence of five mud surfaces which have been truncated a short distance from the wall. The second oldest, (FP7)71, a mud surface incorporating rubble, sits partly on the mud-brick threshold. The others are smoother surfaces, the uppermost [(FP7)68] having two clear paw prints. Other fragments of surfaces remain against the walls elsewhere in Rooms F1-Ib and F1-Ic suggesting that originally there were good surfaces extending across both rooms.

Observation of the much disturbed remains suggests that in Rooms F1-Ib and F1-Ic there were six surfaces. In Room F1-Ic many of these were interleaved with organic deposits (Plates 6.13 & 6.14), in places incorporating pieces of matting, but whether they are all derived from this type of material is uncertain. Some of the surfaces, as (FP7)102 in Room F1-Ib (Plate 6.15), designated (FP7)51 in Room F1-Ic on the west side of the robber pit, also had abundant scatters of pottery and bone on them. There was much less organic material in Room F1-Ib but at least



Plate 6.13. Building F1, Room Ic. Organic deposits, looking west – scale bar 2m.

⁵ Cf. the very similar surface (FP7)132 in Room F1-II which is certainly cut by construction trenches to north, south and west. The relationship of this surface with the external east wall was unclear.

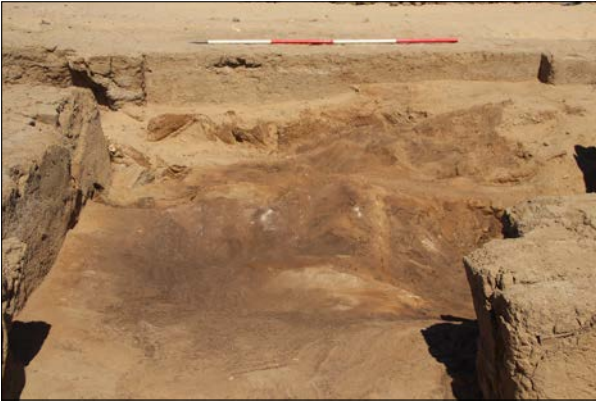


Plate 6.14. Building F1, Room 1c.
Organic deposits and matting, looking north – scale bar 2m.



Plate 6.15. Building F1, Room 1b. Surfaces containing
much occupation debris, looking south east – scale bar 2m.

one layer of matting including a circular ‘lid’ was found towards the centre of the room and part of a circular ‘lid’ was noted amongst the rubble. Deposits and floor surfaces do not appear to extend through the doorways into Rooms F1-II and F1-VI.

Immediately below the ground surface at the time excavations commenced, in the north-west corner of Room F1-1c, was a mass of mud-brick rubble which also filled the doorway into Room F1-VI. Large sherds of pottery vessels and a large lower mandible were found amongst the bricks. The upper surface of this rubble was flat and smooth giving the impressions of being a prepared surface although this was most likely illusory. The surface will have formed naturally with the weathering of any bricks protruding above the ground combined with rain water dissolving the bricks and the resulting mud drying to form the flat surface. The doorway and adjacent area between Rooms F1-1a and F1-1c was also filled with mud-brick rubble.

What may be remains of the collapsed ceiling, timbers associated with matting, was noted by the west wall of Room F1-1c.

There were four areas of pitting in these rooms some dating to within the period of use of the building, some clearly robbing activity after it had been abandoned.

Use phase pits

Room F1-1b – At the eastern end of Room 1b up against the east wall was a ‘D’-shaped pit [(FP7)143] 1.18 x 0.81m

in size and 430mm deep with sharp edges, which cuts the earliest surface in the room (FP7)138. It must date to the earliest period of the building – the surface is also cut by the construction trench for the wall between Rooms F1-1b and F1-1a. Pit (FP7)8 was set into the south-east corner of the room and cut down into the fill of the much earlier pit (FP7)143. It was roughly circular away from the walls, but rectilinear in the angle of the walls which form the upper part of its sides. It was 900 x 700mm in size. It cut through a number of deposits and floor surfaces into the underlying sand. Although of relatively late date it does not appear to have been a robber pit.

At a high level towards the eastern end of Room F1-1b was a shallow oval pit or bin [(FP7)22], 800 x 750mm in size, lined with organic material – basketry? – and filled with fine grey mud, the sort of material from which sealings are made (Plate 6.16).



Plate 6.16. Building F1, Room 1b. Half section
of a pit lined with basketry? – scale bar 500mm.

Room F1-1c – Extending almost the full width of the room was a large irregular-sided pit, the northern edge of which was clearly defined, the other edges were much less clear. The northern edge sloped down at an angle of less than 45° and was lined with a finely-made mat (FP7)61 (Plate 6.17). The western edge was very irregular but extended



Plate 6.17. Building F1, Room 1c. Matting on the northern
side of the pit, looking north west – scale bar 500mm.

up to the mud-brick threshold in the doorway leading to Room F1-VI. In the fill at that point was some mud-brick rubble (Plate 6.18).

Robber pits

Room 1a – Towards its eastern end pit (FP7)25 was well



Plate 6.18. Building F1, Room 1c. Matting and mud-brick rubble by the doorway into Room VI, looking west north west – scale bar 2m.

defined on all sides having been cut through parts of north and south walls of the room and through the mud-brick substructure of the stairway to a depth below its surviving surface of 968mm. The pit extended below the level of the mud bricks into clean sand. It was filled with mud bricks collapsing from the sides of the pit and by wind-blown sand.

Room F1-Ia/Ib – a pit has cut a rectangular slot out of the dividing wall. It extends the full width of the wall but not into the substructure of the stairway.

Room F1-Ib/Ic – At the western end of the room where it meets Room F1-Ic pit (FP7)98 had been dug to remove the wall and threshold between the two rooms. It extended the full width of the room and was 1.45m in length. Articulated mud-brick rubble lay in the fill.

Room F1-Ic – A shallow oval pit, (FP7)36, 1.5 x 1.42m in size and up to 560mm deep, cut into the rubble and sand towards the southern end of the room.

Room F1-II

This room (10.8m long and 5.1m wide) was the largest in the building. In total three surfaces were distinguished. Between each floor level there was a deposit of sand with a high concentration of pot sherds and small rounded pot discs or counters.

The earliest deposit across the room, (FP7)125, was sand with patches of plaster and mud and may date to the construction phase. Resting on this surface was the rubble fill of the mud ramp which sloped up onto the top of the threshold leading to the exterior of the building (see pgs 134-5). The deposit sealed the construction trenches and was overlain by another [(FP7)123], of up to 170mm of sand, which overlay the bricks in the threshold between Rooms F1-II and F1-III, of compacted light brown sand. The stone post-pads sat on this surface.

Over this sandy level was constructed a slightly bow-fronted step [(FP7)83] in the doorway between Room F1-II/III about 300mm in height (Plate 6.19). The front of the riser was of two courses of four bricks set as shiners. This new threshold behind this step was infilled by a mud surface that runs into Room F1-III. The presence of this feature suggests that at this time the floor levels had risen considerably in Room F1-III.

Over the sandy level was the compact sand surface



Plate 6.19. Building F1, Rooms II-III. Step inserted into the doorway, looking south east – scale bar 500mm.

(FP7)74 which overlay the post-pads in the room. Presumably the posts set upon them remained in place; at least some were clearly visible in the surface above. It was sealed by a deposit of loose sand containing many pottery sherds which ran through the doorway into Room F1-Ic. The latest surface observed across the whole space was (FP7)11 which, like its predecessor, lapped up against the front of the step in the doorway into Room F1-III. It extends through the doorway into Room F1-Ic. On the slightly undulating surface in the centre of the space were three hearths, two 370mm in diameter, which had burnt it red. Towards the western end of the space were further deposits of sand, organic material by the doorway into Room F1-Ic, and a compact surface by the doorway into Room F1-III. Above that was a deposit of mud brick and finally sand containing large amounts of pottery sherds with occasional mud bricks.

Room F1-III

A long rectangular room with its long axis east-west measuring 10.66 x 3.21m. Within this room a total of eight surfaces were clearly distinguished and the remains of five more against the walls and over the thresholds were recorded. Extensive disturbance had occurred at the east end of the room and destroyed all surfaces in that area.

The construction level in this room was sealed by a deposit of light brownish-yellow sand (FO7)69, about 150mm, thick over much of the room. In this were found a considerable number of sealings, bungs and an irregular pink sandstone block which does not appear to be *in situ*.

The earliest remains of a surface [(FO7)91] were uncovered in the north-west corner of the room, abutting the timber threshold between Rooms F1-III and F1-II. It sealed the foundation courses of the building. To the south east of the surviving floor at the same approximate level were two patches of matting in very poor condition, one in the middle of the room, which includes a burnt basket or lid about 600mm in diameter, and the other abutting threshold III-IV. These levels were sealed by a sandy deposit which survived over the western part of the room to 5.2m from the west wall. It contained a considerable number of sealings towards the centre of the room, much pottery close to its north wall, and mud bricks near the doorway into Room F1-IV.

Thereafter a sequence of floors, some of compact sand and mud, survived in the north-western part of the room. Elsewhere in the room there were other surfaces and deposits, none of which were very extensive. Some of these were of organic material, others contained rich deposits of pottery including some almost complete ribbed amphorae. It was impossible to ascertain which of these were contemporary nor why they did not extend over a larger area. The deposits just petered out rather than being cut by defined pits.

The latest, almost complete, surface was (FO7)65. It seems that the extension of the threshold between Rooms F1-II/III was built to access this surface. This surface was equivalent to (FO7)88 in Room F1-IV from which it was separated by the timber door. A curious feature of many of the deposits and floors in this room, and in the adjacent Room F1-IV, was that they abutted the remains of the timber doors which were closed. As these deposits formed it would have been impossible to open the doors and it is thus difficult to see how one would gain access into Rooms F1-III and F1-IV and, therefore, how the deposits within them could have been formed. Only after the level had been raised by 140mm plus the height of the timber step in the doorway from Room F1-II to F1-III, 130mm (Plate 6.20), and by 150mm (door) plus 150mm (step) in the other doorway into Room F1-IV, were the remains of the doors sealed and access through the doorways became once again possible.



Plate 6.20. Building F1, Rooms II-III. The reinstated doorway, looking west – scale bar 500mm.

Room IV

This room, situated to the west of Room F1-III, was only accessible through that room. The dimensions were 5.72 x 4.1m; the long axis running north to south.

Following the construction of the walls with their slightly projecting lowermost courses, the room was infilled with a deposit of loose sand within which were pottery and bones. On this was the earliest surface (FO7)96 of mud in places, elsewhere of sand. In the centre of the room were a number of irregular stones [(FO7)100] which may have formed a stone-flagged floor of the type noted in Rooms F1-VIII and F1-IX. These and surface (FO7)96 were sealed by a layer rich in organic material including layers of matting in amongst which was much pottery, animal bones and small finds including the section of elephant tusk (cat. no. F-2325). In the southern part of

the room, around the south post, was a white material on the surface, perhaps plaster or decayed vegetal matter.

Above, another surface covered the west half of the room. Over it a small remnant of mud surface (FO7)88 was exposed next to the threshold with Room F1-III contemporary with surface (FO7)65 in that room. The latest surfaces recorded were two very-badly preserved remains, one next to the threshold with Room F1-III (FO7)52 and the other (FO7)17 in the north-east corner of the room, mainly abutting the east wall. Elsewhere was a deposit of sand containing a small amount of pottery and bone, which had an irregular surface. It was overlain, particularly adjacent to the west wall of the room, by a mass of stone slabs and smaller stones, of very similar character to those forming layer (FO7)100, along with mud-brick rubble. Above this were piles of organic material with much pottery including a number of largely complete ribbed amphorae (Plate 6.21). These deposits appear to have been much disturbed (Plate 6.22) amongst other agencies, by a substantial tree-root system.



Plate 6.21. Building F1, Room IV. Large pottery sherds and organic material in the south-west corner – scale bar 500mm.



Plate 6.22. Building F1, Room IV. View of the disturbed layers, looking north west – scale bar 2m.

Room F1-V

This room (4.3 x 2.35m) was located in the centre of the building and allowed communication between Rooms F1-VII and F1-VI, having doorways into both. Its location and proportions indicate that it functioned as a corridor although the nature of the deposits within it suggests that this may not always have been the case.

The construction surface was sealed by a deposit of yellow sand. The earliest surface (FP6)147 had a hearth

on it next to the south wall. Above it was another deposit of sand sealed by surface (FP6)60 (Plate 6.23). This was cut by four hearths set in shallow and irregularly-shaped pits, all of them with fills rich in charcoal (Table 6.10). A further area of burning sat on it, represents another hearth.

Sealing this surface was a sequence of seven more, the first one extending over the threshold into Room F1-VII. Some of these surfaces were rich in organic material (Plate 6.24). In all these levels pottery and animal bones were present. At some point in this sequence a new threshold was inserted in the doorway leading into Room F1-VI. This utilised a timber beam 70mm thick, 140mm wide and



Plate 6.23. Building F1, Room V. Surface (FP6)60 cut by four hearths, looking west – scale bar 2m.

TABLE 6.10. BUILDING F1. SURFACE LEVELS WITH ASSOCIATED HEARTHES IN ROOM V.

Level	Hearths			
(FP6)147	Level	Length	Width	Depth
	(FP6)148	250mm	220mm	50mm
(FP6)60	Level	Length	Width	Depth
	(FP6)67	500mm	400mm	60mm
	(FP6)68	150mm	230mm	10mm
	(FP6)69	600mm	300mm	60mm
	(FP6)70	600mm	440mm	50mm
	(FP6)71	800mm	400mm	130mm



Plate 6.24. Building F1, Room V. Surface comprised of much organic material, looking west – scale bar 2m.

1.24m long which was set at an angle in the doorway on a silty deposit. On the south side of the timber, fragments of mud brick had been laid to level up the surface in the doorway. These bricks were reused and preserved on their underside extensive remains of mud plaster which bore intricately painted decoration principally in blue.

Room F1-VI

Access to this room was through Room F1-V in the south, or through Room F1-I in the east. The room measured 7.7 x 4.4m with its long axis east to west. For a summary of the surfaces and associated features see Table 6.11.

The earliest surface [(FP6)74] was well preserved in the centre of the room and abutted the post-pads approximately level with their upper surface (Plate 6.25).



Plate 6.25. Building F1, Room VI. The primary floor surface, looking west – scale bar 2m.

It is clear from the west wall that the inner faces of the walls were rendered in mud plaster when the floor was already in place. A series of pits and possible post-holes cut the surface. They were circular or oval in shape and shallow. Pit (FP6)82, abutting the west wall of the room, contained an appreciable amount of animal bone and pottery. In the centre of the room, close to the west post-pad, a small hearth [(FP6)76] sat in a depression on the surface.

Associated with the second surface no significant features were exposed. In the next surface a long, narrow pit [(FP6)65] was exposed abutting the east wall. The fill was of loose sand mixed with some mat fragments and a very few pottery sherds.

These three surfaces were of compact mud. Above a deposit of sand containing much pottery and some bone was an extensive gently-undulating deposit of brown organic material up to 130mm thick [(FP6)37] (Plate 6.26). In the south-west corner of the room a series of shallow pits, of irregular shape and almost vertical sides, were excavated.

Over this surface in the north-east corner of the room was further organic material [(FP6)48] including a mat of palm fibres above which was a layer of circular baskets very similar to the modern *tabaq* (Plates 6.27 & 6.28). On one of the localised traces of surfaces in this area [(FP6)36] were the remains of a shallow basket and its contents (Plate 6.29). They were sealed by (FP6)31, a sandy/silt deposit with abundant pottery sherds, an amount of bone and layers of organic material. Amongst the arte-



Plate 6.26. Building F1, Room VI. Deposit of organic material, looking south west – scale bar 2m.



Plate 6.27. Building F1, Room VI. Matting – scale bar 100mm.



Plate 6.28. Building F1, Room VI. Circular basketry – scale bar 1.5m.

facts were many largely complete pots, some apparently broken as they were walked upon (Plate 6.30). It was sealed by an area of mats and basketry [(FP6)29] in the west half of the room, abutting the west wall. At this level a human skeleton [(FP6)30] was found adjacent to the south wall (Figure 6.3). It is aligned approximately south east to north west. The torso and probably the legs were articulated. The identity of the additional bones where the left shoulder should have been is uncertain – they are



Plate 6.29. Building F1, Room VI. Remains of a basket and its contents – scale bar 500mm.



Plate 6.30. Room VI. The sandy/silty deposit (FP6)31 containing much pottery, looking north east – scale bar 2m.

probably from another individual or belong to an animal. No trace of the skull was found. This individual appears to have been lain on the surface in the room; no trace of a grave cut was noted. If this is the case it was interred during the use of the building which raises the issue of how it could have been left there to rot unless there was a period of disuse of the room.

At some point thereafter the new threshold was inserted in the doorway between Rooms F1-VI and F1-V incorporating the painted wall plaster assumed to come from the upper storey of the building. Another piece of painted plaster with part of a hieroglyphic inscription came from a broadly contemporary deposit in the room.

The latest surface presumably to be associated with the use of the building (FP6)15 survived as isolated patches of organic material, basketry and mats, set on undulating soft sand. By the time this surface was in use there had already been some collapse of the building, at least in the area of this room. Cutting the surface and rubble layers was a 'D'-shaped pit 2.82 x 2.46m in size filled with rubbish [(FP6)9] – abundant pottery sherds, some seal impressions, beads, charcoal and dom-palm nuts, along with a bucranium (Plate 6.31). Sealing this matting and basketry layer were deposits of rubble.

Room F1-VII

Room F1-VII, a long room (8.7 x 2.48m) or corridor, was

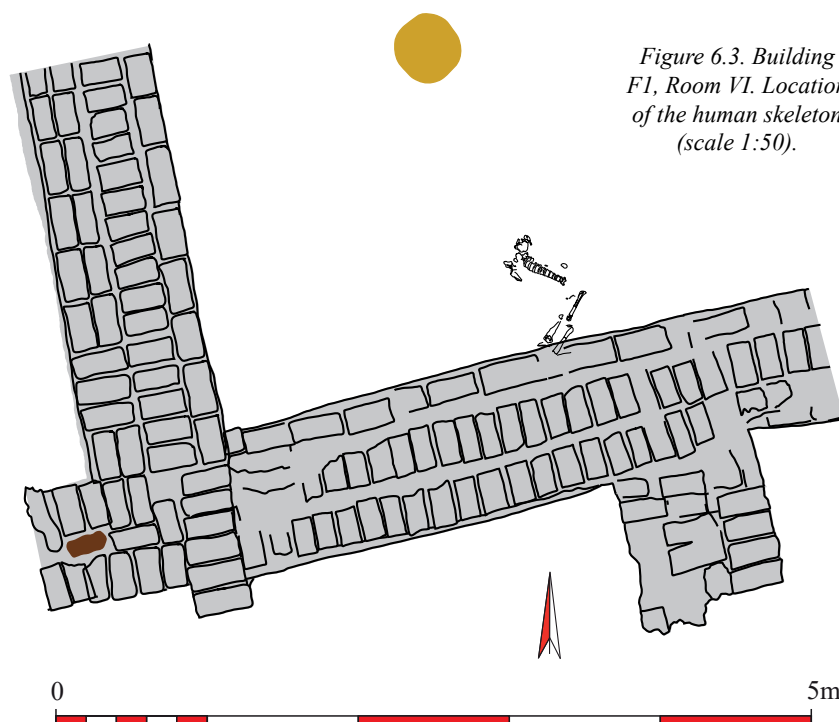


Figure 6.3. Building F1, Room VI. Location of the human skeleton (scale 1:50).

the room partly through the threshold and partly through the step. It was 900 x 600mm in size, had vertical sides cut through the mud brick and a flat bottom at a minimum depth of 430mm (Plate 6.32).

Sealing that level was surface (FO6)157, of compact mud. In this level alongside the north wall were four pits each with a pot *in situ*. Three were well preserved and were open-mouthed jars (one was a type 4811xa), the fourth (type 4649x) contained a much larger vessel the upper part of which is missing (Plate 6.33). Pit (FO6)156 was set half way along the room close to the east wall. It was oval, measuring 960 x 520mm and was 380mm deep and was filled with soft sand, occasional charcoal, pot, bone and a fragment of a mud brick.

The next surface [(FO6)125], of compact mud, sealed three of the four

TABLE 6.11. BUILDING F1, SURFACE LEVELS AND RELATED FEATURES IN ROOM VI.

Level	Osd	Features					
		Level	Length	Width	Depth		
(FP6)74	45.204m	(FP6)76	hearth	300mm	200mm	60mm	
		(FP6)78	post-hole	400mm	400mm	220mm	
		(FP6)80	post-hole	250mm	400mm	180mm	
		(FP6)82	pit	650mm	2.7m	90mm	
		(FP6)86	post-hole	380mm	500mm	120mm	
(FP6)66	45.234m						
(FP6)61	45.244m	(FP6)65	pit	2.2m	920mm	420mm	
(FP6)37	45.404m	(FP6)41	pit	1m	1m	290mm	irregular
		(FP6)43	pit	420mm	820mm	210mm	
		(FP6)45	pit	980mm	960mm	230mm	'L'-shaped
		(FP6)47	pit	310mm	310mm	160mm	circular
		(FP6)53	pit	700mm	580mm	100mm	'kidney'-shaped
(FP6)36	45.454m						
(FP6)31	45.474m						

entered by a doorway in its south wall from the street. On its west side, it connects to Rooms F1-XI and F1-IX, on the east to Room F1-V. For a summary of the surfaces and associated features see Table 6.12.

The earliest surface over the construction level was of compact sand in which was a circular depression 200mm in diameter containing a hearth and a pit (FO6)163 with a pot *in situ*. The pit was situated next to the north wall of the room in the same area occupied by later pots set in surface (FO6)157. The hearth was located a few tens of millimetres to the east of the pit. This surface abutted the step (FO6)139 inside the south entrance. At some uncertain date a large oval pit was dug in the south-east corner of

pots by the north wall. In the central part of the room it was covered by an ashy layer upon which were patches of charcoal presumably from a number of small fires. In the north-east corner of the room was a loose deposit of rubble. Across the room was a sequence of later floors, one associated with a hearth which had extensively burnt the wall bricks, another with an ashy surface with much pottery and charcoal and a piece of burnt basketry on it. It was partly sealed in the north-west corner of the room by tumble; small fragments of mud brick in a sandy matrix.

Thereafter the room was largely covered by a spongy layer of organic material [(FO6)66]. It was cut by a semi-circular pit against the west wall, 1.86m long by 660mm



Plate 6.31. Building F1, Room VI. The bucranium and other bones in the fill of pit (FP6)9 – scale bar 500mm.



Plate 6.32. Building F1, Room VII. The large pit in the south-east corner of the room by the doorway through the external wall, looking south west – scale bar 500mm.



Plate 6.33. Building F1, Room VII. Pottery vessels set in the surface alongside the north wall, looking east north east – scale bar 2m.

wide and 310mm deep filled with wind-blown sand and silt, occasional small pieces of tumble and charcoal. Three bricks in its fill appear to line the pit edge at its northern end.

The last surfaces were in very bad condition and crumbly. Surface (FO6)50 only survived at the northern end of the room and was cut by pit (FO6)49 extending over

the rest of the room with a maximum depth of 270mm filled with loose sand, much pottery and some bone. It was also cut by pit (FO6)51 which straddled the doorway into Room F1-IX.

Rooms F1-VIII and F1-IX

Room F1-VIII (4.9 x 5m) was located in the north-west corner of the building. None of its walls retained mud-mortar render. The only entrance to the room was in the south wall, from Room F1-IX (4.5 x 5.2m). The entrance to Room F1-IX was through the doorway in the east wall from Room F1-VII. Also through the south wall a doorway links with Room F1-X. For a summary of the surfaces and associated features see Table 6.13.

The first surface over the construction surface was a sandy deposit [(FO6)145/148] covering both rooms. In the south-east corner of Room F1-IX, a circular pit contained a large ribbed amphora (type 4337x), still *in situ* but missing its base before it was placed there, its rim protruding a little above the surface. The sandy deposit was sealed by compact mud surface (FO6)129. This surface had been cut by three shallow pits all of them located in Room F1-IX. The function of these pits is unclear.

Sealing this level was the stone floor (FO6)138/119 (Figure 6.4, Plate 6.34). The sandstones were irregular in



Plate 6.34. Building F1, Rooms IX-VIII. The stone floor, post-pads and timber posts, looking north north east – scale bar 2m.

size, shape and thickness varying from 700 x 520mm to 180 x 100mm and between 30mm and 100mm in thickness. This floor covered both rooms but in some areas stones had been removed, as in the north-east corner of Room F1-IX, and disturbed in other areas with some of the stone slabs overlying others still *in situ*. The surface is very uneven perhaps in some areas caused by slumping into the earlier pits. Filling those areas from which presumably stones had been removed was a sand layer which, together with the stone slabs, formed a surface across both rooms [(FO6)90]. Over some of the stones visible at this level were traces of round basketry. At the same level was the base of a small mud storage bin close to the north-east corner of Room F1-IX (Plate 6.35). In the north-west corner of Room F1-IX, this surface was cut by a pit.

Over this, remains of a brown organic surface, (FO6)100

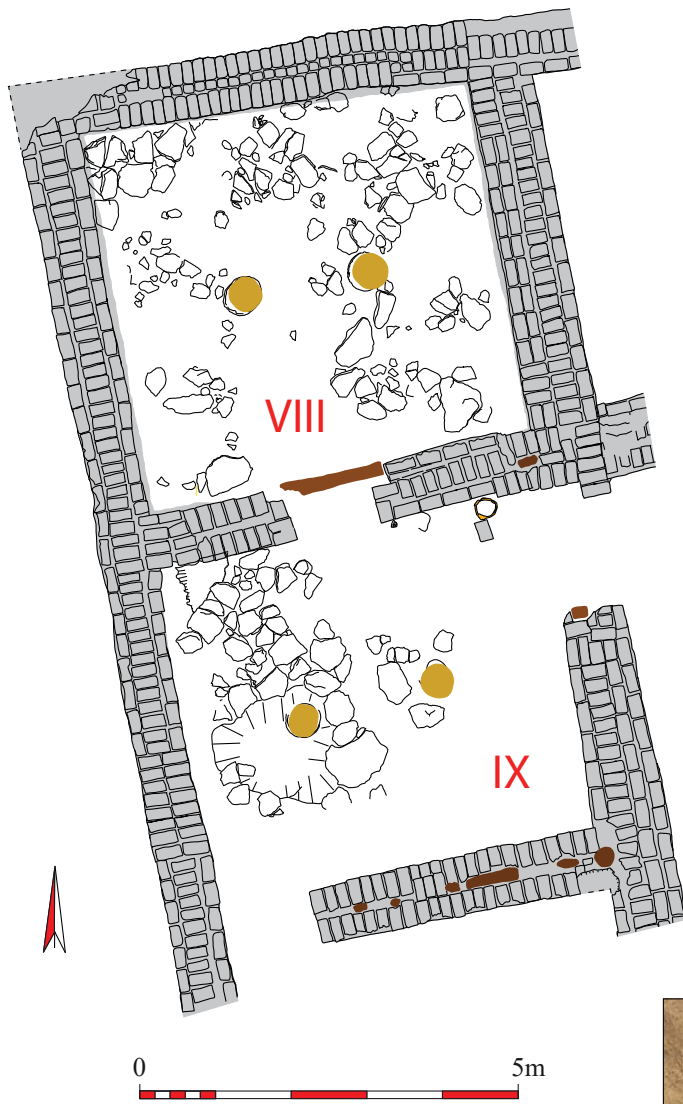


Figure 6.4. Building F1, Rooms VIII-IX: the stone floor (scale 1:100).



Plate 6.35. Building F1, Room IX. Mud storage bin adjacent to the north wall – scale bar 500mm.

(Plate 6.36), were excavated in the eastern part of Room F1-IX. Sand deposits covered this level and were sealed by the remains of another brown ‘spongy’ surface on top. This surface was cut by a pit in the centre of Room F1-IX, next to the east post-pad. Above was another layer of



Plate 6.36. Building F1, Room IX. Organic material forming surface (FO6)100, looking south west – scale bar 2m.

sand and above that a further ‘spongy’ brown deposit forming a smooth surface with much of a bucranium set into it along with pottery sherds (Plates 6.37 & 6.38). The composition of the ‘spongy’ deposits, which have an oily feel, is uncertain. In some rooms the oil has discoloured pottery sherds associated with them. Some of these sherds are from ribbed amphorae but it is clear that the amphorae had not contained the oily substance. It is possible that this room could have been used in this latter period of occupation as a shelter for animals. The same kind of spongy surface was observed in similar levels in Room F1-VI.



Plate 6.37. Building F1, Room IX. ‘Spongy’ brown deposit forming a surface – scale bar 500mm.

Covering this last brown deposit was a series of sandy deposits. In Room F1-VIII, the next surface was of compact mud [(FO6)19]. Resting on this was a thick deposit, interleaved with sand particularly against the walls, made up of organic material, both matting and circular basketry [(FO6)14/16 (Plate 6.39) equivalent to a very similar deposit [(FO6)29] in Room F1-IX (Figure 6.5, Plate 6.40). The surface in Room F1-VIII was cut by two small pits left when the timber posts which sat on the stone post-pads had been extracted or rotted away. Resting on this deposit was a thick layer of mud-brick rubble with the fragments becoming progressively larger towards the

TABLE 6.12. BUILDING F1. SURFACES/DEPOSITS AND RELATED FEATURES IN ROOM VII.

Level	Length	Width	Osd (m)					
(FO6)154	8.7m	2.48m	45.10-45.17	Level	Features	Length	Width	Depth
				(FO6)163	Pit for pot	350mm	350mm	
				(FO6)165	Pit	200mm	200mm	130mm
(FO6)157	8.7m	2.48m	45.19-45.21	(FO6)131	Pit for pot	360mm	330mm	150mm
				(FO6)149	Pit for pot	430mm	430mm	170mm
				(FO6)150	Pit for pot	420mm	320mm	
				(FO6)156	Pit	960mm	520mm	380mm
				(FO6)159	Pit for pot	600mm	600mm	250mm
(FO6)125	4m	2.52m	45.23-45.26	(FO6)135	Pit	900mm	600mm	430mm
(FO6)122	7.04m	2.52m	45.28-45.29					
(FO6)114	6.49m	2.52m	45.31-45.32	(FO6)113	Hearth	820mm	720mm	110mm
(FO6)109	7.82m	2.52m	45.34-45.35					
(FO6)115	2.25m	1.98m	45.37					
(FO6)61	9.1m	2.52m	45.41-45.44					
(FO6)66	5.95m	2.45m	45.34-45.40	(FO6)64	Pit	1.86m	660mm	3110mm
(FO6)60	2m	2.7m	45.45					
(FO6)53	8.65m	2.52m	45.63-45.72					
(FO6)52	1.5m	2.32m	45.74					
(FO6)50	1.49m	2.52m	45.79					

TABLE 6.13. BUILDING F1. SURFACES AND RELATED FEATURES IN ROOMS VIII AND IX.

Level	Length	Width	Osd					
(FO6)145	9.4m	5m	45.054m	Level	Feature	Width	Length	Depth
				(FO6)170	Pit	700mm	640mm	740mm
(FO6)129	9.4m	5m	45.164m	(FO6)133	Pit	1.56m	1.48m	250mm
				(FO6)143	Pit	1.07m	700mm	190mm
				(FO6)147	Pit	1.2m	1.2m	220mm
(FO6)138	9.4m	5m	45.174m					
(FO6)118	9.4m	5m	45.234m					
(FO6)90	9.4m	5m	45.274m	(FO6)117	Pit	720mm	1.42m	560mm
(FO6)100	3.13m	2.17m	45.304m					
(FO6)98	2.6m	2.4m	45.320m	(FO6)104	Pit	720mm	1.42m	560mm
(FO6)96	2.6m	1.5m	45.394m					
(FO6)19	4.9m	5m	45.484m	(FO6)86	Post-hole	480mm	400mm	150mm
				(FO6)88	Post-hole	500mm	650mm	130mm
(FO6)71	4.5m	2.8m	45.464m					

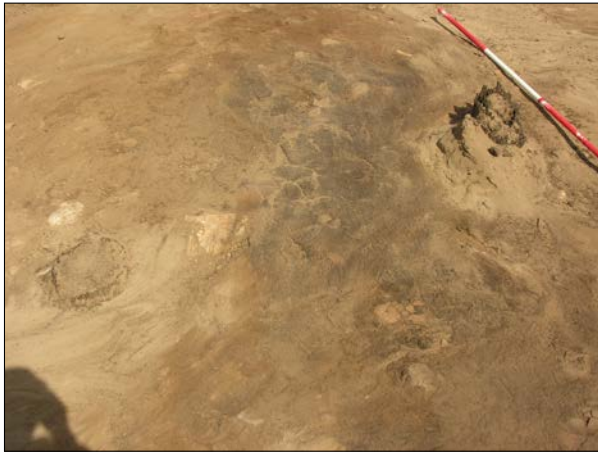


Plate 6.38. Building F1, Room IX. The 'spongy' surface and timber roof supports, looking north east – scale bar 1.5m.



Plate 6.40. Building F1, Room IX. Circular basketry (FO6)29 – scale bar 500m.



Plate 6.39. Building F1, Room VIII. The interleaved basketry/mattings and sand layers (FO6)14/16 against the east wall, looking north east – scale bar 500mm.

doorway. Amongst this rubble were pieces of mud plaster with a smooth surface on which had repeatedly been stamped the same seal impression (Vincentelli forth., type 72). This rubble presumably came from a blocking of the only doorway into the room which had been demolished at this time perhaps on the abandonment of the building when the goods stored in Room F1-VIII were removed.

Room F1-X

This room is located between Room F1-IX in the north and the wall supporting the stairs in the south. It is a narrow room (5.21 x 1.34m) accessible through Room F1-IX. Its walls do not appear to have been rendered; the render on the west wall of Room F1-IX stops against the door threshold. For a summary of the surfaces and associated features see Table 6.14.

TABLE 6.14. BUILDING F1. SURFACE LEVELS AND RELATED FEATURES IN ROOM X.

Level	Length	Width	Osd	Feature				
				Level	Feature	Width	Length	Depth
(FO6)77	1.32m	5.21m	45.284m	(FO6)45	Pit	1.48m	1.4m	170mm
(FO6)54	1.4m	2.1m	45.344m	(FO6)72	Hearth			100mm

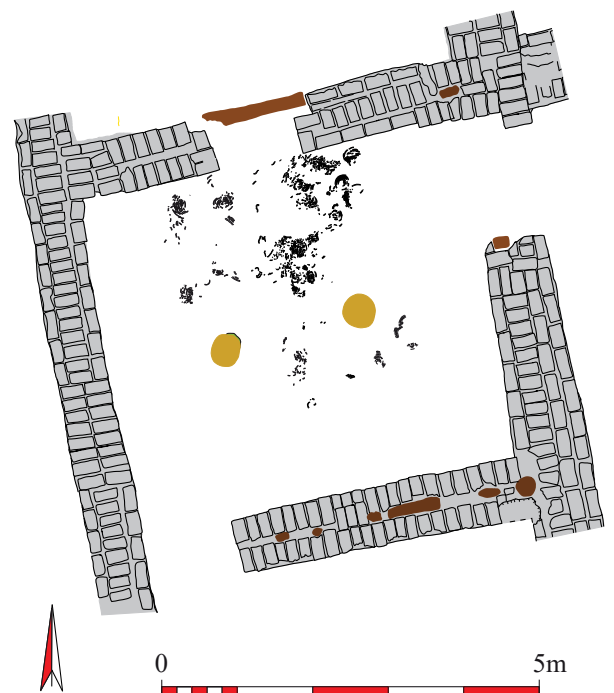


Figure 6.5. Building F1, Room IX. Remains of basketry (FO6)29 (scale 1:100).

The earliest surface excavated was the mud surface (FO6)77. This was cut by pit (FO6)45 located at the east end of the room. Within the fill of the pit, many thin layers of water-deposited silt, was an *in situ* ceramic bowl (type 4159x) and a complete but broken dish (type 4151x).

Over these levels, the mud surface (FO6)54 was preserved in the south-west corner of the room. Next to the wall was a hearth.

Room F1-XI

Overlying the brick floor and some of the steps was a deposit of loose sandy silt with small pieces of mud-brick rubble with evidence of a fireplace.

Additions to the building

Room F1-XII

This room, measuring 7.43-7.17 x 4.86-4.41m internally, is an addition to the building, its east and west walls, (FP6)141 and (FP6)139, abutting the north wall [(FO6)20] of the building. The room is enclosed to the north by wall (FP6)140 through which, at its western end, was the only entrance with a rebated jamb on the east side indicating that the door opened inwards. In other rooms of the building with similar dimensions stone post-pads supporting timber uprights were provided to hold up the ceiling. The absence of such additional supports in this room suggests that the ceiling was of lightweight construction and presumably did not form the floor of an upper storey. For a summary of the surfaces and associated features see Table 6.15.

The west wall (FP6)141 had a foundation course of headers. This wall (4.7 x 0.5m) survived to a height of 690mm but it is not clear how many courses as it retained its mud render. The bond employed is of type H as was also the case with the other two walls with a few rowlocks against the wall of the original building. The east wall [(FP6)139] measures 4.9 x 0.57m and survived to a maximum height of 690mm. The north wall [(FP6)140], 7.4m in length, originally appears to have been about 600mm thick. In the central part of the wall the inner face was later cut back down to its first course forming a wall c. 380mm thick. It survived to a maximum height of 610mm.

A total of 13 surfaces were recorded over the sand level on which it was constructed. The most significant surfaces are described below.

Surface (FP6)161 (Figure 6.6)

The walls were constructed on surface (FP6)161. After its construction, following the removal of the inner wall face, a roughly oval pit 900mm long was cut partly under the base of the wall. Wedged into this pit, up against the underside of the wall, was a ceramic brazier stand (type 4661x). The pit had been used to accommodate a hearth and contained a white compact ashy deposit. The edge of the hearth was partly defined by pieces of mud bricks and sherds like those from cylindrical ceramic ovens of the type seen elsewhere on the site (Plate 6.41). To the west of this hearth was another oval hearth filled with a compact white ashy layer and another lay immediately to the south (Plate 6.42). The heat from these hearths had burnt the mud bricks of the north wall a bright red in places. On the other side of the room, next to the south wall, another oval hearth was related to this surface.

Structure (FP6)165 was constructed partly on this surface and partly over the charcoal and sand fill of a shallow depression (max. 160mm deep). The structure, abutting

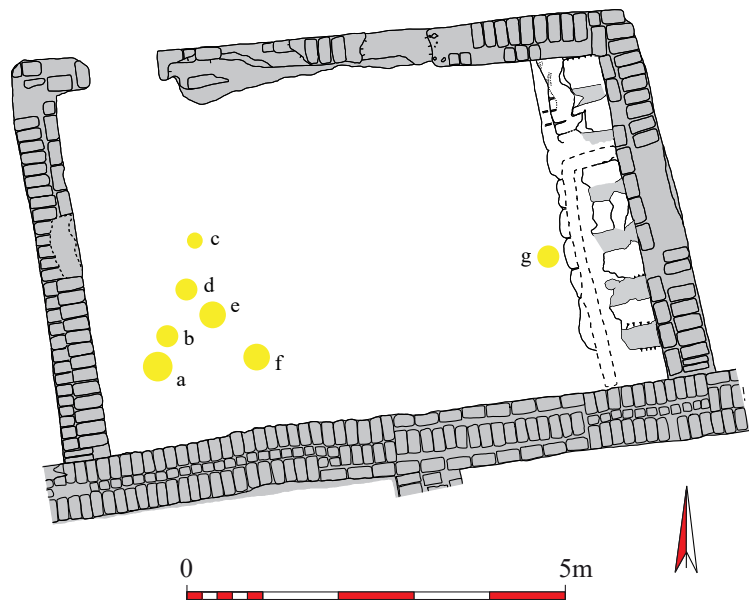


Figure 6.6. Building F1, Room XII. Surface (FP6)161 with hearths and the bank of ovens along the east wall (scale 1:100).

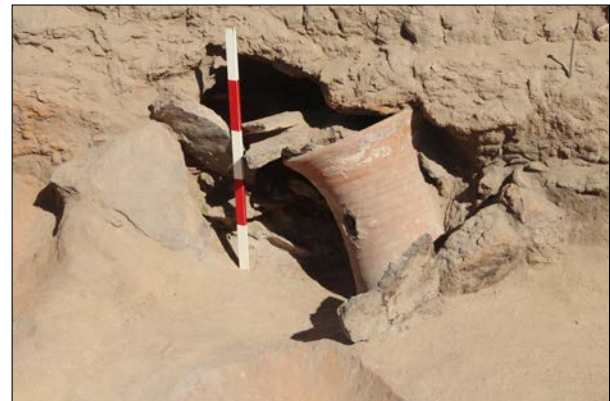


Plate 6.41. Building F1, Room XII. The hearth and ceramic brazier stand cut into surface (FP6)161 and set partly under the north wall – scale bar 500mm.



Plate 6.42. Building F1, Room XII. Surface (FP6)161 and hearths, looking north east – scale bar 2m.

the east wall of the room along its entire length (Figures 6.6 & 6.7a), was built with a mud-brick face serving to revet an elevated area on which was a series of roughly square, shallow, mud-lined depressions, the bases of seven hearths/ovens each separated by a partition made of mud brick (Plates 6.43 & 6.44).

In the south half of the room, set on the surface, a total of seven hearths, with diameters of between 110-200mm, were observed.

Over the foundation level, the earliest mud surface was

(FP6)172. This surface only survived in the western part of the room abutting the western wall. Over it, the marks of two surface fires were recorded. Above, four more surfaces were excavated in the same area until reaching the level of surface (FP6)154.

Surface (FP6)154

This surface, which survived in the east half of the room, was composed of compact dark brown sand with marks of burning. Sat on it was structure (FP6)152. This rectangular

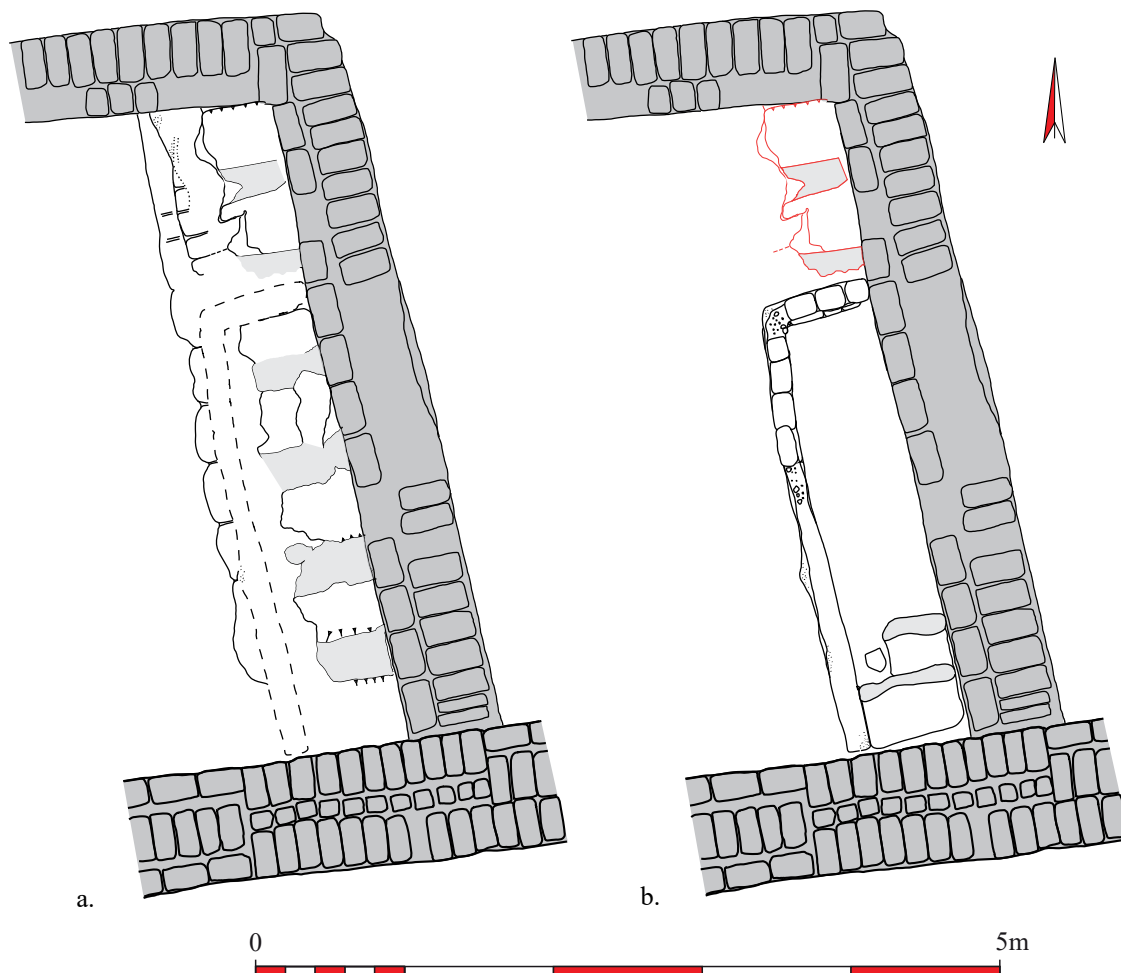


Figure 6.7. Building F1, Room XII. Two periods of ovens alongside the east wall. The ovens in red may have remained in use into the second phase (scale 1:50).



Plate 6.43. Building F1, Room XII. First phase ovens partly overlain by the wall around the phase 2 ovens, looking south east – scale bar 2m.



Plate 6.44. Building F1, Room XII. First phase ovens partly overlain by the wall around the phase 2 ovens, looking north east – scale bar 2m.

TABLE 6.15. BUILDING F1. SURFACE LEVELS IN ROOM XII AND RELATED FEATURES.

Level	Length	Width	Osd	Features				
(FP6)161	6.31m	4.45m	44.844m	Level	Diameter	Length	Width	Depth
				(FP6)189		900mm	600mm	50mm/450mm
				(FP6)187	500mm			70mm
				(FP6)180	300mm			45mm
				hearth A	200mm			
				hearth B	150mm			
				hearth C	110mm			
				hearth D	150mm			
				hearth E	180mm			
				hearth F	150mm			
hearth G	150mm							
(FP6)172	2.3m	3.4m	44.877m	(FP6)173	320mm			
				(FP6)174	230mm			
(FP6)171	2.57m	3.27m	44.881m					
(FP6)156	3.7m	1.8m	44.924m					
(FP6)155	4.8m	3.3m	44.964m					
(FP6)162	2.46m	1.3m	45.024m					
(FP6)154	4.8m	4m	45.104m					
(FP6)138	4.8m	6.9m	45.124m					
(FP6)143	4.8m	6.9m	45.259m					
(FP6)136	1.7m	6.9m	45.306m					
(FP6)135	0.90m	6.9m	45.319m					
(FP6)134	1.2m	6.9m	45.324m					
(FP6)133	1.53m	4m	45.424m					
(FP6)131	4.8m	4.7m	45.451m					

structure (650 x 220 x 170mm) was built with two courses each of a single row of mud bricks enclosing a square area abutting the south wall of the room. It was filled with a mixture of loose sand, animal bone and ash.

Remnants of subsequent floors overlap each other in a strip in the centre of the room, running east to west. One of these, (FP6)143, abutting the south wall and surviving for 1.24m to the north, had three largely complete, but broken, pottery vessels resting on it immediately adjacent to the south wall (types 3207x, 3244x & 4721x). On the latest floor [(FP6)131], approximately 700mm above the primary floor surface, was an 'L'-shaped wall (FP6)130 with a rounded angle, constructed from a single row of bricks and surviving up to the present ground surface, a total of six courses (Figure 6.7b). The exterior was rendered in a mud mortar. This overlay the earlier bank of ovens and had partly removed them although the northernmost two ovens may have remained in use. The new feature was partly filled with a mixture of sand, charcoal, potsherds and animal bone on which were built two rectangular mud-lined hearths/ovens of very similar character to the earlier installations (Plates 6.45 & 6.46).

During the life of the building a substantial buttress 810mm thick and probably as built 4.2m in length, constructed of mud bricks most laid in bond type D, was



Plate 6.45. Building F1, Room XII. The wall delimiting the later phase ovens, looking south east – scale bar 2m.

added to the external face of the west wall and probably originally extended to the north-west corner of the building (Figure 6.8). Subsequently both the buttress and the corner of the building had been much damaged by wind erosion, presumably the reason why the buttress was built in the first place to help protect this part of the building which would have been particularly exposed to wind erosion.

Abutting the north wall of the building by Rooms F1-Ia



Plate 6.46. Building F1, Room XII. The two surviving later phase ovens discovered immediately beneath the modern ground surface, looking south west – scale bar 1.5m.

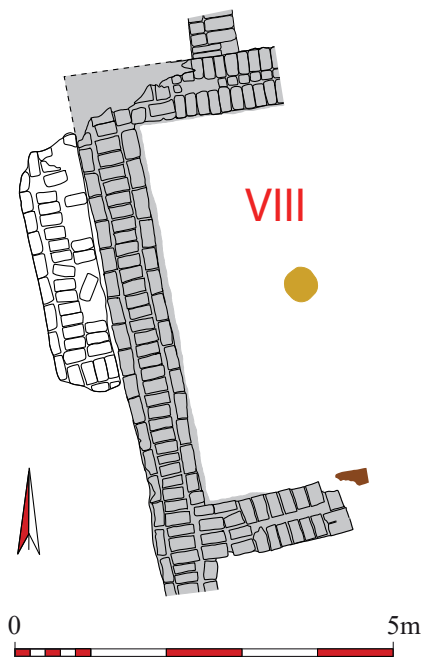


Figure 6.8. Building F1. The buttress by the north-west corner of the building (scale 1:100).

and F1-VI was a rubbish deposit which was only noted on the surface.

Period 3: Abandonment and collapse of the building

Sealing the majority of the rooms of the building was a deposit of rubble, mixed with wind-blown sand.

Room F1-I

At the north-west corner of the room, the mat (FP7)61 was cut by pit (FP7)118. In the southern part of the room two pits were also recorded. The earliest was (FP7)109 and the latest (FP7)120. For details of these pits see Table 6.16. All the fills were characterized by having charred material and mud bricks inside.

Over them, there were deposits of sand (FP7)53, (FP7)54, (FP7)63 around the room. Pit (FP7)98 was cut-

TABLE 6.16. BUILDING F1. PITS IN ROOM I.

Level	Length (N-S)	Width (E-W)	Max. Depth
(FP7)109	1.59m	1.15m	0.13m
(FP7)118	0.63m	1.19m	0.19m
(FP7)120	1.92m	1.2m	0.28m
(FP7)98	1.45m	1.96m	1m
(FP7)36	1.32m	1m	0.14m

ting this level in the centre of the room and was filled with rubble, irregular stones and remains of timber.

Above these sand layers was a deposit of rubble and remains of matting and basketry possibly from the collapse of the upper floor. Pit (FP7)36 cuts this level in the south-east corner of the room, next to the threshold with Room F1-II.

Sealing all these levels was wind-blown sand (FP7)17 = (FP7)23 all over the room. Over it were compact levels of demolition material.

Rooms F1-II, F1-III and F1-IV

In Room F1-II, the latest floor was sealed by a brown organic deposit mixed with sand abutting the north wall of the room. Over it, a deposit of sand with pot and animal bones, was sealed by a compact layer of mud bricks. Sealing this was a deposit of sand (FP7)10 mixed with occasional mud bricks and pot, covering the west half of this room and extending through the doorway into Room F1-III. This level could be equivalent to (FO7)41, over the threshold between Rooms F1-III and F1-IV.

In Room F1-III, a deposit of light brown organic material [(FO7)39] sealed the latest floor. This level survived in a strip in the centre of the room abutting the south and north walls. Over this level, in the centre of the room, a series of organic deposits and sand was excavated. These levels could be the result of the collapse of the roof.

In Room F1-IV, the deposit of sand (FO7)30 was sealing the latest floor levels. Over this was a deposit of stones and mud bricks [(FO7)46] next to the west wall [(FO6)128]. A compact level [(FO7)11] of mud and plaster abuts the east wall, sloping down to the centre of the room. Over these deposits, levels (FO7)45, (FO7)23, (FO7)20 and (FO7)22 could be related to the collapse of the roof.

Rooms F1-V and F1-VI

In Room F1-V, silty sand [(FP6)3] sealed the last occupation surface.

In Room F1-VI, sand layer (FP6)28 sealed the last level of occupation. This in turn was sealed by a deposit of rubble almost throughout the room with a thickness of between 200-800mm. It was cut by pit (FP6)22, rounded in shape with gently-sloping sides and an uneven base, it was located close to the north wall of the room. Its fill consisted of sandy silt with abundant pottery sherds, much bone, along with some sealings, mud bungs and charcoal. The nature of the fill indicated that occupation continued in the vicinity if not in the building itself. Sealing this pit and its fill was a thin deposit of silty sand [(FP6)20] on which were the remains of rounded baskets (FP6)15. This level was cut by pit (FP6)23, located at the east side of the

room, next to the doorway into Room F1-I. This pit was 2.82m long north-south, 2.46m width east-west and had a maximum depth of 540mm. The rubble deposits (FP6)11, (FP6)10 and (FP6)8, sealed those levels.

Rooms F1-VIII, F1-IX, F1-X and F1-XI

In the north of Room F1-VIII, over mat level (FO6)16 were two concentrations of sandstone blocks which may have formed crude post-pads for additional roof supports. These were sealed by the levels of rubble and silty sand deposit that covered the whole room.

The last level of occupation in Room F1-IX was sealed by the rubble deposit (FO6)48. This level was more compact in the areas next to the walls and was cut by pit (FO6)51 in the area next to the threshold with Room F1-VII. This pit 1.7m long north-south, 1.9m width east-west and with a maximum depth of 520mm was filled with sand and occasional animal bones and stones. The purpose of this pit is unclear. Sealing these levels, was (FO6)42, the collapsed ceiling, itself covered by a deposit of rubble (FO6)34 which covered the entire room. This level could be equivalent to level (FO6)40 in Room F1-X and to (FO6)58 in Room F1-XI.

Room F1-XII

The occupation levels of this room were disturbed by the collapse of the north wall of the building which was clearly visible during the excavation of level (FP6)109. On the wall's collapse, the mud-brick rubble broke through the latest floor level in the south-east area of the room. This may have been a localised collapse as it would appear that the wall of the building in this area was unstable and was leaning markedly to the north.

A compact layer of eroded mud formed on top of the rubble creating the false impression of a surface in part of the room. A fine greyish sand (FP6)92 completed the backfill of the room to the north.

It is clear that in most rooms the collapse of the building occurred over a period of time with some evidence for use of the area of the building, if not the building itself, after its partial collapse. Only in Room F1-XII, as noted above, is there evidence for a catastrophic collapse, when much of the north wall of the original building fell to the north directly onto the latest floor surface, supporting the view that the destruction of the wall occurred well before the destruction of the rest of the building.

Activities post-dating the use of the building

Pits were observed cutting the latest levels in all areas of the building. The purpose of these pits may have varied: pits dug by robbers in search of treasure or pits for the extraction of mud used by local farmers to spread on their fields.

In Room F1-XII, the shape of the cut (FP6)93 against the north wall of the room suggests the use of a modern hoe very similar to the tool type still used today. It had destroyed a substantial part of the structure. Pit (FO7)35 in Room F1-III seems more likely to be a robber pit. It cut down through several floor layers against one of the walls.

The same method of digging a pit against the walls was observed cutting the collapsed deposits in Rooms F1-VI, F1-IX and F1-VIII, the walls acting as a revetment for at least some sides of the pit.

The most impressive pit was (FP7)25. With a depth of 1m, this cut the entire width of the stairs platform in Room F1-Ia down into the natural, causing the collapse of the mud bricks from the platform into the pit. This pit was progressively filled with sand and other material.

The latest robbing activities took place at some time between March 1993 and 2010 when the stone blocks used either to block the main entrance into the building from the east, or to raise its threshold, were destroyed.

In Room F1-IV the roots of a substantial tree were exposed. Similar remains of large trees was also noted in the cemetery and indicate that at some point between the later Kushite period and the recent past there was extensive tree cover in the Kawa region.

Excavations outside the building

Only small areas were excavated outside the building.

To the north

A narrow trench was excavated along the outside face of the north wall to define the wall's line. It was the intention to remove only the surface sand but a dense rubbish deposit was located immediately below the surface causing the work to be halted.

To the east

An area running the full length of the east wall was excavated. No clear surfaces were found over much of the area. However, a little to the east of Room F1-Ib was a mud-mortar mixing pit with clear finger impressions left during the removal of the mud. The pit had been dug in the loose sand.

Up against the wall of the building the mud-mortar render lapped onto the soft sand which must have been the ground surface at the time construction was drawing to a close. There was no clear surface immediately in front of the main entrance into the building.

To the south

An area, extending a maximum of 10m east-west and 7.25m north-south, was excavated to the south and around the west side of the building adjacent to Rooms F1-VII and F1-XI. The earliest surface encountered, thought to be contemporary with the construction of the building, was of compact sand and sloped slightly from south to north. It was sealed by a loose sandy deposit [(FN6)6] which contained many mud sealings adjacent to the doorway leading into Room F1-VII. Above were further sandy deposits up to the modern ground surface.

Towards the east end of the building's south wall by Building F11 a small sondage was dug to a depth of about 500mm through soft sand.

Building F11

To the south of Building F1, and separated from it by a narrow alley 1.17m in width, were the remains of another building (Figure 6.9, Plate 6.47). What survived were the walls of a single rectangular-roomed structure 5.08 x 4.17m in size internally. The walls, 1.2m in thickness, only survived to a height of one course in places while on the east side and at the north-east corner all trace of the wall had vanished. The north wall (FO7)118, 6.4m in length, was of bond type B. The west wall (FO7)119, 7.75m long, had a course of stretchers on each face and a core of two rows of headers. The south wall [(FO7)120], 7.75m in length, was constructed like the west wall. The entrance into the building, not more than 2.16m wide, was through this wall. The east wall [(FO7)121] survived in bad condition and the arrangement of the bricks was unclear.

Within the building, the layer of wind-blown sand was excavated. Underneath was a possible floor [(FO7)122] of compact sandy silt that was not excavated.

All of the structural elements of Building F11 were found immediately below the surface and survived to a maximum height of less than 100mm. The wall tops were at the same level as the adjacent walls of Building F1 and were sat on the sand deposits that had accumulated against the south wall of that building. The south wall of Building



Plate 6.47. Building F11 looking north west with Building F1 beyond – scale bar 2m.

F1 survived to a height of 430mm. The walls of Building F11 were amongst the most substantial noted anywhere at Kawa, only surpassed in thickness by the *temenos* wall. The single room surviving may have been part of a much larger and clearly very substantial building which has almost totally been removed by erosion. However, at the three surviving corners, there is no evidence for a continuation of the walls to enclose additional spaces. Its alignment, exactly parallel to Building F1, suggests that the earlier building was still upstanding when Building F11 was constructed.

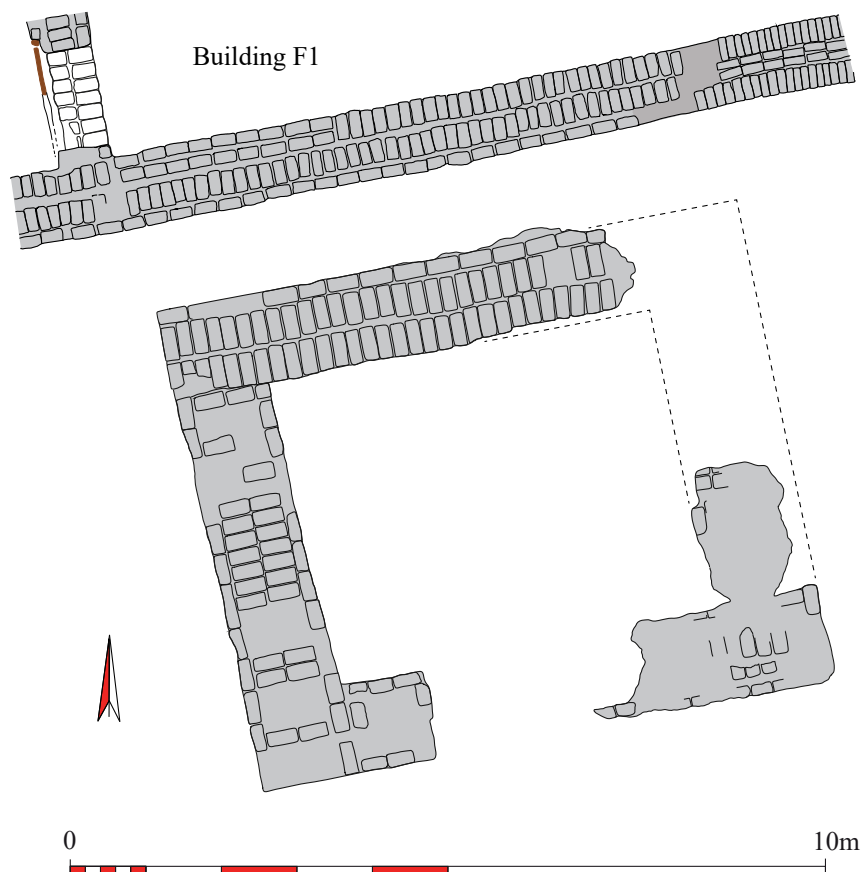


Figure 6.9. Building F11 (scale 1:100).

7. Excavations in Area F – grid squares (FQ3), (FQ4), (FR3), (FR4), (FS3) and (FT3)

Derek A. Welsby

The kiln, Building F3, was observed during the Northern Dongola Reach Survey's activities in the vicinity of Kawa in 1993 (Plate 7.1) when the tops of its walls were planned (Welsby 2002, 36). It was fully excavated along with the

very similar kiln, Building F7 and the surrounding area in the winters of 2001-2 and 2009-10 (Figure 7.1; Welsby 2008, 36-7; 2010, 50-51).

Levels pre-dating the extant buildings

The earliest levels in the excavated area were observed in the sides and at the bottom of the construction pits dug to receive the kilns, Buildings F3 and F7. Much of these deposits were of sterile sand and suggest that, at least in the immediate vicinity of Building F7, there was no occupation pre-dating Building F8. During the excavation of that building, however limited evidence was found for some activities pre-dating the construction of its walls. In the south-eastern corner of the excavation area was a layer of sand which may be the natural. Dug into it was a shallow depression 400mm in diameter and 110mm deep, perhaps the impression of a pot base. It was filled with sand and a few pottery sherds.

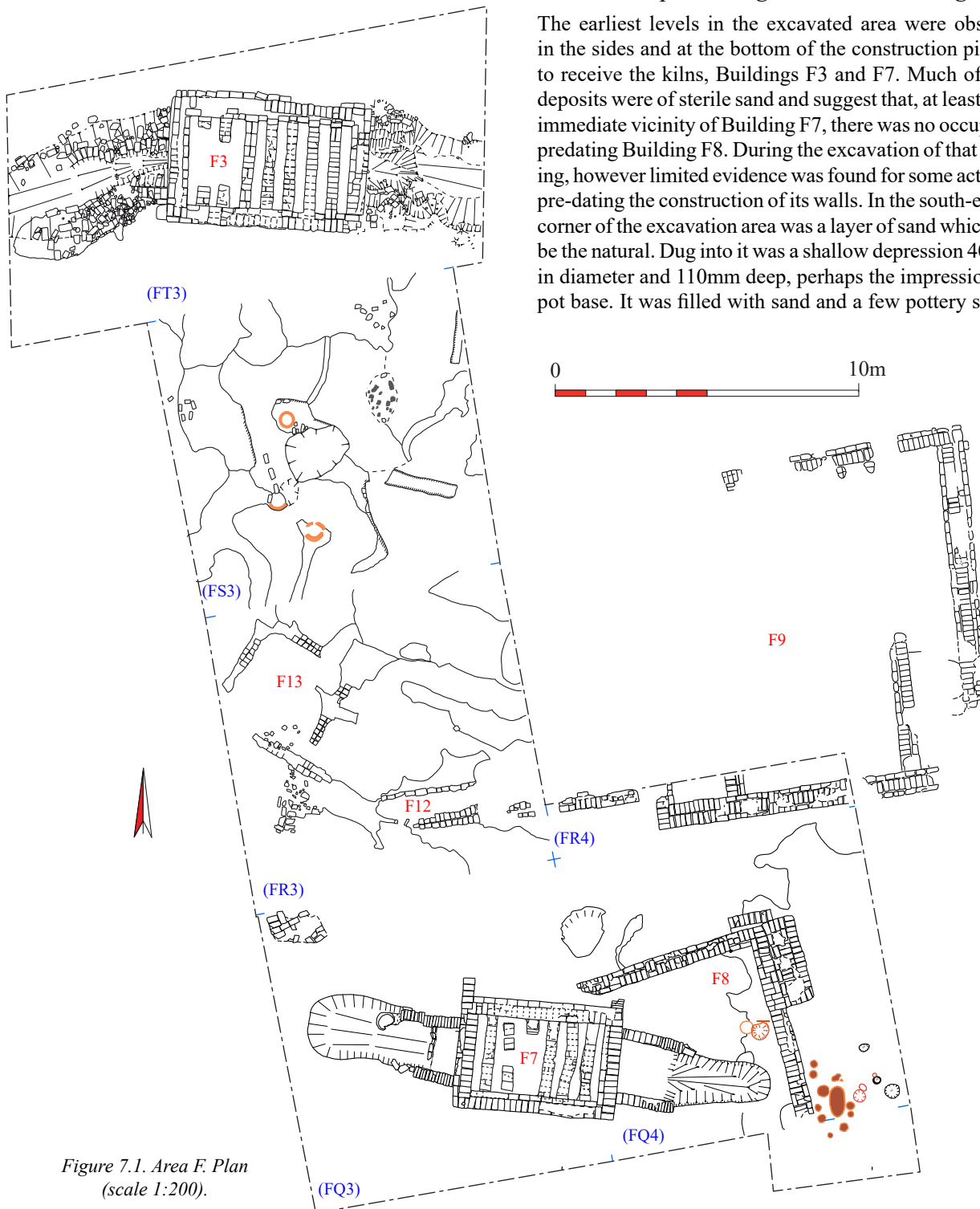


Figure 7.1. Area F. Plan (scale 1:200).



Plate 7.1. View looking north across grid square (FT3).

Also in this surface were two post-holes, one 240 x 170mm in size and 140mm deep, the other 140mm in diameter and 130mm deep, both with vertical sides. These were sealed by a firm sandy surface [(FQ4)82,112,113] which extended over a wide area. It is this surface on which the walls of Building F8 are constructed without any foundations. By the northern kiln, below the surface deposits, the kiln's construction trench was dug down through sterile sand containing a lens of fine gravel which may represent a natural surface at one moment in time.

Building F8

All that survives of Building F8 are two lengths of walling (bond type H), one destroyed to the west by the construction pit for the kiln, Building F7, the other extending out of the excavation area to the south (Figure 7.2, Plate 7.2). The north-south wall [(FQ4)15] is 580mm thick and survives to a maximum height of 260mm (three courses). It is bonded into the east-west wall which survives two courses high and is 570mm thick. Abutting onto the east face of the north-south wall at its north end is a mud-brick buttress [(FQ4)22] 2.89 x 1.02m in size and 260mm high. Abutting the north side of this and the north face of the east-west wall, and masking the join between the two, is a further buttress 1.43m east-west by 470mm and 360mm high. This is constructed



Plate 7.2. Building F8 cut by the construction trenches associated with the kiln, Building F7, looking west – scale bar 2m.

of a single row of headers with a wedge of mud mortar between them and the wall face. These elements are all founded at the same level and may all date to within the construction phase.

To the east of the north-south wall are a number of features relating to the surface on which it was built. As these protrude well above that surface they are presumably to be associated with the primary phase of the building rather than pre-dating it. Set into this surface [(FQ4)113], up to a maximum of 350mm, without in most cases any obvious cuts, were 13 pottery vessels, one of which is a large oval, flat-bottomed basin (Figure 7.3, Plates 7.3-7.6). One is set into the fill of another vessel. Many of the pots had a fill of compact mud while some included fragments of mud some with seal impressions. The basin contained one small vessel within its fill of quite firm silty sand with mud fragments some with seal impressions, large bone fragments and large and small pottery sherds. The lower fill was solid mud which also contained mud fragments with seal impressions. Some of the pots had lost their rims; only vessels of types 2022xa, 2025xc



Plate 7.3. The east wall of Building F8 and the pottery vessels (FQ4)119 set into surface (FQ4)113, looking north – scale bar 500mm.



Plate 7.4. The pottery vessels (FQ4)119 set into surface (FQ4)113, looking north west – scale bar 500mm.



Figure 7.2. Building F8 (scale 1:100).

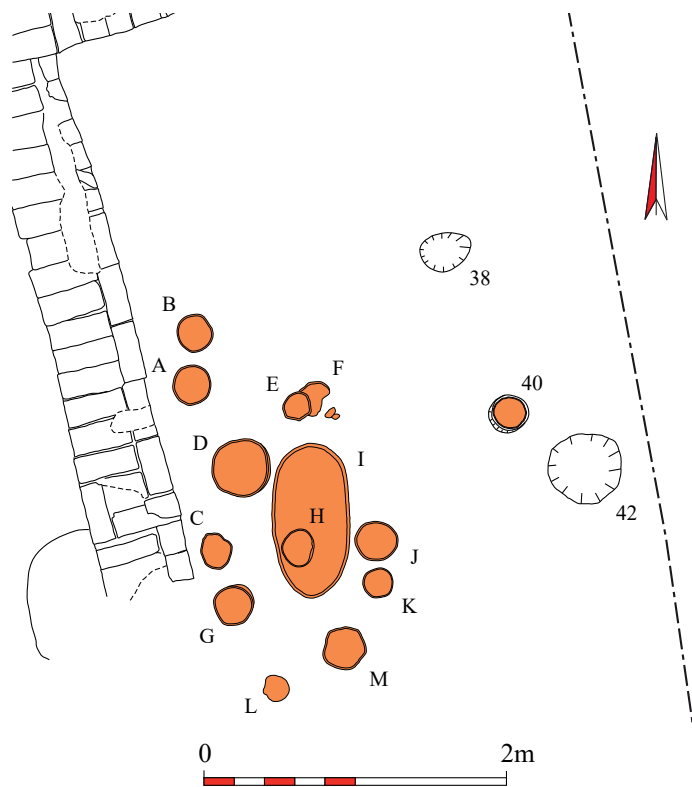


Figure 7.3. Pottery vessels and basin (FQ4)119 A-M, set into surface (FQ4)113 (scale 1:50).

and 4639x could be recognised.

Cut into the same surface as the pots are two semi-circular hearths against the east face of the north-south wall 180 x 110mm and 170 x 110mm in size and 60mm and 50mm deep. The fires in both hearths had burnt the bricks in the adjacent wall.

On the west side of this wall at the contemporary level a steep-sided pit, 210mm deep and 500mm in diameter, had been dug to receive the ceramic oven (FQ4)110 with walls 20mm thick, only a small fragment of which survived. The surface was sealed by 100mm of silty material capped by a mud surface (FQ4)19. Cutting through this surface another pit 500mm in diameter was dug and a new oven [(FQ4)76] 430mm in diameter was placed in it directly over the oven in the primary surface of the building. On (FQ4)19 was a layer of fine grey silt 10-90mm thick cut by two pits (FQ4)32 filled with charcoal, ash and bone and (FQ4)28 perhaps 450mm in diameter and 410mm deep filled with very similar material. The burnt edges of the latter pit indicate that either a fire was lit



Plate 7.5. Pottery vessels within the oval basin set into surface (FQ4)113 – scale bar 500mm.

within it or the fill was deposited whilst still hot. Both these pits and their fills were truncated when the construction pit for the eastern stoke-hole of Building F7 was dug.



Plate 7.6. The oval basin after removal of the pottery vessels and part of its lower fill – scale bar 200mm.

Building F9

Building F9 lay a minimum of 3.6m to the north of Building F8 and extended out of the excavation area to the north and east (Plate 7.7). The surface traces of the building were planned in an earlier season and suggest that it was roughly square, approximately 11.8 x 11.2m in size. A section of wall [(FR4)4] 6.32m in length, running roughly east-west, was excavated with two walls running off it to the north and very quickly disappearing into the baulk. Wall (FR4)4 was 780mm thick, constructed of mud bricks, on the uppermost course with a single row of headers flanked by a row of stretchers on either side (bond type C). The external corner of the building is much disturbed and the west wall is not preserved to its full width. The internal wall, of bond type H, is 620mm thick.



Plate 7.7. Building F9 – The south wall with Building F8 beyond, looking south – scale bar 2m.

Other building remains

Immediately to the west of Building F9, separated from it by a gap of only 540mm, was what may have been the south wall of another building (F12) on the same alignment but offset a little to the north. This wall was very close to the surface and was cut by several pits. It could be traced for a distance of 7.4m. No walls abutted it but 510mm to the

north was a parallel wall over a distance of 3.1m. It again was badly preserved and only a single row of irregularly-sized stretchers remained.

The denuded remains of several disconnected sections of mud-brick walling (Building F13) often surviving to a maximum height of one full course lay to the north and west and appeared to be aligned at approximately 45° from those just described. Being very close to the modern ground surface they were generally very poorly-preserved and often the individual bricks could not be discerned; they appear to be formed of two rows of headers (bond type G). In some cases they appeared as a linear mud features. Only one room was identifiable, approximately 2.9 x 3.1m internally. Perhaps associated with the use of these walls were three ceramic ovens, one of two periods (Plates 7.8 & 7.9). The single well preserved example was 550mm in diameter surviving to a height of 200mm. One of these single-period ovens was set into a pre-existing midden deposit.



Plate 7.8. Oven (FS3)19 cut through midden deposit (FS3)13 – scale bar 500mm.



Plate 7.9. The two period oven (FS3)19 – scale bar 100mm.

North of Building F8 in what may have been the street between it and Building F9 were extensive ashy spreads [(FQ4)114,77] sat on surface (FQ4)82. One of these contained large amounts of burnt bone and pottery. They were covered by a silty-sand deposit 120mm thick with some pot and bone within it. It was in turn sealed by a small deposit of silt and then by (FQ4)59, a silty layer 150-250mm thick rich in pottery. Overlying this to the east and lapping around the buttress (FQ4)22 and abutting wall (FQ4)15

was a deposit [(FQ4)23] formed of mud and small pottery sherds 100-170mm thick with a hard surface. It also partly overlay (FQ4)37 to be noted in the description below. On it, in the corner of the buttress and wall, was a deposit with charcoal sealed by two layers of rubble alongside the wall; another rubble layer was found on the west side of the wall. The uppermost layer was cut by a large pit, 2.75 x 2.39m by 300mm deep, which also had removed part of the wall. It was largely filled with sand.

Sealing the pottery vessels and their fills to the east of wall (FQ4)15 and the buttress was a very hard mud surface [(FQ4)37] sloping slightly down to the east. Three cuts in its surface may have been for pots. One is 340 x 260mm in size and 100mm deep, another retaining its pot (type 2039x) *in situ*, although the rim is missing, was 280 x 260 x 200mm in size, the third was 500 x 480 x 130mm in size. It was covered in part by a layer of fairly clean wind-blown sand [(FQ4)20] which also covered the rubble layer and the pit noted above.

The latest pre-kiln levels

When excavation began in grid squares (FS3), (FR3), (FR4), (FQ3) and (FQ4), which were subsequently found to contain the remains of the two kilns and Buildings F8 and F9, the uppermost deposit, in the southern part of the excavation 100mm thick, was removed. It was a mixed disturbed deposit containing large amounts of weathered bone, pottery fragments and small stones (Plate 7.10). In the same area it covered another 100mm-thick deposit of sand with pottery and bone fragments. Beneath these surface deposits many shallow pits were revealed along with



Plate 7.10. View looking south-south-east across grid squares (FS3) to (FR3) – scale bar 2m.

dense rubbish deposits often containing a vast amount of very fragmented bone, much of it burnt, in an ashy matrix (Plate 7.11). These were often delimited by very loose sand and it was far from clear whether they were fills of large shallow pits or low mounds of rubbish. No lower deposits could be traced over wide areas and the contemporaneity or otherwise of features and deposits from one part of the excavation area to another, across a total of 590m², was impossible to ascertain. The mud-brick walls are all discussed as though they are contemporary and this may be so and we may assume that the ceramic ovens date to the phases of



Plate 7.11. Deposit (FR3)19 containing much animal bone, some burnt – scale bar 200mm.

use of the buildings these walls represent. What is clear is that when the massive construction pits for the kilns were dug all these buildings had gone out of use and may have already been severely denuded.

Building F7

This kiln (Figure 7.4), a little over 20m to the south of Building F3, was set in a pit (Plate 7.12), dug 1.97m through the sand layer (FQ3)9 where its sides sloped at an angle of 45° and then vertically through the natural sand deposits. On the south side of the kiln it was excavated over a length of 5.3m



Plate 7.12. Building F7. The construction pit (FQ3)66 excavated on the south side of the kiln, looking west – scale bar 2m.

where it was 1.77m wide at the top and thereafter 961mm wide coming down onto a flat base. On the north side of the kiln it appeared that the north wall was built right up against the edge of the pit. In this area the construction pit also cut through wall (FQ4)14 of Building F8. The pit appears to have been rectangular with rounded angles, large enough to take the walls flanking both stoke-holes. It was not fully

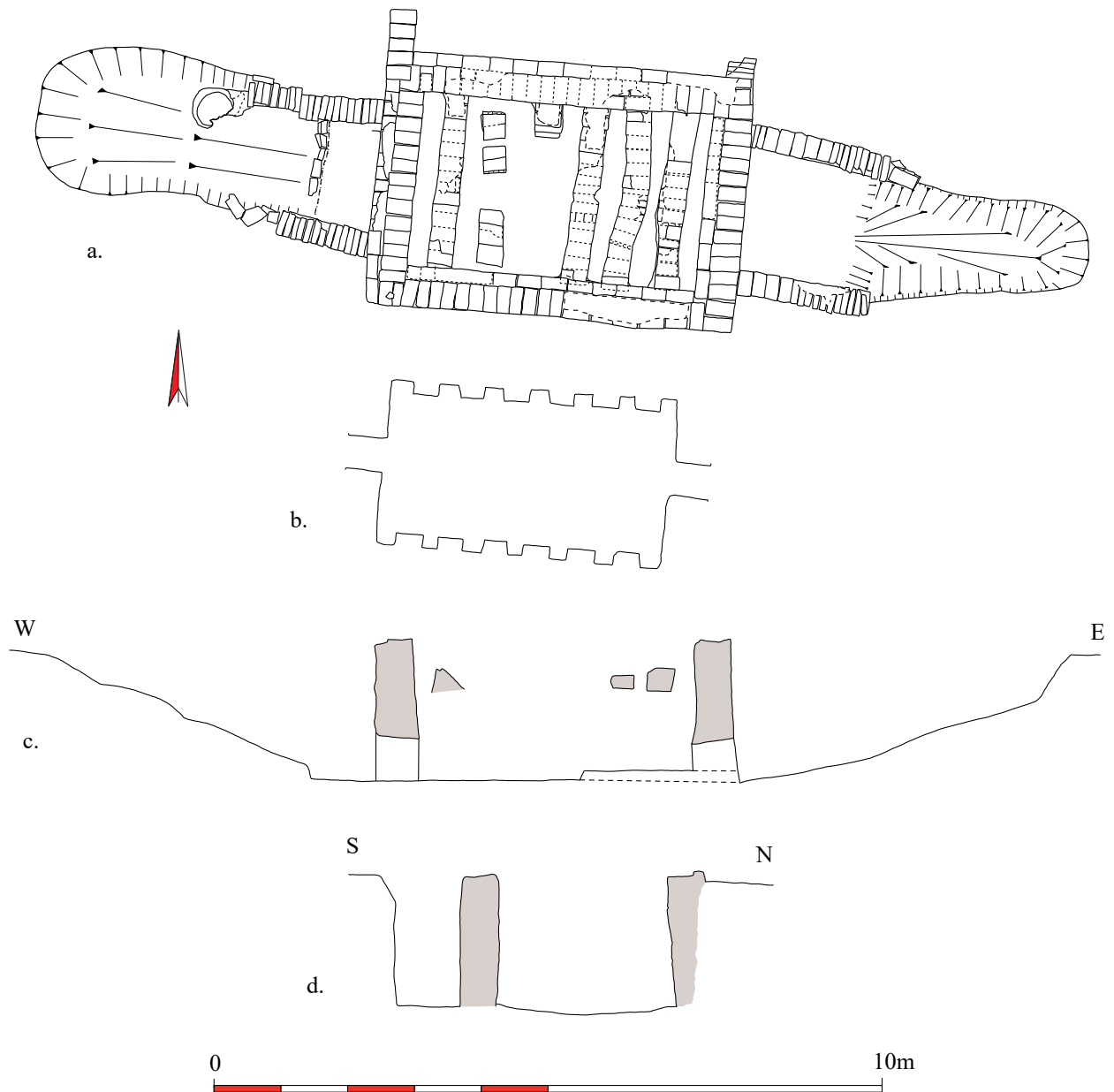


Figure 7.4. Building F7. The southern kiln. a. top plan; b. plan of the floor of the furnace chamber; c. east-west section; d. north-south section (scale 1:100).

excavated. The rectangular kiln was slightly smaller, at 5.24-5.32 x 3.64m, than that to the north but otherwise very similar. It was constructed throughout of mud bricks, all heavily burnt on their inner face. In the external walls, 580-620mm thick and surviving to a maximum height of 2.18m, the bricks were laid in alternating 1½-brick courses (bond type H) (Plate 7.13). A mud render was applied by hand – finger marks were visible – to the inner faces of the external walls and to the outer faces of the eastern and western walls within the stoke-hole. The bricks were c. 400 x 180 x 90mm in size. The northern end of the west wall projected 610mm beyond the north wall, its outer face being prolonged by a single row of three header. The eastern wall was extended 310mm by a single row of headers set on edge.

Within were six cross-walls running north-south which abutted the outer walls (Plates 7.14 & 7.15). They were constructed of mud bricks 380 x 180 x 90mm set in courses of headers (bond type L) which, with the render on both



Plate 7.13. Building F7. The exterior face of the kiln's south wall originally buried by the fill of the construction pit – scale bar 1.5m.

*Plate 7.14. Building F7.
The interior with cross
walls during excavation,
looking south
– scale bar 1m.*



*Plate 7.15. Building F7.
The interior with cross
walls during excavation,
looking north east
– scale bar 1m.*

*Plate 7.16. Building F7.
The internal cross walls
and eastern stoke hole,
looking east. The deposits
on the floor of the kiln can
be seen in section
– scale bar 2m.*



faces, formed walls c. 400mm thick. Each was pierced by a wide arch with bricks set radially as voussoirs (Plate 7.16). The arches had a span of approximately 2.1m and a maximum height of about 1.35m. Several of the walls survived at least in part to their full height of about 1.82m at which level the uppermost course was covered in a thick surface of mud (Plate 7.17). The end walls of the kiln were pierced at their base by small entrances (Plates 7.18



Plate 7.17. Building F7. Cross wall partly preserved to its full height – scale bar 500mm.

& 7.19) with arched tops, 500mm wide and 580-600mm high. Abutting these walls and flanking the stoke-holes were two parallel walls. The north revetting wall of the western stoke-hole was 1.18m in length, 380mm thick



Plate 7.18. Building F7. West stoke-hole half-sectioned to reveal its primary surface in the foreground. In the lower part is the ash (FQ3)48 resting on surface (FQ3)51 – scale bar 2m.



Plate 7.19. Building F7. West stoke-hole with the primary and secondary revetting walls on its south side – scale bar 2m.

and survived to a height of 1.8m. The south revetting wall was 1.35m long and 1.91m high (Plate 7.19), those to the east were 2m and 1.9m long and 2.06m and 1.95m high. All were constructed of alternate courses of headers set flat and on edge becoming more irregular towards the top where there was the occasional stretcher. The bricks were 360-370 x 180-190 x 90mm in size. These revetting walls sit on the bottom of the construction trench and are level with the base of the kiln walls throughout their length apart from that on the north side of the western stoke-hole which rises slightly onto the lowest first step of the ramp leading down into the kiln. These ramps were cut through the

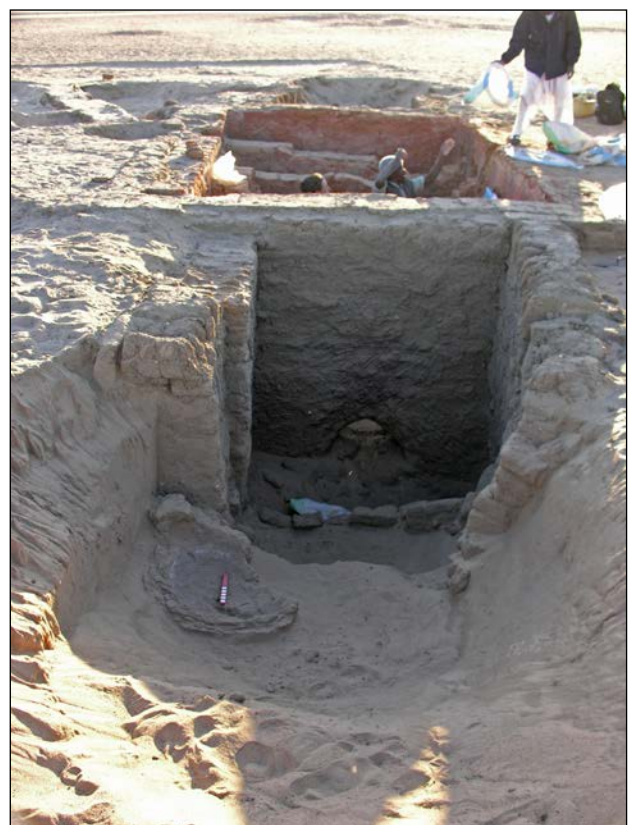


Plate 7.20. Building F7. West stoke-hole with mud storage bin (FQ3)46 sat on surface (FQ3)47. Beyond the step is the row of mud bricks (FQ3)57 – scale bar 200mm.

natural sand and consisted of gently- and steeply-sloping (steps) sections, the base rounding into the steeply-sloping north and south edges of the ramp (Plates 7.18 & 7.20). The western ramp was 4.6m in length, the eastern was 4.9m. These were presumably excavated at the same time as the construction pit through surface (FQ3)9, the eastern ramp also cutting through pits (FQ4)28 and 32 and their fills. During the construction of the building the lower 1.27m of the construction trench filled with compact silty sand and mud-brick rubble with occasional fragments of pottery and bone, thereafter by a loose sandy fill.

Over virtually the whole of the kiln's interior was a single deposit [(FQ3)48] 11mm thick with a level upper surface, of ash, fine burnt mud-brick rubble and occasional pottery sherds perhaps from the break-up of the mud bricks (Plate 7.16).

Although the evidence from within the kiln for multi-phase use was limited, the situation in the stoke-hole ramps to the east and particularly to the west suggested a rather longer period of activity. In the western stoke-hole ramp the ash (FQ3)48 extended a short distance beyond the west kiln wall. Sloping down from the lowest 'step' was a mud-brick rubble deposit up to 340mm thick extending across the ramp, on which was laid a single row of stretchers [(FQ3)57], some broken, up to two courses high without any bonding material (Plate 7.20). This was presumably designed to stop sand drifting down to the stoke-hole. On the next step up was, to north and south, two deposits of rubble [(FQ3)54,55] 160 and 270mm thick. On one of these was built an extension to the north revetment wall. It was 750mm long, 480mm thick and a maximum of 1.42m high, built of bricks 370 x 160 x 90mm with courses of headers, headers set on edge and a mix of headers and stretchers. The lowest course steps out a little from the wall line and slopes down following the surface of the rubble. A deposit [(FQ3)47] up to 230mm thick of sand levelled up the floor of the ramp; whether the stoke-hole was still accessible at this time could not be ascertained as the relevant strata had been removed by the modern robber pit. On the surface of this sand and stepping up the slope above was an extension to the southern wall which describes an arc and was 1.43m long and survives to a maximum height of 1.19m (Plate 7.19). It had a markedly battered face, the courses of stretchers presumably revetting the steeply-sloping sides of the original cut. Its lower part steps up the slope following the rubble surface. Both these extension walls abut the ends of the primary revetting walls.

On surface (FQ3)47 was a oval, bowl-shaped, mud container 800 x 600mm in size surviving to a maximum height of 240mm (Plate 7.20), built against the face of the north extension wall with mud masking the join. Within it was a deposit of mud 40mm thick stuck to the bottom. The upper fill was of sand, silt, mud-brick rubble with occasional pieces of charcoal, ash, bone and pottery.

In the eastern stoke-hole ramp a mud surface covered the secondary ash deposit and was itself sealed by rubble and sand to a depth of 200-300mm. It was then covered with a mud surface near the stoke-hole and by a sand surface further east. Sealing this was a further mud surface only preserved in patches. At what point in the stratigraphic

sequence the northern revetting wall was extended is unclear. The new wall was 450mm in length, survived to a maximum height of 1.34m, and was formed of a single row of stretchers 360 x 180 x 90mm in size and brick fragments.

Overlying the ash deposit within the kiln was a mass of mud-brick rubble, many of the bricks heavily burnt. All were clearly derived from the collapse of the building. In the lowest level of the rubble were a few fragments of the specially-shaped floor bricks found in quantity associated with the northern kiln, Building F3. After a substantial episode of collapse, particularly of two of the cross walls, the rubble was sealed by up to 800mm of wind-blown sand with occasional concentrations of bone and some pottery sherds followed by further thinner rubble deposits and more sand.

In the west stoke-hole deposits of sand covered the mud container and filled the ramp entirely. In the eastern stoke-hole mud-brick rubble had fallen into the feature along its south side while sand filled it elsewhere. The final phase of activity was the excavation of a very recent robber pit in the western stoke-hole which penetrated down to its base by the kiln wall.

Building F3

This kiln was very similar to that described above but was a little larger measuring 4.15-4.2 x 6.58-6.63m over its walls which survived to a maximum height of 1.7m. The kiln was constructed within a construction pit its edge on the south side being 450mm from the wall, on the north side 350mm from that wall. A small sondage was excavated by the north wall where the almost vertical face of the pit was followed to a depth of 1.45m below the contemporary ground surface, (FT3)4 (Figure 7.5, Plate 7.21). At that point the edge was 200mm from the kiln wall. It was filled with sand containing some charcoal flecks, and mud-brick fragments and mud mortar derived from the construction of the kiln's walls. When those walls reached the contemporary ground surface the construction pit was backfilled as the superstructure of



Plate 7.21. Building F3. The north edge of the construction pit and the north wall – scale bar 1.5m.

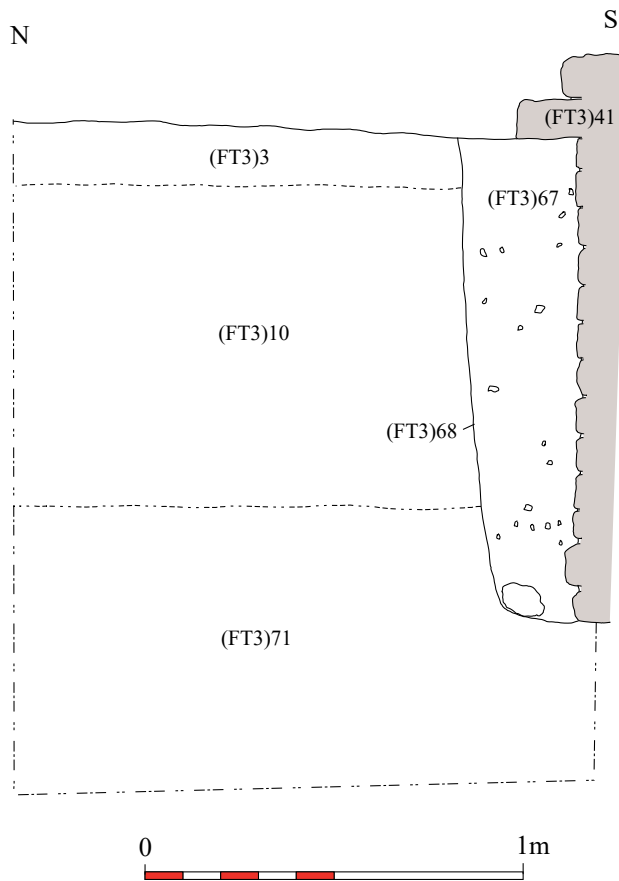


Figure 7.5. Building F3. Section through the north side of the construction pit cutting deposits (FT3)3, 10 and 71 (scale 1:20).

the wall above that extends a little over the fill.

All the walls of the kiln were constructed of mud bricks, those facing into the interior heavily reddened by the heat of the furnace (Figure 7.6; Plates 7.22-7.24). In the external walls these were on average 380 x 180 x 80mm in size and were bonded in mud mortar and rendered on the interior face with mud mortar as were the external faces close to the stoke-holes. External walls were 580-620mm thick with the bricks laid in alternate courses of 1½-brick construction (bond type H) although the uppermost surviving course of the west wall is partly of bond type GA. On the north wall it could be seen that the outer face was well constructed above the construction fill but below that presented an irregular face. An additional row of stretchers was placed along the north wall perhaps to offer additional protection to the structure from the prevailing north wind. The east and west walls were pierced at their base by arched openings c. 700mm high. These were slightly splayed measuring 1.45m and 1.46m wide internally and 1.32m and 1.38m wide externally Figure 7.7 a & c; Plates 7.23 & 7.24).

Internally were seven cross walls set approximately 300mm apart (Plate 7.25) abutting the external walls. All were constructed of alternate courses of two stretchers

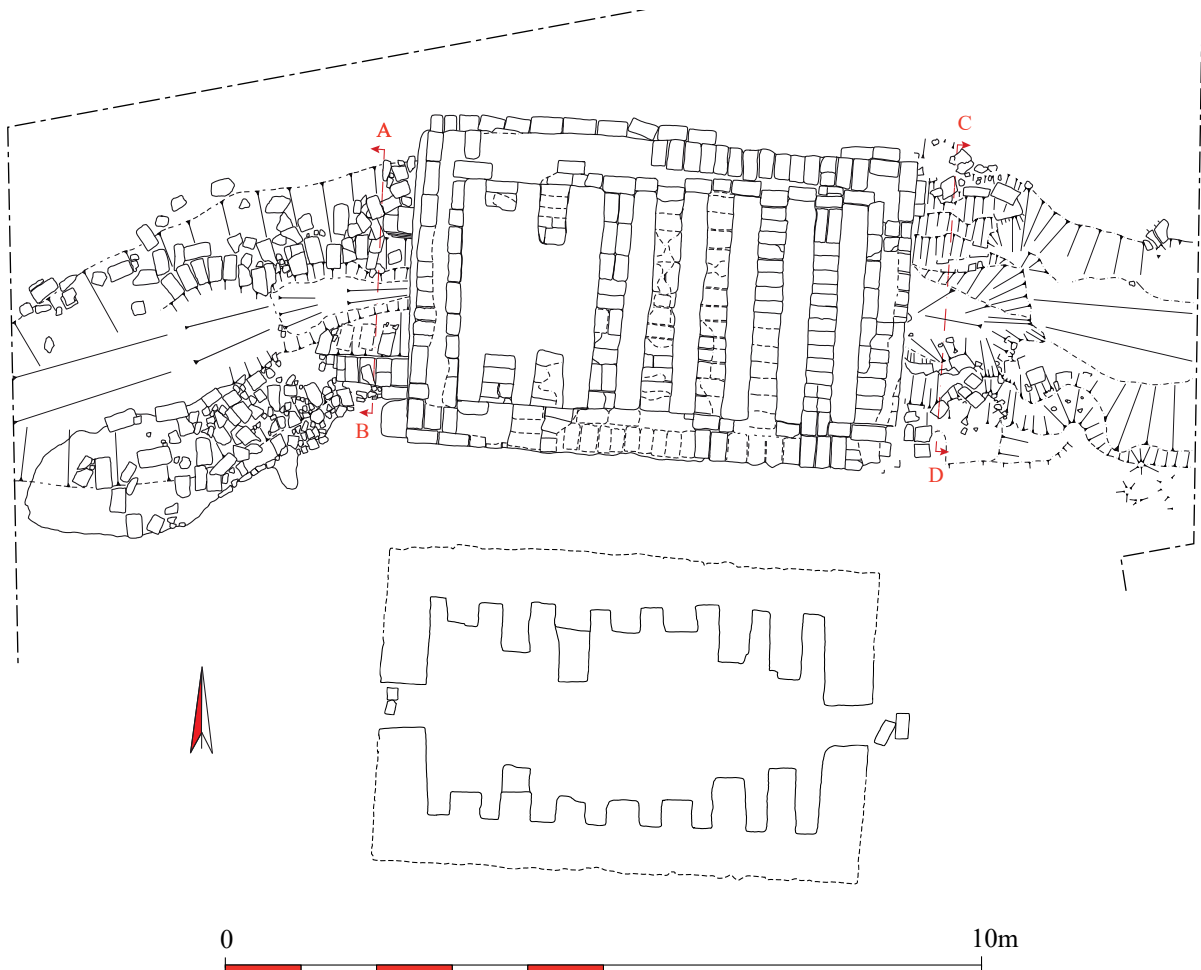


Figure 7.6. Building F3. Top and bottom plans (scale 1:100).



Plate 7.22. Building F3. General view of the kiln, looking south east – scale bar 2m.



Plate 7.23. Building F3. The western stoke-hole – scale bar 2m.



Plate 7.25. Building F3 – The cross walls.

(bond type K) and of one header (bond type L) forming walls 380mm thick. Piercing each of the cross walls was a wide, slightly pointed, arch springing in the western part of the kiln from the floor of the furnace chamber, in one wall for example 2.32m wide and 1.42m high (Plate 7.26). Towards the east however, the openings are narrower and the arches, therefore, spring from further up the abutments to maintain the same height of the intrados. The wall faces and the intrados of the arches were coated in a mud render preserving the finger marks of the plasterer. The two western arches had collapsed well before excavation began.

To east and west access to the stoke-holes had been provided down sloping ramps, that to the west running at an oblique angle to the kiln. The sides of both ramps were partly revetted by walls. On the west side of the kiln the north revetting wall was constructed of mud bricks 350 x



Plate 7.24. Building F3. The eastern stoke-hole – scale bar 2m.



Plate 7.26. Building F3. The cross-wall arches, looking east – scale bar 2m.

160-180 x 70mm in size and was 250mm thick. In its upper part it projected from the kiln wall by 400mm, but by less in its lower courses. That on the south side was similar; it was 800mm long and 600mm wide with its seventh and eighth courses projecting further west than those above and below it. Neither appear to be bonded into the west kiln wall. On

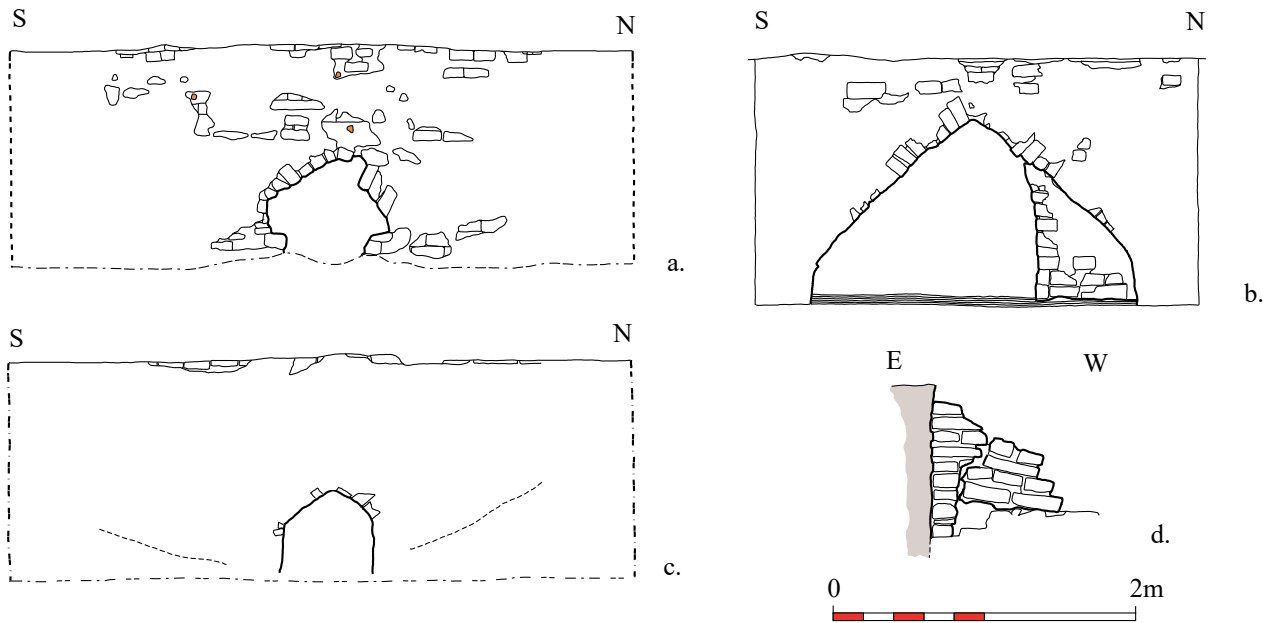


Figure 7.7. Building F3. Elevations of the walls. a. the exterior face of the west wall; b. the east face of the third cross wall from the west; c. the exterior face of the east wall; d. the two period revetting wall on the south side of the west stoke-hole (scale 1:50).

the east wall, the revetment wall, the construction of which pre-date the plastering of the kiln wall, only survived to a height of three courses, was 540mm wide and projected 140mm. Whether there was a similar wall to the south is unknown as the later revetment (FT3)27 was not removed during excavation.

None of the walls of the kiln survived to the height of the floor in the firing chamber. Many elements of this floor, however, were recovered from amongst the sand and rubble within the kiln. The floor had been made of specially-shaped bricks (Plate 7.27) which, when laid next to each other, formed a smooth surface pierced by a large number of rectangular holes to allow the heat to circulate from the chamber below. Figure 7.8 illustrates the possible arrangement of these flooring bricks. However, it must be noted that



Plate 7.27. Building F3. Suggested reconstruction of a section of the firing chamber floor – scale bar 200mm.

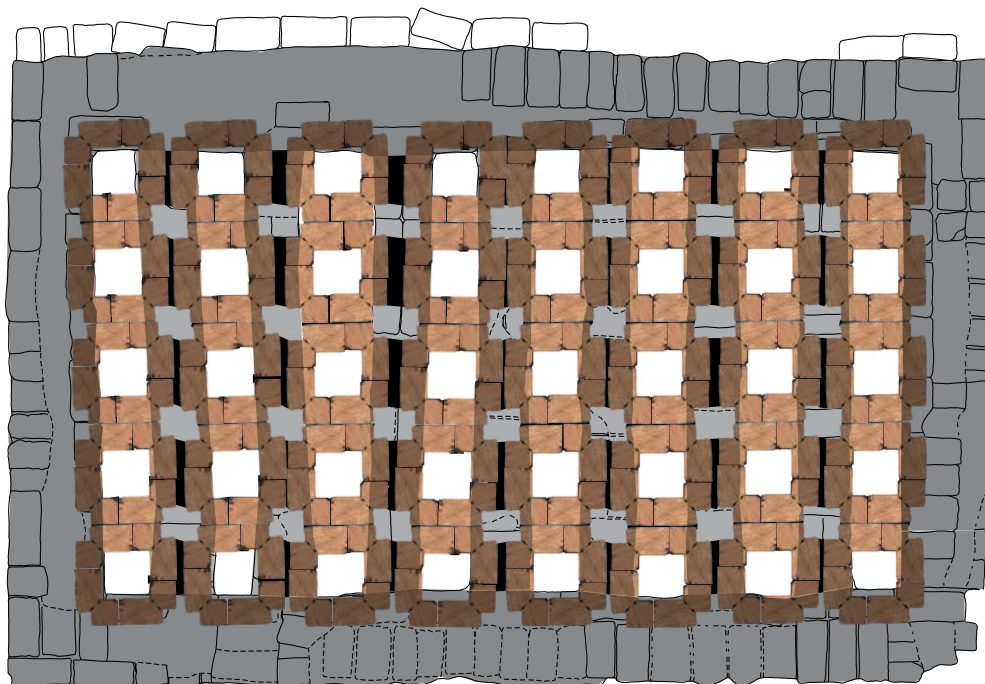


Figure 7.8. Building F3. Suggested reconstruction of the floor of the firing chamber (scale 1:50).

in this arrangement a scarcement would have been required to support the end of the bricks against the kiln's walls. No such scarcements were provided in the better-preserved Building F7. In its absence the space between the final cross wall and each end of the kiln would have been unroofed. Also this arrangement would produce a very weak floor where tiles met over the void between the cross walls. To address this issue the floor may have been of two layers of tiles, the asymmetrical nature of the 'arms' of each tile meaning that the layer above could be placed to provide a strong, well-bonded floor.

Sat on the natural sand within the kiln, which had been reddened by heat, was a deposit of ash (FT3)53 100mm thick. This extended through the stoke-holes (designated (FT3)62 & 64) where it contained a much higher proportion of charcoal. Within the kiln the primary ash layer was covered by a 100mm-thick layer of sand which was reddened by burning represented by the next ash layer 100mm thick which sealed it (Figure 7.9; Plates 7.26 & 7.28).

Built on this ash in the second and third cross-walls from the west a section of wall perhaps designed to buttress

the arches was built. In the former case the support was 700mm long, 360mm wide and a maximum of 880mm high (Figure 7.7 b; Plate 7.29). The latter was 370mm long and 380mm wide attaining a maximum height of 600mm (Figure 7.9). Both were plastered. These were abutted by another 100mm-thick layer of burnt sand across the kiln sealed by the final layer of ash, another 100mm-thick layer.

In the stoke-holes the distinction into three layers of ash was not discernible (Plate 7.30). Here the ash remains may have been periodically removed so as to maintain access to the stoke-holes. The final phase of use of the kiln interior was represented by (FT3)47, a deposit of ashy sand with occasional charcoal inclusions.

In the eastern and western stoke-hole ramps there was



Plate 7.28. Building F3. Ash deposits within the kiln – scale bar 200mm.

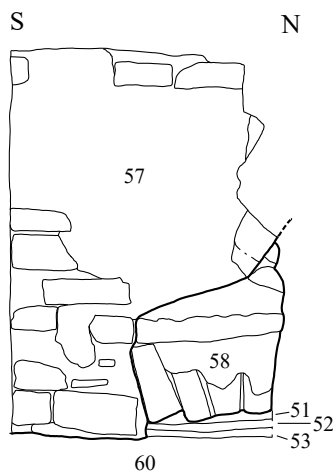


Figure 7.9. Building F3. Strengthening of the southern side of the arch of the second cross wall from the west. It is set on the ash [53 and 51] and sand [52] layers (scale 1:20). All context numbers in grid square (FT3).



Plate 7.29. Building F3. Walling inserted into the arch of the third cross wall from the west sat on ash deposits, looking west – scale bar 500mm.



Plate 7.30. Building F3. Ash deposit in the east stoke-hole – scale bar 200mm.

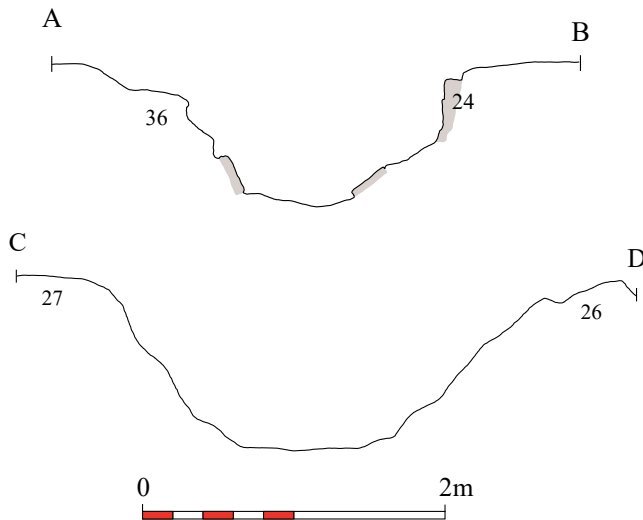


Figure 7.10. Building F3. Profiles across the stoke-hole ramps. a. the west stoke-hole ramp; b. the east stoke-hole ramp. For the location of the profiles see Figure 7.6a (scale 1:50).

a complex sequence of features (Figure 7.10; Plates 7.31-7.34). Probably late in the construction phase the eastern stokehole ramp adjacent to the kiln wall was paved with mud bricks over an area extending 2.6m to the east and measuring 1.7m north-south, delimited on its south side by a row of three stretchers (Plate 7.32). It was partly sealed by the primary ash layer [(FT3)64] noted above. Sat on this ash layer the ramp was revetted on each side by a mass of mud mortar within which were small fragments of mud brick [(FT3)26,27]. Later this was added to with similar material to increase the size of the revetment.

In the west stoke-hole ramp, resting on the steep slope and a little lower than the south revetting wall's first course, were three mud bricks partly overlying the ash layer (FT3)62 (Plates 7.31 & 7.33). Covering these was mud-brick rubble [(FT3)66] perhaps from the partial collapse of the south revetting wall. Abutting that wall was an additional length of walling sat on deposit (FT3)66. This was 650mm long, 500mm wide and survived to a height of 680mm, that is well below the present ground surface. At some date prior to this wall's construction the western face



Plate 7.31. Building F3. The west stoke-hole with ash deposit (FT3)62 and the revetting walls, looking north east.



Plate 7.32. Building F3. The east stoke-hole with the mud-brick paving, looking north east – scale bar 500mm.



Plate 7.33. Building F3. The west stoke-hole the three mud bricks resting on ash deposit (FT3)62 and the south revetting wall, looking south east – scale bar 2m.

of the kiln had been re-rendered in mud after a build-up of about 200mm of deposit. The sides of the stoke-hole ramp along its whole length was then revetted with mud bricks and mud-brick fragments laid on the slope, on the south side with mud daubed on the surface between them (Plate 7.34). Some of the mud bricks have been heavily burnt and must have come either from the kiln itself or from the other kiln, Building F7.

On the abandonment of the kiln it was infilled with 300mm of wind-blown sand. Thereafter the building's walls began to collapse, the rubble lying within the wind-blown sand. Amongst these layers were bricks from the walls along with the specially-shaped floor bricks. Between two of the cross-walls a little below the present-day ground surface was the articulated skeleton of a canine laid on its back (Plate 7.35). In the east stoke-hole ramp was a deposit of rubble, firm sand some of it burnt, pottery, pebbles and bone sealed by wind-blown sand at some levels incorporating pottery, bone and mud-brick rubble. A similar situation pertained in the western stoke-hole ramp.

Although unproven it can be argued that the southern kiln, Building F7, was earlier than the northern kiln, Building



Plate 7.34. Building F3. The west stoke-hole with mud-brick paving, looking north east – scale bar 500mm.



Plate 7.35. Building F3. Skeleton of a canine lying on the sand and rubble fill between two of the cross walls – scale bar 200mm.

F3. On the top of the cross walls in the southern kiln will have rested the specially-shaped floor bricks. Very few fragments of these were found, suggesting the possibility that they had largely been removed for reuse in the other kiln where many were discovered. This kiln only exhibited one period of use. Its poor quality of construction may have led to its abandonment and the building of the kiln to the north to replace it.¹

In the uppermost deposits in the vicinity of Building F8 were vast quantities of pottery sherds, all small and eroded. These appeared to be a dump of material but from where they came and why they were placed here is unclear. Cutting into these deposits were many pits filled with wind-blown sand. The latest phase of robbing of the site occurred only a few months before excavations began when a large pit was dug into the fill of the northern kiln's western stoke-hole down to the sterile sand at a depth of about 2m.

¹ For further discussion of these kilns see Welsby and Welsby Sjöström 2022.

8. Excavations in Area F – Grid squares (FZ1) and (FZ2)

Derek A. Welsby

The excavations in these two areas were specifically designed to investigate a number of features revealed by the fluxgate gradiometer surveys on the site. In both surveys the gradiometer had picked up rows of roughly-circular features,¹ in one case within a building parallel to one of its walls, in the other appearing to flank a street.

Grid square (FZ1)

Excavations here were conducted in the north-west angle of what was presumably a large courtyard towards the eastern end of a complex of buildings designated F4/F5/F10 (Plate 8.1). The courtyard (Room F4-I) measures within its walls 38.98 x 38.13m but there appear to have been some walls later inserted into it on its western side. The excavation did not reach the natural in the area investigated, being terminated as soon as the nature of the ‘circular’ features was identified (Plate 8.2).



*Plate 8.2. Building F4, Room I, grid square (FZ1).
General view looking west south west – scale bar 2m.*

alternating rows of headers and stretchers could be seen. Bricks are approximately 350-250 x 150 x 50mm in size along with some smaller bricks 100 x 100 x 5mm. It was revealed to a maximum height of 400mm.

The western wall [(FZ1)17] is thinner at 650mm and constructed of bricks arranged as a row of headers and one of stretchers to the course and in one place three rows of stretchers (bond types H & O). Bricks were 300 x 150 x 50mm in size along with some half bricks. It appeared to be of a later date than the north wall and from the plan of the building (Plate 8.1) it can be seen that it, and some adjacent walls, had been inserted into the western side of the courtyard at some point.

Three structural phases of roof supports were revealed (Figure 8.1) but their chronological order was not ascertained owing to the limited excavation undertaken. Each employed roof supports which were not aligned from one phase to another (Plate 8.3). The roof was presumably that of a colonnade or arcade running around the courtyard or at least along its northern wall. No proof was found

during excavation to indicate that the colonnade extended along the western wall.

Phase A – three engaged mud-brick piers [(FZ1)19, 20 & 23] spaced at intervals of 3.46m and 3m centre-to-centre, the western one being 3.78m from the centre of the western wall. The two well-preserved piers were ‘D’-shaped, 900mm and 700mm wide and projected a maximum of 600mm and 750mm from the wall face. Clearly visible on

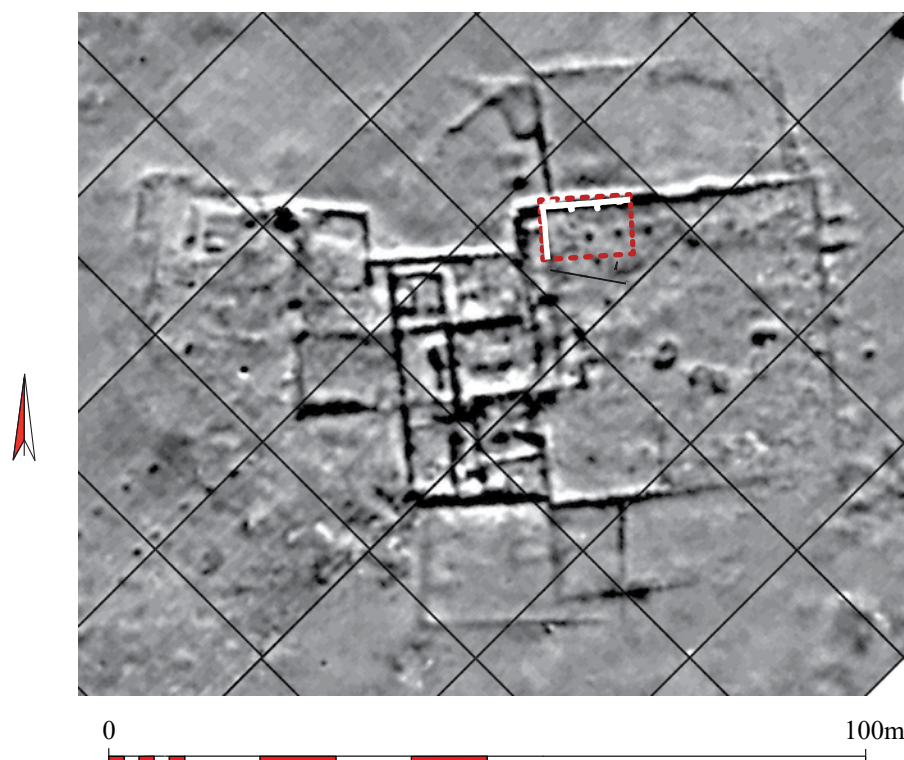


Plate 8.1. The fluxgate gradiometer survey of Buildings F4/F5/F10 and the location of the excavations in grid square (FZ1) (scale 1:1000).

This north-west corner of the courtyard was delimited by two walls meeting at right angles. The north wall [(FZ1)18] was 800mm thick, constructed of two rows of headers in the visible uppermost course, bond type G. On the south side

¹ According to the gradiometer team the apparent circular shape of the features is a product of the survey resolution and in no way, given their small size, precludes their being rectilinear.

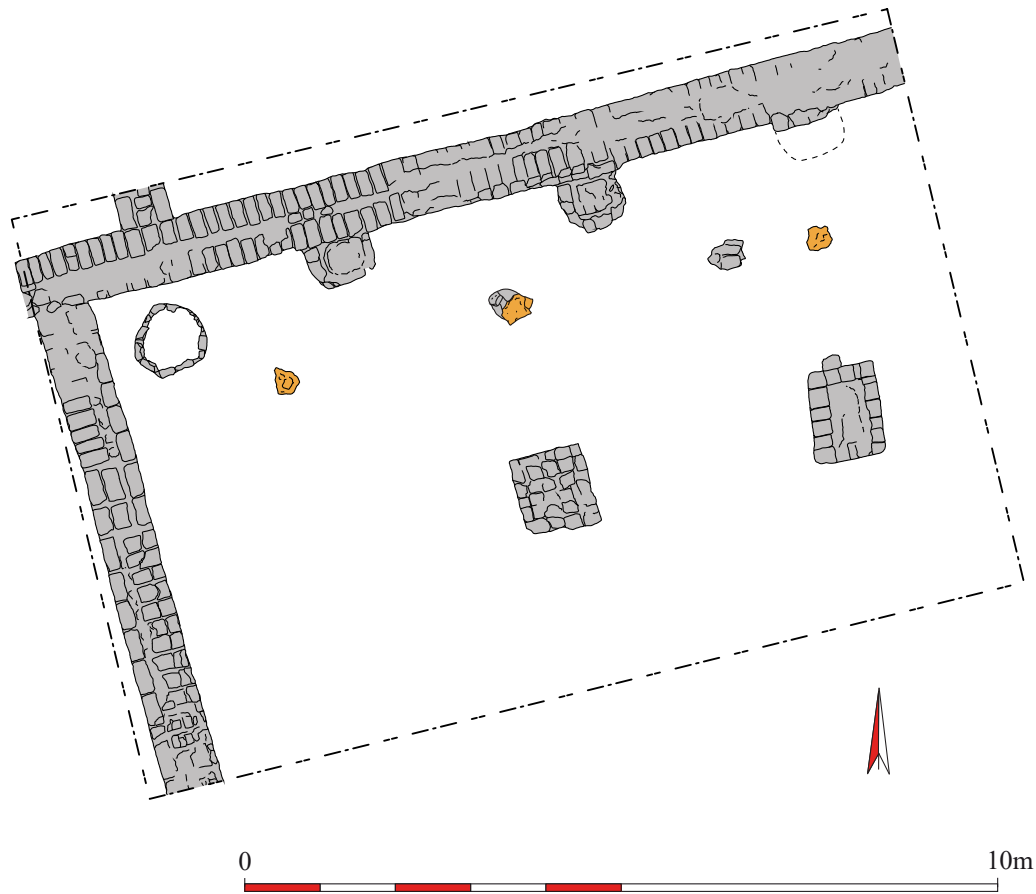


Figure 8.1. Plan of the excavations in the courtyard of Building F4 (scale 1:100).



Plate 8.3. Building F4, Area (FZ1). The three phases of roof supports looking north, 21, 16 and 20 – scale bar 2m.

the surviving top of the western pier was a smooth oval depression lined with mud 500 x 400mm in size (Plate 8.4), which may reflect the base of an architectural element of stone or wood which will have sat against the wall face. From the surface planning of those walls of this building, surviving up to immediately below the modern ground surface, there is the possibility that similar engaged piers existed along the southern wall of the courtyard.

The engaged piers appear to be of one build with the north wall.

Phase B – Two rectangular mud-brick piers [(FZ1)21 and 22], the western one 1.1 x 0.9m in size, the other 1.2m north-south by 0.92m east-west (Plates 8.2 & 8.3). They are set

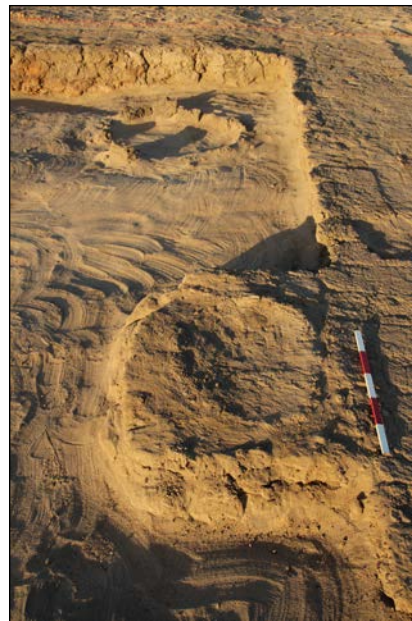


Plate 8.4. Building F4, Area (FZ1). The westernmost engaged pier [20] with the oval impression in its top and pit 15 beyond, looking west – scale bar 500mm.

4.07m apart centre-to-centre and are 3.43m and 3.37m from the south face of the north wall, the western pier is 4.75m from the east face of the western wall. From the results of the gradiometer survey it is clear that these are part of a row of seven piers in total extending the full length of the northern side of the courtyard. It is also possible that there was a similar row along the east side but this is uncertain.

Phase C – a row of four post-pads [(FZ1)16, 31, 35 & 36] of stone, or a mixture of stone and mud brick (Plate 8.5),

Plate 8.5.
Building F4,
grid square
(FZ1). A
Phase C
post-pad of
stone and
mud brick
– scale bar
500mm.



roughly parallel to the north wall and between 1.63m and 1.47m from its face (measured to the centre of each post-pad). Their spacing is irregular, from west to east 3.14m, 2.9m and 1.2m centre-to-centre. The western post-pad is 2.19m from the face of the western wall. These features are crudely constructed but presumably were designed to function in conjunction with the still-standing north courtyard wall at a time when the desire for a shaded area/walkway here was required. The crude nature of these post-pads might suggest that they represent the latest of the three phases of structural features noted.

The earliest deposit revealed was a small area of very soft sand which ran under the western wall [(FZ1)17]. Within the courtyard close to wall (FZ1)17 it was sealed by a hard surface [(FZ1)30] formed of many thin layers of mud. By wall (FZ1)17 the floor and the wall itself were much reddened by fire, the ash and charcoal resting on the floor surface. The relationship of this floor and the stone post-pad (FZ1)31 was unclear, the post-pad may have been set in the floor or the floor may have formed around it. The floor faded away to the east. It was partly overlain by a thin layer of sand [(FZ1)34] which includes charcoal and clay, and by surface (FZ1)25. The sand (FZ1)34 is cut by a 'D'-shaped pit against the north wall, filled with decayed sandstone, charcoal and ash.

Surface (FZ1)25, of very similar composition to surface (FZ1)30, was also cut by a similarly-shaped pit, 1.9 x 1.8m in size and 150mm deep, against the north wall close to its junction with wall (FZ1)17, filled with mud-brick rubble, some pottery and bone. It had a small hearth on its surface. The surface was also cut by a slightly oval pit 1 x 0.9m in size and 120mm deep, with steeply sloping sides and a flat bottom. Set within it was a circular bin made from seven mud bricks 150 x 100mm set on their edges resting against the side of the pit (Plate 8.6). It was filled with compact sand and pieces of mud.

Following these activities the area was partially sealed by mud-brick rubble probably derived from the collapse of wall (FZ1)17 and a layer of silt. Two irregular pits were the latest features noted in the area.

A very small section of mud-brick wall abutting the north face of wall (FZ1)18 was uncovered which belonged to a large rectangular courtyard or enclosure as can clearly be seen from the gradiometer survey. It was 600mm thick and built of bricks 300 x 150mm in size.



Plate 8.6. Building F4, grid square (FZ1). Mud-storage bin 10 set in pit 15, looking north west – scale bar 500mm.

Grid square (FZ2)

A total of 278m² was excavated so as to investigate a number of circular anomalies picked up by the fluxgate gradiometer survey (Plate 8.8).

The earliest deposit revealed was a very slightly undulating hard sand layer [(FZ2)31] forming a surface right across the excavation area. This was cut by construction pits, sub-rectangular to oval in shape, within which were constructed the mud-brick structures (Figure 8.2, Plates 8.7 & 8.9). The structures fell into two groups.



Plate 8.7. Grid square (FZ2). Mud-brick structures flanking the 'street' and the deposit of mud bungs, looking south west – scale bar 2m.

To the north and west of the central space, the 'street', each structure was a regular rectangle in shape with rounded corners and with sides formed of a single row of bricks which survived to a maximum height above the surface of 360mm.

(FZ2)2 – Three courses of mud brick covered in a mud render on the exterior, bricks 300 x 150 x 140mm (Plate 8.10), External dimensions 1.12 x 0.95m. Height from base of construction pit 410mm.

(FZ2)8 – Probably three courses of mud brick with a mud-mortar render. Bricks 350 x 220 x 130mm. External dimensions 1.17 x 0.8m. Height from base of construction pit 360mm.

(FZ2)11 – Built from mud brick and rendered in mud mortar on all sides (Figure 8.3, Plate 8.11). External dimensions

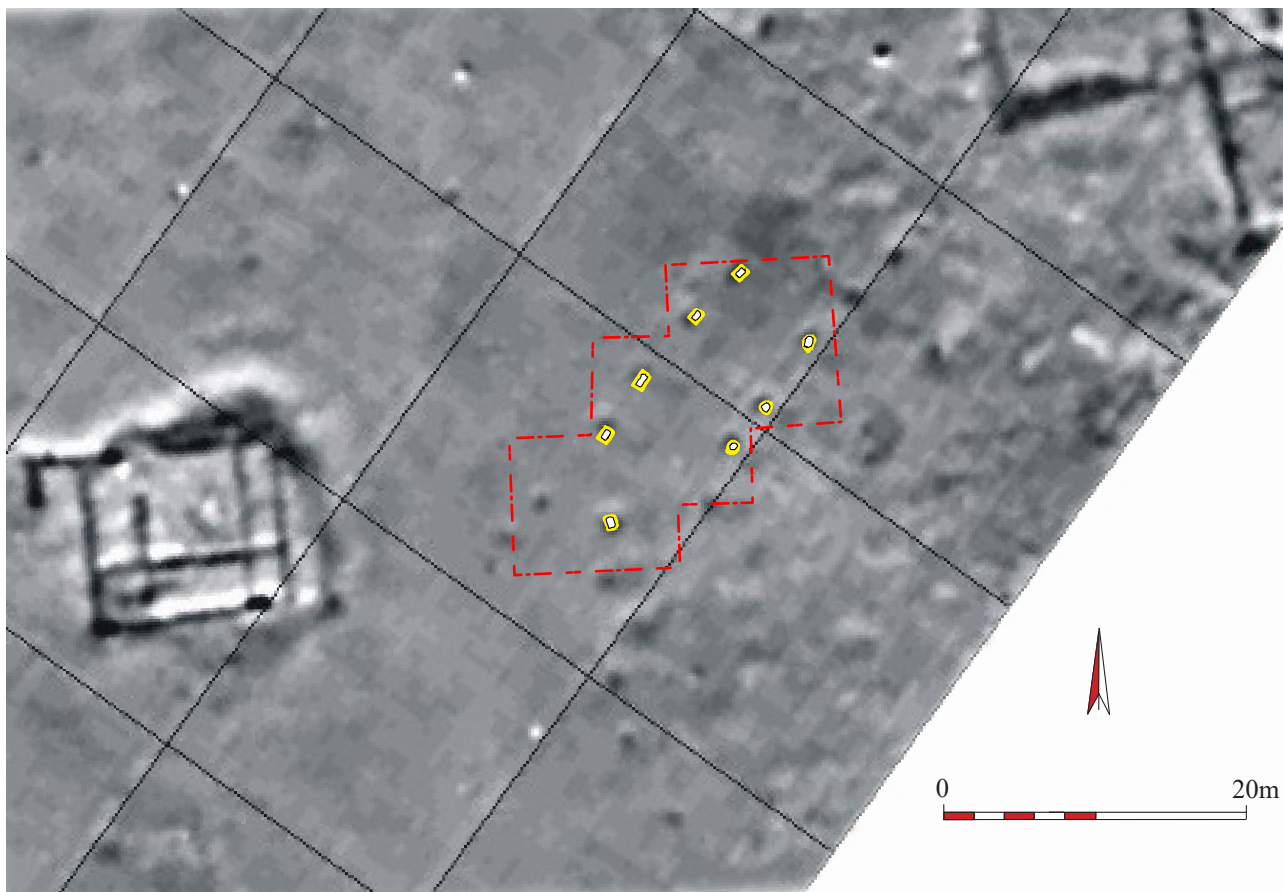


Plate 8.8. The fluxgate gradiometer survey of the locality between Buildings F2 and F4/F5/F10 and the location of the excavations in grid square (FZ2) (scale 1:500).

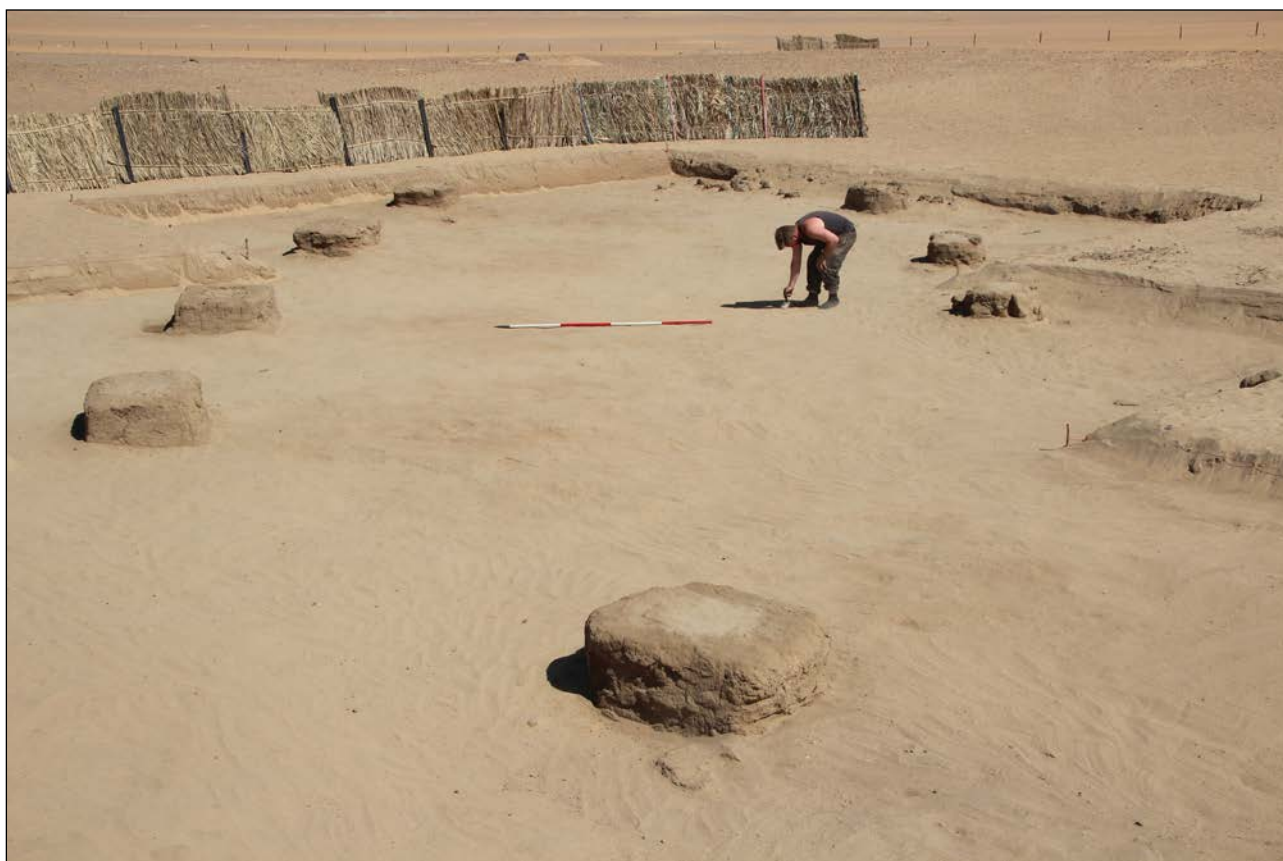
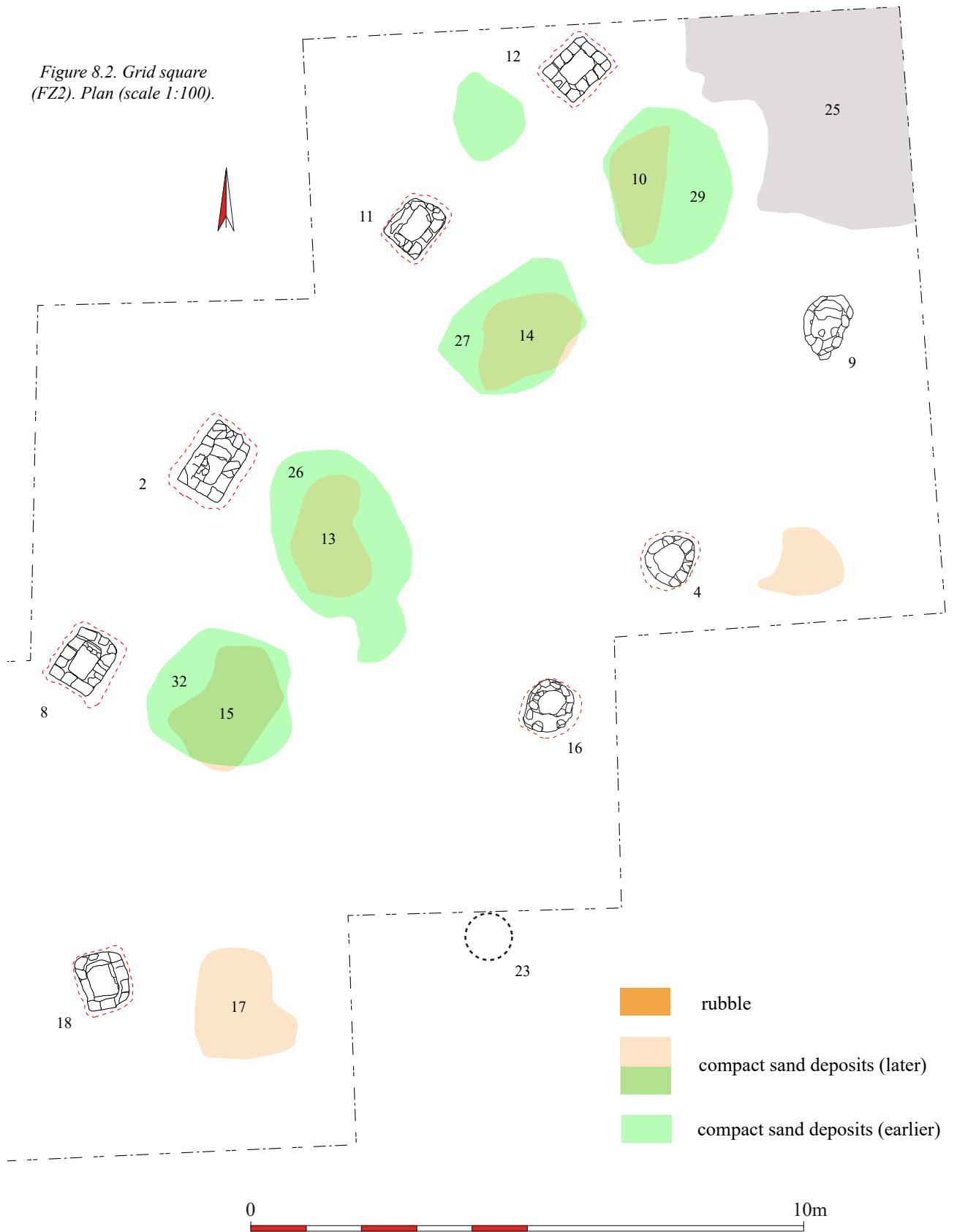


Plate 8.9. Grid square (FZ2). Mud-brick structures flanking the 'street', looking north east – scale bar 2m.

Figure 8.2. Grid square (FZ2). Plan (scale 1:100).



1.02 x 0.84m. Height from base of construction pit 390mm.
(FZ2)12 – Built from mud brick and rendered with 50-80mm of mud mortar on all sides. External dimensions 1 x 0.77m. Height from base of construction pit 480mm.
(FZ2)18 – Four courses of mud brick. Mud bricks 400 x

130mm. External dimensions 1.05 x 0.84m. Height from base of construction pit 490mm.
 To the south and east the structures were of more irregular form, each approximating to an oval. They also were constructed of a single row of mud brick but with some use of



Plate 8.10. Grid square (FZ2). Mud-brick structure 2 and construction pit 37 cut into surface 31 – scale bar 500mm.

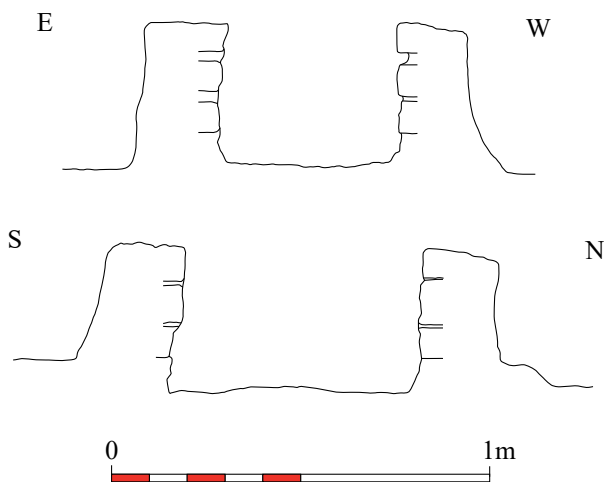


Figure 8.3. Grid square (FZ2). East-west and north-south sections of structure 11 (scale 1:20).



Plate 8.11. Grid square (FZ2). Mud-brick structure 11 and construction pit 35 cut into surface 31 – scale bar 500mm.

brick fragments and reuse of mud bungs and stone grinding equipment. They were of much poorer construction and much less carefully-built than the rectangular structures across the street.

(FZ2)4 – Three courses of mud brick and some mud bungs (cat. nos F-1313 to F-1315). Some mud render remains. Bricks 250 x 150 x 130mm. External dimensions 1.12 x 0.89m. Height from base of construction pit 500mm.

(FZ2)9 – Mud bricks along with mud bungs and two stones (Plates 8.12 & 8.13). Three bungs are on the north side (cat.



Plate 8.12. Grid square (FZ2). Mud-brick structure 9 with mud bungs and stone used in its construction – scale bar 500mm.



Plate 8.13. Grid square (FZ2). Mud-brick structure 9 with mud bungs and stone used in its construction – scale bar 500mm.

nos F-1318 to F-1320), on the east face five bungs (cat. nos F-1317, F-1326, F-1328, F-1330 & F-1331) and four on the west face (cat. nos F-1321 to F-1324). The exterior is rendered in mud. Mud bricks 300 x 250 x ?mm. External dimensions 1.1 x 0.83m. Height from construction surface 340mm.

(FZ2)16 – Four courses of mud brick 230mm wide by 130mm thick but smaller in the uppermost course where they are 100mm wide. External dimensions 820 x 640mm. Height from base of construction pit 440mm.

(FZ2)23 – not excavated but visible in the collapsed edge of the excavation trench. It is clearly of a similar form to the features just described.

Structure (FZ2)11 was filled with coarse sand, (FZ2)12 with wind-blown sand. Others were filled with fine silt, in some cases including mud-brick rubble and, in (FZ2)9 a complete mud bung. The base of the structures was hard and smooth overlain in (FZ2)8 by a partial surface of mud bricks.

Resting on the surface related to the construction phase of the mud-brick structures was a deposit of mud-brick rubble [(FZ2)25] extending beyond the north-east corner of the excavations. It fades away to the south and west. It, and surface (FZ2)31, were sealed by (FZ2)22, a layer of

sand and silt. It was cut by two pits (FZ2)6 (fill (FZ2)5) and (FZ2)20 (fill (FZ2)19). Pit (FZ2)5 was oval, 2.67 x 2.28m in size, and less than 50mm deep with a rounded base. It was filled with orange sand along with a few charcoal flecks. Pit (FZ2)20 was also oval, 540 x 330mm, and shallow concave in profile with a maximum depth of 55mm. It was filled with reddish sand and pieces of wood which may be tree roots. On this rested several amorphous-shaped patches of harder sand, in some cases formed of two distinct layers – upper layer (FZ2)22, 27, 29 & 32: lower layer (FZ2)10, 13, 14, 15 & 17. These may be remnants of hard surfaces extending over a wide area but partly removed by erosion.

A large number of mud bungs were found in grid square (FZ2). As well as those mentioned above reused as building materials in structures (FZ2)4 and (FZ2)9, many were found on surface (FZ2)22 and amongst the mud-brick rubble (FZ2)25 as well as in the topsoil sand. Two were recorded as coming from on surface (FZ2)31. Those on surface (FZ2)22 were distributed across the area but were more prevalent along the sides of the street between the mud-brick structures, a pattern replicated in the topsoil sand. However, in the area of the mud-brick rubble, many bungs lay on the surface in the middle of the ‘street’ (Plates 8.7 & 8.14).



Plate 8.14. Grid square (FZ2). Mud bungs on the surface towards the centre of the ‘street’ – scale bar 1.5m.

The mud-brick rubble at the north-eastern corner of the trench along with a piece of mud bearing palm leaf impressions (cat. no. F-1237), perhaps from an upper-storey floor of a building, suggest that there was at least one quite substantial building close by, no trace of which showed up on the gradiometer survey – the nearest walls known are 14m away. The structures found in the excavation flank a space which can only be considered as a road or street.

9. Excavations in the *temenos* gateway, grid square (TG5)

Derek A. Welsby

When Griffith excavated the temples at Kawa in 1929-31, work followed by that of Laming Macadam and Kirwan in the winter of 1935-6, the *temenos* wall, 4m thick at the base, was briefly investigated and assumed to be of early Kushite date (Kirwan 1955, 208). Only the north-east angle and a small part of the east wall were found. During the topographical survey at Kawa a gateway through the east wall of the *temenos* was noted 90m south of the north-east angle of the enclosure. Kawa was a contemporary foundation with Sesebi, the plan of the Pharaonic town there being well known from the Egypt Exploration Society's excavations in the 1930s. It was suggested that the *temenos* wall may actually be on the line of the Pharaonic defences and the plan of a settlement of the same form as at Sesebi fits well into the topography of the site at Kawa with the newly discovered gate being in the same position as one of the Sesebi gates. Excavations of the gate were undertaken to test this hypothesis and ultimately proved it wrong. The area of the gate and the adjacent sections of *temenos* wall had a complex history with four major periods documented.

Excavations began here in the winter of 2009-10 and were completed during the following season.¹ The area was investigated to a maximum depth below the recent ground surface of 3.86m at which point the work ceased. This was partly the result of health and safety considerations but was partly the result of archaeological considerations. At that depth the area available for excavation was strictly limited and it was not felt appropriate to cut though what appeared to be significant archaeological deposits where there would be little possibility of understanding their true significance. It is assumed that in this area there is the possibility of a further several metres of stratigraphy.

Period 1

Not wanting to destroy the extent remains of the *temenos* gateway this period was only visible in two small areas to the east and west of the gateway (Figure 9.1, Plate 9.1). The contemporaneity of the surface reached in these two trenches 5.5m apart seems certain. The hard silt surface was pierced by a large number of post-holes. In the limited area exposed no plan of any structures was visible. The post-holes fall into two main groups, larger holes ranged in diameter from 90-120mm and smaller stake-holes from 30-70mm. The former were up to 190mm deep, the latter were often very shallow. Some, but by no means the majority, were natural features, animal or root holes.

¹ In the first season the excavations were supervised by Tanya Bowie and Ross Thomas, in the second season by Ross Thomas. The plans, sections and elevations were drawn in the field by Ross Thomas and prepared for publication by the author with the assistance of Rebecca Bradshaw.



Plate 9.1. Period 1 surface and post-holes to the east of the later gateway looking north – scale bar 2m.

Period 1-2

In the western trench after the deposition of 500mm of sand and fine gravel deposits, some wind-blown, others containing flecks of charcoal, surface (TG5)151 was cut by a pit 220mm in diameter and 120mm deep filled with loose sand. The surface was sealed by a deposit 60-170mm thick with a hard sand surface cut by an irregular pit 650 x 600mm in size but only 120mm deep and another running into the baulk but with an observed depth of 370mm and 400 x 280+mm in plan. Both were filled with sand sealed by another hard sand surface 50-80mm above. After the build-up of further deposits a sandy surface (TG5)115 was formed contemporary with (TG5)116 to the east. In the eastern trench no structural features were noted during the build-up of 1.12m of sandy deposits to the level of (TG5)116 although some did contain bone, pottery and charcoal.

Period 2

Surfaces (TG5)115 and 116 were cut by four large post-holes, three to the east of the later gate and one to the west (Figure 9.2, Table 9.1). Others can certainly be postulated. Those to the east formed a row 6m in length centre-to-centre parallel to the later *temenos* wall but were not evenly spaced. Too small an area was excavated to suggest a function for the posts set into these holes. That in the south-western hole appears to have been removed by rocking back and

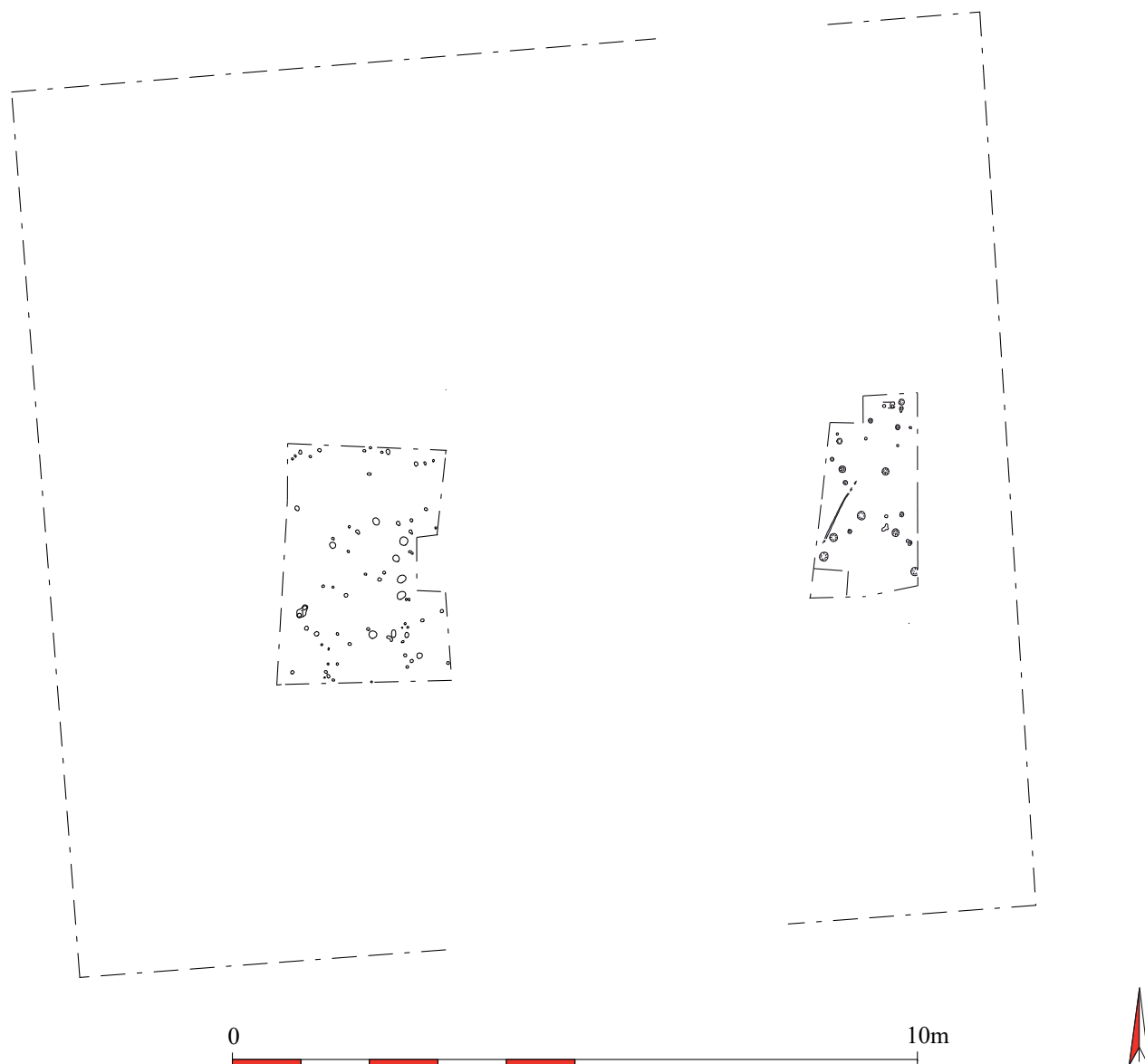


Figure 9.1. Grid square (TG5), Period 1 (scale 1:100).

forth suggesting that the timbers were removed rather than decaying *in situ*.

TABLE 9.1. DIMENSIONS OF THE PERIOD 2 POST-HOLES.

	Diameter	Depth
(TG5)118	440mm	460mm
(TG5)121	440mm	470mm
(TG5)123	440mm	490mm
(TG5)125	490mm	670mm

Period 3

In the construction phase of Period 3 the timbers were removed from the large post-holes and a vertically-sided foundation trench was cut into the surface. Into this was placed, towards the centre of the gateway, a row of mud bricks only visible on the east side of the gate paving in the sondage. Those right in the centre of the gateway were set

on edge while those to either side were angled in towards the centre forming a slightly convex surface (Plate 9.2). The bricks did not appear in the edge of the western sondage



Plate 9.2. Mud-brick and rubble foundation for the stone paving in the Period 3 gateway – scale bar 2m.

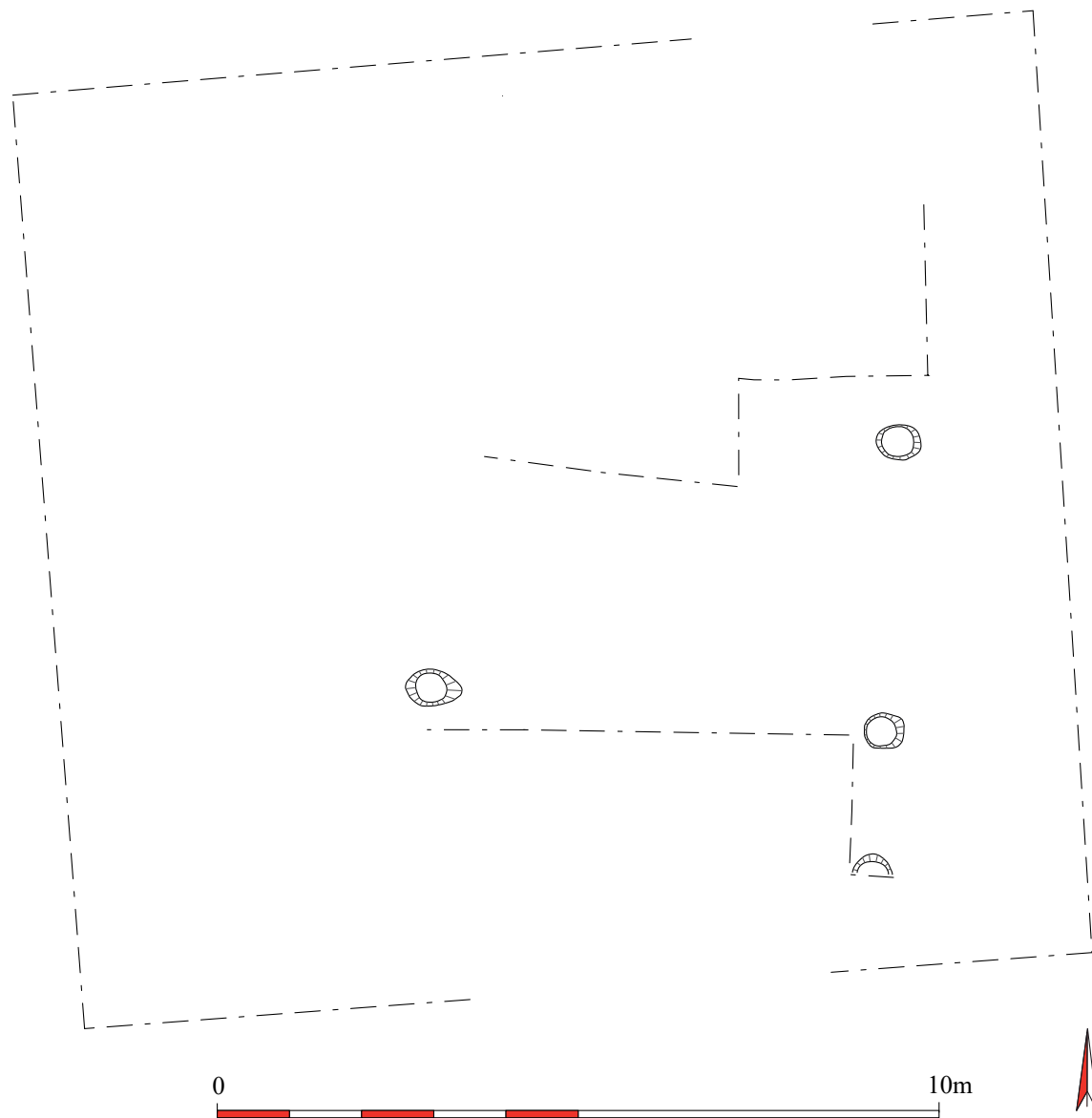


Figure 9.2. Period 2 post-holes (scale 1:100).

so how far under the paving they extended is uncertain. To either side the foundation consisted of a deposit [(TG5)117] 230mm thick, a mixture of stone, mud-brick rubble and sand which abutted the mud bricks and also filled the post-holes. This deposit extended right across the area excavated to the east of the gate and was visible in the edge of excavation; the contemporary similar material to the west was deposit (TG5)114. Laid on the mud-brick and rubble foundation was a stone pavement constructed of large white sandstone slabs with a few of red sandstone (Figure 9.3, Plate 9.3). Those observed in section ranged in thickness from 80-400mm and the largest slab was 882 x 582mm in size. The pavement's east edge was in line with the front of the gate and it is assumed that its rear edge was similarly aligned. Its extent to north and south was unclear as it was directly overlain by the passage walls of



Plate 9.3. Stone paving in the Period 3 gateway – scale bar 2m.

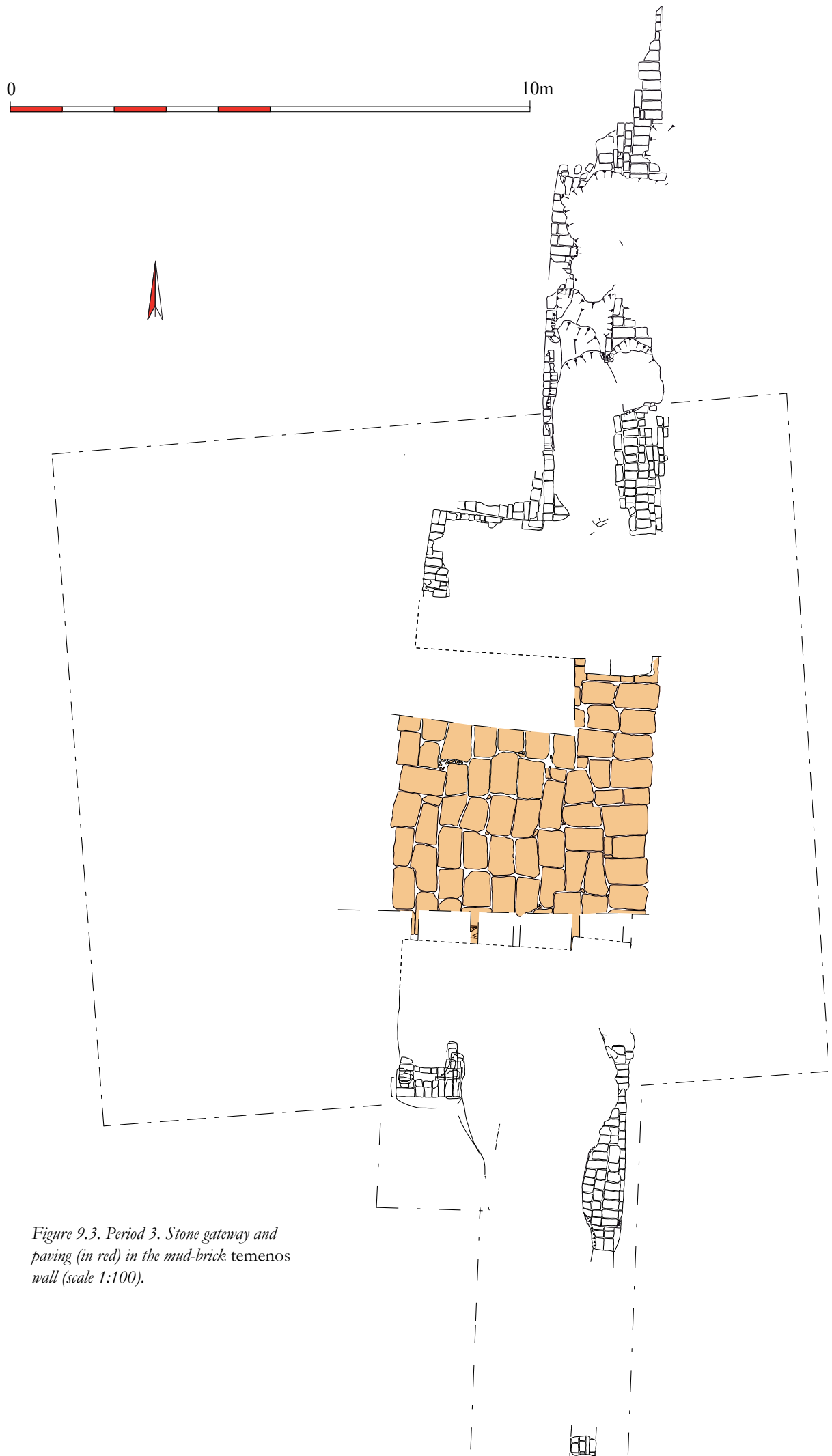


Figure 9.3. Period 3. Stone gateway and paving (in red) in the mud-brick temenos wall (scale 1:100).

the gate which used it as their foundations. Both these walls were only revealed in part as the later walls were largely left *in situ* making total excavation impossible.

The south wall was glimpsed in several narrow slots. Of what could be seen of it, it can be confidently assumed to have been similar to the north passageway wall. The eastern end of this was cleared and consisted of four courses of well-dressed white sandstone masonry surviving to a height of approximately 1.6m (Plate 9.4, Figure 9.4). The front face was battered at an angle of about 5°. The jamb measured 1.29m east-west and projected 286mm from the wall line.



Plate 9.4. The north jamb resting on the stone paving in the Period 3 gateway – scale bar 2m.

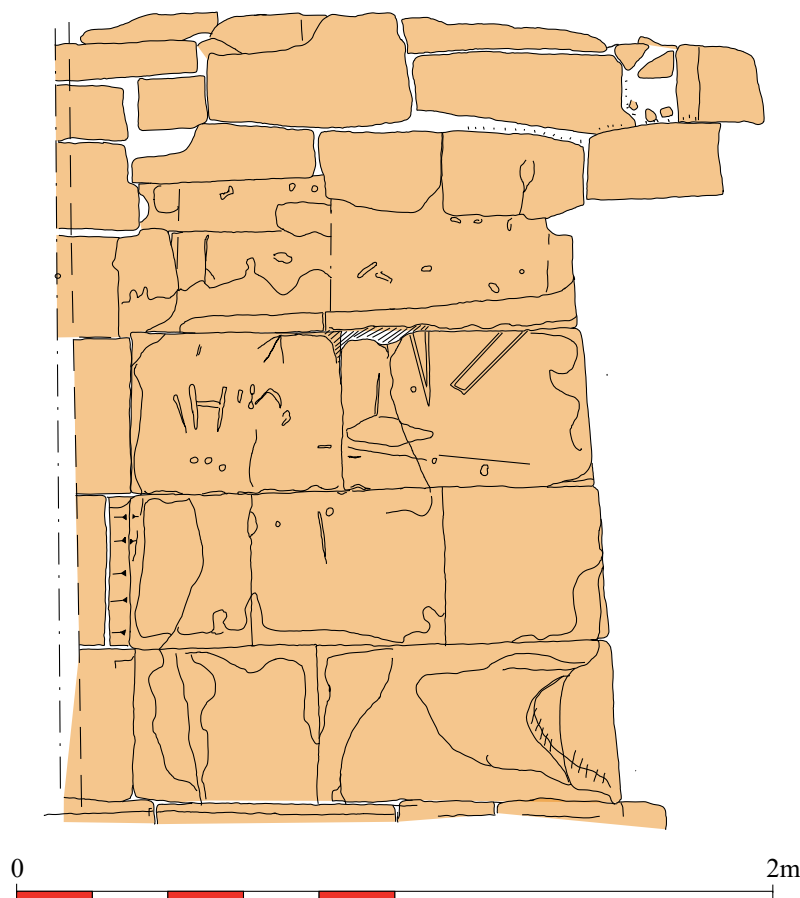


Figure 9.4. Period 3 north gate jamb with the Period 6 revetment above (scale 1:20).

Together with the southern jamb they will have reduced the 5.6m wide passage to 5.07m. No evidence was found for the location of the door pivot nor for any bolt mechanism either in the pavement in the centre of the gate or in the north passage wall. There was no scoring resulting from the closing of gates. The eastern corner of the gate passage was rounded and severely wind-eroded particularly on the lowermost block indicating that it was exposed to aeolian erosion for some considerable time.

The stone passageway walls were a revetment of the mud-brick *temenos* wall which was inturned at the gate. The north wall was approximately 2.56m thick, the inturned section with the revetment being 2.6m thick. The north face of the inturned section [wall (TG5)45/106] had its lowest two courses on a slightly different alignment than its superstructure and these courses were of headers. The headers were sealed at their east end by four courses laid as headers and stretchers, again projecting beyond the superstructure of the north-south *temenos* wall. The superstructures of these two walls were thereafter bonded. To the south of the gate the mud bricks were 250 x 180 x 100mm in size. South of the gate the wall had been very extensively robbed. In this area only limited excavation was undertaken which indicated that the wall extended at least 9.8m to the south of the south passageway wall.

Up against the east face of the pavement was a construction deposit 80mm thick, which had formed a hard surface when trampled. It left a small step up onto the pavement which was levelled out by the addition of 100-110mm of pebbles, pot sherds and sand [(TG5)109]. To the west a deposit of mud, pebbles, sherds and firm sand formed the surface contemporary with the pavement.

Period 3-4

How long the pavement remained visible cannot be ascertained. It will have needed to be cleaned on a regular basis otherwise it would have vanished very quickly beneath the wind-blown sand. There is epigraphic evidence for sand removal on a large scale at Kawa and this may have occurred here. However at some point the battle against the accumulation of sand was abandoned and thereafter a series of layers built up over the pavement. The first [(TG5)105] was 100-130mm thick of compact gravel and pot sherds in a sand and silt matrix which covers most of the excavation area and seals the projecting mud-brick courses of wall (TG5)45. Of the many layers above some are of wind-blown sand and do not extend across the whole of the excavated area. The surfaces of the deposits tend to be more compact within the passageway of the gate where there was a greater abundance of pottery sherds, small lumps of mud and stones. After a build-up of 860mm above the stone pavement the surface was cut by a single post-hole [(TG5)92] set almost half way along and half way across the

passageway. It was 390mm in diameter and 90mm deep, filled with a loose sand.

To the north of the inturned mud-brick wall delimiting the north side of the gate passage was a midden with a mass of pottery and bone with ash lenses. Three separate deposits could be identified [(TG5)91,87,73] over 600mm thick. This midden extended out of the excavations to the north and was presumably associated with some activity in that area rather than with the gateway.

At a level 1.1m above the paving was a sandy surface [(TG5)79] with some admixture of silt and charcoal. Cutting this was a line of six post-holes running obliquely across the gate passageway (Figure 9.5). These attained a maximum depth of 110mm and a diameter of 330mm. Looking at the spacing and dimensions of the holes it appeared that initially there were only four posts (another may be hidden at the south end under the unexcavated baulk), the southern three 1.68 and 1.44m apart centre-to-centre while the gap at the

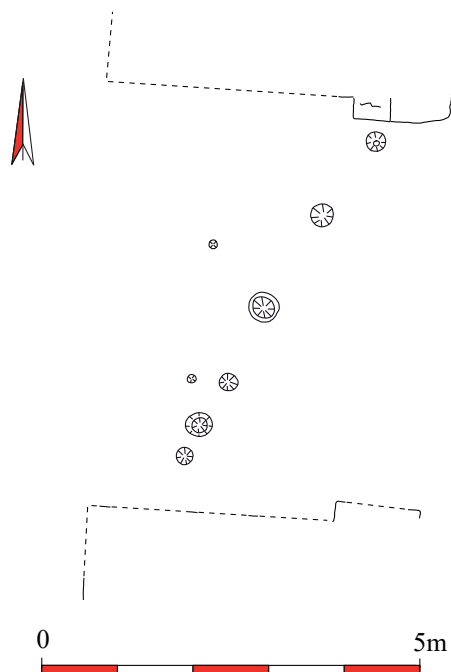


Figure 9.5. Period 3-4, post-holes (scale 1:100).

north end was 1.2m wide. That at the northern end of the line was set very close to the stone face of the passageway and the situation was probably similar at the other end. Two smaller posts were then added in the southern section of the line and two much smaller posts/stakes was set a little behind the line. The largest post-hole (post?) was that in the centre.

The next deposit formed a hard surface with mud-brick rubble and pottery trampled flat. It was sealed by a deposit of sand which sloped down a little to the north and south in the passageway where its surface was levelled up with mud-brick rubble and stoney rubble [(TG5)76,75] on which wall (TG5)3/56 was built.

Period 4

Built over the denuded remains of the period 3 south passageway wall and partly on rubble a new wall was con-

structed utilising reused large stone blocks (Figure 9.6). These, surviving to a height of two courses, about 400mm, were laid in a careless fashion in some cases with the bedding planes of the stones set vertically. The lowest course projected between 191mm and 243mm from that above on its north side and also to a lesser extent to east and west. The lowest course of the wall was 4.69m in length, the upper course mainly of headers was a maximum of about 680mm thick except at the north-east angle where it was 1.32m thick. The stone revetment extended 1.48m along the face of the *temenos* wall to the south of the gate at the level of its first course. There was no projecting jamb against which the gate could close. Traces of white plaster may indicate that the wall was rendered although this may relate to the original use of the stones.

The north passageway wall was also replaced with a wall of similar construction to that to the south but without a projecting lowermost course. This was only visible largely in plan as the Period 6 modifications were not removed during excavation. By the time of its construction the primary wall must have been reduced almost to the ground level and the highest course was in a very poor state, being very friable and heavily eroded. The gate passage was 5.1m wide above the footings and its east end increasing to 5.4m wide to the west.

Broadly contemporary with these activities was a rebuilding of the outer face of the *temenos* wall to the north of the gateway. A small construction trench 140mm deep was dug to allow the rebuilding of the wall face (TG5)40.

Perhaps at this period the north-western corner of the mud-brick inturned wall was rebuilt at a high level from bricks on average 260 x 140 x 80mm in size with thick mortar beds – up to 60mm – arranged as headers and stretchers [wall (TG5)39]. This was partly set directly on the core of the primary *temenos* wall but towards the wall's edge where it had been eroded the new wall sat on a layer of sand.

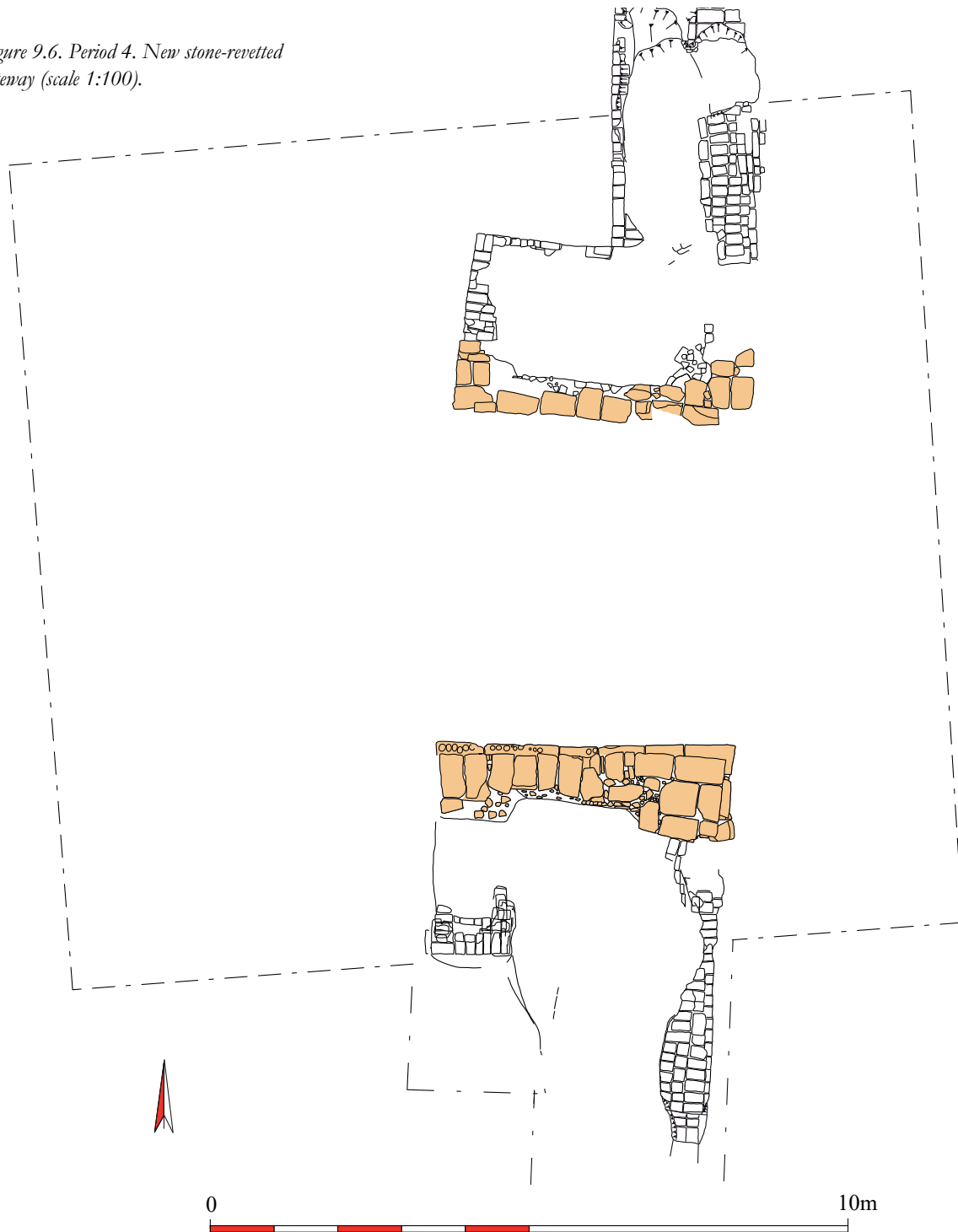
Period 4-5

Abutting the new south wall was a further levelling layer of compact sand with some pottery and bone [(TG5)29]. Cut into the upper surface of the projecting first course of the south wall was a series of circular bowl-shaped depressions (Plate 9.5). At least one of these was cut through by a Period 5 post-hole. They may have been small grinding hollows or part of a game; the depressions are similar to those used in *mancala* although the arrangement with only a single row is very different.

Period 5

This substantial gateway must have been in poor condition when it was rebuilt or strengthened in timber. Massive posts formed the two sides of the gate passage (Plate 9.6) while a central triple post-hole (Plate 9.7) presumably supported the timbers against which the two-leafed gate closed at the inner end of the passageway (Figure 9.7). Most of the timbers were set in substantial, but shallow, post-holes (for example post-hole (TG5)28 at 300mm in diameter

Figure 9.6. Period 4. New stone-revetted gateway (scale 1:100).



and 190mm deep) apart from the two on the south side of the gate, which were partly cut through the first projecting course of the Period 4 stone facing which presumably was already covered by deposits and thus invisible. The westernmost of these post-holes was extremely deep, at 950mm. The alignment of the gate is a little different from that of its predecessor with a gap of about 1.25m between its north side and the earlier north side of the gate passage. The passageway was approximately 3.5m wide at its east end. To the west the layout is unclear as the arrangement of the post-holes is difficult to interpret.

Period 6

The south wall of the gate passage was extended by approximately 1.77m to the west by a wall faced with large stone blocks and with a mud core (Figure 9.8, Plate 9.8). It abutted against the Period 4 wall and was in line with its north face. The wall was about 1.17m thick and projected west of the inturn of the *temenos* wall. It survived to a height of two courses, 660mm. This appears to be contemporary with a more extensive refurbishment of the north side of the gateway. Here the Period 3/4 wall was extended to the west by a wall mainly constructed of mud bricks arranged in a mixture of headers and stretchers in each course but



Plate 9.5. Circular, bowl-shaped depressions cut into the stones of the Period 4 gateway's first course – scale bar 500mm.



Plate 9.8. Period 6, reuse of the Period 4 stone gateway and extension of the gate passage at its west end – scale bar 2m.



Plate 9.6. Post-holes of the Period 5 gateway looking east – scale bar 2m.



Plate 9.7. Triple post-holes at the inner end of the Period 5 gateway – scale bar 500mm.

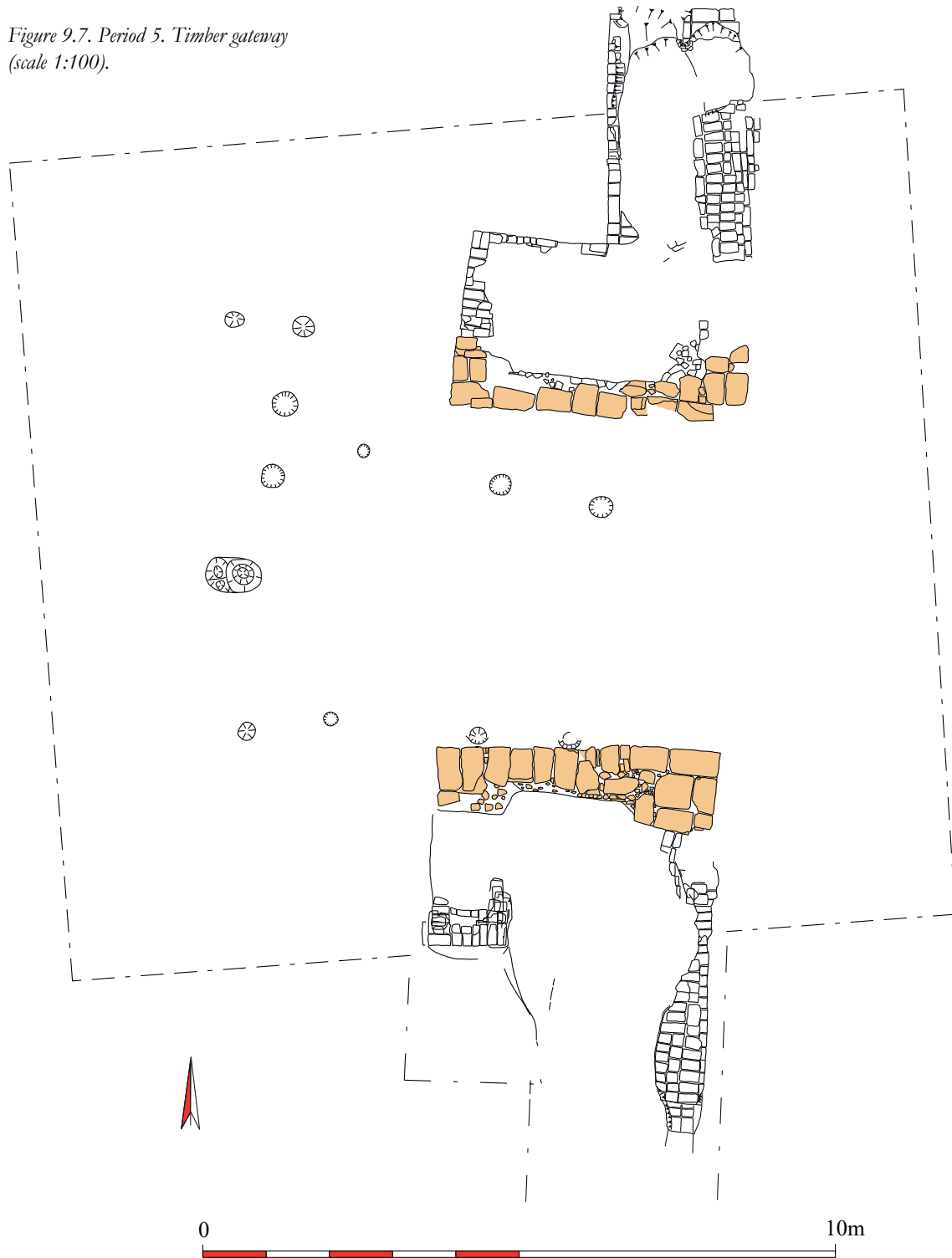
also incorporating some stone blocks. It measured about 1.76m east-west and 1.3-1.59m north-south and survived to a height of 440mm. The brickwork abutted the end of the Period 3/4 stone revetment and also extended part way along its south face thickening the walls by approximately 625mm; the lower courses were of brick fragments. Further east the thickening was of stone blocks, the south face of both sections being battered with the lower courses each projecting a little more. The stone thickening also extended around onto the east face of the *temenos* wall to the north of the gateway for a distance of 3m (Plate 9.9) and included part of a cornice block set upside-down amongst its stones. Here the Period 4 rebuild of the outer face of the *temenos* wall was hacked into to allow the insertion of the new stone revetment. One of the blocks used in the new revetment

had three of the shallow circular depressions as seen in the southern Period 4 wall. In this period the gate passage was 4.48m wide at its east end increasing in width to 5.32m to the west and was approximately 4.4m long.

The *temenos* wall

From the gateway to the north-east angle of the *temenos* the wall is visible, and towards its northern end, as a result of the 1929-1936 excavations, it is an upstanding monument. There 17 courses can still be seen all of headers with a number of saw-tooth headers in some courses (Plate 9.10). By the gate the surface of the wall was cleaned for a distance of 15m to the north of the passageway wall (Plate 9.11). A number of different phases were visible but their

Figure 9.7. Period 5. Timber gateway
(scale 1:100).



exact sequence was unclear. Following on from the Period 4 rebuildings of the wall it was overbuilt, at approximately the present-day ground level, by another substantial wall of mud brick. This appears to have been offset from its predecessor to the east, it is founded both on the core of the original wall and on the wind-blown sand immediately to its east. In the area investigated only a single course survived. However in light of its quality of construction and the width of the surviving brickwork there is no reason to doubt that this was a substantial wall which attained a significant elevation. This rebuild may be contemporary

with Period 6 as it appears to continue the line of the wall face of the newly installed stone revetment.

Post-gateway

Against some of the walls were deposits of mud-brick rubble. Cutting into the mud-brick *temenos* walls to the north and south of the gateway and removing very large parts of the inturned sections of wall were many robber pits dug to a maximum depth of 2.47m into the walling. No dating evidence was found for these – their fills contained many



Plate 9.9. The Period 6, gateway from the exterior – scale bar 2m.



Plate 9.10. The temenos wall by the north-east angle showing construction technique. This was uncovered during the 1929-36 excavations – scale bar 2m.



Plate 9.11. The temenos wall immediately to the north of the gateway looking north – scale bar 2m.

residual Kushite sherds. One of the workmen recalled that in living memory farmers used to cross the Nile to collect *maroq* from Kawa but these activities may have been going on for a considerable period of time. The *maroq* diggers were careful to leave the wall faces in place torevet their pits and keep out the sandy deposits. Thereafter the whole area filled with wind-blown sand up to the surface, the level to which the latest phases of the gate and *temenos* wall were preserved.

Interpretive summary

Period 1. A hard surface extending over the area of the later gateway with the remains of timber structures of uncertain character.

Period 2. A major timber structure built with large deeply-set posts. This probably does not long predate the stone gateway and the placing of the posts suggests the possibility that they formed a timber gateway with a passageway approximately 4m wide and 6m long flanked on its east face by a row of timbers spaced at intervals of *c.* 2m. These may have formed the face of a timber or composite wall/rampart.

Period 3. Construction of a massive stone gateway and mud-brick wall. The stone pavement with an elaborate foundation was built first and then the stone revetment of the gate passage was set directly upon it. The stone pavement, although showing little wear, was in use for a long period during which the north jamb was severely wind eroded.

Period 3-4. During the steady build-up of material within the gate, much of it probably dumped there to form a firm road surface, access was restricted by a timber fence running obliquely across the gate. If gates had ever been provided the gradual raising of the level in the passageway will have made their maintenance in use very difficult.

Period 4. After the upper parts of the gateway walls had been removed and the uppermost course had suffered extensively from wind erosion a new stone-revetted gateway was built, the stones resting partly on the fill within the passageway. This was built of reused material.

Period 5. The gateway was strengthened by substantial timbers after at least the first course had been covered by deposits.

0 10m



Figure 9.8. Period 6. Stone gateway of Period 4 with passageway extended to the west and the north wall with a new revetment. This plan also shows the latest phase of the temenos wall to the north and the robber pits post-dating the gate's use (scale 1:100).

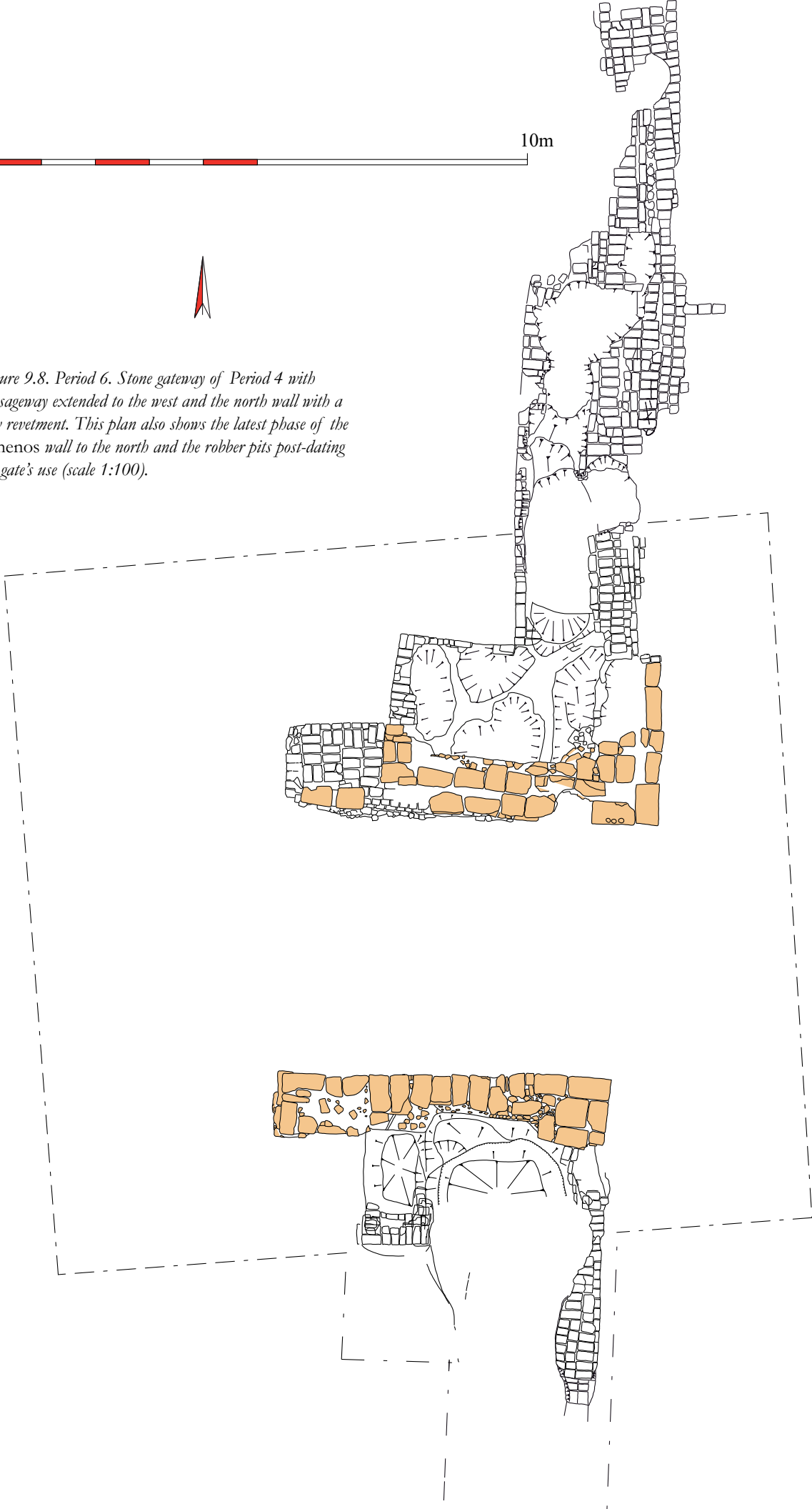




Figure 9.9. North-facing section through the gateway with elevations of the Period 3, 4 and 6 passageway walls.

Period 6. Re-use of the Period 4 gateway and extension of the gate passage to the west. The north face of the passage was revetted in mud brick and stone, some of it reused, and this was carried around onto the exterior face of the *temenos* wall immediately north of the gate. The *temenos* wall was rebuilt to the north and offset a little to the east where it rested on wind-blown sand.

Post-gateway. The mud-brick core of the *temenos* wall was extensively quarried.

10. Excavations of Building Z1

Mahmoud Suliman Bashir and Derek A. Welsby

Introduction

Building Z1 is situated towards the northern edge of the site at Kawa. Sections of the building's walls were visible on the ground surface and a plan of these was made in 2000 after brushing of the surface (Plate 10.1). The remains were fully excavated in the winter of 2001-2, the work supervised by Pip Stevenson.

Summary of the phasing

Phase 1 – Construction

Phase 2 – The use of Building Z1

Phase 3 – Collapse of the building and subsequent activities

Phase 1 – Construction

Building Z1 lies on the edge of the Kushite-period river bank 40m to the east of the present-day bank. It is partly set on the plain but its western room is terraced down the steep slope. As preserved it consists of a single rectangular room (Room Z1-I) aligned roughly north-south measuring 8.05 x 3.18-3.36m internally with a long narrow room containing



Plate 10.1. Building Z1. The building's walls visible immediately below the surface before excavation began. The ruins in the background are of the dig house constructed by Griffith – scale bar 2m.

a stairway (width 1m) against the exterior of its east wall. Extending 3.5m beyond this to the east is a single wall (Figures 10.1 & 10.2). Preservation varies dramatically. The most easterly section of the building survives to a maximum height of 60mm above foundation level while to the west the east wall of Room Z1-I is preserved to over 1m in height. It is entirely possible that the eastern parts of the building have been totally removed presumably by aeolian erosion. However, there are no traces of additional walls extending beyond the rooms preserved and the eastern end of the wall running east from the stairway is a dressed corner.

The mud-brick walls of Building Z1 are constructed on a clean light-brown sand deposit. They are built from bricks measuring approximately 360 x 170 x 90-110mm in size. Walls (ZI5)2, (ZH5)6 and (ZH5)7 are approximately 570mm, 600mm and 670mm thick respectively with one row of headers and one of stretchers (bond type H) forming the course, the greater width of (ZH5)7 being the result of it having a mud core. The foundations vary from wall to wall. Wall (ZH5)7 has over most of its length a single course of two rows of headers set on edge (bond type J), but towards its western end, to level up the sloping surface on which it was built, the foundation is of greater depth, built of stretchers, rowlocks and some rubble (Figure 10.3). Wall (ZH5)6 has a foundation of three courses of alternating headers and stretchers (bond type H) as in the superstructure but little care

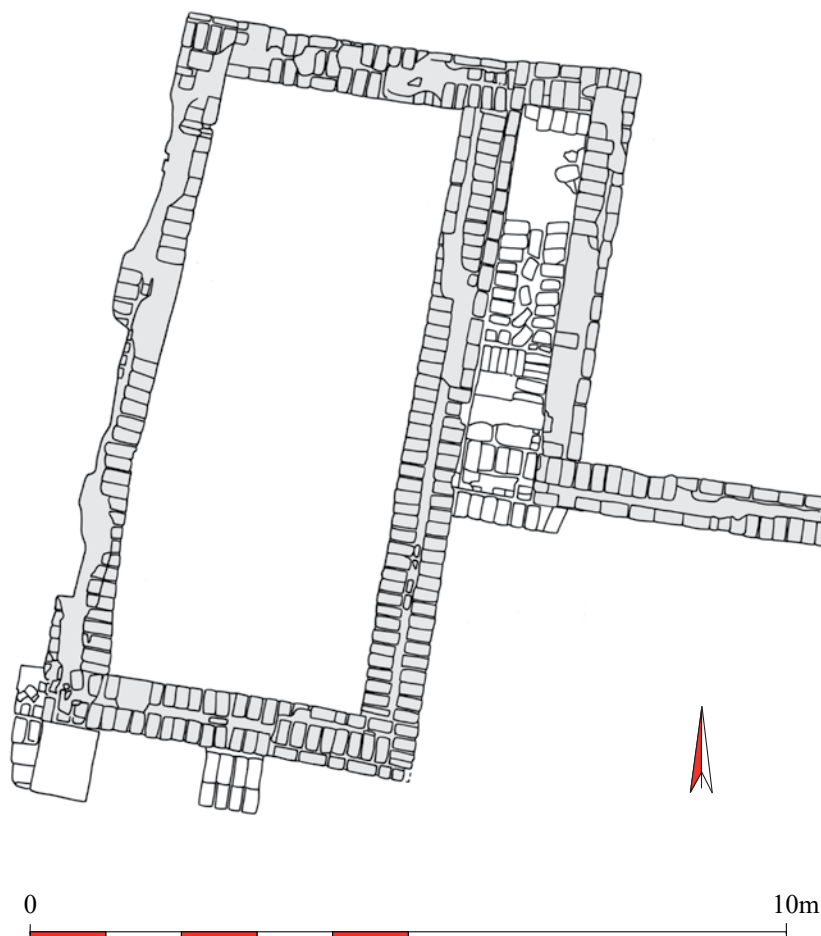


Figure 10.1. Plan of Building Z1 (scale 1:100).

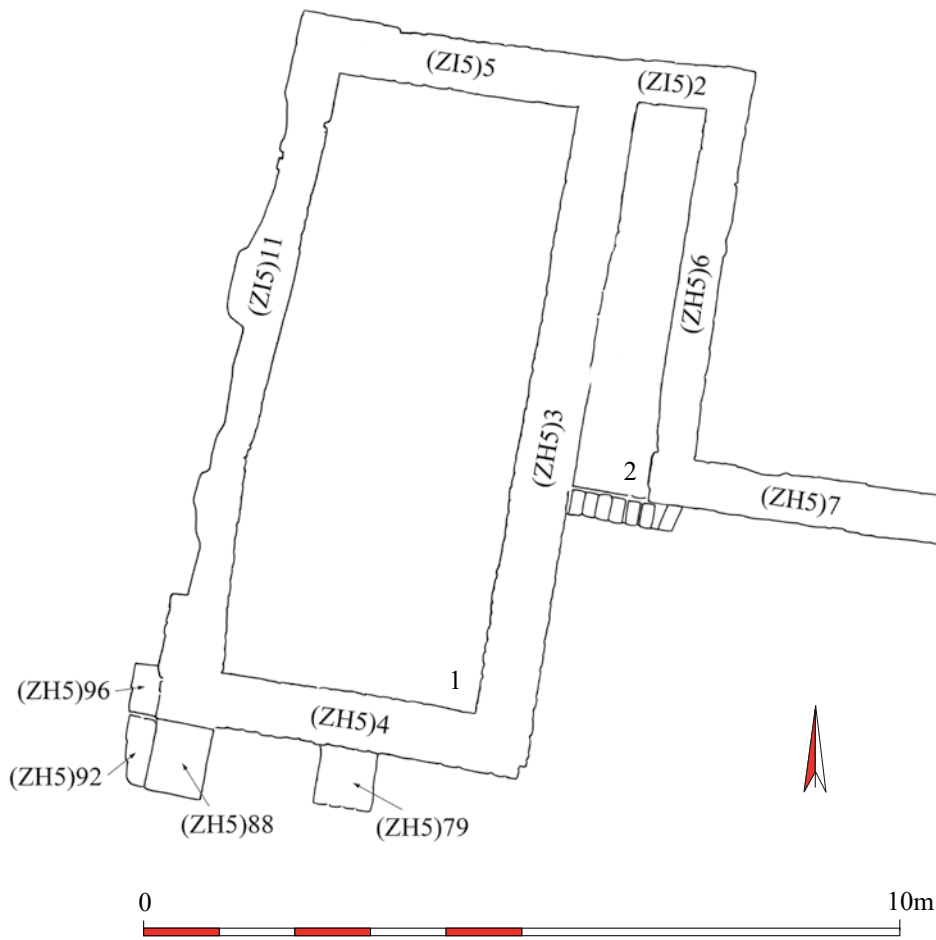


Figure 10.2. Building Z1. Context numbers of major structural elements (scale 1:100).



Figure 10.3. Building Z1. Elevation of the north face of wall (ZH5)7 (scale 1:50).

has been taken to form a smooth wall face. At each end the foundation is deepened by a partial course of shiners (Figure 10.4).

The walls of Room Z1-I are thicker. The east wall which is typical of the others, is 800mm thick constructed of alternating courses of two rows of headers (bond type G) and two rows of stretchers with a row of headers between (bond type C). It survives within Room Z1-I to a height of 1.06m above the foundations, a single course of rowlocks surmounted by two courses of headers. The level of the primary floor is indicated by the mud-mortar rendering, up to 20mm thick, which begins above the third course (Plate 10.2). At the external south-east angle of the room there is a vertical rectangular rebate, presumably designed to accommodate an upright squared timber of 90 x 100mm scantling (Plate 10.8). The east wall of Room Z1-I acts as a terrace wall having been built up against deposits of clean sand approximately 750mm in thickness upon which Room Z1-II and the walls to the east were constructed. The west wall of Room Z1-I also has a similar function and is

founded 200mm below the level of the east wall.

At the south-west corner of Room Z1-I was a buttress [(ZH5)96] bonded into the south wall and extending 500mm west of the external face of wall (ZI5)11. It is 700mm in length and at least 250mm high.¹

Subsequent to the construction of the walls defining Room Z1-I sand up to 400mm thick containing some mud-brick rubble was deposited to provide a level base for the primary floor. This was a thin mud surface with some charcoal flecks upon it, which was preserved in the south-west corner of the room.

Room Z1-II is 1m in width with a total length of 5.17m. What little survives indicates the presence of a doorway at the south end of the room with a staircase leading up towards the north bounded by walls (ZH5)3 and (ZH5)7. The threshold was of mud, 100mm wide and 50mm high up against a rectangular-sectioned timber long since decayed. The timber, approximately 100mm wide



Plate 10.2. Building Z1. The north and east walls of Room I showing foundations and mud mortar render above the primary floor level looking north east – scale bar 2m.

and 80mm thick, was set into sockets in the side walls to east and west and was associated with a shallow post-hole either for a jamb or door pivot at its west end. The function of the shallow depression 380mm in diameter towards the east end of the threshold is unclear. Additional sockets, with thin stone slabs forming their tops, are presumably for the timber front edge of the first step, the core of which is of

¹ Owing to the proximity of the edge of excavation and the very soft sand through which it was dug it was not possible to excavate the whole of this buttress.

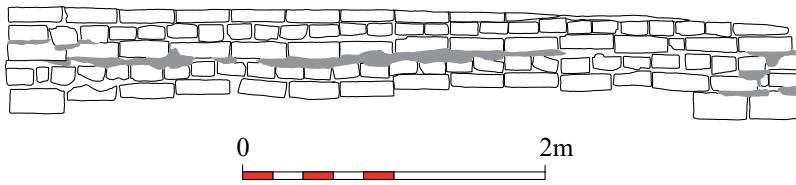


Figure 10.4. Building Z1. Elevation of the east face of wall (ZH5)6 (scale 1:50).



Plate 10.3. Building Z1, Room II. The threshold, 'pivot' and sockets for the wooden elements of the steps looking south west – scale bar 500mm.

mud brick (Plate 10.3). The lower part of the socket for another timber beam associated with the second step was located but no trace of steps at a higher level are preserved, the building not surviving above that level. However, the solid mud-brick infill of the rest of Room Z1-II was presumably designed to support a staircase with perhaps a landing at the top giving access to the west onto the roof or upper storey over Room Z1-I.

In front of the doorway, abutting the north-south wall to the west and the south face of wall (ZH5)7 to the east, is a step measuring 1.48m in length constructed of a single course of bricks laid as headers leading up from the sandy surface to the south. To the south the natural sand was overlain by a 200mm thick deposit (ZH5)54 of small fragments of mud-brick rubble upon which the step is laid. The surface of the rubble was then used as a surface contemporary with the use of the staircase in Room Z1-II (Plate 10.4).



Plate 10.4. Building Z1. Rubble surface (ZH5)54, wall 19 on deposit 43 and rubble 18 looking north west – scale bar 2m.

Phase 2 – The use of Building Z1

None of the surfaces within Room Z1-I could be traced right across the room and many were only defined as such when features were found at a particular level. A number of isolated patches of mud may represent repairs to floors, designed to fill hollows. Overlying

the primary-floor surface was another mud surface located in the south-west corner covering an area 1.35m in length and 1.68m in width. It was covered in an ashy deposit and was burnt a reddish-brown colour. There was no sign of burning on the adjacent walls. Surfaces of sand [(ZH5)66 & 69] in different parts of the room may be contemporary. Cut into these were two shallow pits 200 x 230mm by 60mm deep and 260mm in diameter and 40mm deep and what may be a post-hole 300 x 230mm in size and 250mm deep containing some charcoal flecks.

Context (ZH5)49 is another surface with a matrix of sand, ash, and a little charcoal and other organic material. Up against the south wall it was 60mm thick, further to the north it was 30mm in thickness. Mid-way between the east and west walls, and a little south of the centre of the room, a substantial oval post-hole with vertical sides and a rounded base 320 x 370mm in size and 250mm deep was cut from this surface. Within this is a clearly defined post-pipe filled with charcoal fragments, 150mm in diameter and extending to the base of the hole with two large pieces of mud brick used as packers. The post set in this hole is almost certainly associated with a socket 290mm wide, 250mm high and 210mm deep roughly cut into the east wall of the room and



Plate 10.5. Building Z1. Post-hole in the centre of Room 1 and associated beam socket in the west wall – scale bar 200mm.

only about 220mm above the surface of (ZH5)49 (Plate 10.5). At a comparable level at the north end of the room was an organic deposit [(ZH5)56] containing fibrous material.

The west wall of Room Z1-I was built on the steep slope presumably down to the river. During the construction of the building buttress (ZH5)96 had been provided at the south-west angle. Abutting this buttress is another [(ZH5)92] extending 980mm to the south, over 380mm wide and up to 200mm high; the top is stepped. After a build-up of sand against (ZH5)92 another mud-brick buttress (ZH5)88 was constructed partly overlying (ZH5)92 extending 960mm south of the building, 670mm thick and surviving to a height of 700mm (Plate 10.6). The buttress was covered in a mud-mortar render 20-30mm thick. To the east of this buttress 100mm of sand was deposited, sealed by a thin layer of ash. On this surface, mid-way along the south wall, buttress (ZH5)79 was constructed of mud brick and covered in a mud-mortar render. It is 770mm wide, projects

mud many bearing seal impressions, along with a little pottery and bone.

Horizontal sandy deposits, some containing a little mud-brick rubble, continued to build up to the south of wall (ZH5)4 gradually burying the buttresses. One surface was marked by a thin layer of ash, another had a complete pot (probably type 3083x), containing an oyster shell (Plate 10.7), and rubble on its surface up against the wall. In addition, the excavations in this area revealed a single upright stone and a reused grinder, set at the external angle of walls (ZH5)3 and (ZH5)4 (Plate 10.8).

Extending across the doorway into Room Z1-II was a single line of up to two ‘courses’ of mud-brick rubble. To the south, fine rubble layers on the primary surface are overlain by a row of four mud-brick stretchers over a



Plate 10.6. Building Z1. The south wall of Room I with buttresses (ZH5)96, 92 and 88 at the angle and (ZH5)79 midway along the wall, looking north east – scale bar 1.5m.

from the wall 770mm and is 450mm high and consists of two steps, the lower with a riser of 230mm. Abutting buttresses (ZH5)88 and 79 was a deposit 200mm thick of sand [(ZH5)85] containing considerable quantities of lumps of



Plate 10.7. Pottery vessel containing an oyster shell – scale bar 100mm.



Plate 10.8. Building Z1. The south-east corner of Room I with the impression of the vertical timber and the grinding base – scale bar 200mm.

distance of 1.5m with another set off line to the west (Plate 10.3). The gap between the last brick and wall (ZH5)7 was filled with rubble.

East and a little north of the end of wall (ZH5)7 was a roughly circular patch of rubble and occupation material, pottery, traces of burning and charcoal [(ZH6)2] approximately 1.5m in diameter and up to 340mm thick. This was set in an expanse of soft clean sand which abuts the walls in this area. It was presumably the fill of a shallow pit associated with an occupation surface which had been removed by erosion. As the surface from which the pit was cut had been removed, the stratigraphic relationship of the pit to Building Z1 could not be ascertained. Immediately to the north of the pit was a line of two mud bricks.

Phase 3 – Collapse of the building and subsequent activities

The beginning of the destruction of the building in Room Z1-I is represented by 50-100mm of mud-brick rubble sealed by yet more mud-brick rubble amongst which were pieces of mud showing the impressions of palm fronds, presumably material from the collapsed roof/first floor.

Upon this rubble wind-blown sand accumulated. At a later date ash and other rubbish including animal bone and pottery was tipped into the room over an extended period and further layers of mud-brick rubble and sand completed the filling of the room. High in the sand fill, in the south-east corner of the room, were several mud bricks, a grinder and fire-blackened pottery, possibly evidence for some occupation of the ruins at that time.

The presence of the mud sealings suggests that the building was of some importance but what this may have been is unclear.

The remains of the building have been greatly denuded presumably by aeolian erosion. The eastern part of the structure has been removed down to the level of the surrounding plain. To the west, however, the north and south walls of Room I have been eroded so that their tops slope



*Plate 10.9. Building Z1. General view during excavation looking north east.
The relationship of the denuded walls of Room Z1-I to the present ground level can be clearly seen – scale bar 2m.*

Immediately to the north of the building abutting the north walls of Rooms Z1-I and Z1-II was a mass of mud-brick rubble which was set on the sandy surface which slopes steeply to the north west and west.

Discussion

The nature of the original building on this site is uncertain. As it survives the plan of the building appears to be complete but, if so, its form is very unusual (Figure 10.1). Whether the building was ever more extensive is unclear. The depth of the very soft sand deposits on the west side of Room Z1-I made it impossible ascertain if the building extended further down the slope. There is no evidence for walls abutting the north-east corner of Room Z1-II nor for any continuation of wall (ZH5)7. It is possible that the carefully-constructed east end of wall (ZH5)7 was one side of a doorway, the other side and the continuing wall having been removed by erosion.

Room Z1-I is a substantial structure but lacks a doorway. That and the presence of the stairway in Room Z1-II suggests that it was designed as a substructure to support a first-floor room on the steeply sloping river bank. However, the material from within it indicates that the room was occupied and used for domestic activities at least on some occasions.

markedly from east to west, a slope down of 880mm over a distance of 3.2m. This again presumably reflects the denuding of the walls down to the then contemporary ground level. Today however, the surface around Building Z1 is horizontal (Plate 10.9) indicating that the severe erosion of the building took place before the river bank migrated to the west and the area to the west of the building infilled with sand. There is no dating evidence available to suggest when this may have occurred.

11. Excavations within the Kushite cemetery at Gematon (site R18)

Derek A. Welsby

The earliest excavations within the eastern cemetery, designated site R18 during the SARS 1993 survey, was by Griffith in 1930 (Laming Macadam 1955, 116). He uncovered three graves, the precise locations of which are unknown. Very little information is available. Grave 1 was plundered and apart from a list of the finds no other details are given. The interment in Grave 3 was placed in a contracted position on its left side with the head to the east. The grave was cut by Grave 2 which had a stepped descandary and an end chamber. Following the excavation of the single tumulus with its primary and secondary burials in 1993, excavations have been continued in the cemetery in parallel with those at various locations within the town. For the locations of the graves excavated by the SARS mission see Figure 11.1.

A note on the finds

A list of finds from each grave is appended to their description. Some finds are certainly grave goods intentionally buried with the deceased. Others were recovered from deposits associated with the robbing of the grave. These may represent disturbed grave goods but there is also the possibility that they were incorporated in these fills from the surface scatter, were the robbed contents of adjacent graves, were dropped by the robbers themselves or came from the disturbed descandary fill. Those finds which came from the undisturbed fill of the descandary pre-date the grave and had nothing to do with the burial *per se*. For a discussion of the ceramic material from the graves see Welsby Sjöström 2023, Ch. 7.

As noted on page 7, the following prefixes are used to direct the reader to the appropriate specialist report (in Welsby forth. a) for more details of individual finds:

- B- beads catalogue
- F- small finds catalogue
- L- lithics catalogue
- ML- macro-lithics catalogue
- S- mud seal impressions catalogue
- Sc- scarabs catalogue

Any object number followed by an x is a pottery type number.

Excavations of individual graves

Unless otherwise stated all of the bodies excavated in the cemetery were aligned roughly west-east with the head to the west. All data on the human skeletal material is derived from the report by Drs Anna Davies-Barrett, Tatiana Vlemincq-Mendieta and Rebecca Whiting to be published in Volume IV of the SARS monograph series devoted to Kawa.

(5) – This grave contained a male aged 45 or over, placed in a contracted position on his right side, aligned west-east

with the head to the west, set in a side-niche. Cut into the tumulus covering the grave were three secondary graves. All were excavated in 1993 and are fully published (see Fathi Abdul Hamid Salih Khider 1994; 2001).

(483) – Located towards the very northern edge of the cemetery the grave was marked on the surface by an oval spread of brown-quartzite pebbles with a few black-stone fragments almost level with the surrounding ground surface. The spread measured approximately 4.6m north-south by 3.15m east-west attaining a maximum elevation on 150mm. An area of 64m² was investigated. Half-sectioning of the stone spread appeared to reveal a robber pit. However during excavation the edges of the ‘pit’ proved extremely difficult to define in the very soft sand interspersed with patches of harder sand stained by iron panning. Under the centre of the stone spread mud-brick rubble was revealed a little below the surface and extending down to a depth of approximately 1.24m. Complete bricks from among the rubble measured between 250mm and 280mm in length, 140-170mm wide and 70-80mm thick. Two pottery sherds were also noted. Although this rubble presumably lay in the fill of a robber pit this could still not be defined. Traces of what at first sight appeared to be post-holes, one containing timber remains, were most likely root holes. The north-eastern part of the excavation area was sondaged to a depth of over 1m but, as no trace of the edge of a robber or grave pit could be found, and faced with the excavation being continually backfilled by sand moved by the very strong winds, the excavation was aborted.

(533) – skeleton (533)30, Figures 11.2-11.5, Plate 11.1



Plate 11.1. Grave (533) – primary phase descandary and stone base of the monument.

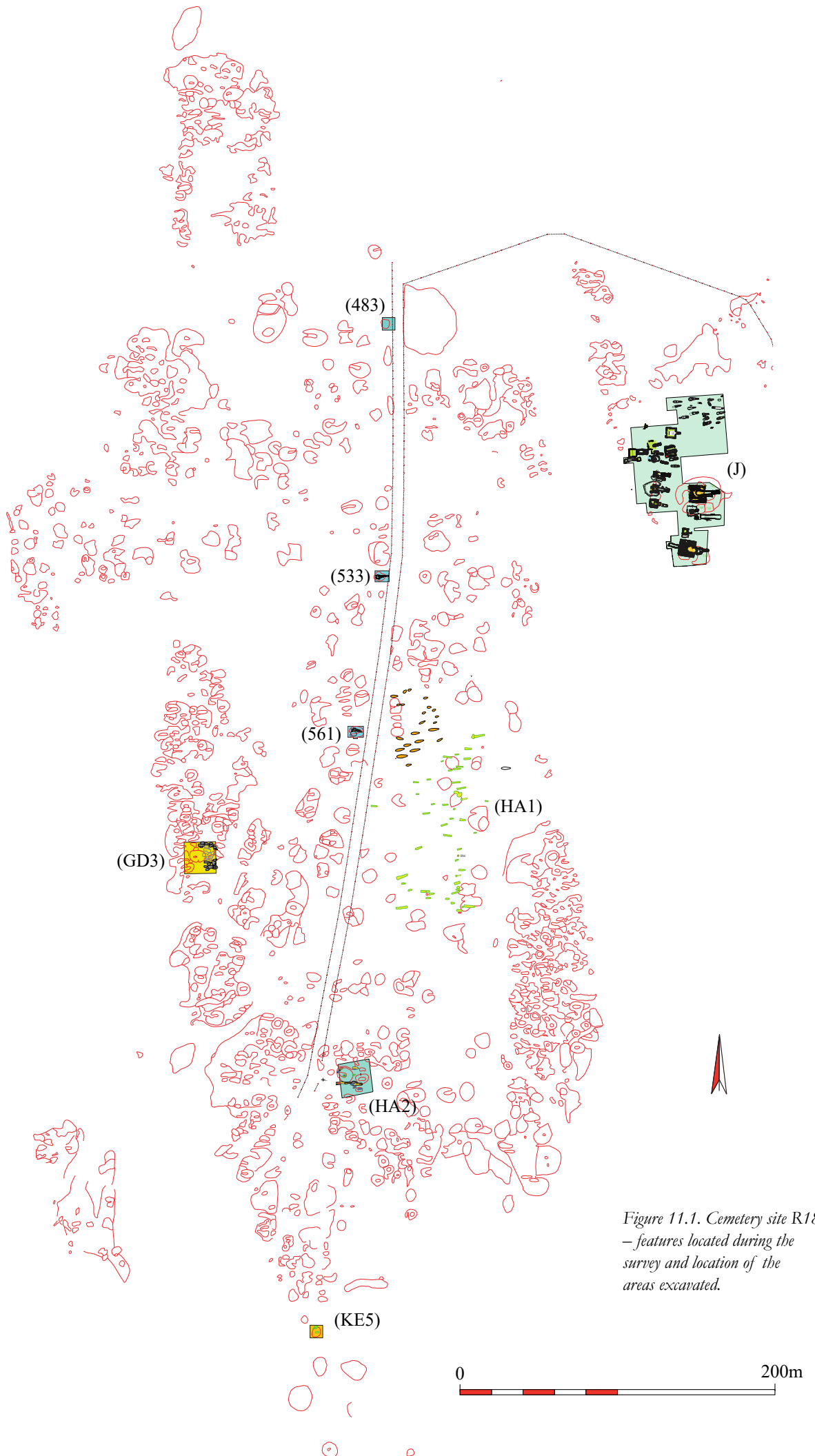


Figure 11.1. Cemetery site R18 – features located during the survey and location of the areas excavated.

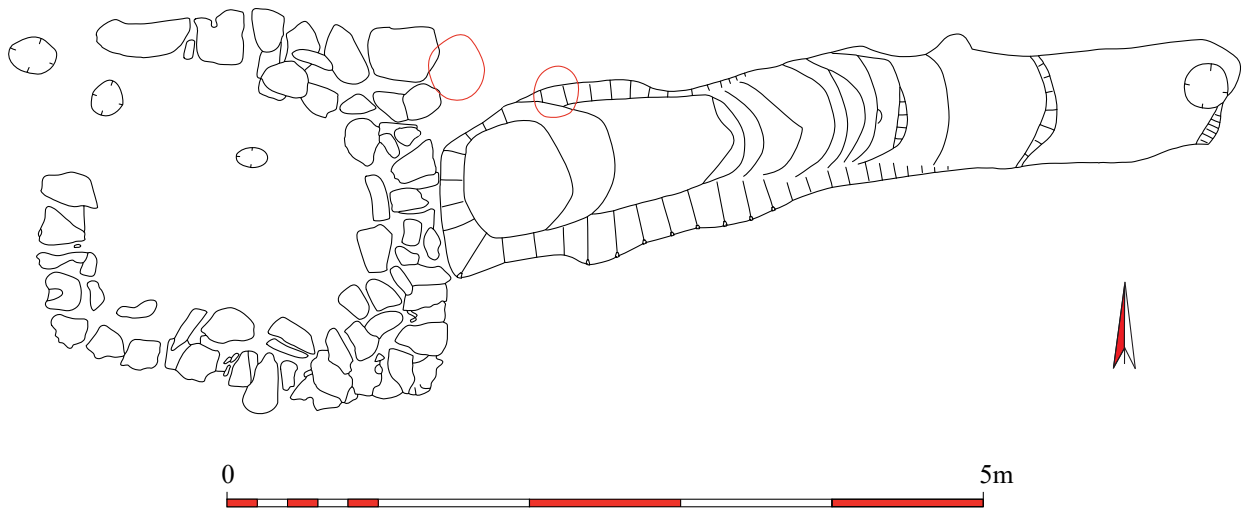


Figure 11.2. Grave (533), primary phase descender and stone base of monument (scale 1:50).

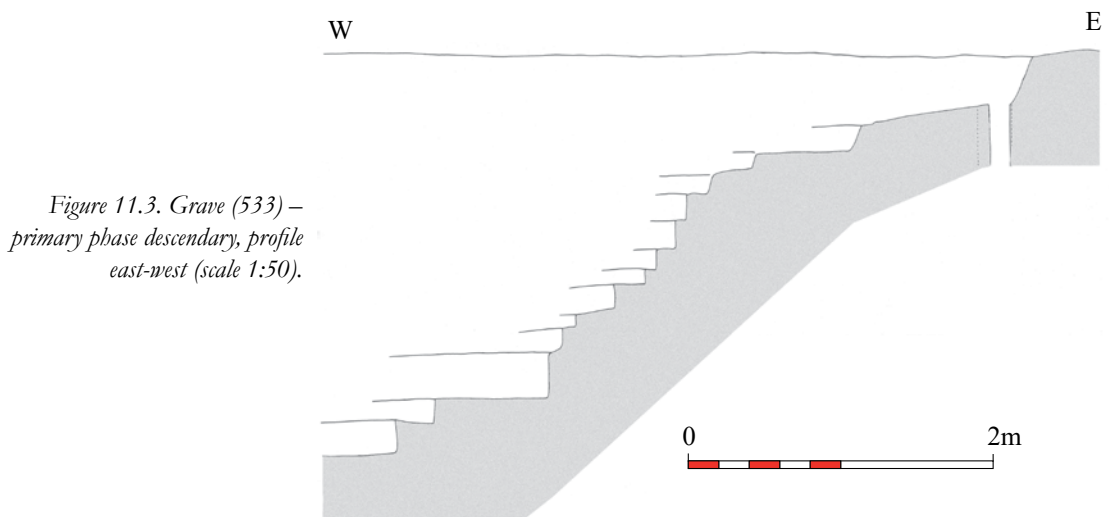


Figure 11.3. Grave (533) – primary phase descender, profile east-west (scale 1:50).

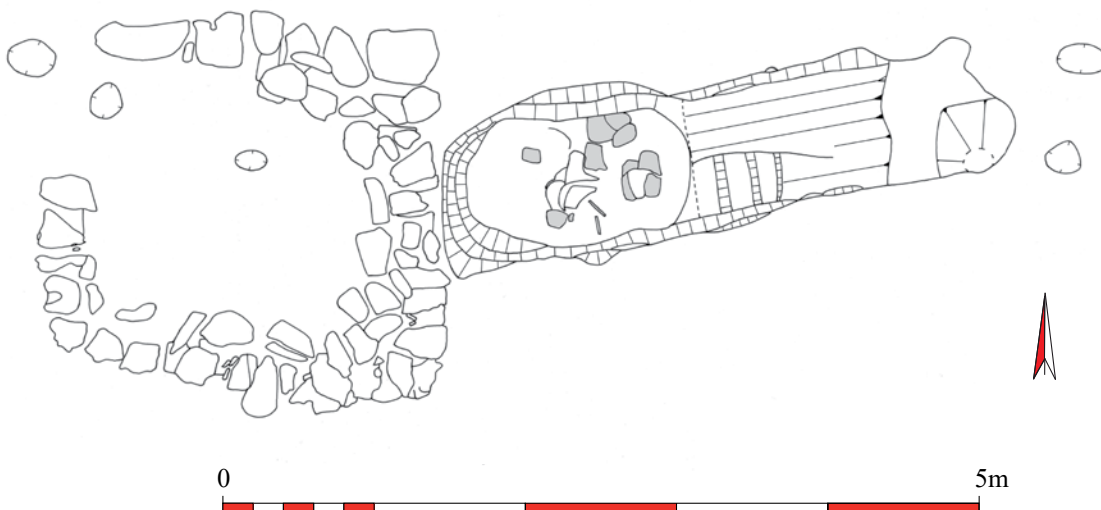


Figure 11.4. Grave (533) – secondary phase descender and stone base of monument (scale 1:50).

The descender was 5.4m in length and on average 800mm wide. There was a total of 13 steps cut into the alluvium, the upper two had a wide tread, then were nine narrow steps forming a steep staircase; the lower steps again had broad treads. The riser of each step formed a concave curve in plan, in some cases markedly so. The stairway gave access

down 2.63m to the tomb chamber hollowed out of the alluvium. Its exact form was unclear as the roof has partially collapsed and the excavations were infilled with sand during a period of strong winds which was not subsequently removed. It appears to have been 1.18m in length and 600mm wide. The body of a young adult of indeterminate

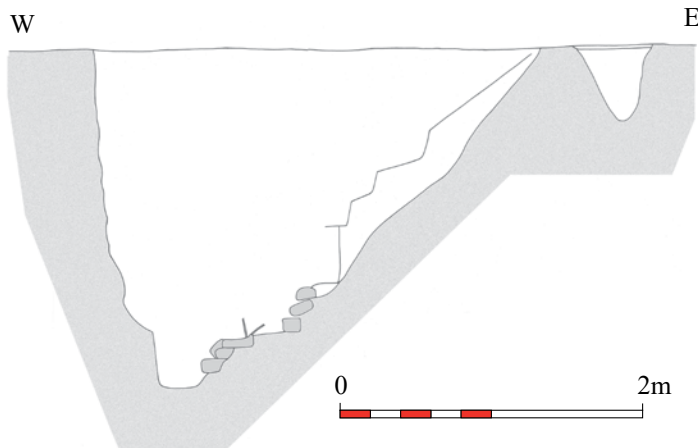


Figure 11.5. Grave (533) – secondary phase descender, profile east-west (scale 1:50).

sex had been much disturbed and its original location and burial attitude were uncertain. Mud-brick rubble found in the lower fill of the robber pit is presumably from a blocking wall of which not a trace remained *in situ* (bricks 280 x 160 x 90mm, 330 x 140 x 100mm, 325 x 150 x 90mm). Large pottery sherds from a wheel-made jar were recovered from amongst the rubble. Hard up against the east end of the descender in the top step is a post-hole [34] 280mm in diameter and at least 420mm deep. Cut into the alluvial fill of the descender was another stairway only extending 370mm from its southern wall. This was a flight of four steps with a total fall of 1.53m at which point it is cut by the robber pit. On the north side of the steps is a steep slope – there never seems to have been any steps here. The steps are regular and are presumably to be connected with a reuse of the tomb for a secondary burial rather than with the robbing phase. At the eastern end of this secondary descender was a conical pit 530 x 440mm in plan and 500mm deep. The robber pit cut through the hard alluvial surface forming the floor of the burial chamber down into a lens of soft sand. The robber pit filled to the surface with yellow wind-blown sand.

Marking the location of the grave was a square tomb monument constructed of a single course (max. height 200mm) of irregular stone blocks roughly arranged to form a face with some other stones behind it. The core of the monument was earth. No foundations were provided, the stones resting directly on the hard surface crust. Before excavation the monument had the form of a shallow mound strewn with of black ferruginous-sandstone fragments and some brown-quartzite pebbles through which the facing stones protruded. After removal of the monument a row of three depressions were visible in the surface [10-12] with others cutting through the surface crust (Table 11.1).

Material associated with the burial

Ceramic

Cat. no. F-515 – object

Cat. no. F-514 – object

Pottery (see Welsby Sjöström 2023, 363, tab. 7.1, fig. 7.7)

base, rounded – 2561x

bowl – 2518x

Stone

Cat. no. L-62 – flake, lithic

TABLE 11.1. DIMENSIONS OF POST-HOLES CUTTING THE SURFACE CRUST.

	Length	Width	Depth	
10	340mm	240mm	75mm	
11	260mm	240mm	195mm	
12	220mm	140mm	45mm	
13	150mm	110mm	40mm	
17	230mm	170mm	140mm	
18	320mm	190mm	185mm	Animal burrow?
19	270mm	240mm	240mm	
26	180mm	150mm	120mm	

Pottery from the descender fill

handle – 2042x

dish – 2247x

Pottery from the robber pit

jar – 2713x

jar or deep bowl – 3241x

(561) – skeletons, primary (561)25, secondary (561)24, tertiary (561)21, Figures 11.6 & 11.7, Plates 11.2 & 11.3 The descender was 5.4m in length, 900mm wide and attained a maximum depth of 2.2m. The uppermost step was very shallow with a tread of approximately 150mm. Below this was a flight of eight steps leading to a landing with a further step of about 100mm down to the floor on which the blocking wall was built. Within the arch-shaped doorway into the burial chamber were a further two steps, the upper with a riser of 90mm, the lower of 40mm. The chamber was oval in shape, 2.05m in length, 1.42m wide and 1.7m high although there has been much collapse from the ‘vault’. The primary burial, of a robust middle adult male, was disarticulated as its bones had been moved close to the south wall of the chamber when the secondary burial was inserted. Only the lowest course of the primary blocking



Plate 11.2. Grave 561 – the stepped descender, two phases of blocking wall and robber pit giving access into the burial chamber, looking west.

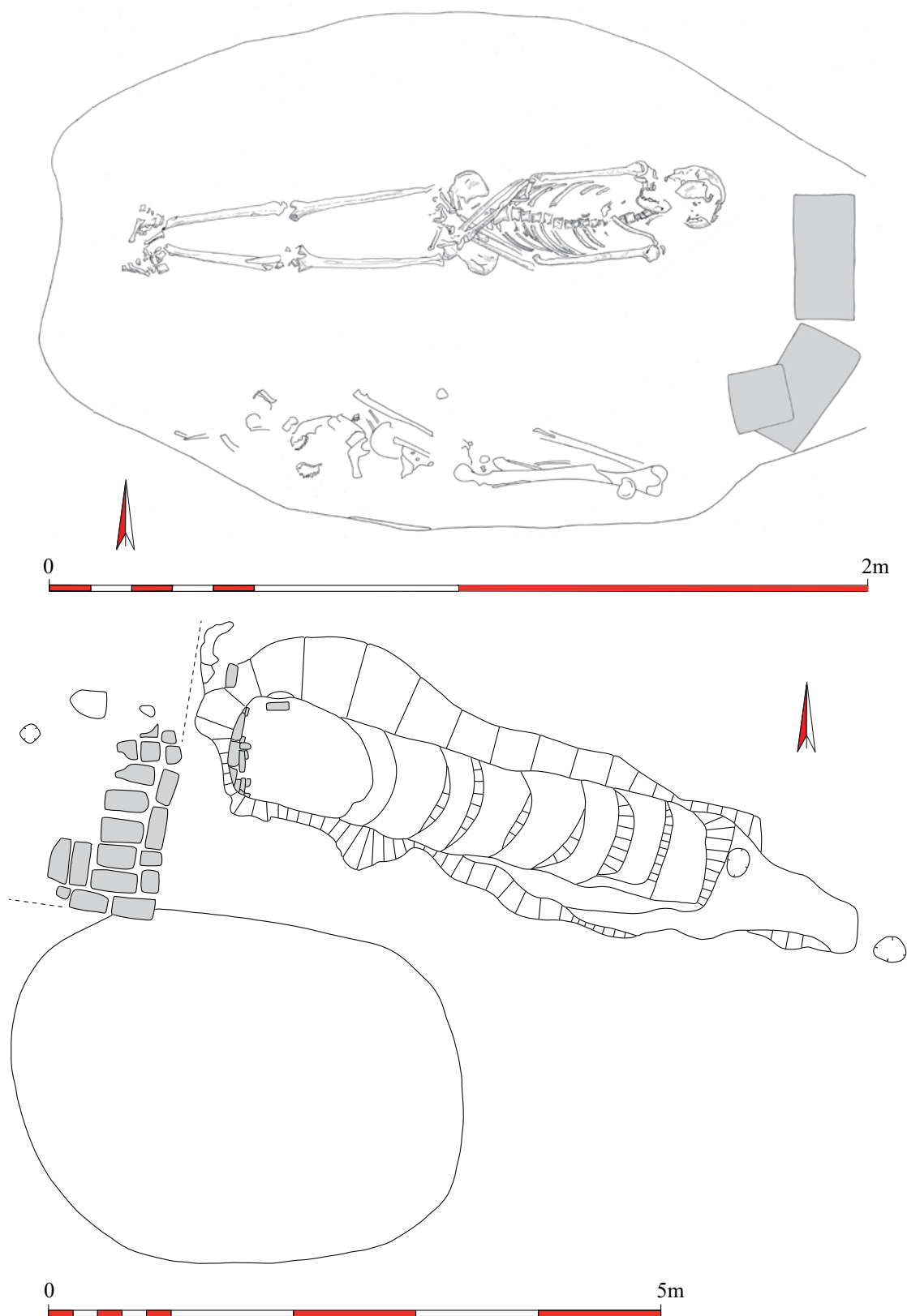


Figure 11.6. Grave 561 – burial chamber with the bones of the primary burial pushed to the south side (scale 1:15) and plan of the descender with remains of the tomb monument and robber pit upcast ('tumulus') (scale 1:50).

wall sealing the chamber survived, two stretchers, 340-345 x 170 x 90mm, sat on the upper step in the doorway which was the same width and height as the bricks used.

The tomb was marked on the surface by a monument constructed of mud brick. Only the lower part of one course survived which included the south-east corner of

what may have been a square monument. The outer face of the monument, surviving on its east face for a length of 1.72m and along its south face for 900mm, was constructed of stretchers backed by a row of headers. Set on the long axis of the descender, 1.66m to the west of the mouth of the chamber, is a slightly oval post-hole 110 x 100mm in

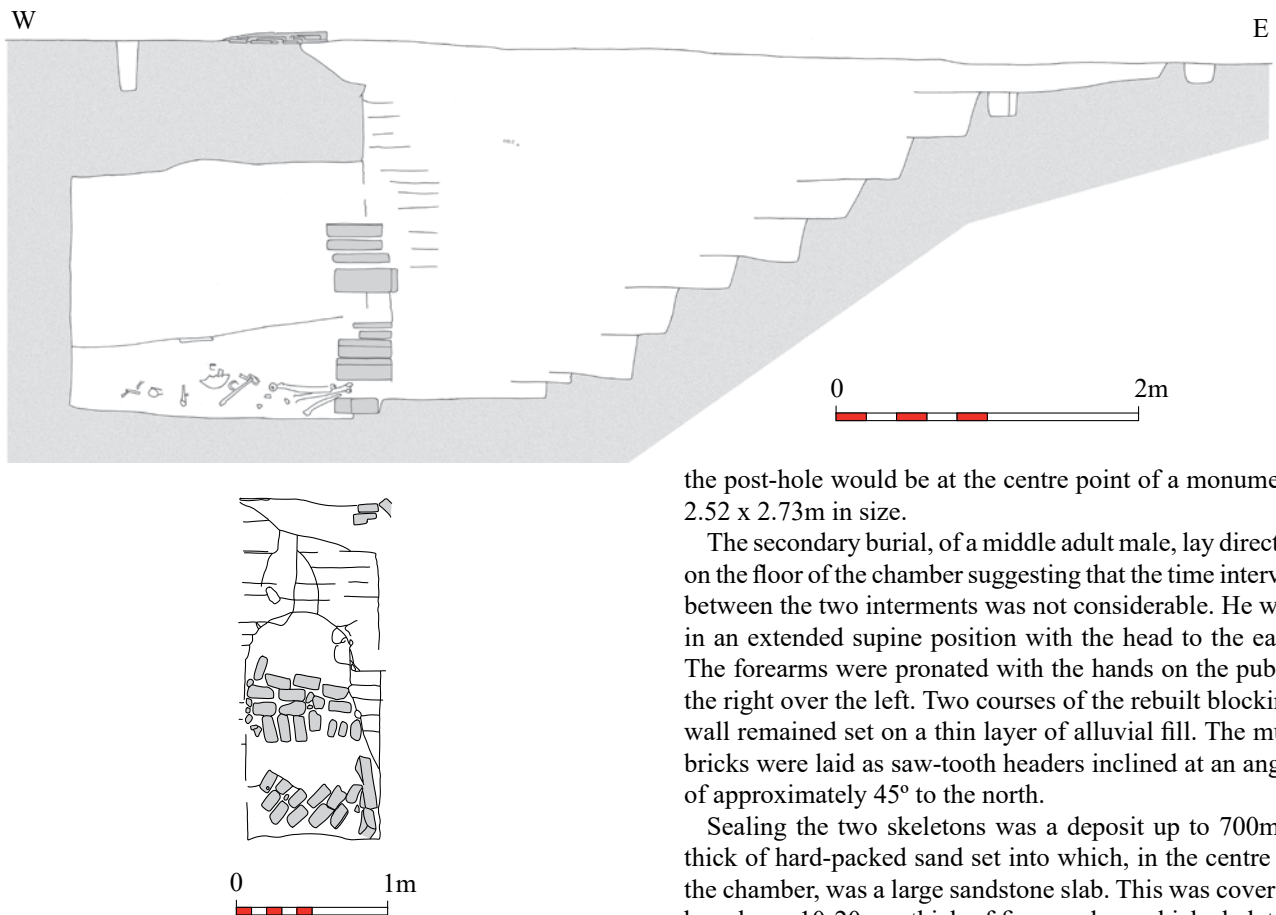


Figure 11.7. Grave 561 – east-west profile and elevation of the tomb entrance with blocking wall (scale 1:50).



Plate 11.3. Grave 561 – burial chamber with the bones of the primary burial pushed to the south side, looking west.

size and 310mm deep. The location is reminiscent of the centrally-placed posts used as the upright of *shadufs* during the construction of pyramids at Meroe and elsewhere. If the mud-brick walls are part of a square monument placed symmetrically with regard to the long axis of the descendary

the post-hole would be at the centre point of a monument 2.52 x 2.73m in size.

The secondary burial, of a middle adult male, lay directly on the floor of the chamber suggesting that the time interval between the two interments was not considerable. He was in an extended supine position with the head to the east. The forearms were pronated with the hands on the pubis, the right over the left. Two courses of the rebuilt blocking wall remained set on a thin layer of alluvial fill. The mud bricks were laid as saw-tooth headers inclined at an angle of approximately 45° to the north.

Sealing the two skeletons was a deposit up to 700mm thick of hard-packed sand set into which, in the centre of the chamber, was a large sandstone slab. This was covered by a layer 10-20mm thick of fine sand on which skeleton (561)21 had been placed. Most of this skeleton, of an older, probably female, middle adult, was disarticulated apart from the right femur and pelvis while the humerus also appears to be *in situ*. These bones indicate that the body was placed on its right side with the head to the east. A mud brick lay directly on a pile of bones in the middle of the chamber. To be associated with this burial was a new blocking wall set on fill 350mm above the top of the secondary blocking. The lowest course was of rowlocks with three courses of headers above.

The robber pit extended the full width of the descendary and was 2.95m long giving access, through a small hole, into the upper part of the burial chamber. The spoil from the pit was deposited to the north but principally to the south of it forming, after the erosion of the softer material, what appeared to be the pebble-covered tumulus. The pit, which contained many mud bricks removed from the blocking wall, filled with wind-blown sand, some pebbles and stones.

A few shallow post-holes were found cut into the surface from which the descendary was dug. No function for these can be suggested.

As in grid square (HA2) there was evidence for trees here with several substantial roots being noted.

Pottery from the descendary fill
(see Welsby Sjöström 2023, 363, tab. 7.1)

base, footring – 2231x

bowls – BU2.16, 3440x

Pottery from the robber pit

beakers – 2045x, 2712x

Grid square (GD3)

This area lay to the west of the modern track running through the cemetery. It was flat and sandy with very shallow mounds covered with brown-quartzite pebbles and some small flat pieces of ferruginous sandstone, rising above the sand (Plate 11.4). As elsewhere in the cemetery a close relationship between surface and subsurface features was not readily apparent. A 20 x 20m area was investigated, the surface sand being stripped off. The most obvious features were the robbing pits which were commonly filled by wind-blown sand deposits. Although features were noted across the whole area, owing to time constraints, only those in the eastern part were investigated in detail (Figure 11.8).¹

Twenty-five graves were excavated, containing a total of



Plate 11.5. Grid square (GD3). Grave 3, looking north.

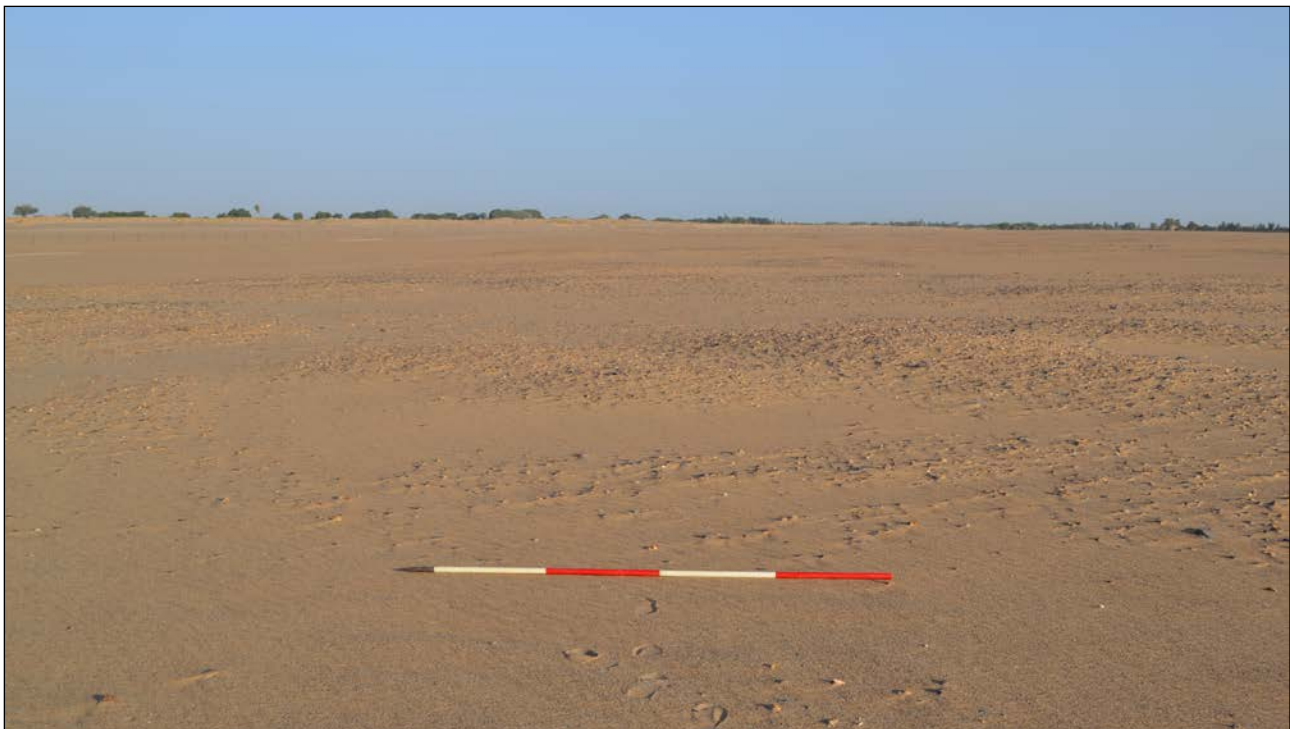


Plate 11.4. Grid square (GD3). General view before excavation, looking north.

22 skeletons. Many of the graves either cut into, or were cut by, other graves, a result of their being located in a very densely utilised part of cemetery. Several distinct grave types were noted. Only a few traces of grave monuments survived, associated with grave (GD3)98 and possibly with grave (GD3)38.²

Grave (GD3)3 – skeleton 26, Figure 11.9, Plate 11.5
Oval pit with vertical sides. It had a flat base with a single step halfway along its width so that its northern half was lower than its southern. The body of an infant had been placed in the lower northern portion of the grave. This portion was enlarged by an undercut on the northern side of the grave shaft creating a niche. The grave had been robbed, most of the burial chamber blocking bricks had

been removed and the skeletal remains of the infant were either missing or disarticulated. However, the position of the remaining bones seems to indicate that its head was to the east.

Material associated with the burial

Jewellery

Cat. nos B-1373 & B-1379 – 2 beads, ostrich eggshell

Cat. nos B-1374 & B-1375 – 2 beads, faience

Cat. nos B-1377 & B-1378 – 2 melon beads, glass

Grave (GD3)7 – skeleton 30, Figure 11.10, Plate 11.6

An east-west aligned sub-rectangular grave slot cut into the backfill of grave (GD3)60. Within the slot the body of a young child had been placed in an extended supine position with the head to the east facing forwards. Above the body mud bricks had been arranged in a rudimentary fashion to form a blocking structure.

Material associated with the burial

Jewellery

Cat. nos B-1380 to B-1382 – 3 beads, faience

¹ The excavations were directed by Andrew Ginns, on behalf of the Sudan Archaeological Research Society, from January to March 2017. Much of the report on grid square (GD3) was prepared by Ginns.

² For pottery from the surface see Welsby Sjöström 2023, fig. 7.7.

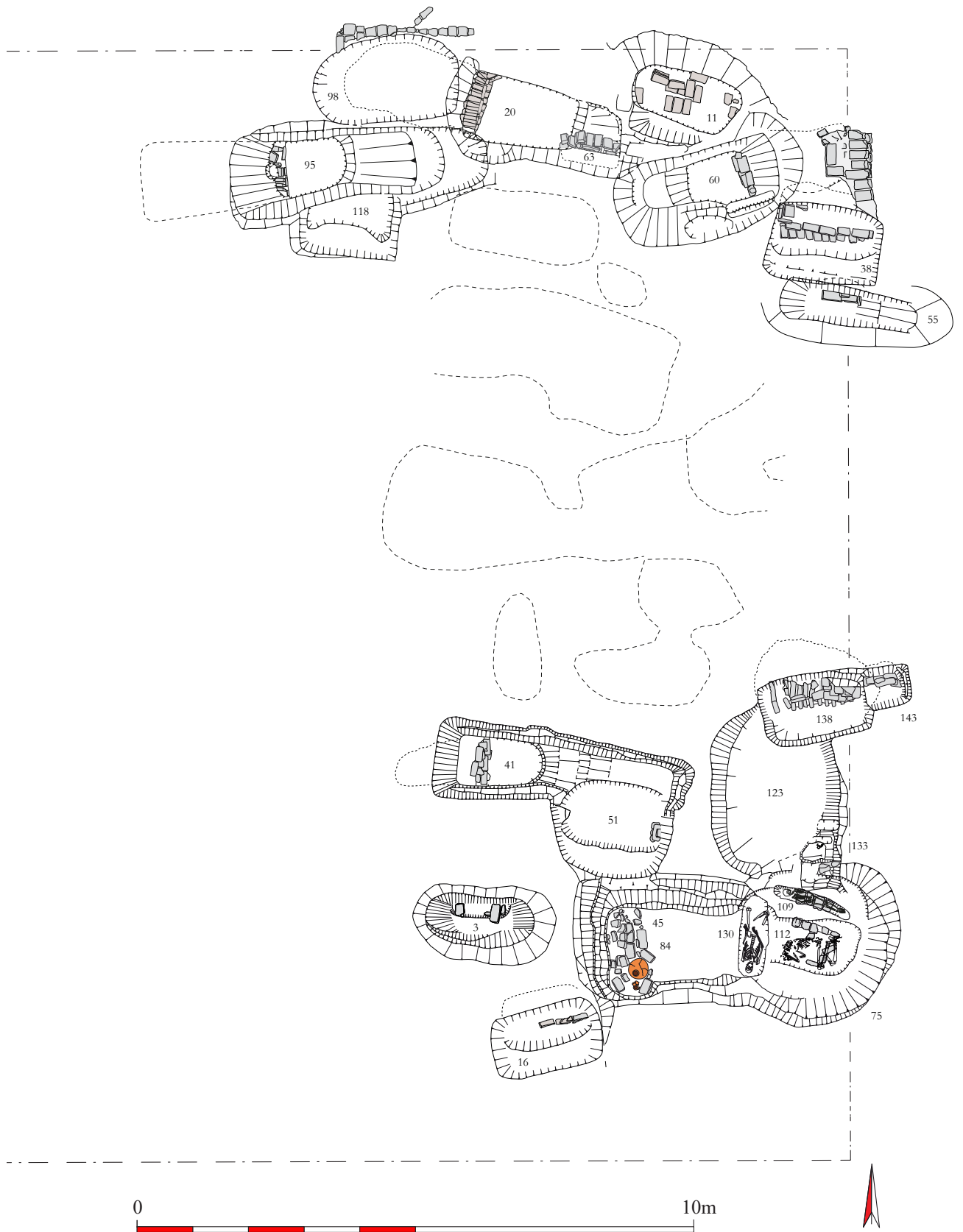


Figure 11.8. Grid square (GD3) – graves in the eastern part of the excavations (scale 1:100).

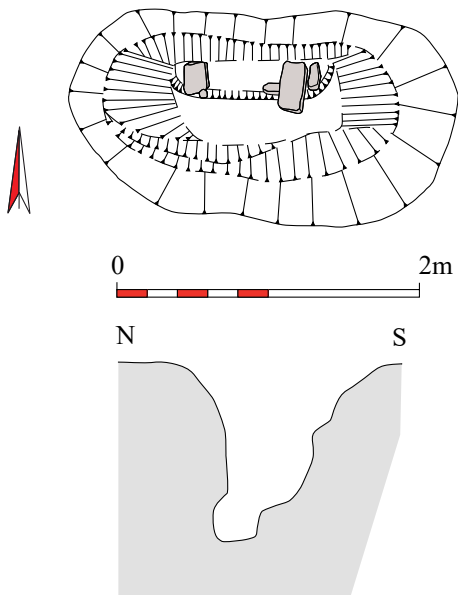


Figure 11.9. Grid square (GD3). Grave 3 – plan of the pit and north-south section (scale 1:50).



Plate 11.6. Grid square (GD3). Grave 7 cut into the fill of grave 60.

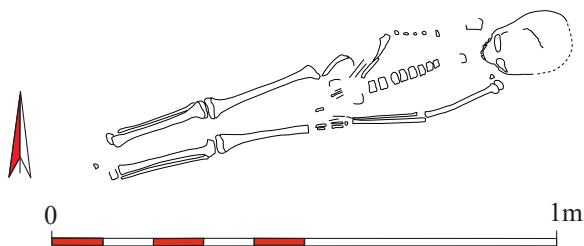


Figure 11.10. Grid square (GD3). Grave 7 – plan of the burial (scale 1:15).

Grave (GD3)11 – skeleton 61, Figure 11.11, Plates 11.7-11.9

Rectangular pit with vertical sides and a flat base. The body of a young female adult had been placed in the northern portion of the grave cut. This portion was enlarged by an undercut on the northern side of the grave shaft creating a niche. The body was placed in a crouched position, on its left side, with its head to the west facing north and its legs flexed. Desiccated wood across the top and along the north side of the skeleton represented the remains of a coffin. The north-eastern corner of the burial chamber contained two ceramic beakers (3858x & 4781x) and a ceramic flask



Plate 11.7. Grid square (GD3). Grave 11 – skeleton 61 and grave goods.



Plate 11.8. Grid square (GD3). Grave 11 – the coffin and grave goods.

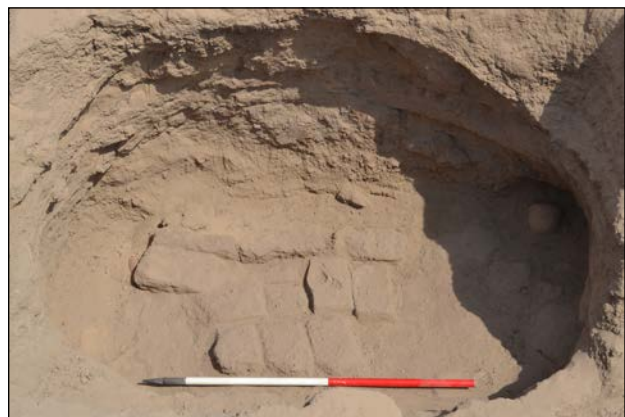


Plate 11.9. Grid square (GD3). Grave 11 – brick of the blocking wall as disturbed by the robbers.

(4784x). The northern portion of the grave had been sealed by an east-west aligned mud-brick blocking wall. At some point the grave had been robbed, most of the blocking bricks had been removed, the ceramic vessels moved and the coffin lid/upper planking had been shifted southwards.
Material associated with the burial

Jewellery

Cat. no. B-1383 – bead, faience

Pottery (see Welsby Sjöström 2013, 364, tab. 7.2, fig. 7.1, pl. 7.2)

beakers – 3858x, 4781x

flask – 4784x

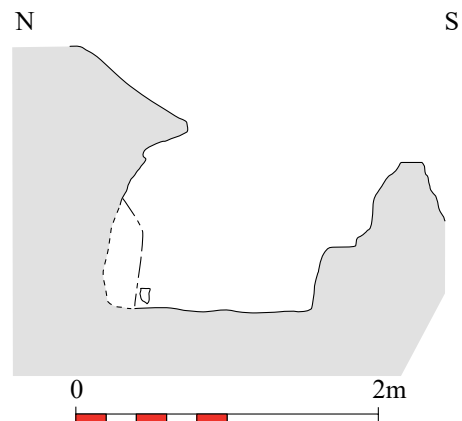
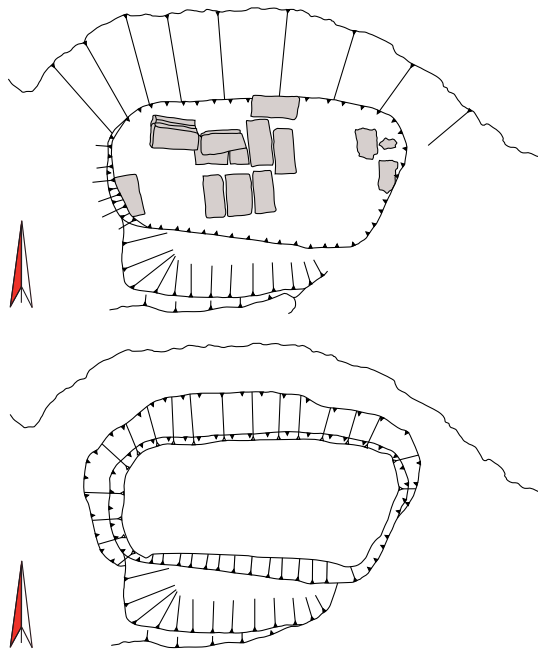
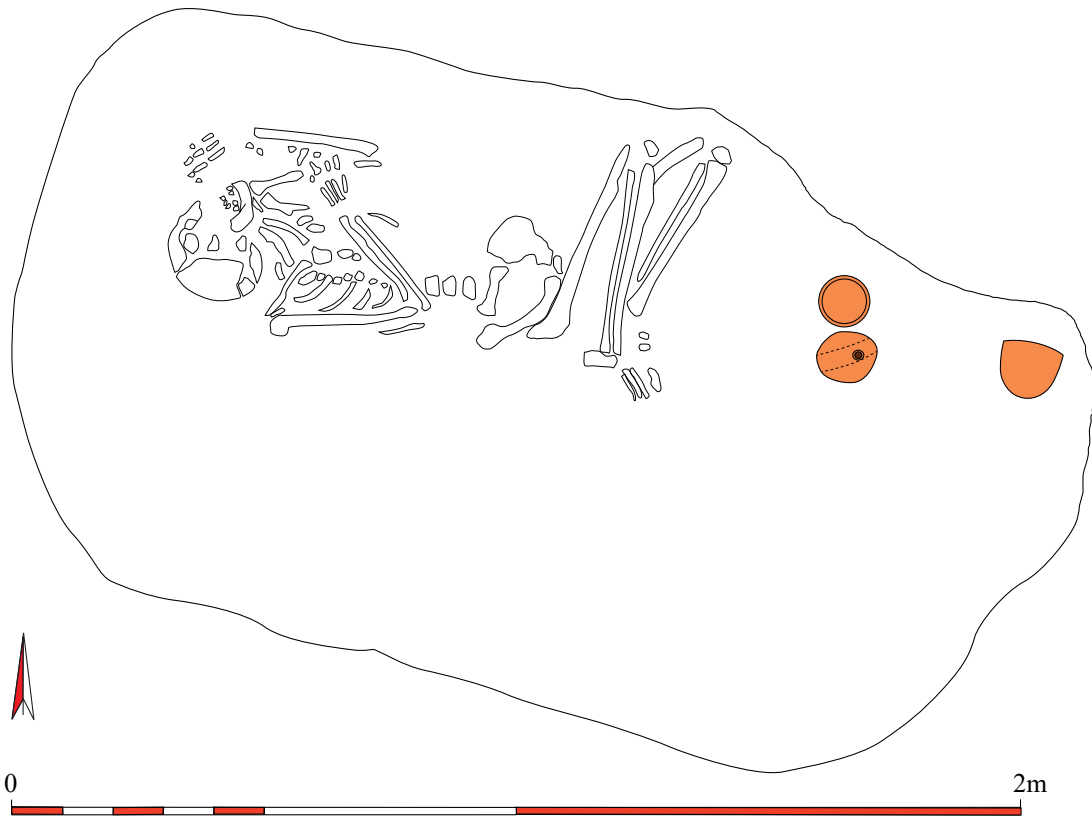


Figure 11.11. Grid square (GD3). Grave 11 – plan of the burial (scale 1:15), the grave pit at the level of the blocking wall, the grave pit - top plan and the north-south profile (scale 1:50).

Material from the grave fill

Cat. no. S-368 – sealing

Pottery possibly associated with the burial

beaker – 3831x

jars – 2656x, 3834x, 3880x

Pottery from the robber pit

beakers – 3411x, 4780x

bowl – 3754x

Grave (GD3)16 – skeleton 27, Figure 11.12, Plate 11.10

Rectangular pit with vertical sides. It had a flat base with a single step halfway along its width so that its northern half was lower than its southern. The northern side of the shaft



Plate 11.10. Grid square (GD3). Grave 16.

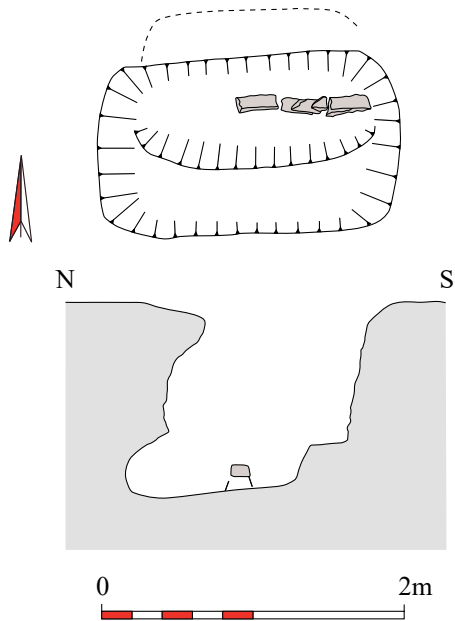


Figure 11.12. Grid square (GD3). Grave 16 – top plan and the north-south profile (scale 1:50).

was undercut to produce a subterranean burial chamber into which the body of a young adult female had been placed. The grave had been robbed, most of the burial chamber blocking bricks had been removed and the skeletal remains were either missing or disarticulated.

Material associated with the burial

Jewellery

Cat. no. B-1384 – bead, faience

Grave (GD3)20 – skeleton 146, Figures 11.13-11.15, Plates 11.11 & 11.12

Along narrow descender sloping westwards to a large and deep subterranean burial chamber. The body of a middle adult female had been placed in an extended supine position with the head to the west facing north. Around the sides of the burial chamber had been placed large rocks intended to hold back the sand strata, encountered at that depth, from entering the chamber. The rectangular block of fill around the skeleton differed from the fill elsewhere in the grave implying that the body had been placed in a coffin. To the south of the body had been placed ceramic vessels (4803x & 4804x) with copper-alloy cup (cat. no. F-79) sat on the



Plate 11.11. Grid square (GD3). Grave 20 – skeleton 146, grave goods and blocking wall.

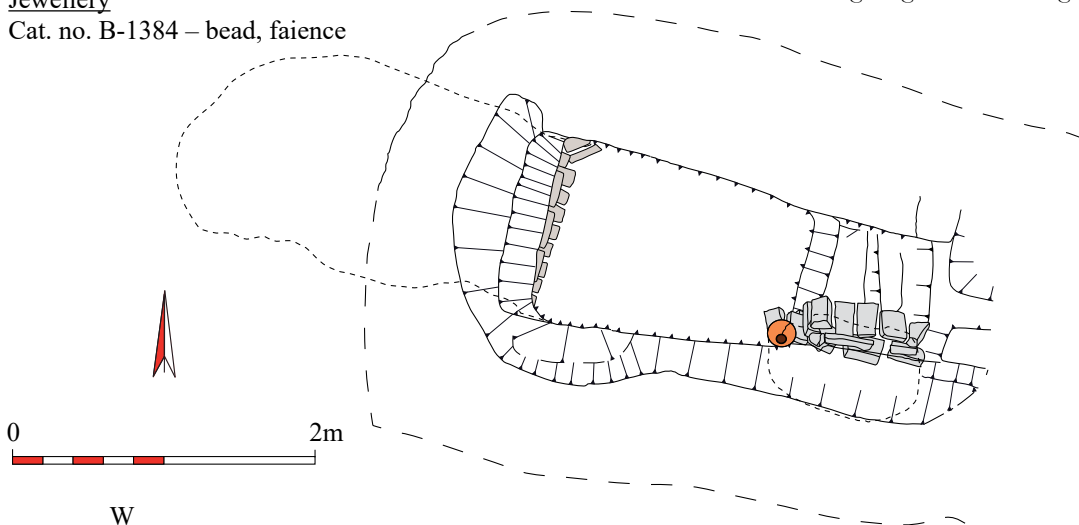


Figure 11.13. Grid square (GD3). Graves 20 and 63 – top plan (scale 1:50).

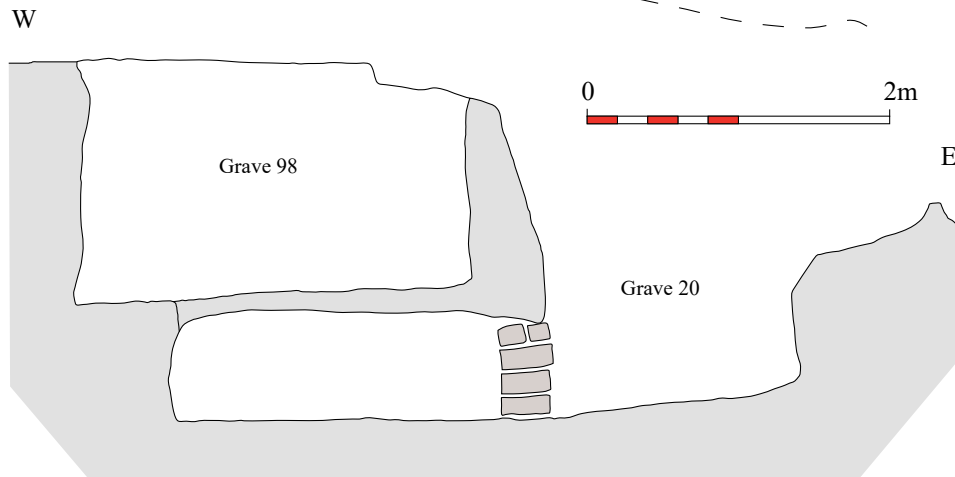


Figure 11.14. Grid square (GD3). Graves 20 and 98 – east-west profile (scale 1:50).

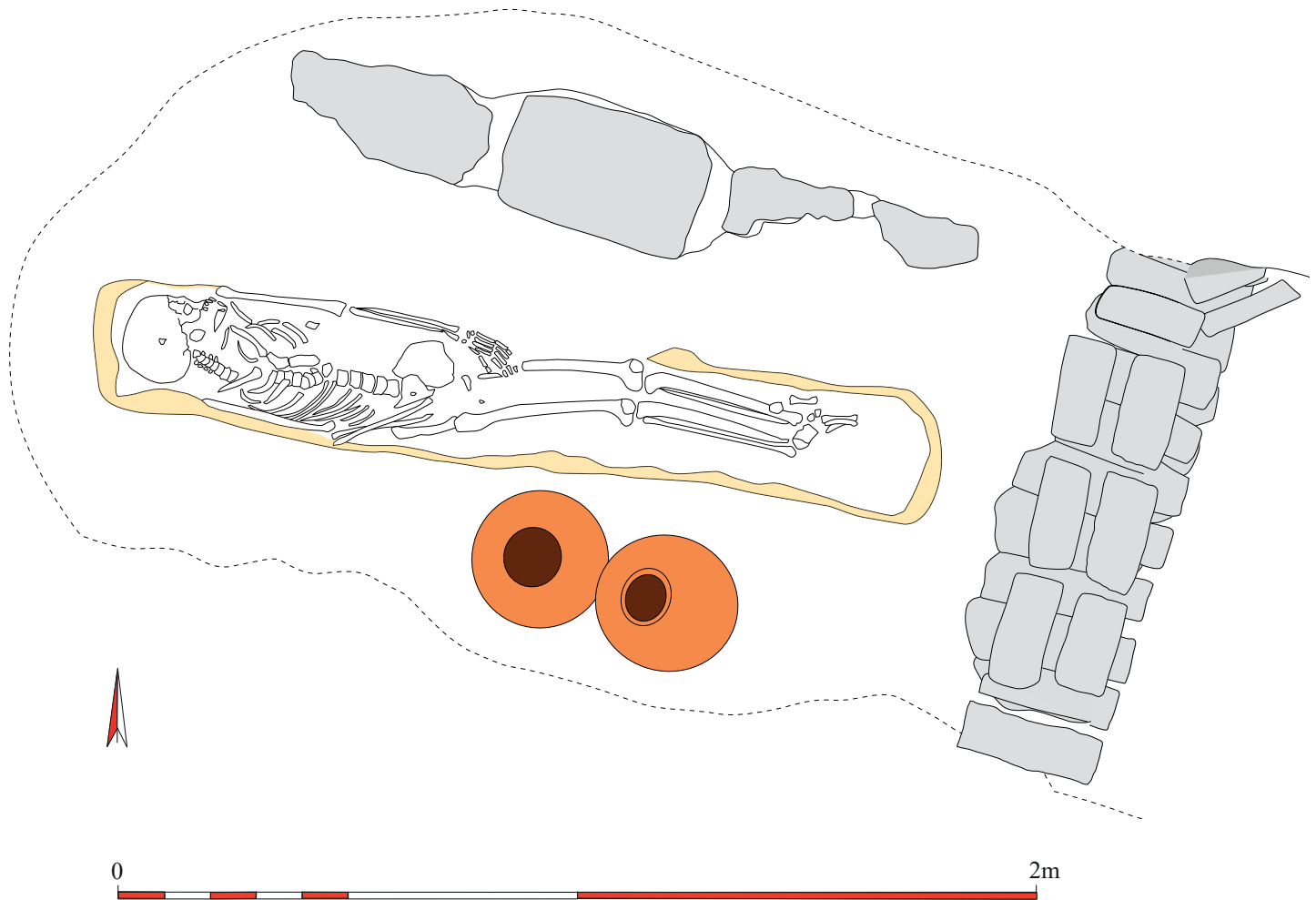


Figure 11.15. Grid square (GD3). Grave 20 – plan of the burial (scale 1:15).



Plate 11.12. Grid square (GD3). Grave 20 – blocking wall.

rim of 4803x. The burial chamber had been sealed with a mud-brick blocking wall leaving the body in a void. The burial chamber had been cut underneath grave (GD3)20 which had subsequently slumped as the ceiling of the

chamber collapsed onto the burial.

Material associated with the burial

Metalwork

Cat. no. F-79 – vessel, copper alloy

Pottery (see Welsby-Sjöström 2023, 364, tab. 7.2, fig. 7.1, pl. 7.2)

jars – 4803x, 4804x

Pottery possibly associated with the burial

dish – 2410x

Grave (GD3)38 – skeleton 69, Monument (GD3)100, Figure 11.16, Plates 11.13 & 11.14

Rectangular pit with vertical sides. It had a flat base with a single step halfway along its width so that its northern half was lower than its southern. The body of a middle adult male, had been placed in the lower northern portion of the grave. This portion was enlarged by an undercut on the northern side of the grave shaft creating a niche. The skeletal remains of the body were in a crouched position, on its left side with a slight pronation on the upper part of the body. Its head was pointing to the west and its legs flexed. The arm bones were within the fill of the burial chamber of grave (GD3)60. The creation of grave (GD3)60 had intruded on these grave remains. The grave had also been damaged by robbing activity, many of the blocking bricks had been removed and the body may have ended up in a prone position with its arms missing due to this event. At the western

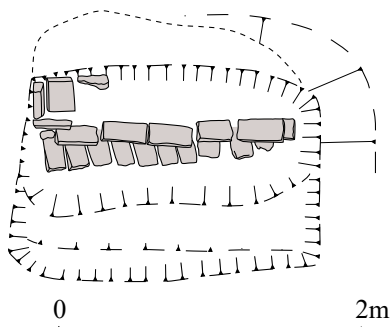
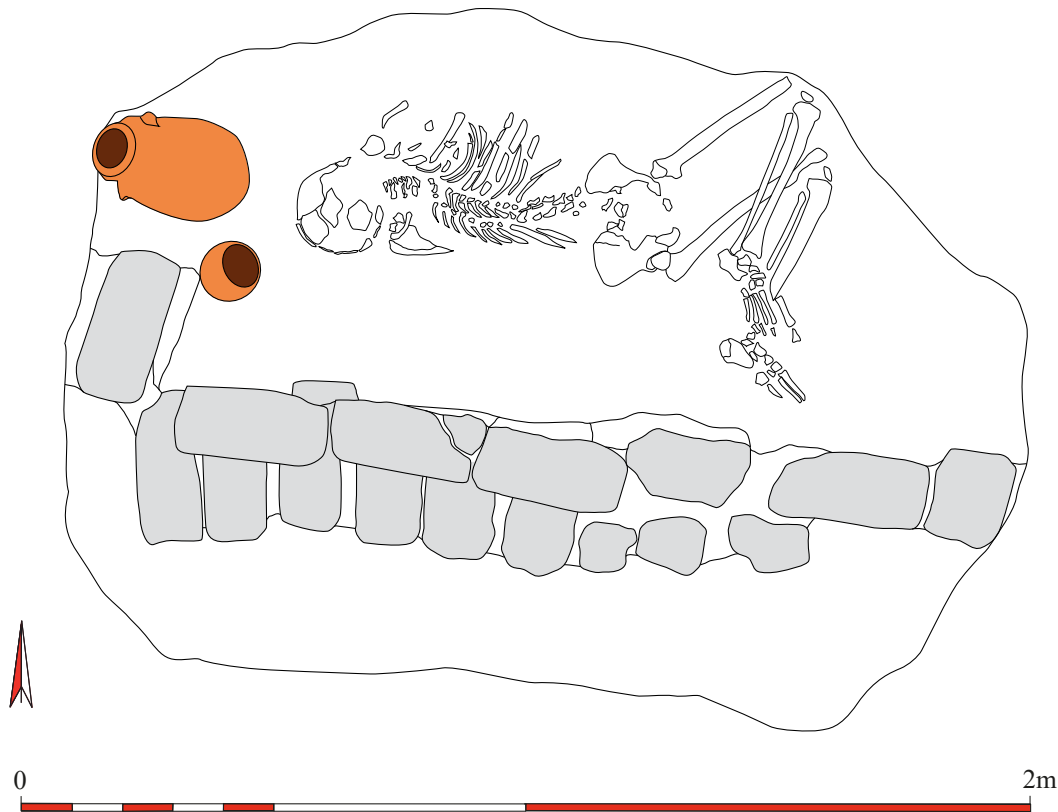


Figure 11.16. Grid square (GD3). Grave 38 – plan of the burial (scale 1:15). top plan (scale 1:50).



Plate 11.14. Grid square (GD3). Grave 38 – mud-brick monument 100.



Plate 11.13. Grid square (GD3). Grave 38 – skeleton 69, grave goods and mud bricks.

end of the subterranean burial chamber were an amphora (4799x) and a ceramic beaker (4780x).

This grave, or more likely the pit dug to rob it, cuts through traces of a monument [(GD3)100]. It is uncertain

whether the monument is associated with this grave or another in the vicinity, in particular grave (GD3)60. It survives as two courses of mud brick 360 x 180 x 75-90mm in size, the lower course extending 1.22m north-south. The east face is of headers. The second course is set back 62mm to the west. Its eastern face is again of headers while the other face is a mixture of headers and stretchers, any resulting gaps in the core being filled with mud-brick fragments. It is 807mm thick.

Material associated with the burial

Pottery (see Welsby Sjöström 2023, 364, tab. 7.2, fig. 7.1, pl. 7.2)

amphora – 4799x

base, rounded; vessel type uncertain – 4798x

beaker – 4780x

Pottery from the robber pit

bowls – 3776x, 4790x

Grave (GD3)41 – skeleton 106, Figures 11.17 & 11.18, Plates 11.15 & 11.16

A long narrow descandary sloping westwards to a large and deep subterranean burial chamber. The body of a middle adult male, had been placed in an extended supine position with an east-west orientation. The burial chamber had been sealed with a mud-brick blocking wall. The grave had been robbed, the upper bricks of the blocking wall being removed and most of the skeletal elements of the body had been dispersed with only the legs remaining *in situ*.

Material possibly associated with the burial
Pottery (see Welsby-Sjöström 2023, 365, tab. 7.2)

jar? – 4046x

Pottery from the robber pit

beaker – 3255x

bowls – 3381x, 3440x



Plate 11.15. Grid square (GD3). Grave 41 – skeleton 106, looking west.

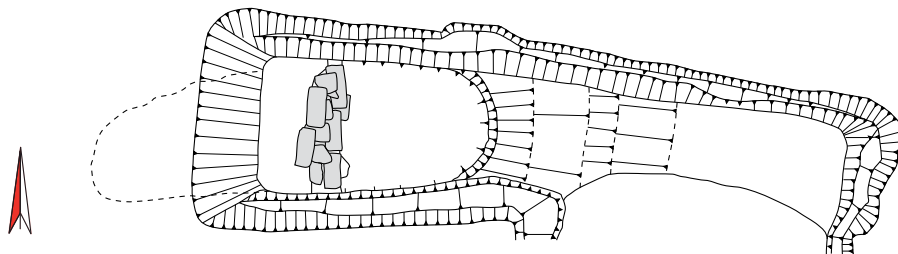
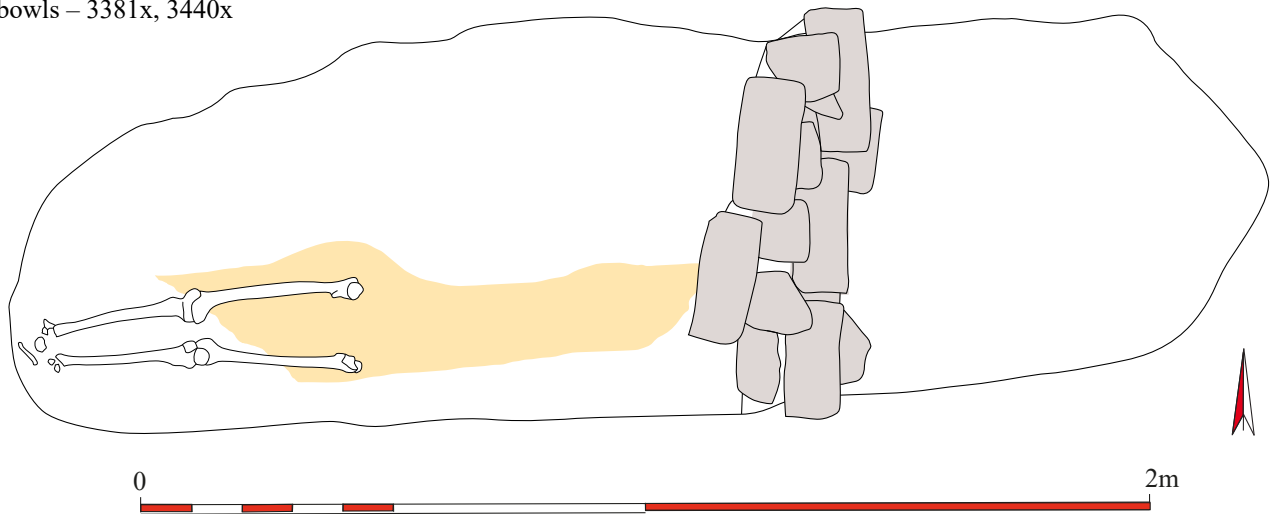


Figure 11.17. Grid square (GD3). Grave 41 – plan of the burial (scale 1:15), top plan with blocking wall, east-west and north-south profiles, the latter also through graves 45 and 51 (scale 1:50).

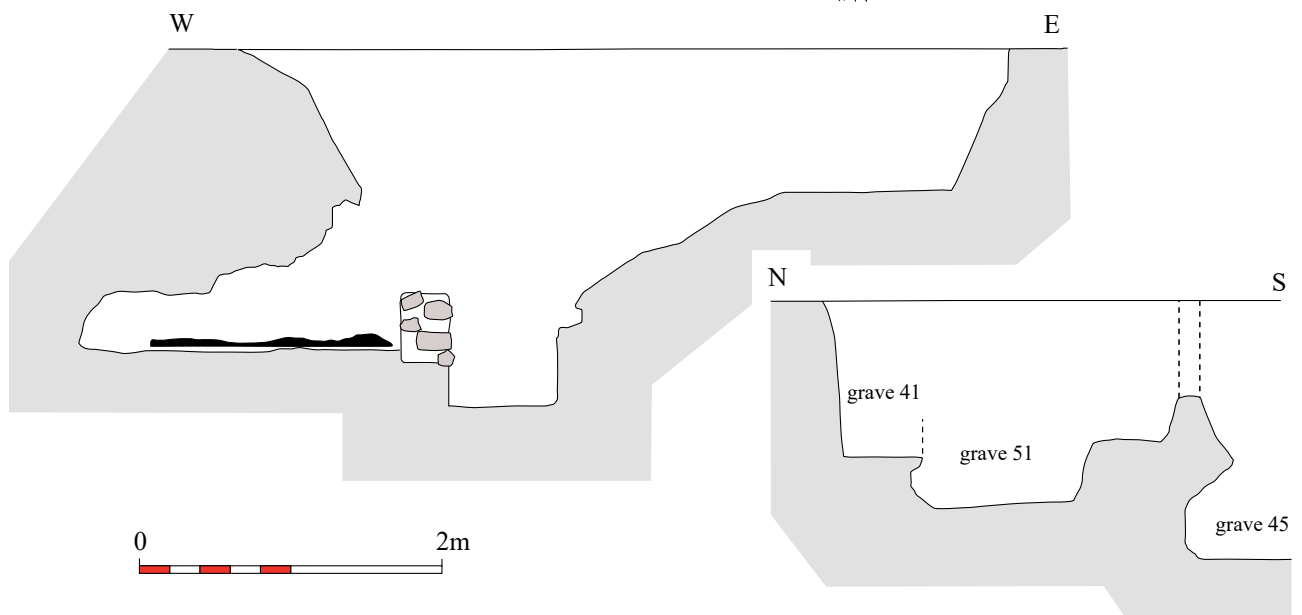




Plate 11.16. Grid square (GD3). Grave 41 – blocking wall.

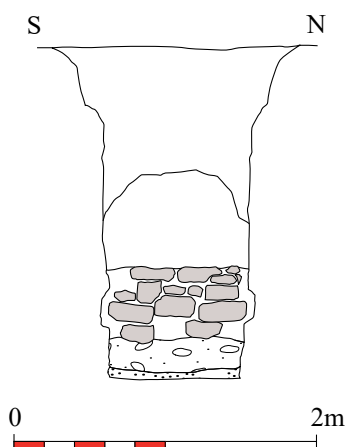


Figure 11.18 Grid square (GD3). Grave 41 – blocking wall (scale 1:50).

Grave (GD3)45 – skeleton 81, Figures 11.19 & 11.20, Plates 11.17-11.19

A long descandary sloped westwards to a large subterranean burial chamber. The body of a middle adult male had been placed in an extended supine position with the head to the south facing west. The rectangular block of fill around the skeleton differed from the fill elsewhere in the grave cut implying that the body had been placed in a coffin. To the east of the body were two large ceramic storage vessels (4786x & 4802x). On the rim of 4802x was placed a decorated cup (4785x). The burial chamber had been sealed with a mud-brick blocking wall. At some point the blocking wall had collapsed onto the burial damaging the ceramic



Plate 11.17. Grid square (GD3). Grave 45 – mud coffin.

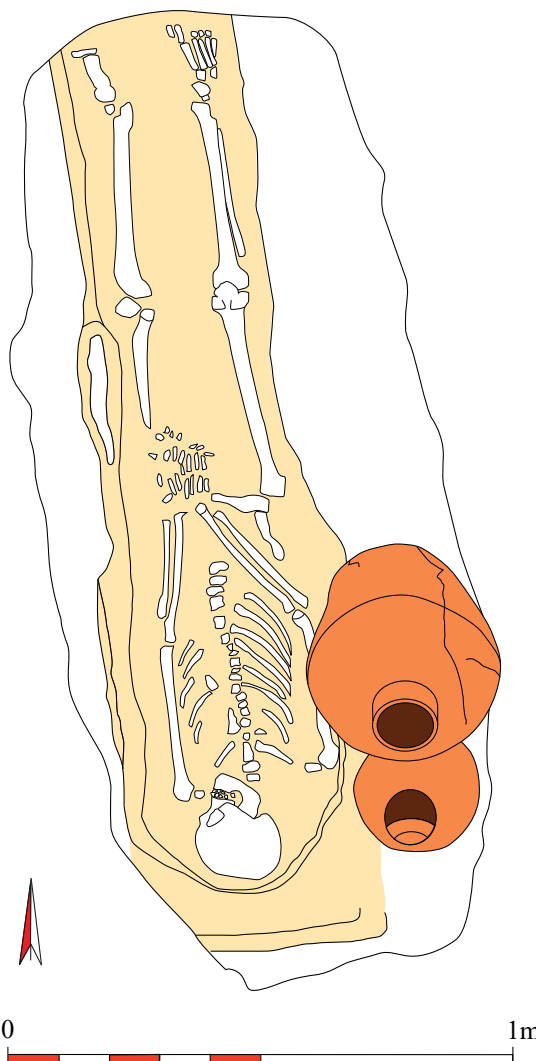


Figure 11.19. Grid square (GD3). Grave 45 – plan of the burial (scale 1:15).



Plate 11.18. Grid square (GD3). Grave 45 – skeleton 81 and grave goods.

vessels. The upper eastern end of the ramp had been cut by later grave (GD3)84.

Material associated with the burial

Metalwork

Cat. no. F-164 – 3 fragments, fittings?, copper alloy

Pottery (see Welsby Sjöström 2023, 365, tab. 7.2, fig. 7.1, pl. 7.3)

cup – 4785x

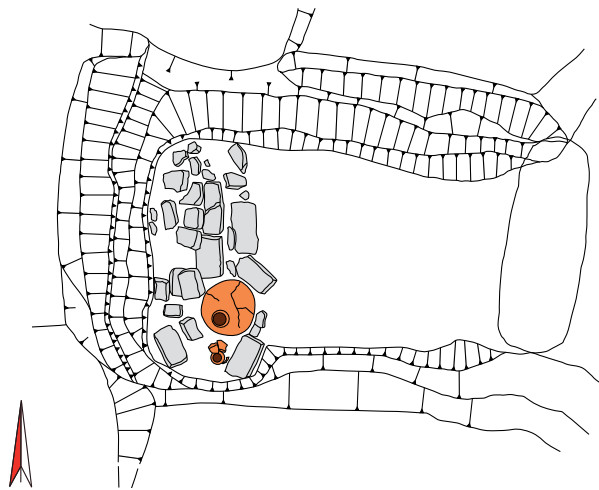


Plate 11.19. Grid square (GD3). Grave 45 – ceramic jar and blocking wall.

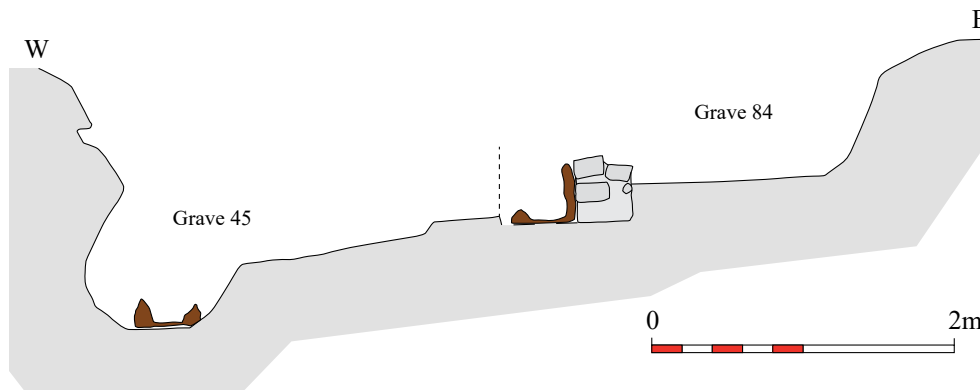


Figure 11.20. Grid square (GD3). Grave 45 – top plan and east-west section also through grave 84 (scale 1:50).

jars – 4786x, 4802x

Pottery possibly associated with the burial

bowl – 3942x

Pottery from the robber pit

jar – 4797x

Grave (GD3)51 – skeleton 78, Figure 11.21, Plate 11.20

The rectangular pit had vertical sides and a flat base with a single step halfway along its width so that its northern half was lower than its southern. By its east wall a low platform had been created with brick fragments and earth on which was set a mud brick on edge, apparently designed to support an overhanging part of the grave wall to prevent collapse. The northern edge of the grave had been truncated by the creation of grave (GD3)41.

The grave had also been robbed, most of the burial



Plate 11.20. Grid square (GD3). Grave 51 – feature against the eastern wall of the grave.

chamber blocking bricks had been removed and the skeletal remains of a young adult, probable male, were either missing or disarticulated.

Material possibly associated with the burial Pottery (see Welsby Sjöström 2023, 365, tab. 7.2)

flask side or sagging base – 4792x

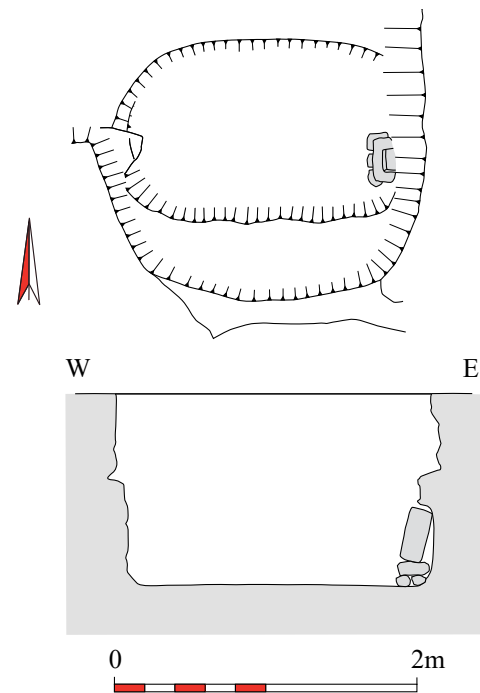


Figure 11.21. Grid square (GD3). Grave 51 – top plan and east-west section (scale 1:50).

Grave (GD3)55 – skeleton 62, Figure 11.22, Plate 11.21

A narrow pit sloping down from east and west to a rectangular space off which opened a small sub-rectangular subterranean chamber to the north. Within the chamber the body of an infant had been placed. The rectangular block of fill around the skeleton differed from the fill elsewhere in

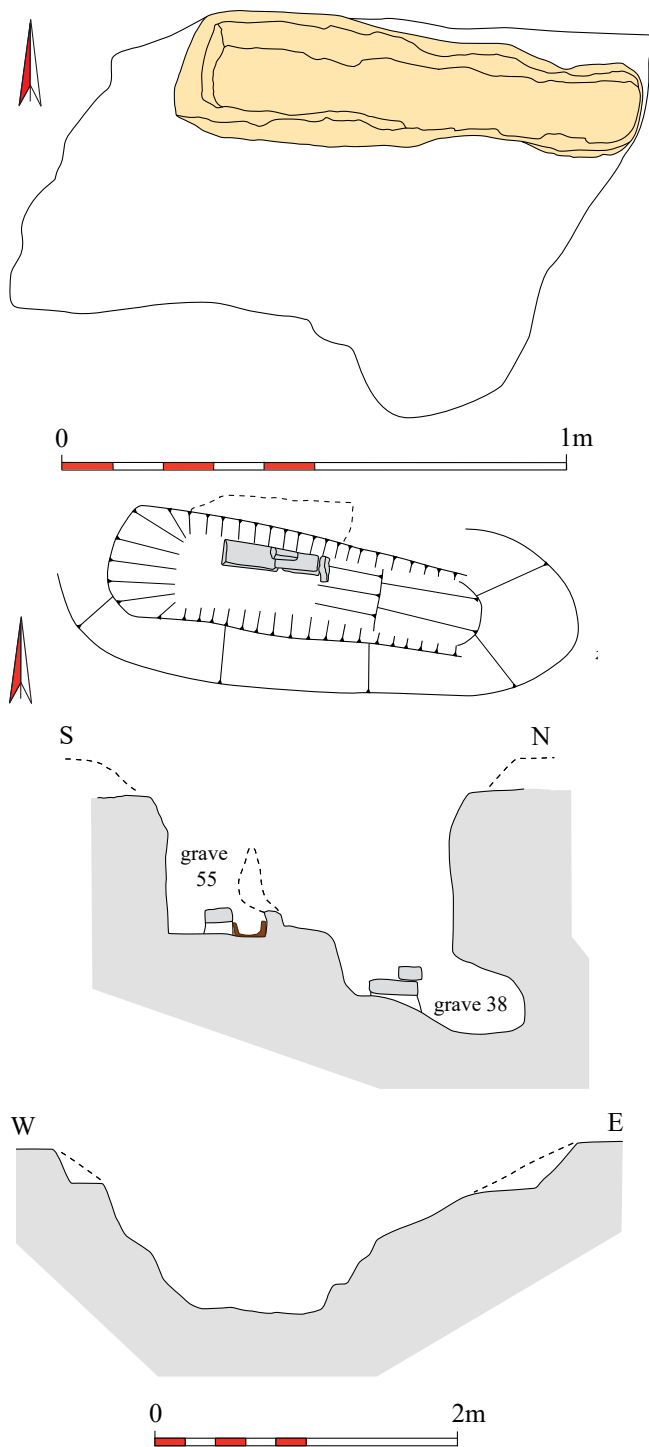


Figure 11.22. Grid square (GD3). Grave 55 – plan of the coffin and the floor of the adjacent grave 38, top plan, east-west profile of graves 55 and 38 and north-south profile of grave 55 (scale 1:50).

the grave implying that the body had been placed in a coffin. The burial chamber had been sealed with a mud-brick blocking wall. This burial cut slightly into the south side of grave (GD3)38.

The grave had been robbed, many of the bricks of the blocking wall had been removed and most of the skeletal elements of the body were missing. However, the feet were still in position, which allowed the identification of the east-west orientation although the tapering form of the coffin would suggest that it had been designed to contain a



Plate 11.21. Grid square (GD3). Grave 55 – coffin.

body aligned west-east.

Material associated with the burial

Jewellery

Cat. no. B-1385 to B-1387 – 3 beads, faience

Cat. no. B-1388 – bead, bone?

Pottery from the robber pit

(see Welsby-Sjöström 2023, tab. 7.2, fig. 7.6)

dish – 2509x

jar – 4791x

decorated sherd – 1279y

Grave (GD3)60 – skeleton 127, Figure 11.23, Plates 11.22 & 11.23

A steep narrow descendary sloping eastwards to a large and deep subterranean burial chamber. The body of a young adult, probable male, had been placed in an extended supine position with the head to the west facing south. A ring was found around the proximal hand phalanx of the left fourth ray. The rectangular block of fill around the skeleton differed from the fill elsewhere in the grave cut, implying that the body had been placed in a coffin. This burial cut into grave (GD3)38, and arm bones of skeleton (GD3)69 from that burial were found within its fill. The burial chamber had been sealed with a mud-brick blocking wall.

The grave had been robbed, the upper bricks of the blocking wall had been removed and the skull damaged.

Material associated with the burial

Jewellery

Cat. no. F-30 – finger ring, metal



Plate 11.22. Grid square (GD3). Grave 60 – skeleton 127.

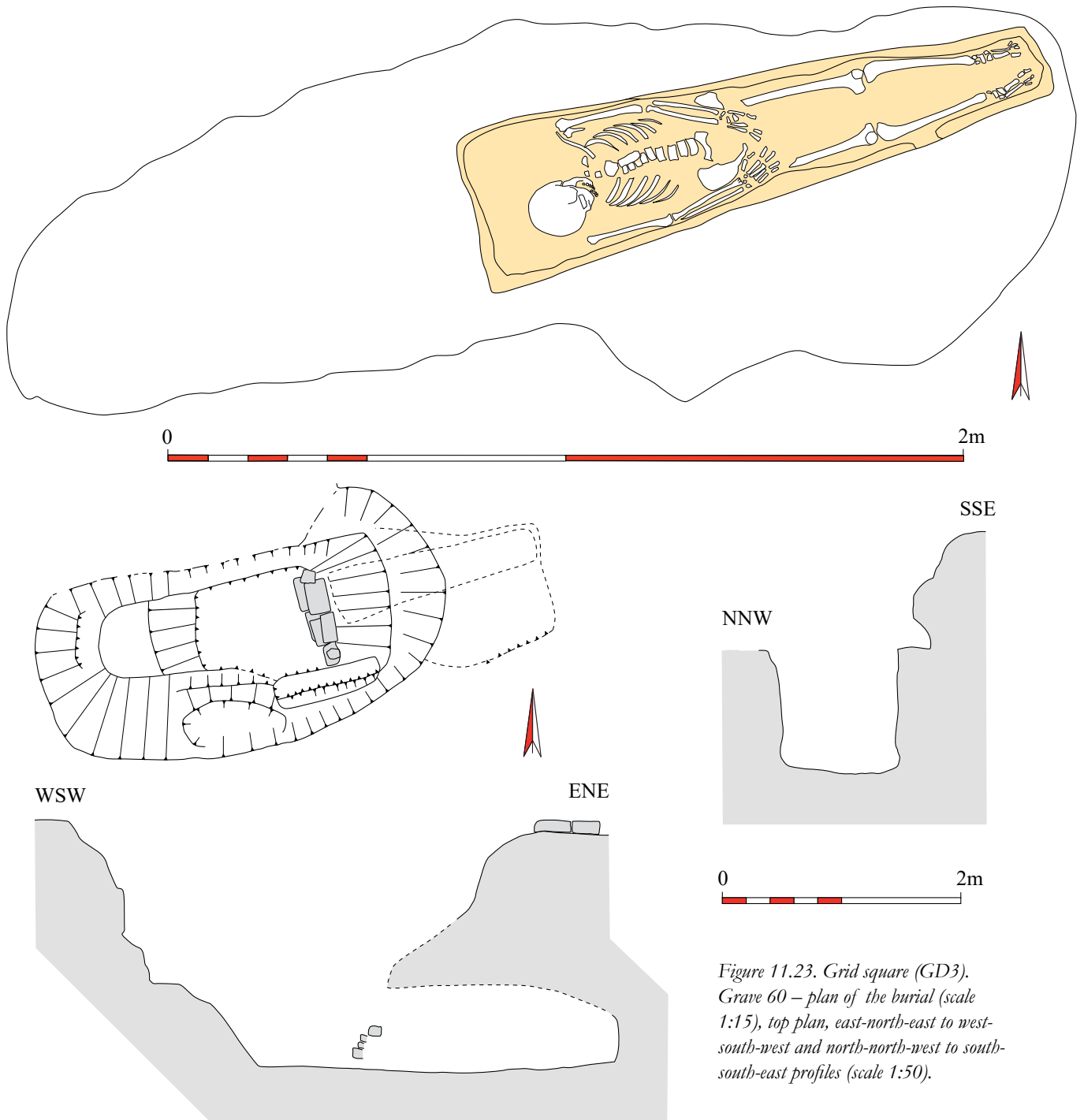


Figure 11.23. Grid square (GD3). Grave 60 – plan of the burial (scale 1:15), top plan, east-north-east to west-south-west and north-north-west to south-south-east profiles (scale 1:50).



Plate 11.23. Grid square (GD3). Grave 60 – blocking wall.

Grave (GD3)63 – skeleton 65, Figures 11.13 & 11.24, Plates 11.24 & 11.25

A sub-rectangular niche cut into the southern side of the upper eastern end of grave (GD3)20's descandary. Within the niche the body of a young child had been placed in an extended supine position with the head to the east facing north. The body had been adorned with three necklaces [(GD3)157]: one made of two strings of green faience beads, surrounding the neck and finishing on top of the chest, with the four ends pending – one of those ends had a bead with a painted eye; a second one with blue rectangular beads; and a third one with teardrop-shaped semi-precious stone

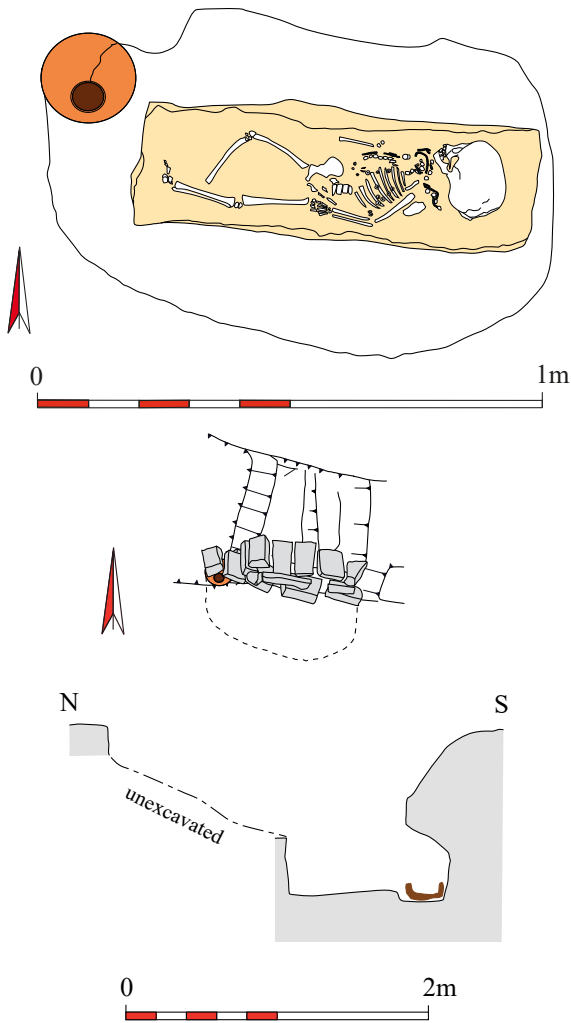


Figure 11.24. Grid square (GD3). Grave 63 – plan of the burial (scale 1:15), top plan with the blocking wall and the steps in the descendency of grave 20 and north-south profile across the grave 20 descendency and the burial chamber of grave 63 (scale 1:50).



Plate 11.24. Grid square (GD3). Grave 63 – skeleton 65.

beads – red, black and white. In addition to this, a bracelet made of ostrich shell was found around the right elbow. The rectangular block of fill around the skeleton differed from the fill elsewhere in the grave cut implying that the body had been placed in a coffin. At the western end of the niche was a ceramic vessel (4801x). The opening into the niche had been blocked with mud bricks.



Plate 11.25. Grid square (GD3). Grave 63 – blocking wall and steps in the descendency of grave 20.

Material associated with the burial

Jewellery

- Cat. no. B-1389 – bead, gold-in-glass: at the junction of four strings
- Cat. no. B-1390 – 100 beads, faience: string 4
- Cat. no. B-1391 – 153 beads, faience: string 3
- Cat. no. B-1392 – 131 beads, faience: string 2
- Cat. no. B-1393 – 149 beads, faience: string 1
- Cat. no. B-1394 – 66 beads, faience
- Cat. no. B-1395 – 46 beads, faience
- Cat. no. B-1396 – bead, glass
- Cat. no. B-1397 – bead, gold-in-glass: end of string 2
- Cat. no. B-1398 – 4 beads, gold-in-glass
- Cat. no. B-1399 – 62 beads, most gold-in-glass
- Cat. no. B-1400 – 11 beads, glass and gold-in-glass
- Cat. no. B-1401 – bead, glass
- Cat. no. B-1402 – 22 beads, glass
- Cat. no. B-1403 – 35 beads, gold-in-glass
- Cat. no. B-1404 – 2 beads, glass
- Cat. no. B-1405 – 28 beads, gold-in-glass
- Cat. no. B-1406 – 7 beads, glass
- Cat. no. B-1407 – 2 beads, faience and glass: fused together
- Cat. no. B-1408 – 2 beads, faience and glass: fused together
- Cat. no. B-1414 – 2 beads, faience or glass
- Cat. no. B-1415 – 4 beads, faience or glass
- Cat. no. B-1416 – 7 pendant beads, stone or glass
- Cat. no. B-1417 – bead, glass or carnelian
- Cat. no. B-1418 – 2 beads, glass or carnelian
- Cat. no. B-1419 – 5 beads, ostrich eggshell
- Cat. no. B-1420 – 9 beads, ostrich eggshell
- Cat. no. B-1421 – 3 beads, ostrich egg-shell
- Cat. no. B-1422 – 2 beads, ostrich egg-shell
- Cat. no. B-1423 – 2 beads, ostrich eggshell
- Cat. no. B-1424 – 4 beads, ostrich eggshell
- Cat. no. B-1425 – 9 beads, ostrich eggshell
- Cat. no. B-1426 – 8 beads, ostrich eggshell
- Cat. no. B-1413 – 3 beads, faience or glass
- Cat. no. B-1427 – 3 beads, ostrich eggshell
- Cat. no. B-1428 – 3 beads, ostrich eggshell
- Cat. no. B-1429 – bead, ostrich eggshell
- Cat. no. B-1430 – 2 beads, ostrich eggshell
- Cat. no. B-1431 – 3 beads, ostrich eggshell
- Cat. no. B-1432 – 3 beads, ostrich eggshell

- Cat. no. B-1433 – 2 beads, ostrich eggshell
- Cat. no. B-1434 – 3 beads, ostrich eggshell
- Cat. no. B-1435 – 6 pendant beads, carnelian
- Cat. no. B-1438 – 13 pendant beads, glass
- Cat. no. F-2345 – earring?, cowrie shell
- Glass
- Cat. no. F-2548 – vessel rim shard
- Pottery** (see Welsby-Sjöström 2023, 365, tab. 7.2, fig. 7.2)
- jar – 4801x
- Pottery possibly associated with the burial*
- jar – 4794x

Grave (GD3)84 – skeleton 86, Figures 11.25 & 11.26, Plates 11.26 & 11.27

A burial chamber cut into the eastern end of the ramp of grave (GD3)45. The body of an individual, from puberty or adolescence, had been placed in an extended supine position with the head to the south facing upwards. This burial was



Plate 11.26. Grid square (GD3). Grave 84 – skeleton 86, looking south.

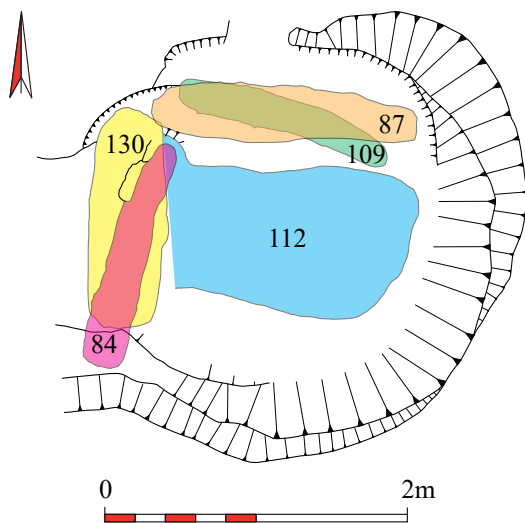


Figure 11.25. Grid square (GD3). Plan of the superimposed graves in the south-eastern part of the area. Graves 84 and 87 overlying graves 109, 112 and 130 (scale 1:50).

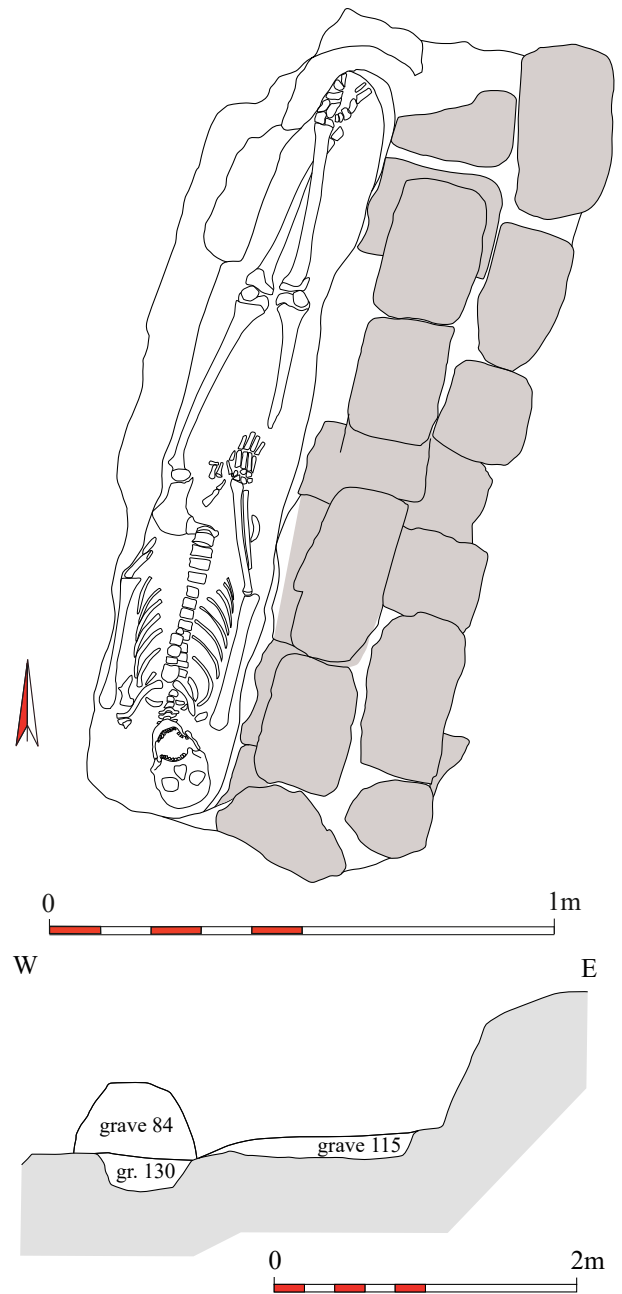


Figure 11.26. Grid square (GD3). Grave 84 – plan of the burial (scale 1:15) and east-west profile across graves 115, 84 and 130 (scale 1:50).



Plate 11.27. Grid square (GD3). Grave 84 – mud bricks sealing the burial.

directly over grave (GD3)130, that burial's chamber being reused and a new descandary cut through the descandary backfill (and perhaps into the cut) of grave (GD3)130. The burial chamber had been sealed by a mud-brick blocking wall built along the eastern side of the body. That blocking wall abutted the blocking of grave (GD3)87 which was

partially truncated by the creation of this grave.

Grave (GD3)87 – skeleton 89, Figure 11.25 & 11.27, Plate 11.28

A narrow east-west aligned grave into which the body of a middle adult female had been placed in an extended supine position with the head to the west facing upwards. Mud

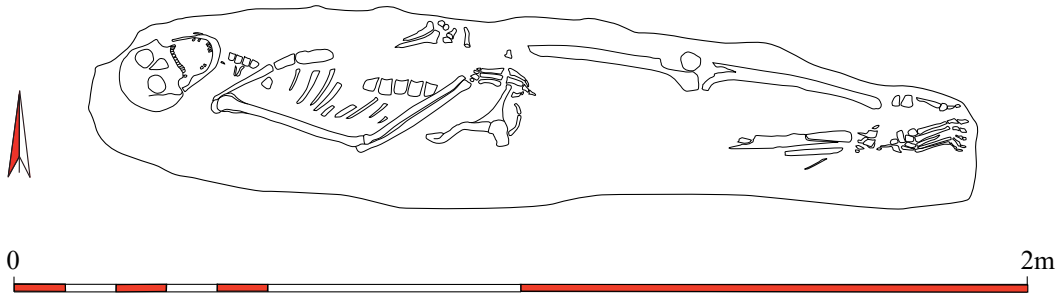


Figure 11.27. Grid square (GD3). Grave 87 – plan of the burial (scale 1:15).



Plate 11.28. Grid square (GD3). Grave 87 – skeleton 89, looking north.

bricks had been placed across the width of the top of the grave slot, a little above the body. Much of this mud-brick blocking as well as the upper portions of the right leg of skeleton (GD3)89 had been truncated by the creation of the later grave (GD3)84. Due to this truncation the upper parts of the grave no longer existed.

Grave (GD3)95 – skeleton 152, Figures 11.28 & 11.29, Plates 11.29 & 11.30

A long narrow descandary sloping westwards to a large and deep subterranean burial chamber. The body of a middle adult female had been placed in an extended supine position with the head to the west facing north. The burial chamber had been sealed by a mud-brick blocking wall leaving the body in a void. The grave had been robbed, a hole had been cut through the blocking wall and the head and feet of the burial disturbed.

Material possibly associated with the burial

Pottery (see Welsby Sjöström 2023, 365, tab. 7.2, fig. 7.7) amphora – 4796x

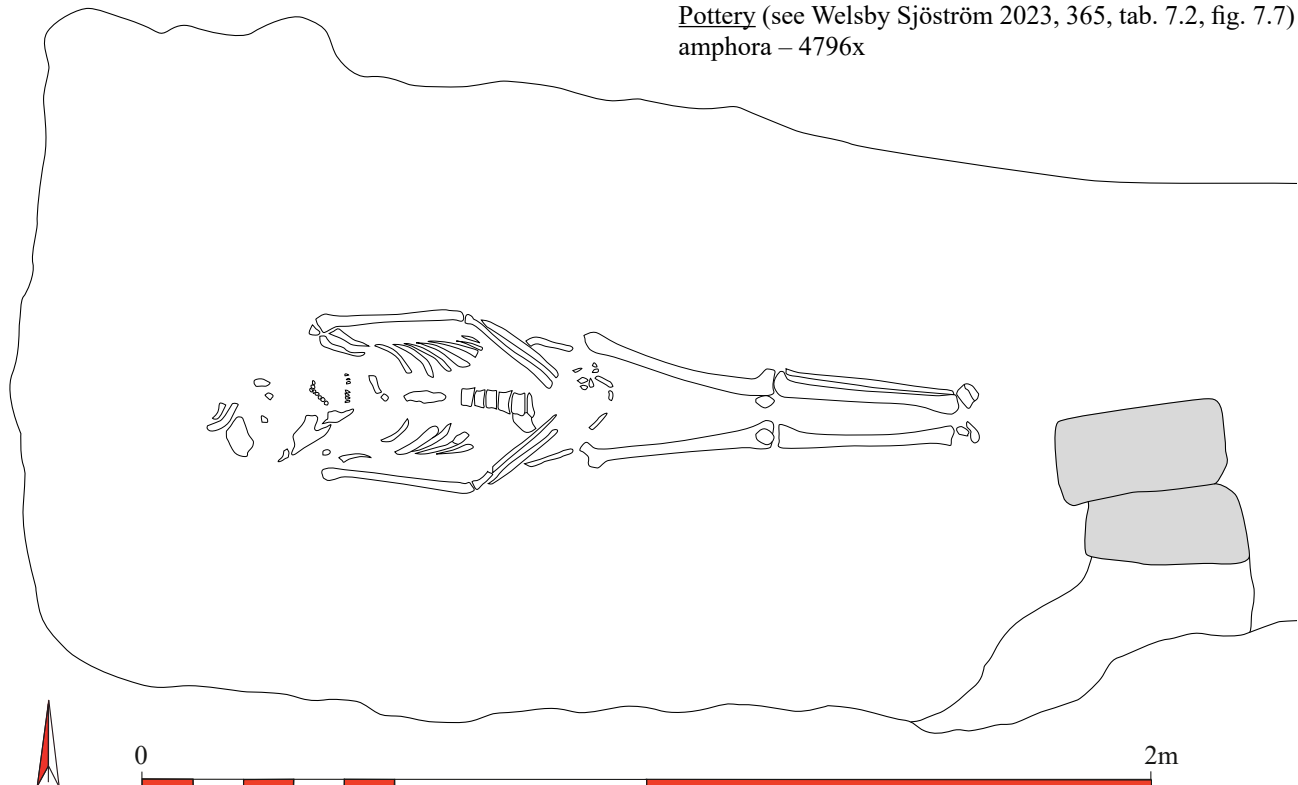


Figure 11.28. Grid square (GD3). Grave 95 – plan of the burial (scale 1:15).



Plate 11.29. Grid square (GD3). Grave 95 – skeleton 152, looking south.



Plate 11.30. Grid square (GD3). Grave 95 – the west end of the descender, entrance to the burial chamber and blocking wall.

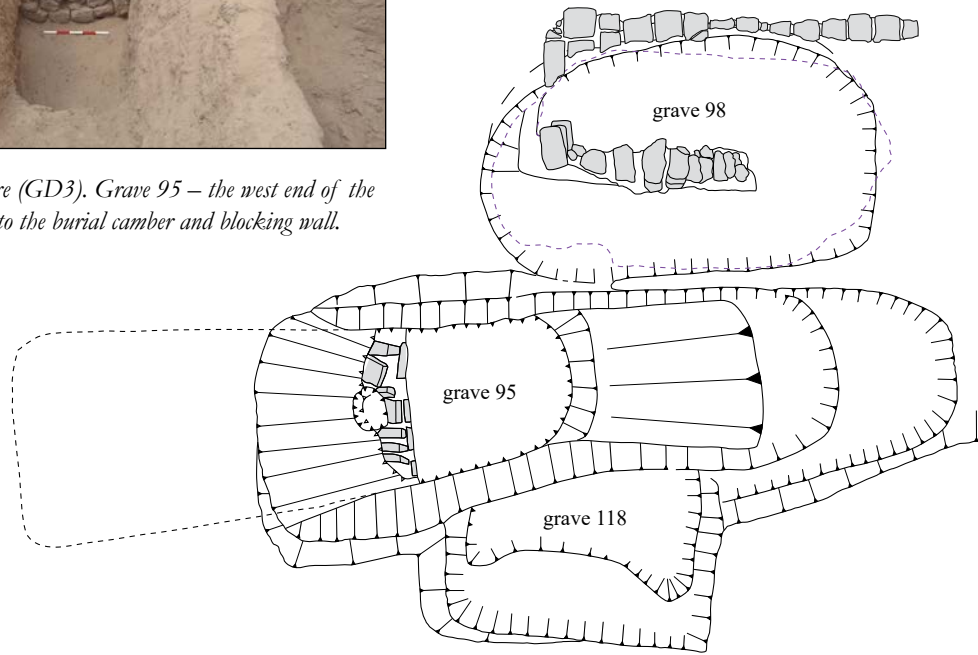
bread cone – 2655x
 small bowl or cup – 4503x
 jars – 2893x, 4789x

Grave (GD3)98 – skeleton 108, Monument 156, Figures 11.29 & 11.30, Plates 11.31 & 11.32

An oval pit with vertical sides, it had a flat base with a single step halfway along its width so that its northern half



Plate 11.31. Grid square (GD3). Grave 98 – skeleton 108, grave goods and blocking wall.



0 2m

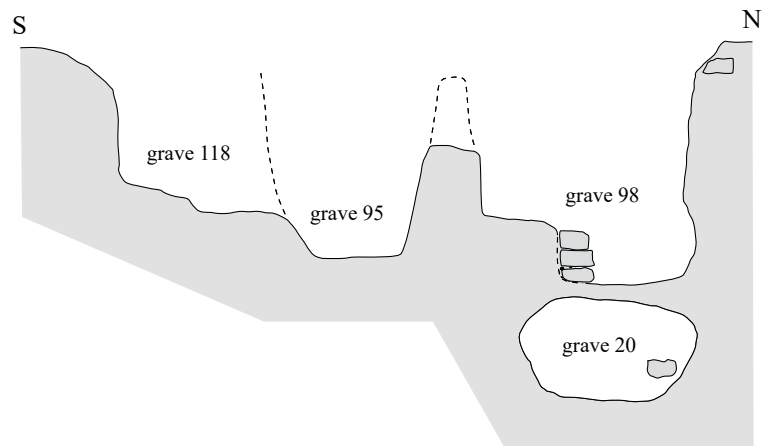


Figure 11.29. Grid square (GD3). Graves 95, 98 and 118 – top plan including monument 156 associated with grave 98 and north-south section also through the chamber of grave 20 (scale 1:50).

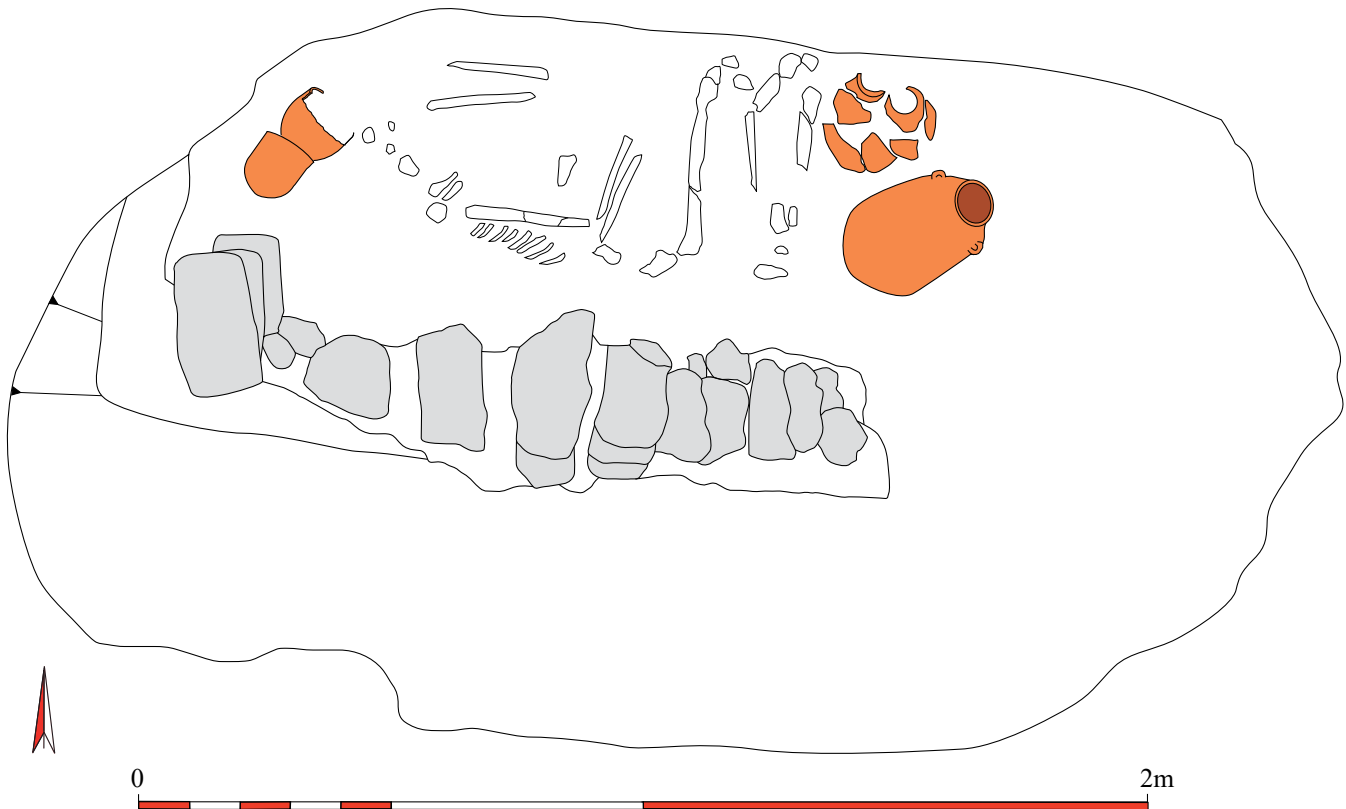


Figure 11.30. Grid square (GD3). Grave 98 – plan of the burial (scale 1:15).



Plate 11.32. Grid square (GD3). Grave 98 – monument 156, looking south east.

was lower than its southern. The body of a middle adult, probable male [(GD3)108] had been placed in the lower northern portion of the grave. This portion was enlarged by an undercut on the northern side of the grave shaft creating a side niche. The body was placed on its left side in a crouched position with its head to the west. West of the head were placed two beakers (4782x & 4783x); east of the lower legs was a narrow-mouthed jar (4787x) and an amphora (4800x).

The lower northern portion of the grave had been sealed by an east-west aligned mud-brick blocking wall. At some point the grave had been robbed, most of the blocking bricks had been removed and the skull of the deceased smashed. This grave had slumped down to a certain extent due to the collapse of the burial chamber of grave (GD3)20 which directly underlay it.

Only a part of the north wall of the rectilinear monument survived from its north-west corner for a distance of

2.56m to the east. It was constructed of mud bricks with only one course surviving, all the bricks cut through by the robber pit.

Material associated with the burial

Pottery (see Welsby Sjöström 2023, 365, tab. 7.2, fig. 7.2, pl. 7.2)

amphora – 4800x

beakers – 4782x, 4783x

narrow-mouthed jar – 4787x

Pottery possibly associated with the burial

beaker – 3255x

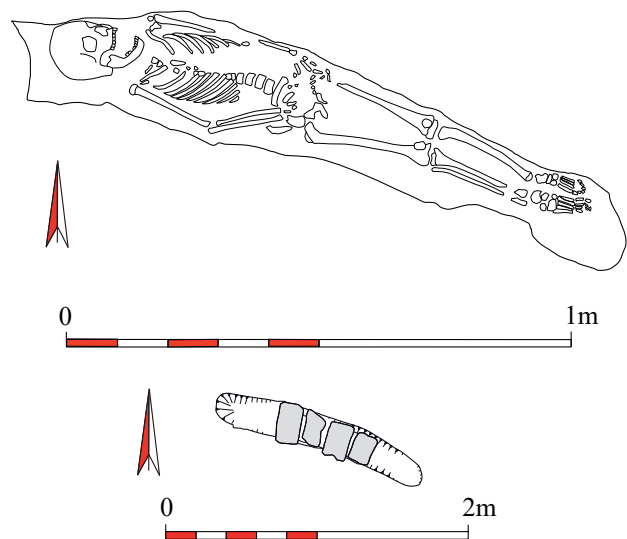


Figure 11.31. Grid square (GD3). Grave 109 – plan of the burial (scale 1:15) and top plan (scale 1:50).



Plate 11.33. Grid square (GD3). Grave 109 – skeleton 114.

Grave (GD3)109 – skeleton 114, Figure 11.31, Plates 11.33 & 11.35

A narrow east-west aligned grave slot into which the body of an older child had been placed in an extended supine position with the head to the west and facing upwards. Around the right ankle and left wrist were faience bead bracelets. Mud bricks had been placed across the width of the grave slot, a little above the body. The upper portions of the grave shaft had been truncated by the creation of the later graves (GD3)84 and (GD3)87.

Material associated with the burial

Jewellery

Cat. no. B-1439 – 19 beads, faience, around left forearm

Cat. no. B-1440 – 104 beads, faience

Cat. no. B-1441 – 6 beads, glass, around right ankle

Grave (GD3)112 – skeleton 115, Figure 11.32, Plates 11.34 & 11.35

Rectangular grave cut with a flat base on which the body of a middle adult of indeterminate sex had been placed on its right side, aligned east-west in a crouched position with the head to the west. The form of the upper portion of the grave is unknown due to its being truncated by the creation of grave (GD3)130. Grave (GD3)130 also truncated the head and left hand of the skeleton.

Material possibly associated with the burial

Pottery (see Welsby-Sjöström 2023, 365, tab. 7.2, fig. 7.6) dish – 3716x with decoration 1142y on its rim

Grave (GD3)118 – Figures 11.29

Rectangular pit with vertical sides. It had a flat base with a single step halfway along its width so that its northern half was lower than its southern. The body of a presumed adult had been placed in the lower northern portion of the grave. Much of this northern side of the grave had been truncated



Plate 11.34. Grid square (GD3). Graves 112 (east) and 130 (west) with skeletons 115 and 132 respectively, looking north.

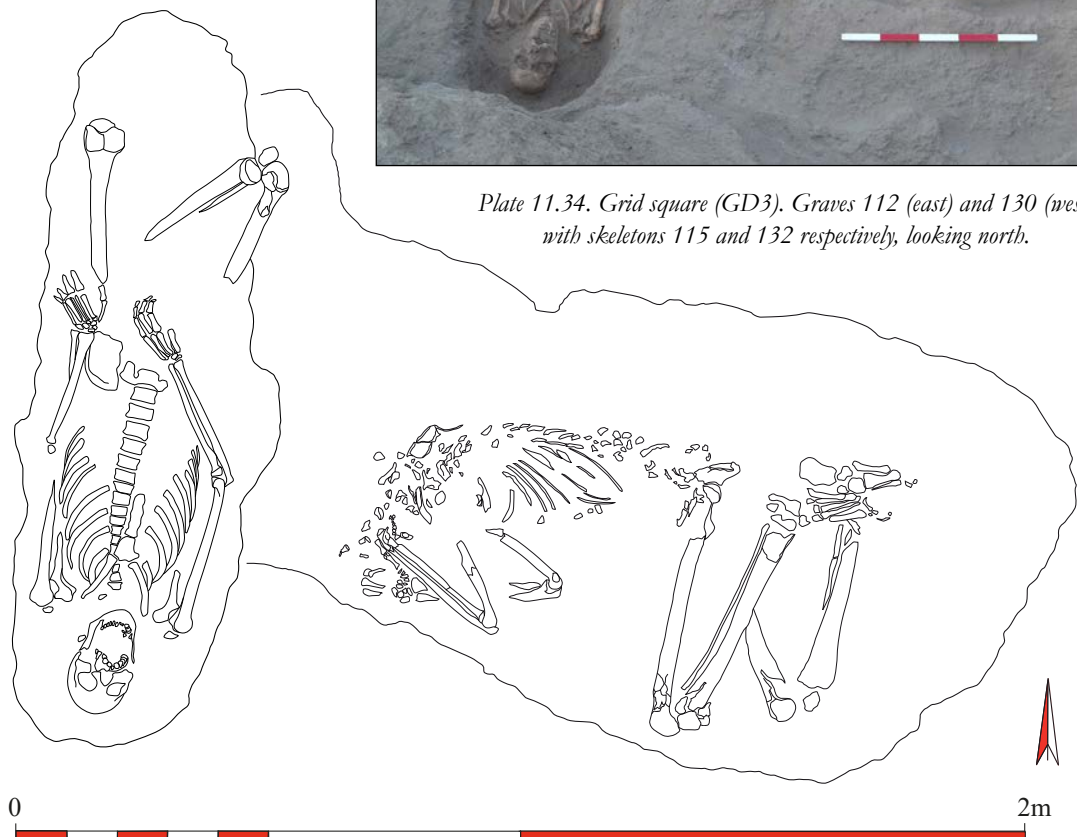


Figure 11.32. Grid square (GD3). Graves 112 (east) and 130 (west) – plan of the burials (scale 1:15).



Plate 11.35 Grid square (GD3). Grave 112 – mud bricks by skeleton 115 and grave 109 to the north with covering bricks, looking west.

by the creation of grave (GD3)95 and thus the skeletal remains were either much disturbed or missing entirely.

Grave (GD3)119

Remnants of the eastern and western ends of a narrow burial slot. The majority of this feature had been truncated by robbing activity [(GD3)123]. No remains of the associated burial were present. Degraded remains of the mud-brick blocking were present at the eastern end a little to the south of the slot.

Material from the robber pit

Pottery (see Welsby Sjöström 2023, tab. 7.2)

dishes – 2130x, 3235x, 3802x

bowl – 3816x

cup – 4795x

Grave (GD3)130 – skeleton 132, Figure 11.32, Plates 11.34 & 11.36

A narrow, north-south aligned, grave slot into which the body of a middle adult male, had been placed in an extended supine position with the head to the south facing upwards. The legs of the body were partially contracted with the knees being raised due to the length of the body exceeding that of the grave slot. The associated descendency may have cut into and damaged the burial in grave (GD3)112. The



Plate 11.36 Grid square (GD3). Grave 130 – skeleton 132, looking west.

original form of the descendency of this grave is uncertain due to the later digging of grave (GD3)84. This burial presumably had some form of blocking structure which was removed during the creation of grave (GD3)84.

Material associated with the burial

Jewellery

Cat. no. B-1442 – bead, faience

Grave (GD3)133 – skeleton 135, Figure 11.33, Plate 11.37

Remnants of the eastern end of a narrow burial slot. The majority of this feature had been truncated by robbing activity [(GD3)123]. The slot contained the skeletal remains of a young infant's right foot. Where the ankle had been was an iron ring anklet.

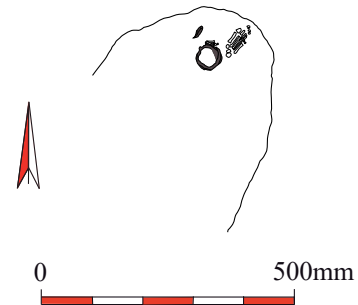


Figure 11.33. Grid square (GD3). Grave 133 – plan of the elements of the burial remaining in situ (scale 1:15).



Plate 11.37. Grid square (GD3). Grave 133 – part of skeleton 135 and grave goods.

Material associated with the burial

Jewellery

Cat. no. F-205 – anklet, iron

Metalwork

Cat. no. F-224 – nail?, iron

Grave (GD3)136

Remnants of the eastern end of a narrow burial slot. The majority of this feature had been truncated by robbing activity [(GD3)123]. No remains of the associated burial were present.

Grave (GD3)138 – skeleton 151, Figure 11.34, Plate 11.38

Oval pit with vertical sides and a flat base. The northern

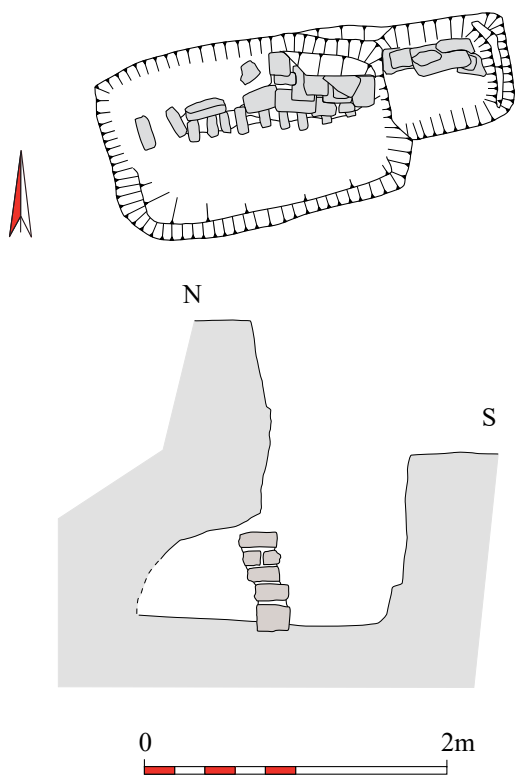
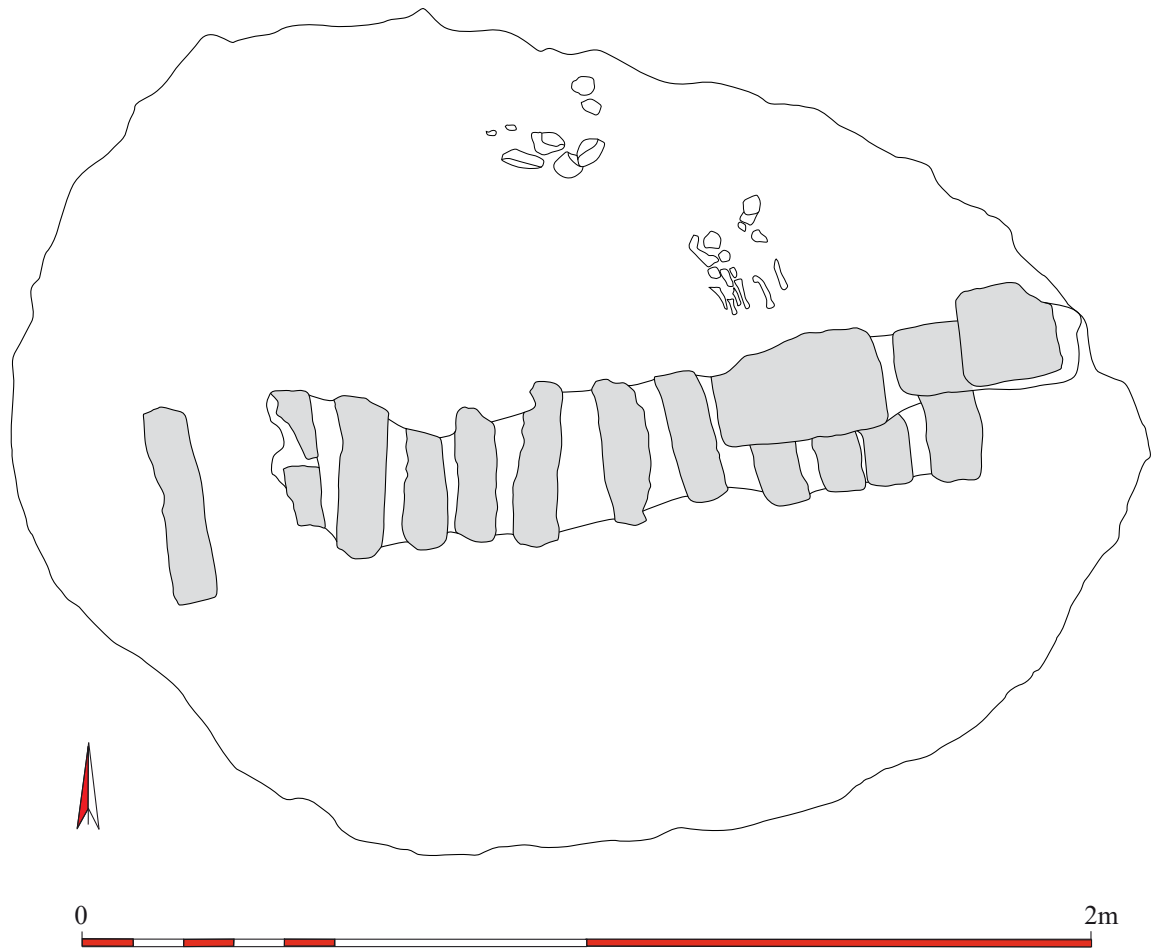


Figure 11.34. Grid square (GD3). Graves 138 – plan of the burial (scale 1:15), top plan with the blocking wall of grave 143 to the east, and north-south profile (scale 1:50).



Plate 11.38. Grid square (GD3). Grave 138 – blocking wall.

side of the shaft was undercut to produce a subterranean burial chamber into which the body of a young adult male had been placed. The chamber had then been sealed with an east-west aligned blocking wall of mud bricks. At some point the grave had been robbed with the result that the skeletal elements of the deceased were spread throughout the lower portions of the grave and in its robber-pit fill. The remaining leg bones and pelvis, if *in situ*, could indicate the probable orientation: crouched on its left side with its head to the west.

The pottery was recovered from the grave and robber pit fills.

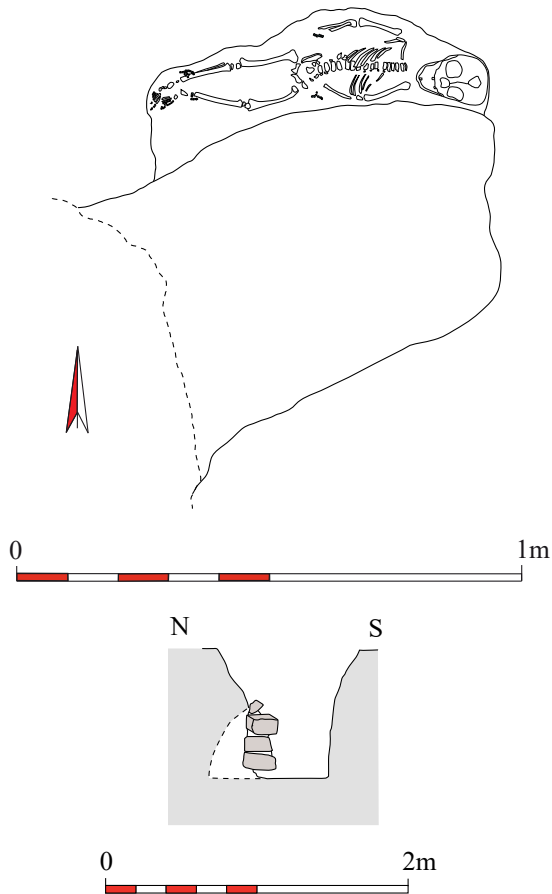


Figure 11.35. Grid square (GD3), Graves 143 – plan of the burials (scale 1:15) and north-south profile (scale 1:50).



Plate 11.39. Grid square (GD3), Grave 143 – skeleton 154.

Material associated with the burial

Stone

Cat. no. F-2410 – vessel, stone

Pottery possibly associated with the burial

(see Welsby-Sjöström 2023, 365, tab. 7.2)

beaker – 3468x

bowl/dish – 2604x

jar – 3443x,

Pottery from the robber pit

beakers – 3843x, 4630x

cooking pot – 2767x

jars – 2656x, 4805x



Plate 11.40. Grid square (GD3), Grave 143 – skeleton 154 and bead anklets.



Plate 11.41. Grid square (GD3), Grave 143 – blocking wall.

Grave (GD3)143 – skeleton 154, Figures 11.34 & 11.35, Plates 11.39-11.41

Rectangular pit with vertical sides and a flat base. The northern side of the shaft was undercut to produce a subterranean burial chamber into which the body of an infant was placed. The body had been laid in an extended supine position with the head to the east. Both wrists had faience-bead bracelets around them and both ankles had faience-bead anklets. The rectangular block of fill around the skeleton differed from the fill elsewhere in the grave, implying that the body had been placed in a coffin. The burial chamber had been sealed with mud bricks.

Material associated with the burial

Jewellery

Cat. no. B-1443 – 3 beads, faience: behind neck

Cat. no. B-1444 – 29 beads, faience: bracelet on left wrist

Cat. no. B-1445 – 25 beads, faience: anklet, left ankle

Cat. no. B-1446 – bead, faience: anklet, right ankle

Cat. no. B-1447 – 40 beads, faience: anklet, right ankle

Cat. no. B-1448 – 25 beads, faience: bracelet on right wrist

Other cuts

(GD3)123

Sub-rectangular cut with steeply sloping sides and a flat base. This feature truncated the majority of graves (GD3)136, (GD3)133 and (GD3)119. It also cut extensively into grave (GD3)138. Cut (GD3)123 is either a single or a series of robbing events.

(GD3)75

Sub-circular cut with steeply sloping sides and a flat base. The density of burials within this cut did not allow it to be associated with a particular grave. Its edges are seemingly comprised of a combination of the cuts of graves (GD3)84, (GD3)87 and (GD3)112.

Area (HA1)

During the survey of the cemetery in 1993 large areas in the centre of the site to the east of the modern track retained no traces of what we were interpreting at that time as funerary monuments. During the January to March 2000 season there were gale-force winds which lasted for a few days. The wind stripped this area of the very thin layer of sand and loose silt revealing in the alluvium, for some time thereafter, many grave cuts (Plates 11.42 & 11.43). If they



Plate 11.42. Area (HA1). Grave 1051 – the outline of the grave cut marked by stones and the sand-filled robber pit.



Plate 11.43. Area (HA1). General view of a part of the area, looking north.

ever had superstructures all traces have been removed in the past by erosion.

Individual graves were excavated over a wide area as well as in a 10 x 11m trench (Figure 11.36).

Pit (HA1)1069

Towards the centre of the area a shallow oval pit 2.18 x 1.64m in size and a maximum of 240mm deep, was filled with wind-blown sand.

Grave (HA1)1052 – skeleton (1052)3, Figure 11.37, Plate 11.44

The grave was a sub-rectangular pit 2.07m long, 380mm wide and 450mm deep. At that level a side niche was excavated along the whole of the north side a further 290mm. Only the pelvis and legs and the left arm of the deceased, a young adult male remained *in situ*, the other bones were found in the robber-pit fill. The body was placed in an extended supine position. The mud-brick blocking wall had been much disturbed but appeared to have consisted of bricks laid on their sides along the ledge with others set at an angle leaning on these and against the north side of the grave cut. The grave's alluvial fill had been cut by a robber pit 1.5m long by up to 560mm wide. It was filled with wind-blown sand over the disturbed grave fill, mud brick fragments and bones.

Grave (HA1)1055 – skeletons, primary (1055)6, Figure 11.38

The descendary, 1.61m in length and 840mm wide, had a steeply sloping floor into which one shallow rudimentary step had been dug. At a depth of 700mm a step, with a riser of about 250mm, dropped down to the floor level of the burial chamber entered through an arch-shaped doorway. The chamber was oval, 1.7m x 800mm in size with a

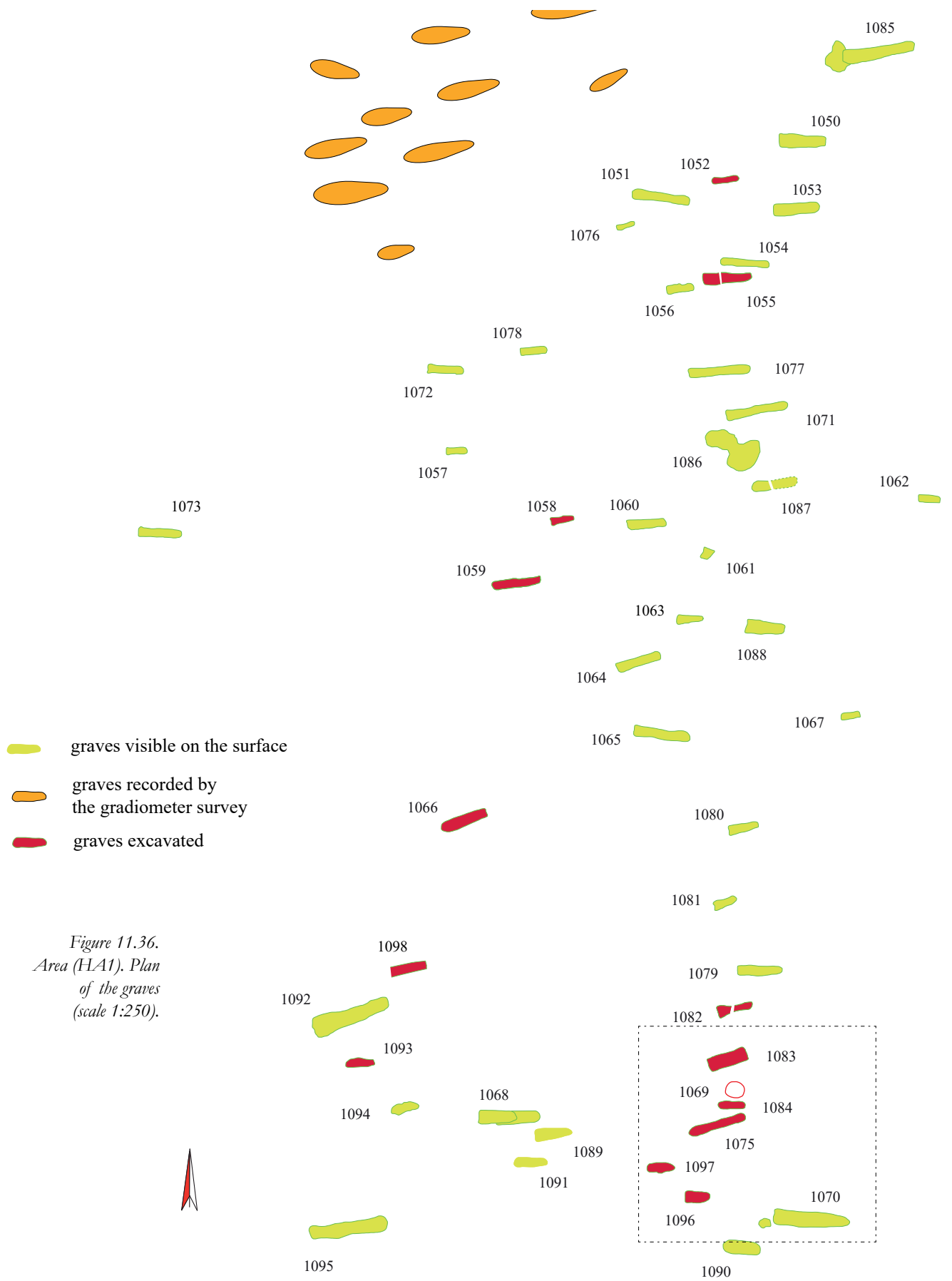


Figure 11.36.
Area (HA1). Plan
of the graves
(scale 1:250).

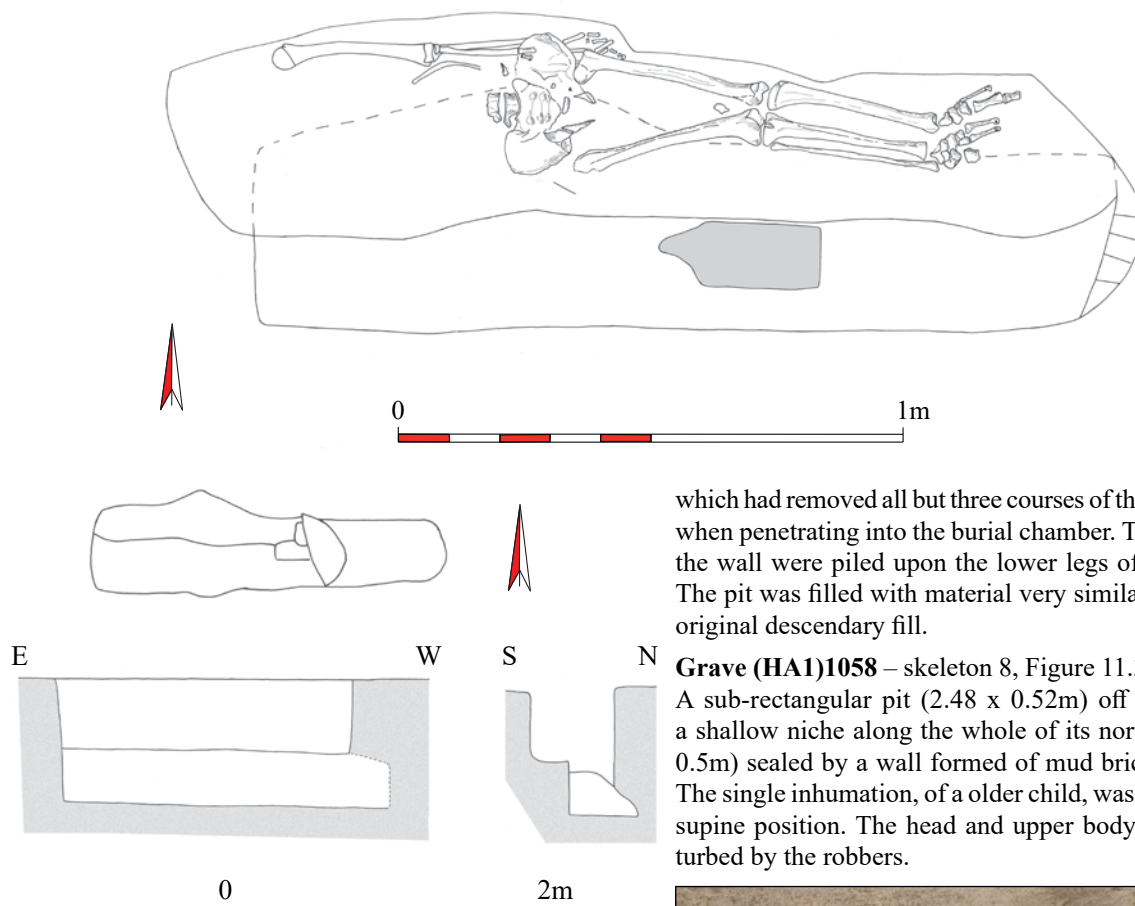


Figure 11.37. Area (HA1). Grave 1052 – plan of the burial (scale 1:15), top plan, north-south and east-west profiles (scale 1:50).



Plate 11.44. Area (HA1). Grave 1052 – skeleton 3.

maximum height of 880mm. The supine extended skeleton was of an adolescent. The upper right-hand side of the body was markedly shifted to the south but remained articulated. The chamber was closed by a blocking wall of mud bricks set as rowlocks/headers and inclined about 45° to the north. Cutting the alluvial fill of the descandary was a robber pit

which had removed all but three courses of the blocking wall when penetrating into the burial chamber. The bricks from the wall were piled upon the lower legs of the deceased. The pit was filled with material very similar to that of the original descandary fill.

Grave (HA1)1058 – skeleton 8, Figure 11.39, Plate 11.46
A sub-rectangular pit (2.48 x 0.52m) off which opened a shallow niche along the whole of its north side (1.98 x 0.5m) sealed by a wall formed of mud bricks set on end. The single inhumation, of a older child, was in an extended supine position. The head and upper body had been disturbed by the robbers.



Plate 11.45. Area (HA1). Grave 1058 – skeleton 8.

Grave (HA1)1059 – skeleton 8, Figure 11.40, Plates 11.47-11.49

A long, narrow descandary (4.22 x 0.76m, depth 1.17m) with well-cut steps at its eastern end which become very rough towards the west. Within the chamber was the extended supine skeleton of a pubescent individual accompanied by a necklace of bi-conical glass beads and, on each leg, an anklet of faience ring beads. Extensive, but very fragmented, remains of the plaster which coated the coffin survived, some bearing painted decoration. Most of the blocking wall, of mud bricks (c. 200 x 140 x 100mm) set at 45° or vertically, remained *in situ*, although pierced by a very small robber hole.

Material associated with the burial

Jewellery

Cat. no. B-1449 – bead, faience

Cat. no. B-1450 – 52 beads, faience

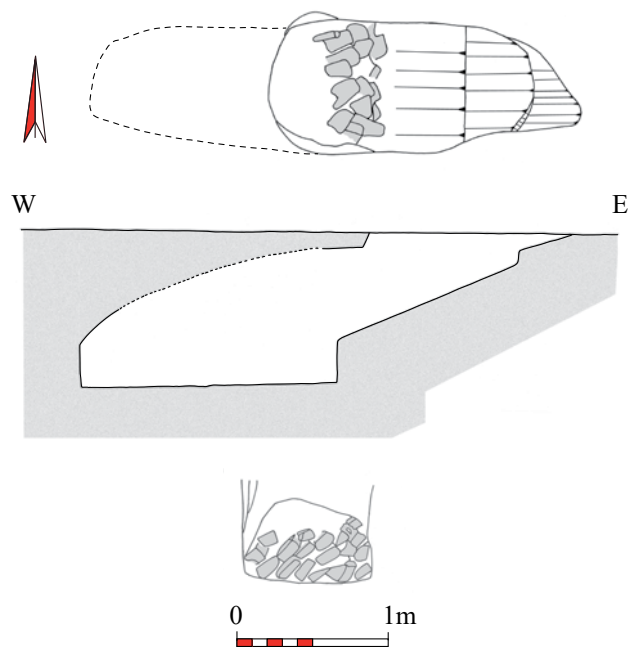
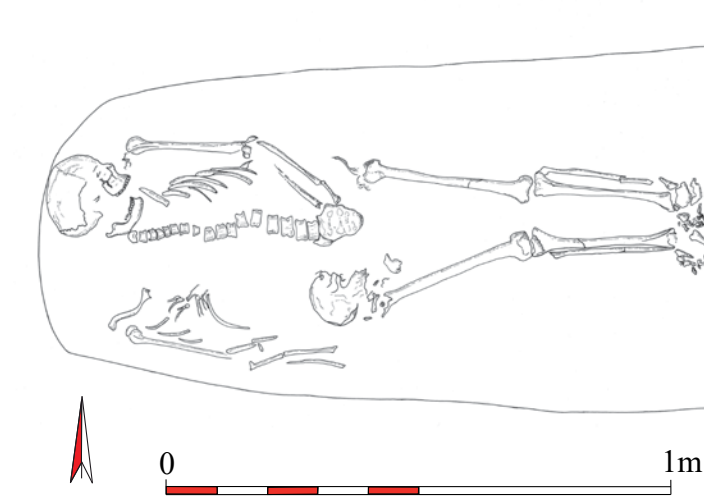


Figure 11.38. Area (HA1).
Grave 1055 – plan of the burial
(scale 1:15), top plan, east-west
profile and elevation of the blocking
wall (scale 1:50).



Plate 11.46. Area (HA1). Grave 1058 – blocking wall.

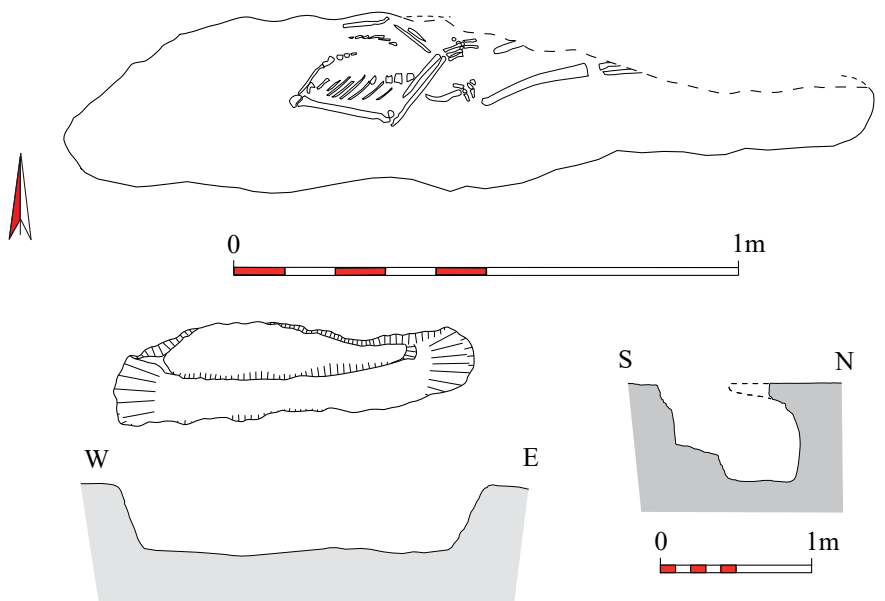


Figure 11.39. Area (HA1). Grave
1058 – plan of the burial (scale
1:15), top plan, east-west and north-
south profiles (scale 1:50).

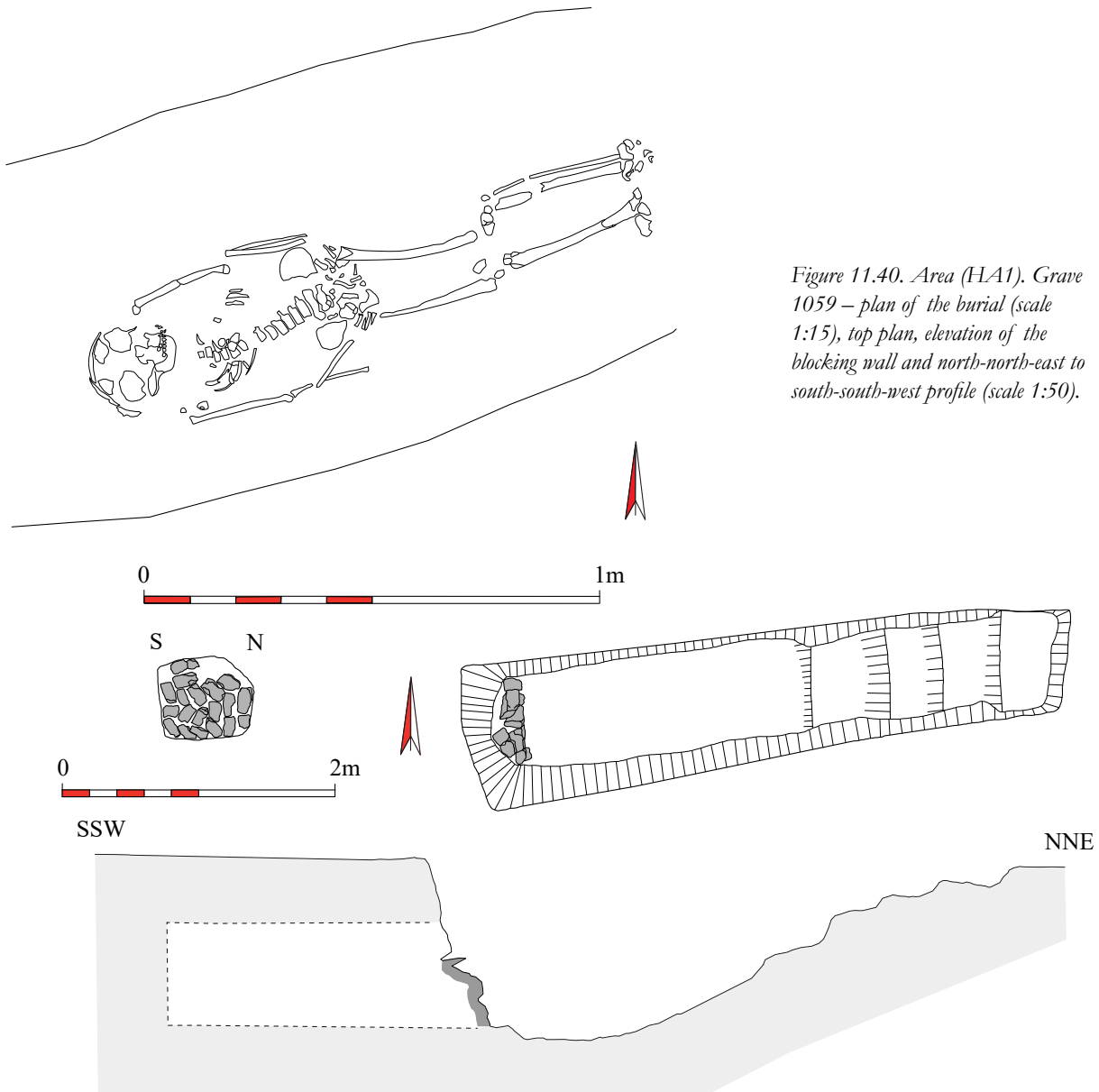


Figure 11.40. Area (HA1). Grave 1059 – plan of the burial (scale 1:15), top plan, elevation of the blocking wall and north-north-east to south-south-west profile (scale 1:50).



Plate 11.47. Area (HA1). Grave 1059 – skeleton 8.



Plate 11.48. Area (HA1). Grave 1059 – blocking wall.



Plate 11.49. Area (HA1). Grave 1059 – the descender, looking north east.



Plate 11.50. Area (HA1). Grave 1066 – skeleton 8 as visible in the vertical cut made to allow the excavation of the chamber.

- Cat. no. B-1451 – anklet, 87 beads, faience
- Cat. no. B-1452 – anklet, 91 beads, faience
- Cat. no. B-1453 – necklace, 61 beads, glass
- Cat. no. B-1454 – 2 beads, bone
- Cat. no. B-1455 – cowrie shell

Grave (HA1)1066 – skeleton 8, Figures 11.41 & 11.42, Plates 11.50 & 11.51

A long, narrow descender (4.5 x 0.7m, depth 1.54m) with well-cut steps. In the chamber was the extended supine skeleton of a middle adult of indeterminate sex with the right hand on the pubis, and the left under the pelvis. Traces of the lime-plaster coating of the coffin survived. Only on the north side of the ‘arched’ entrance to the chamber did the mud-brick blocking wall remain, the rest having been destroyed by the robber pit.

Material possibly associated with the burial

Pottery (see Welsby-Sjöström 2023, 365, tab. 7.3)
bowl – 2537x



Plate 11.51. Area (HA1). Grave 1066 – the descender, looking east.

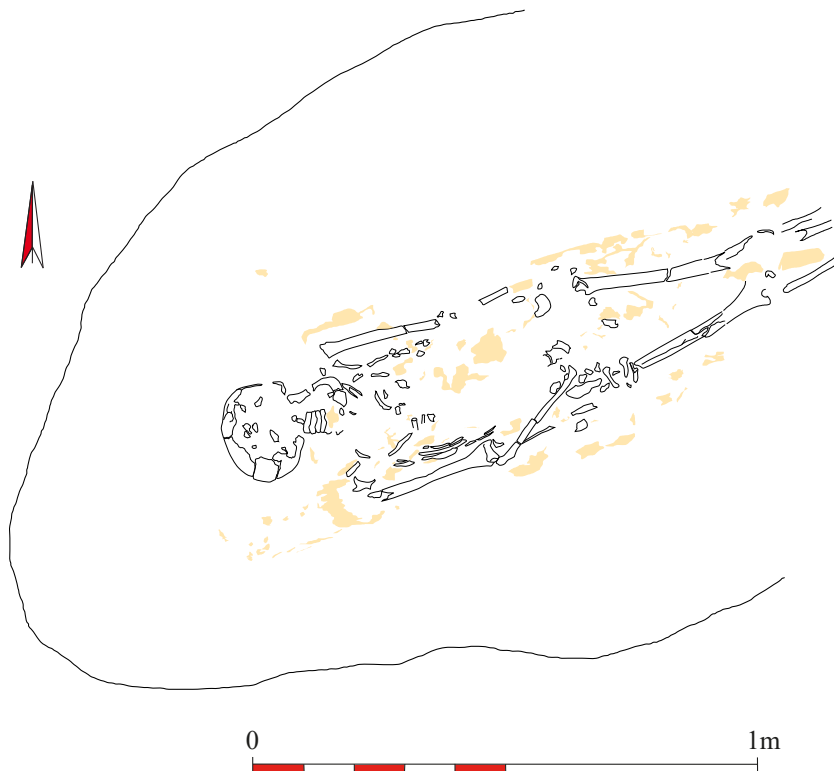
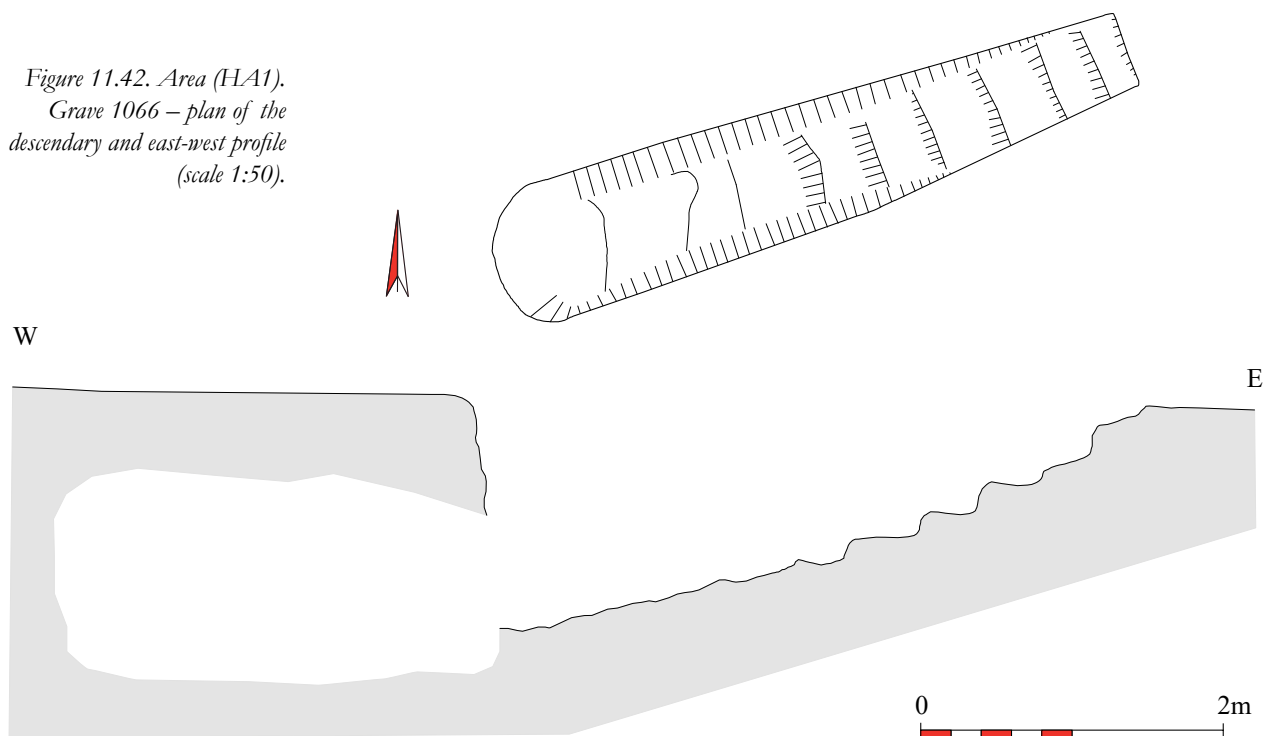


Figure 11.41. Area (HA1). Grave 1066 – plan of the burial (scale 1:15).

Figure 11.42. Area (HA1).
Grave 1066 – plan of the
descendary and east-west profile
(scale 1:50).



Grave (HA1)1075 – skeletons, primary (1075)21, secondary (1075)16, tertiary (1075)9,11,13,17, Figures 11.43 & 11.44, Plates 11.52-11.55

The descendary was 4.78m in length and only 710mm wide with vertical walls. A flight of six steps with wide treads and shallow risers led down from the surface, at the bottom of which the descendary slopes down for 1.2m until reaching three further steps onto a landing. From here another step gave access, via the arch-shaped doorway, into the chamber, the floor of which lay 2.51m below the surface. The chamber was sub-rectangular, 2.02m in length and had a narrow ledge running along the south, west and part of the

north side. Towards the corners were four post-holes which perhaps housed the feet of a bier or bed.

Sealing the holes and the floor of the chamber was a deposit of coarse sand [(1075)20] up to 200mm thick. Deep within this towards the west end was a mandible, presumably from the primary burial. The chamber was closed by a blocking wall made of good-quality mud bricks, a single row of stretchers founded on the upper step within the doorway. Only three courses remain against the north and south jambs of the doorway.

Secondary burial. Traces of what may have been an anthropomorphic coffin, with sides 8-10mm thick, remained

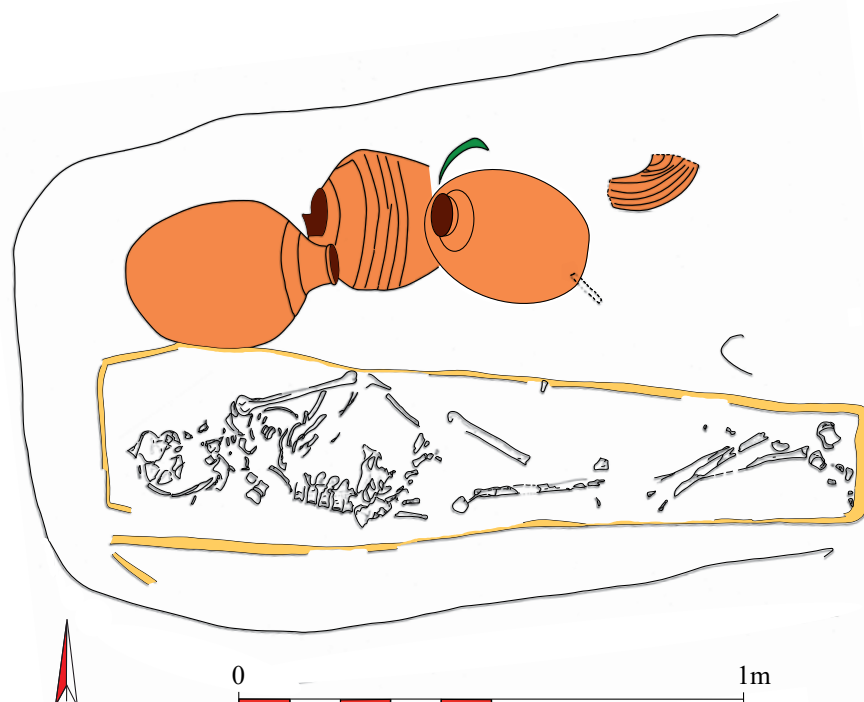


Figure 11.43. Area (HA1). Grave 1075 – plan of the burials (scale 1:15).



Plate 11.52. Area (HA1). Grave 1075 – skeleton 16 and ceramic grave goods, looking west.

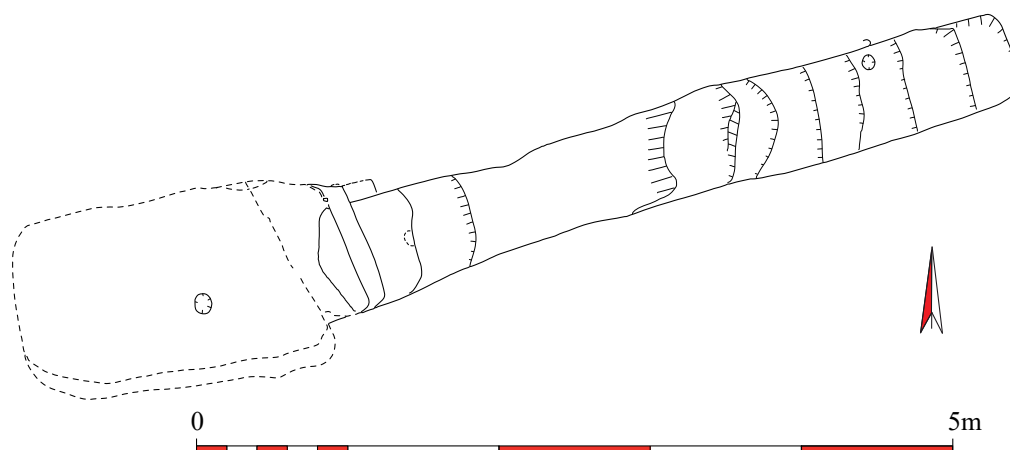


Figure 11.44. Area (HA1). Grave 1075 – plan of the descender and burial chamber (scale 1:50).



Plate 11.53. Area (HA1). Grave 1075 – skeleton 16 with copper-alloy toe rings.



Plate 11.55. Area (HA1). Grave 1075 – descender.



Plate 11.54. Area (HA1). Grave 1075 – the lower steps in the descender and the entrance to the burial chamber.

upon fill layer (1075)20. The body of a young adult, probable female, was placed in an extended supine position with the arms pronated and the hands over the pubis. The

right leg was slightly raised and crossed over the lower left. Dark blue beads were found in the neck area, a scarab was beneath the left forearm and six toe rings, three of which remained *in situ* on the third to fifth digits of the right foot. Alongside the body to the north were three large jars (types 2882x-2884x), a copper-alloy bowl (cat. no. F-80) and a large sherd of pottery (type 2124x) while at a slightly higher level another jar (type 2881x) lay over the pelvic region adjacent to a mud brick. The chamber was sealed by a substantial wall set a little further to the west than the primary blocking. It was constructed principally of headers and survived to a height of six courses against the south jamb. Among the bricks were two with dimensions 340 x 180mm and 320 x 180mm.

The grave fill, presumably that inserted after the secondary burial, was cut by a large pit [(1075)8] 1.5m in length which removed the upper part of the blocking wall and disturbed what must have been tertiary burials. Many bones were found amongst the disturbed fills in the chamber and set on the bottom of the pit well to the east of the chamber were the disarticulated and commingled remains of a young

adult probable female [(1075)9] and a child [(1075)17]. Other bones were found in the fill including a skull [(1075)13]. The upper fill of the robber pit was wind-blown sand, in places hardened by the action of standing water.

Whether two post-holes were associated with the grave and/or its superstructure is unclear. On the north side of the third step of the descendary was a shallow post-hole 100mm in diameter and only 30mm deep. It was presumably cut down through the fill of the descendary or predates it. Another post-hole, on the long axis of the descendary, was located c. 800mm to the west of the cut. It was oval, 180 x 160mm in size and 270mm deep.

Material associated with the secondary burial

Jewellery

- Cat. no. B-1456 – bead, faience
- Cat. no. B-1457 – 4 beads, faience
- Cat. no. B-1458 – c. 19 beads, glass
- Cat. no. B-1459 – 2 beads, glass
- Cat. no. B-1460 – bead, glass
- Cat. no. B-1461 – 6 beads, glass
- Cat. no. B-1462 – 4 beads, glass
- Cat. no. B-1463 – bead, glass
- Cat. no. B-1464 – 5 beads, glass
- Cat. no. B-1465 – bead, glass
- Cat. no. B-1466 – 10 beads, glass
- Cat. no. B-1467 – 206 beads, glass
- Cat. no. B-1468 – 2 beads, gold-in-glass
- Cat. no. B-1469 – c. 37 beads, gold-in-glass
- Cat. nos F-42 to F-47 – 6 toe rings, copper alloy
- Cat. no. Sc-1 – scarab, steatite

Metalwork

- Cat. no. F-80 – bowl, copper alloy
- Cat. no. F-137 – object, copper alloy

Pottery (see Welsby Sjöström 2023, 365, tab. 7.3, fig. 7.2, pl. 7.3)

jars – 2881x-2884x

Pottery possibly associated with the burial

beaker – 2124x

cooking pot or bowl – 2848x

Grave (HA1)1082 – skeleton (1082)1, Figure 11.45, Plate 11.56

Very denuded remains of a skeleton visible on the surface. The bones³ appear to be of an infant laid in a prone position with the legs extended.

Grave (HA1)1083 – skeletons, primary (1083)15, secondary (1083)11, tertiary (1083)5, Figure 11.46, Plates 11.57 & 11.58

The descendary, attaining a maximum depth of 1.32m, was



Figure 11.45. Area (HA1). Grave 1082 – plan of the burial (scale 1:15).



Plate 11.56. Area (HA1). Grave 1082 – skeleton 1.

3.66m in length and 1.13m wide at the east end tapering towards the west where the end of the cut sloped eastwards. The upper five steps were regular in shape with shallow risers. Steps six to eight however, cut through on their north side, appeared heavily worn and almost indistinguishable. The cut [(1083)9], which had removed the northern ends of the lower steps at the west end of the descendary, removed almost all of the lowest step and approached the south side of the descendary. From the base of the secondary cut a shallow step led down to the oval burial chamber through an arch-shaped doorway. The deceased, an indeterminate adult, lay in an extended supine position. The right arm was pronated with the hand was on the pubis, the left arm was alongside the body. The bones were in a very poor condition and those in the thoracic area were disturbed. Samples of brain tissue were collected from within the skull. The



Plate 11.57. Area (HA1). Grave 1083 – descendary.

³ These were not studied in detail.

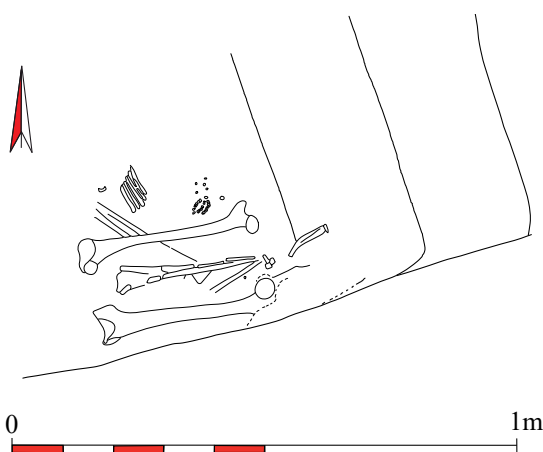
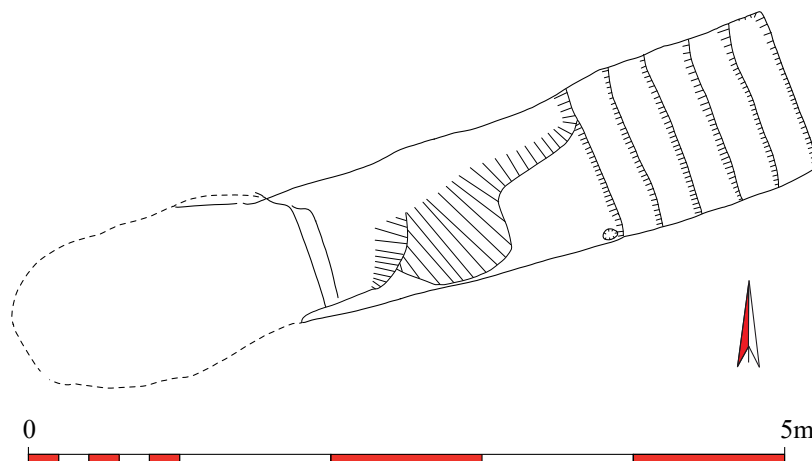
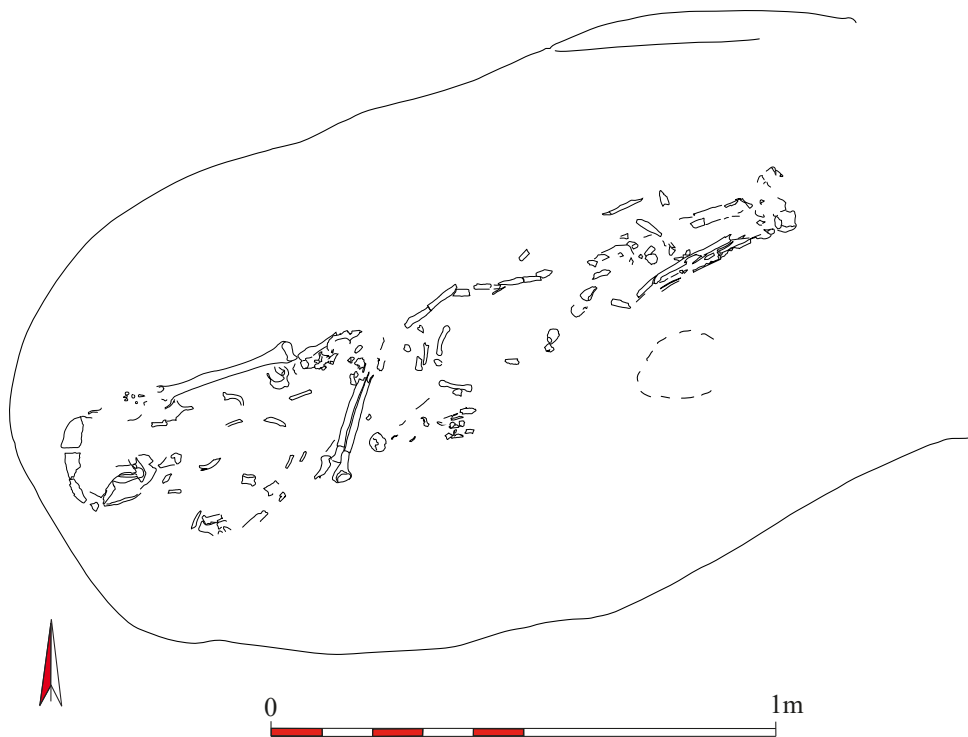


Figure 11.46. Area (HA1). Grave 1083 – plan of the burials, skeletons 15 and 11 (scale 1:15) and top plan (scale 1:50).

chamber was sealed by a mud-brick blocking wall. The lowest course was of three headers and one stretcher, above which was a course of two stretchers and one header. Of the third course only one stretcher remained.

Cutting diagonally through the steps of the descendary was a pit 2.1m long widening to the west where it cor-

responded to the width of the doorway into the chamber. On its north side it was vertical continuing the edge of the descendary. On the south side a triangular step was left well above the floor of the pit. This would have assisted access from the truncated steps on the south side of the descendary into the chamber. It is not clear how to interpret these features. The lower steps of the descendary do not descend



Plate 11.58. Area (HA1). Grave 1083 – skeleton 11.

to the mouth of the chamber. It is possible that pit (1083)9 was a convenient way of carrying the descender deeper rather than extending it a metre or more to the west to gain the desired depth. Perhaps other features in the area precluded such an approach or perhaps the nature of the strata made the cutting of steps difficult; this may explain why the steps look worn. The lower part of the pit was filled with up to 190mm of alluvium, presumably the original grave fill; it contained no artefacts or bone. Cutting into this fill was a robber pit which penetrated into the chamber destroying much of the blocking wall. On the mud-brick rubble in the south-east corner of the chamber was an upturned copper-alloy bowl (cat. no. F-81). Set on the floor of the pit to the east of the chamber against the north side of the cut was a bundle of bones [(1083)11] of an adolescent or young adult female delimited to the west by a mud brick and bone fragments were found throughout the coarse sand fill above [(1083)10]. Visible on the surface in this layer at the eastern end of the descender was a scatter of bone [(1083)5] of a middle adult female. Beneath this was a collection of bones sat on the second step against the south side of the descender which included an articulated pelvis and femurs. However it appears that these were not *in situ*, the skull lay immediately adjacent to the femur as did part of the articulated left foot. Associated with the burial was a string of faience, beads, a ceramic ball and a spherical bead. The fill [(1083)10] was, in its turn, cut by a robber pit 2.24m in length and 880mm wide which penetrated into the chamber and filled with wind-blown sand.

Cut into the south-eastern part of the sixth step down was a small bowl-shaped depression 70 x 80mm in size and 20mm deep.

Material associated with the burial

Jewellery

Cat. nos B-1470 to B-1474 – 5 beads, faience

Cat. nos B-1475 to B-1485 – 60 beads, faience

Cat. no. B-1487 – bead glass

Cat. no. B-1486 – 42 beads, faience

Metalwork

Cat. no. F-81 – bowl, copper alloy

Pottery from the robber pit

(see Welsby Sjöström 2023, tab. 7.3, fig. 7.6)

dish – 2466x

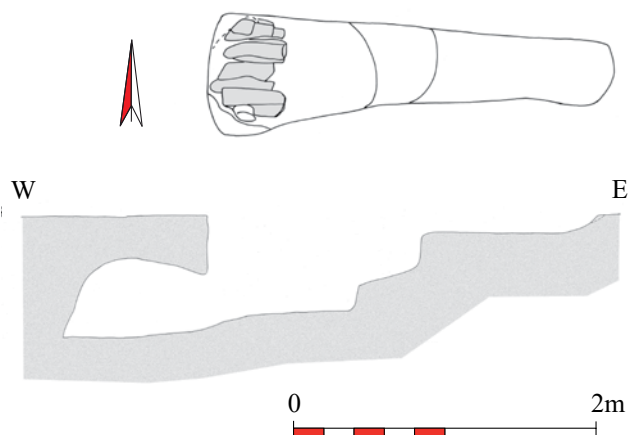


Figure 11.47. Area (HA1). Grave 1084 – top plan and east-west profile (scale 1:50).



Plate 11.59. Area (HA1). Grave 1084 – the descender and blocking wall, looking west.

Grave (HA1)1084 – skeleton 8, Figure 11.47, Plate 11.59

The descender, of three long steps, was 1.68m long, 770mm wide and attained a depth of 640mm. A low arch-shaped opening led into the burial chamber 980mm long, 470mm wide and 510mm high. It had contained the burial of an infant but the disarticulated bones were found in the fill within the chamber and in the robber pit. The skull and a number of other bones were not recovered. The doorway was originally blocked by a wall of mud bricks laid as rowlocks set immediately outside the doorway. Some of the bricks were well made with maximum dimensions of 355 x 190 x 100mm.

Pottery from the descender fill

(see Welsby Sjöström 2023, tab. 7.3, fig. 7.2)

feeding cup – 2622x

vessels of uncertain form – 2850xa, 2850x⁴

Pottery from the robber pit

beaker/bowl – 2849x



Plate 11.60. Area (HA1). Grave 1093 – skeleton 8.

⁴ This looks like the base of a *clepsydra* but has no holes through it.

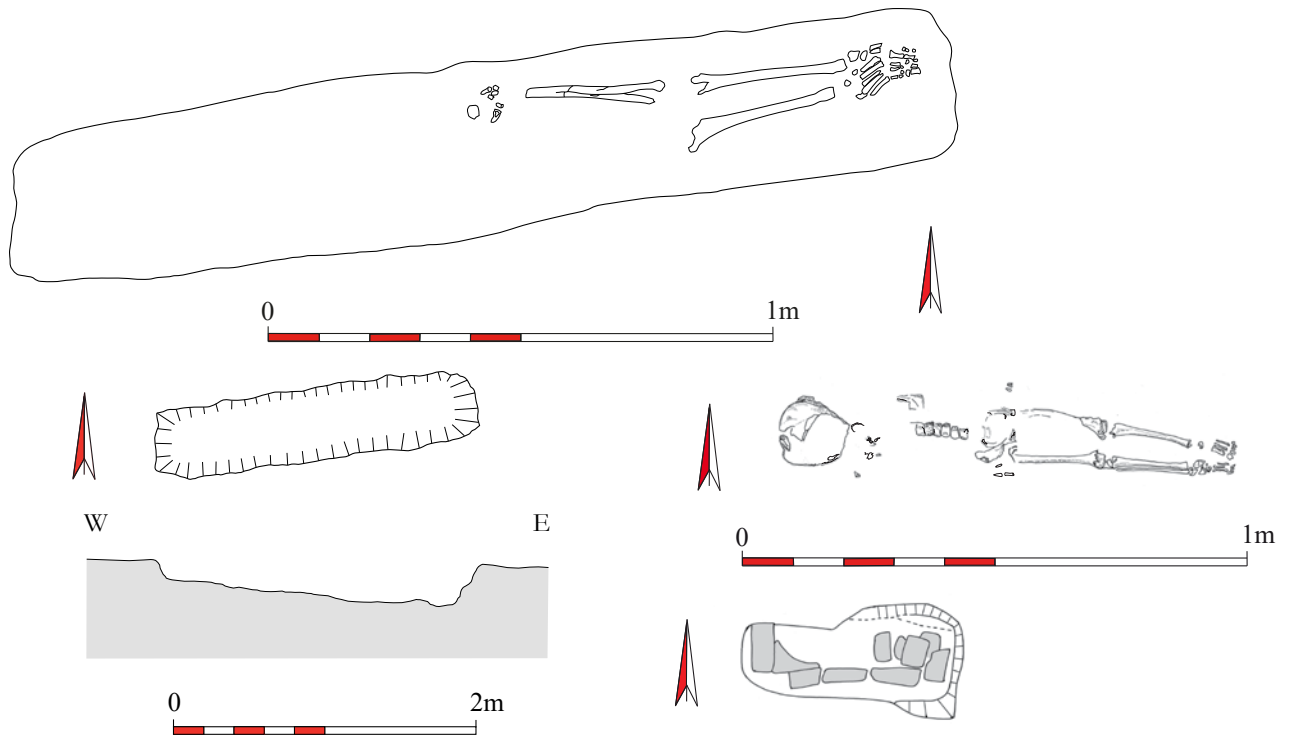


Figure 11.48. Area (HA1). Grave 1093 – plan of the burial (scale 1:15), top plan and east-west profile (scale 1:50).

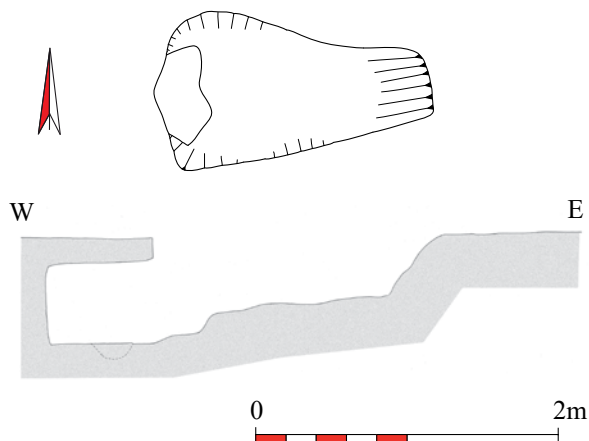


Figure 11.49. Area (HA1). Grave 1096 – top plan and east-west profile (scale 1:50).

Grave (HA1)1093 – skeleton 8, Figure 11.48, Plate 11.60
A narrow sub-rectangular grave (1.02 x 0.46m) which only survived to a depth of 290mm below the present ground surface. The whole of the upper body of an indeterminate adult, including most of the pelvis, had been removed by the robbers.

Grave (HA1)1096 – skeleton 7, Figure 11.49
The trapezoidal descender was 1.84m in length, attained a maximum width of 1.04m and a depth of 660mm. The body of an infant had been much disturbed with disarticulated bones in the robber-pit fill.

Material associated with the burial

Jewellery

Cat. no. B-1409 to B-1492 – 23 beads, faience

Cat. no. B-1488 – bead, material?

Cat. no. B-1489 – 19 beads, material?

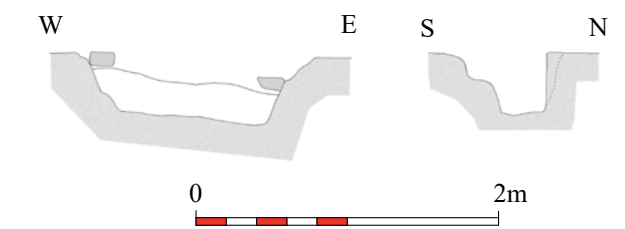


Figure 11.50. Area (HA1). Grave 1097 – plan of the burial (scale 1:15), top plan, east-west and north-south profiles (scale 1:50).

- Cat. no. B-1493 – 17 beads, faience
- Cat. no. B-1494 – 20 beads, faience
- Cat. no. B-1495 – 5 beads, glass
- Cat. no. B-1496 – 2 beads glass
- Cat. no. B-1497 – bead chalcedony
- Cat. no. F-54 – earring, copper alloy

Grave (HA1)1097 – skeleton 7, Figure 11.50

The grave cut was rectangular in plan with rounded ends, 1.4m x 0.54m in size. The flat base slopes from west to east with a depth of from 410-470mm. The body of a young child lay in an extended prone position with its arms by its sides. The skull and thorax had been disturbed. Along the south side was a ledge 230mm wide on which rested two courses of mud bricks, part of a rectangular structure which presumably originally covered the burial chamber. This had been largely destroyed by the robbing.

Pottery possibly associated with the burial

(see Welsby Sjöström 2023, 365, tab. 7.3, fig. 7.6)

bowl –2067x

Grave (HA1)1098 – Figure 11.51, Plates 11.61 & 11.62

The long, narrow descender (c. 3.24 x 0.74m, depth 1.97m) with well-cut steps, the lowermost markedly curved, gave access to the burial chamber, the roof of which had collapsed. Nothing remained *in situ* of the body, bones⁵

⁵ These bones were not studied in detail.

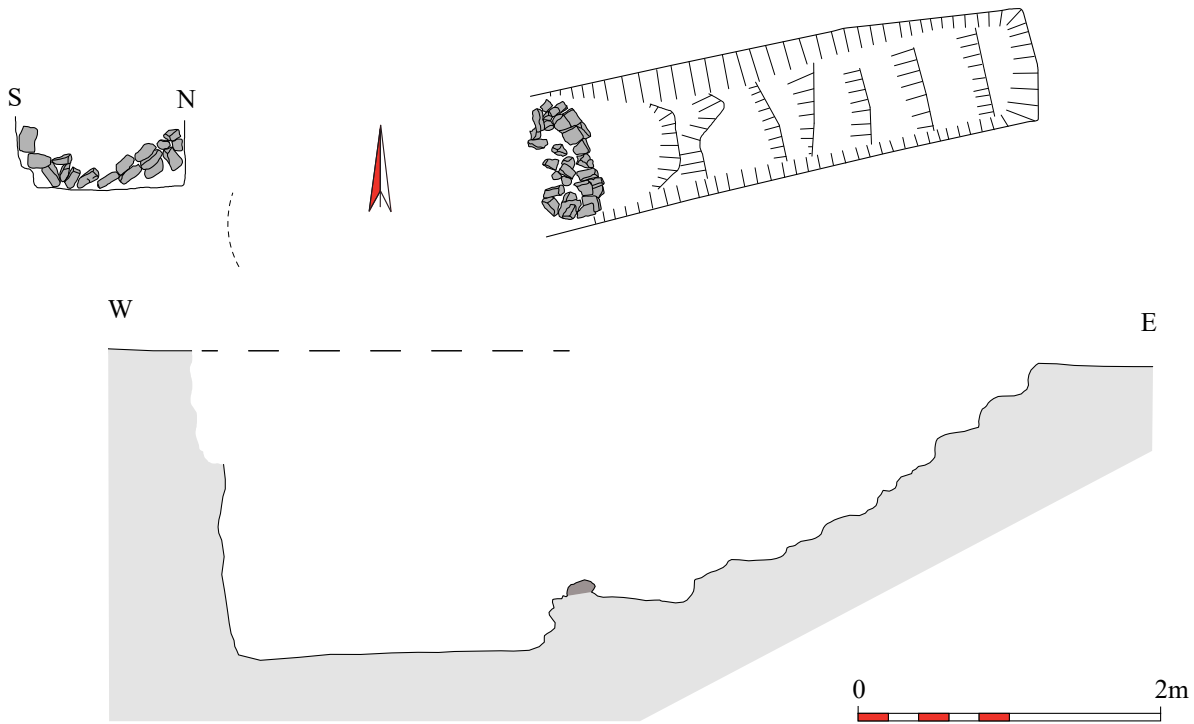


Figure 11.51. Area (HA1). Grave 1098 – top plan, elevation of the blocking wall and east-west profile (scale 1:50).



Plate 11.61. Area (HA1). Grave 1098 – descender and blocking wall, looking east north east.



Plate 11.62. Area (HA1). Grave 1098 – blocking wall.

of which were found in the robber-pit fill. The mud-brick blocking wall was much disturbed.

Pottery possibly associated with the burial

(see Welsby Sjöström 2023, 365, tab. 7.3)

beaker – 2235x

bread cone – 4320x

Pottery from the robber pit

dish – 3716x, rim decoration 1142y

Grid square (HA2)

Excavations here were conducted within a 20 x 20m trench which was extended a little on the west side to allow the excavation of grave (HA2)161. During the survey of the cemetery in 1993 two tumuli were recorded in this area designated (45) and (46). Tumulus (45) was oval, approximately 5.8 x 4.25m in size, and was covered in brown-quartzite pebbles. Tumulus (46) was a little larger at 8.4 x 8.3m, was covered in the same material but with a large admixture of small black ferruginous sandstones and had a prominent sand-filled depression in its centre (Plate 11.63). A considerable amount of time was expended in attempting to excavate these monuments which it was assumed would cover the shafts of two tombs. Excavations proved to be rather difficult and when the tumuli were finally cleared away and a large area excavated to the subsoil the many robber and grave pits (Figures 11.52 & 11.53) found bore no relation to the prominent tumuli visible on the surface.



Plate 11.63. Grid square (HA2) before excavation – 'tumulus' (46) looking towards the settlement.

Quite what the tumuli represent and how they were formed is unclear. They, and perhaps many of the others meticulously surveyed in 1993, may not represent the position of

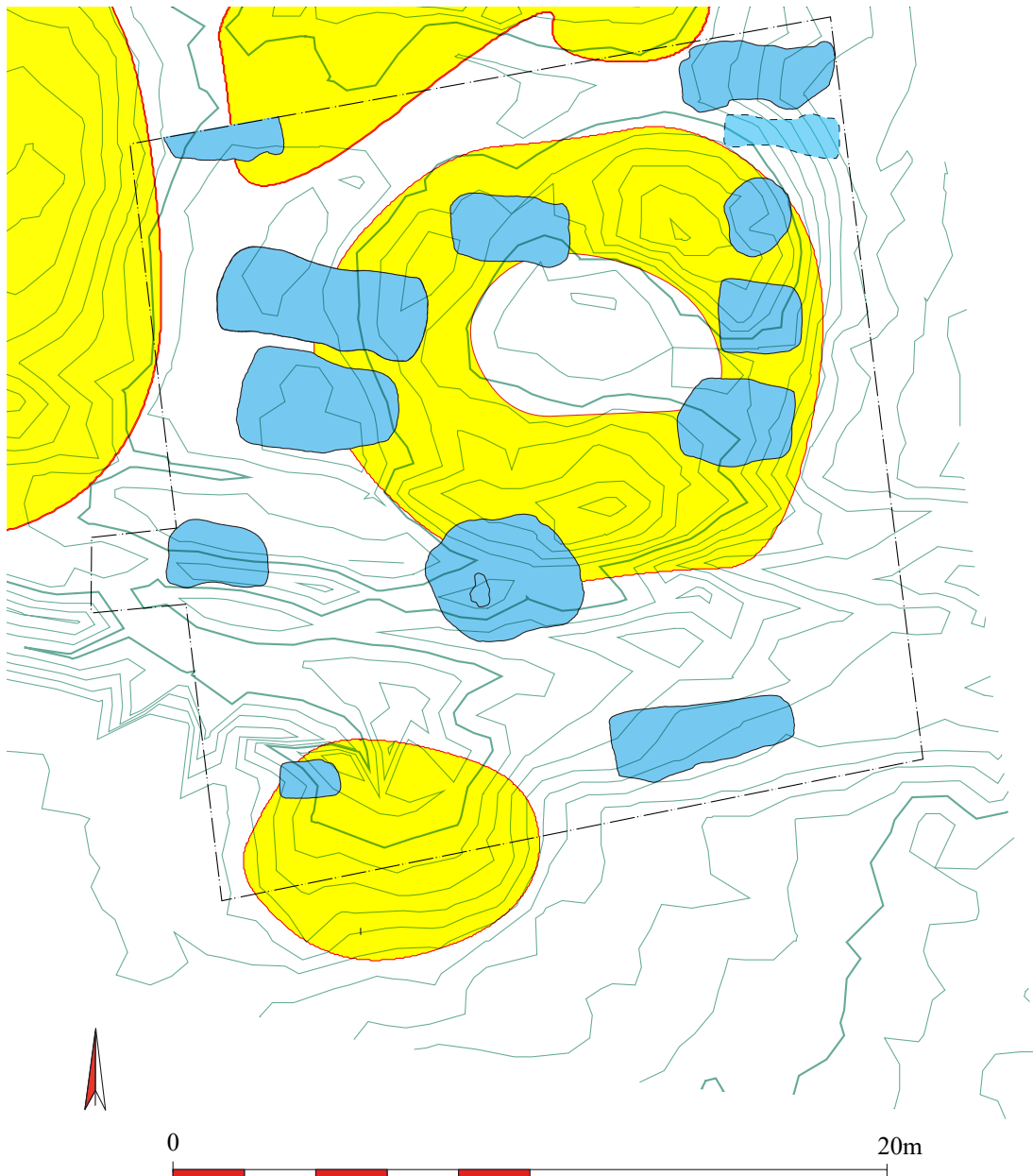


Figure 11.52. Grid square (HA2). Contours, 'tumuli' visible on the surface and robber pits (scale 1:200).

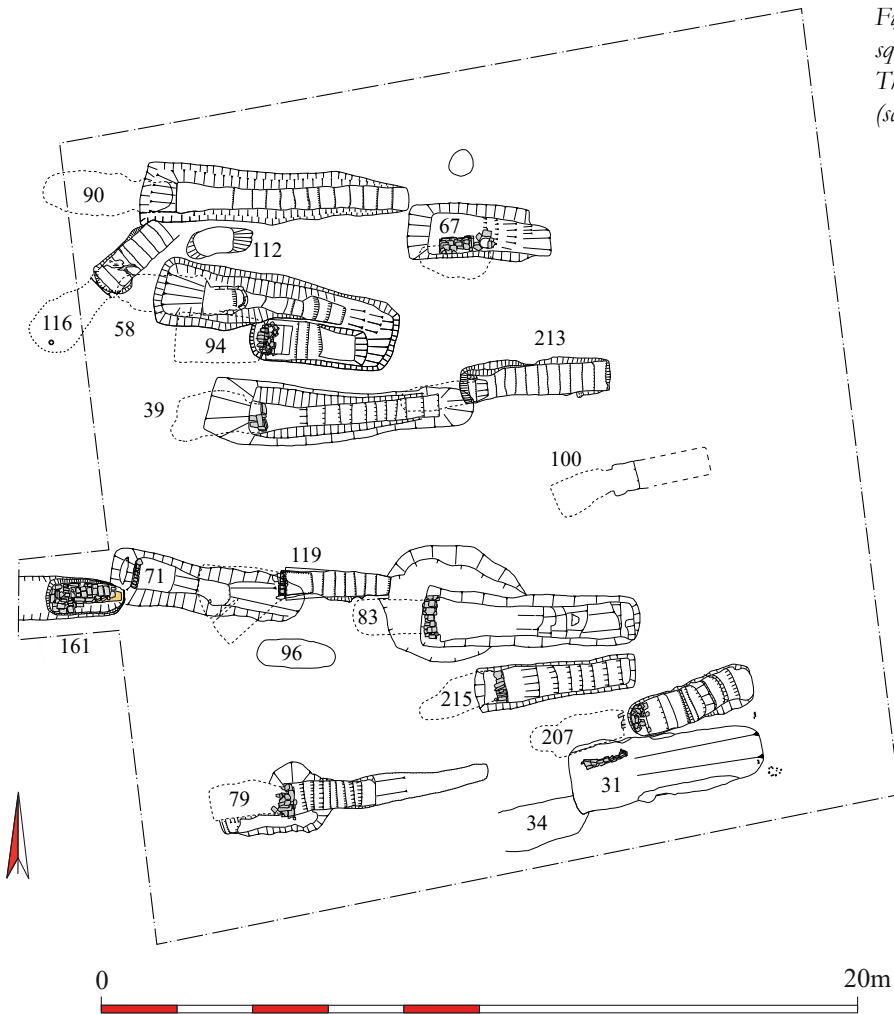


Figure 11.53. Grid square (HA2). The excavated graves (scale 1:200).

graves. In grid square (HA2), which encompassed the two ‘tumuli’, there were 18 grave shafts from which 30 bodies were recovered. Several graves within the excavation area, particularly along the eastern side, were not excavated.

Grave (HA2)20

This grave, extending beyond the eastern limits of excavation was not investigated. At the level of the subsoil [(HA2)28] it was a sub-rectangular cut filled with the usual loose friable alluvium. Cut into the western end was a sub-rectangular robber pit 3 x 2.75m in size, its sides to the north, west and south formed by the edge of the descandary. The cut was visible on the surface prior to excavation and penetrated through a deposit containing pebbles and stones, perhaps the remains of the grave’s tumulus. The fill, only partly excavated, consisted of wind-blown sand with a few sherds of pottery, bone fragments and the stones and pebbles from the tumulus.

Grave (HA2)23

This grave, like grave 20, extends beyond the eastern limits of excavation and was not fully investigated. At the level of the subsoil it was a sub-rectangular cut filled with the usual loose friable alluvium. Cut into the western end was an oval robber pit 1.08 x 0.9m in size with a depth of 1.6m at which point mud-brick debris was found amongst the wind-blown sand fill. Excavation ceased at this point.

Material found in the robber pit

Pottery (see Welsby-Sjöström 2023, 365-367, tab. 7.4)

decorated sherd – 1118y, possibly of *Kerma Ancien* date

Grave (HA2)31 – skeleton 193, Figure 11.54, Plates 11.64-11.67

The sloping descandary is 5.6m in length, 1.81m wide and attains a maximum depth below surface (HA2)28 of 1.12m. Towards its western end it cuts into the descandary of grave 34 while on its northern side it broke through into the chamber of grave 207. It appears that the grave diggers at that point, rather than continuing with the excavation of the burial chamber at the western end of the descandary,



Plate 11.64. Grid square (HA2). Grave 31 – skeleton 193.

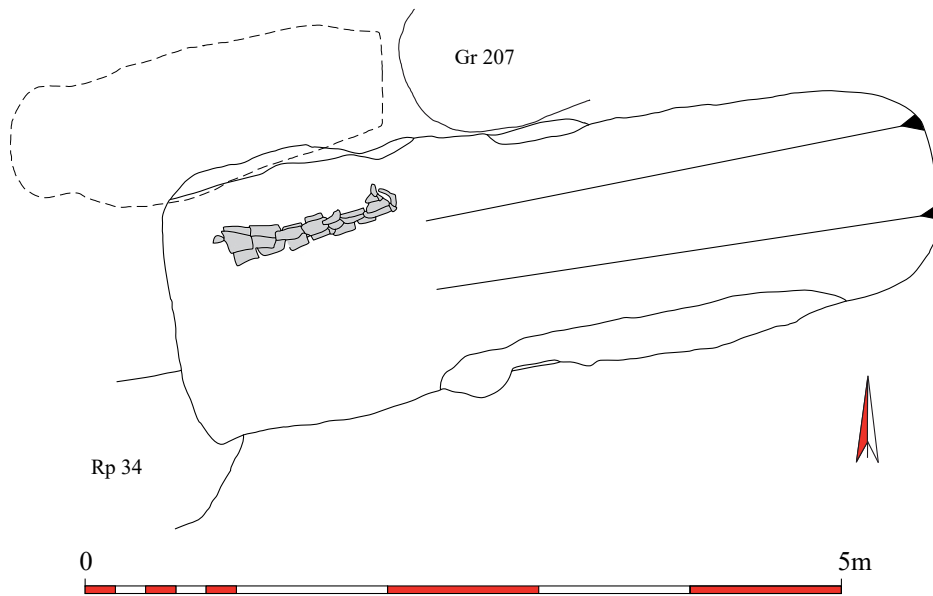
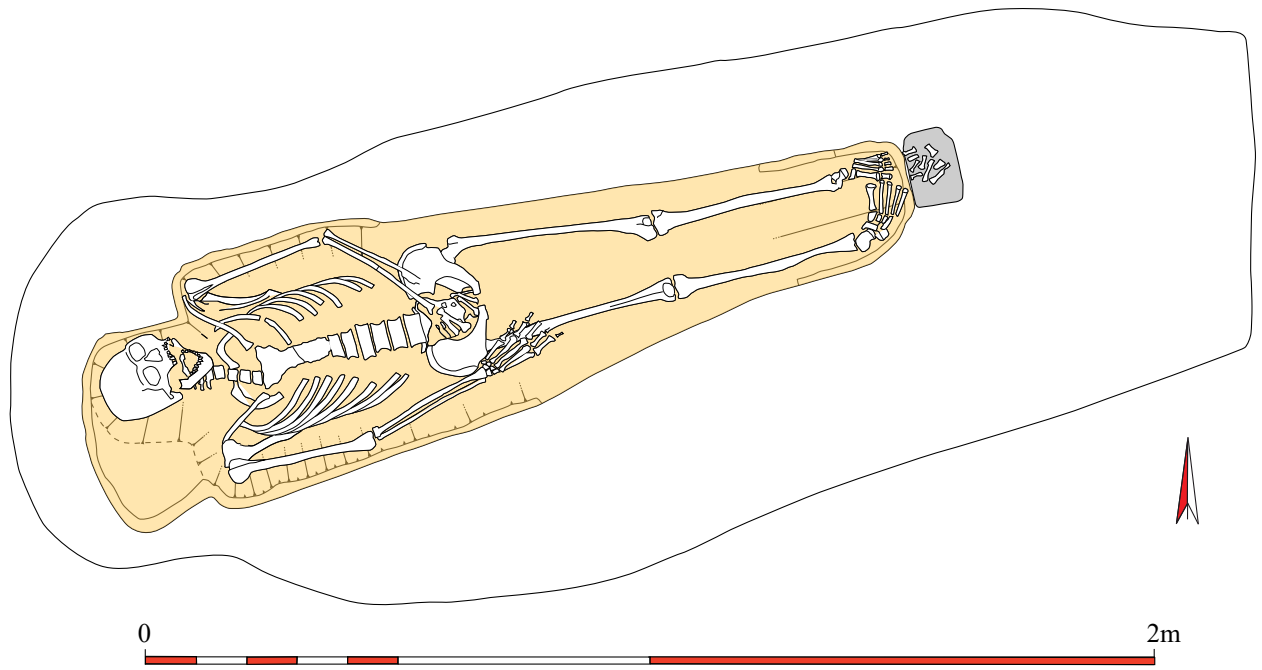


Figure 11.54. Grid square (HA2). Grave 31 – plan of the burial (scale 1:15) and top plan (scale 1:50).



Plate 11.65. Grid square (HA2). Grave 31 – mud bricks presumably from the partly demolished blocking wall lying on skeleton 193.



Plate 11.66. Grid square (HA2). Grave 31 – the descending and opening into the burial chamber of grave 207.



Plate 11.67. Grid square (HA2). Grave 31 – the descandary and mud-brick blocking wall.



Plate 11.68. Grid square (HA2). Grave 39 – skeleton 209.

decided to utilise the chamber of grave 207. By that time the burial in the earlier grave was sealed by up to 400mm of sandy alluvium [(HA2)236], material collapsed from the walls and roof of the chamber along with a few mud-brick fragments near the original blocking wall and additional material entering the chamber from the descandary; this deposit was thickest towards the east. The body of a middle adult male had been placed on this fill, in an extended supine position with the left hand over the pubis and the right alongside the right thigh. The feet rested on a single mud brick. Originally the body had been placed inside a

plaster-coated coffin, traces of which were preserved beneath the skeleton. On excavation a layer of 18 mud-brick fragments (from bricks *c.* 360 x 160 x 120mm in size) was found covering the lower part of the body.

The entrance to what was effectively a side niche was then blocked with a wall [(HA2)22] of mud bricks, none complete (260+ x 180 x 90mm), forming an arc and surviving to a height of four courses. The lower fill of the descandary was a soft sandy deposit, a maximum of 260mm in thickness, which was overlain by lumps of alluvium in a sandy matrix. This deposit was cut at its west end by an irregular robber pit 1.35 x 1.06m in size, which had removed the up-

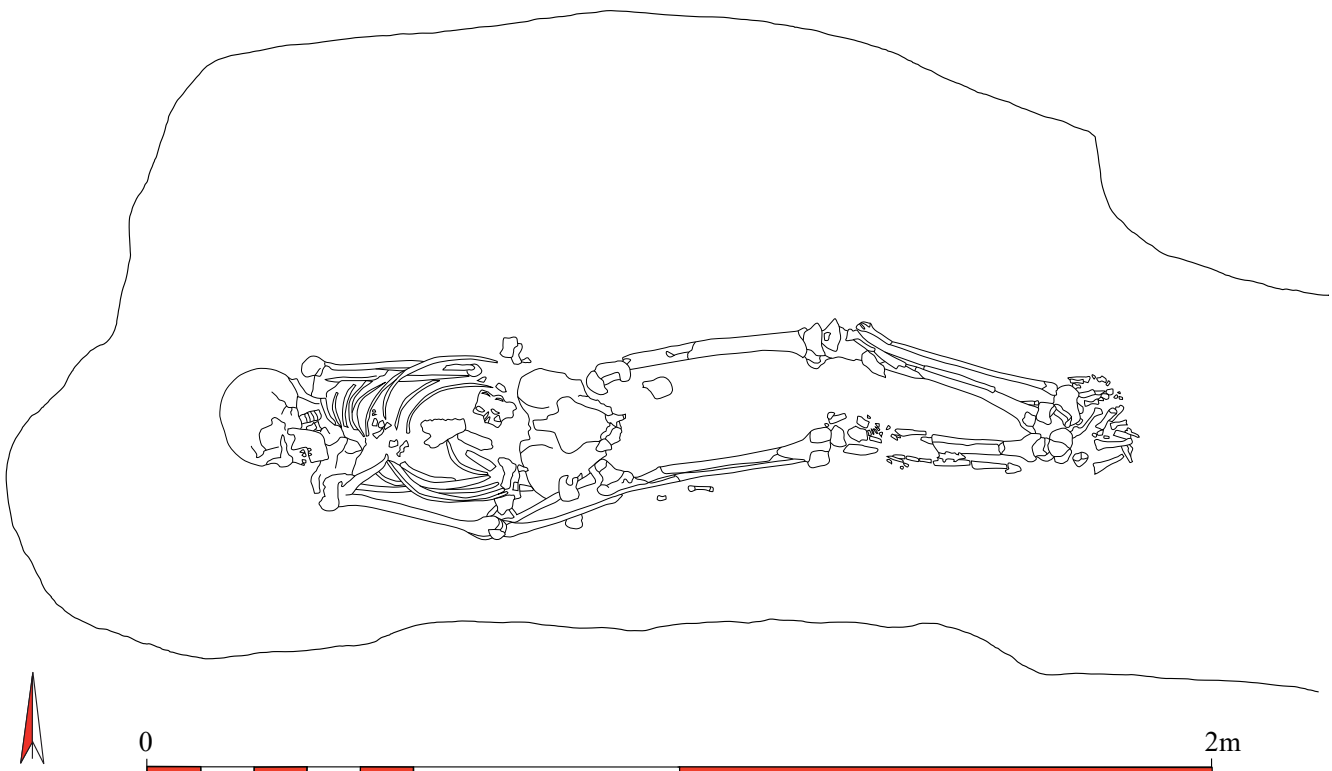


Figure 11.55. Grid square (HA2). Grave 39 – plan of the burial (scale 1:15).

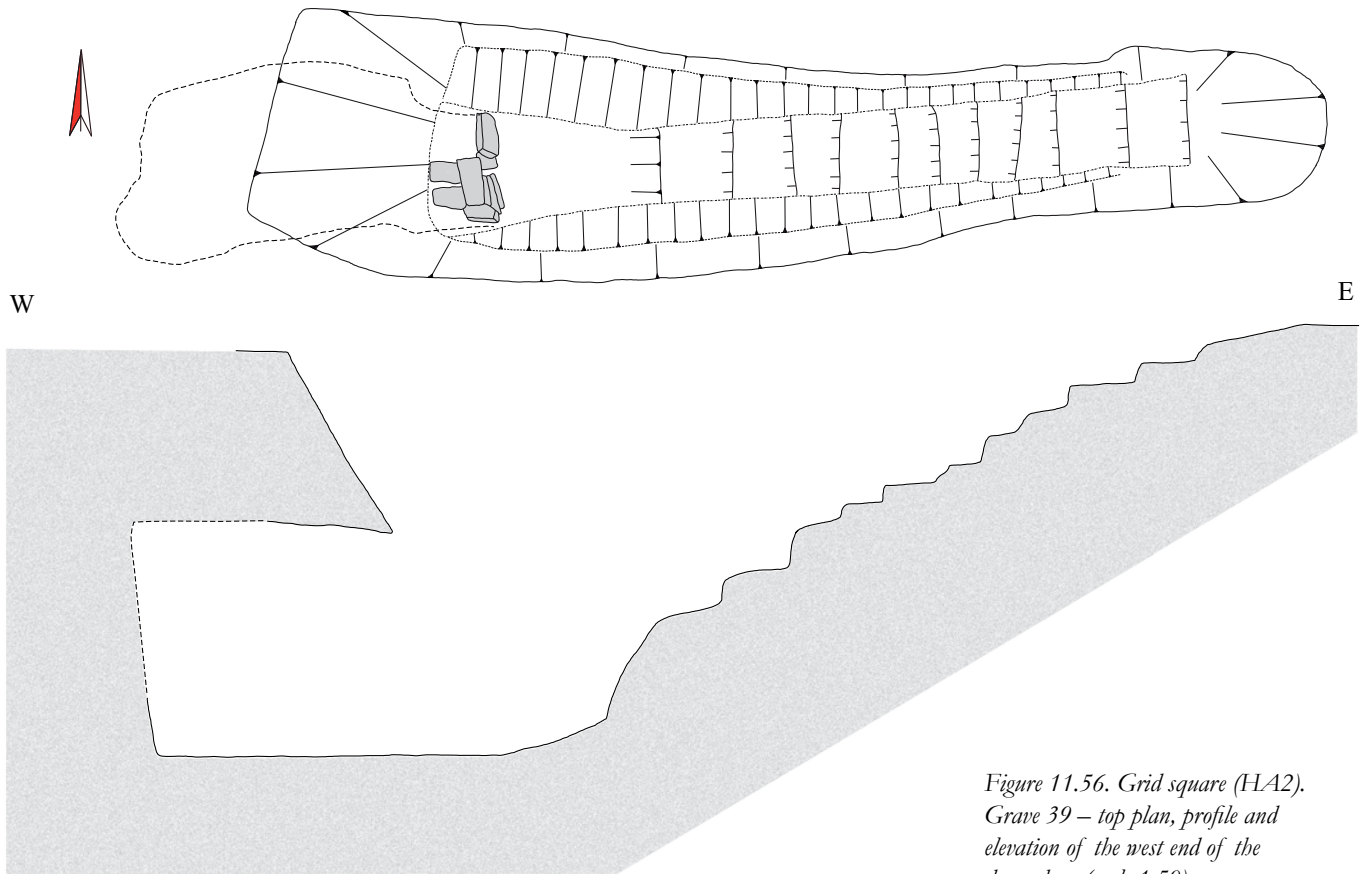


Figure 11.56. Grid square (HA2). Grave 39 – top plan, profile and elevation of the west end of the descendery (scale 1:50).

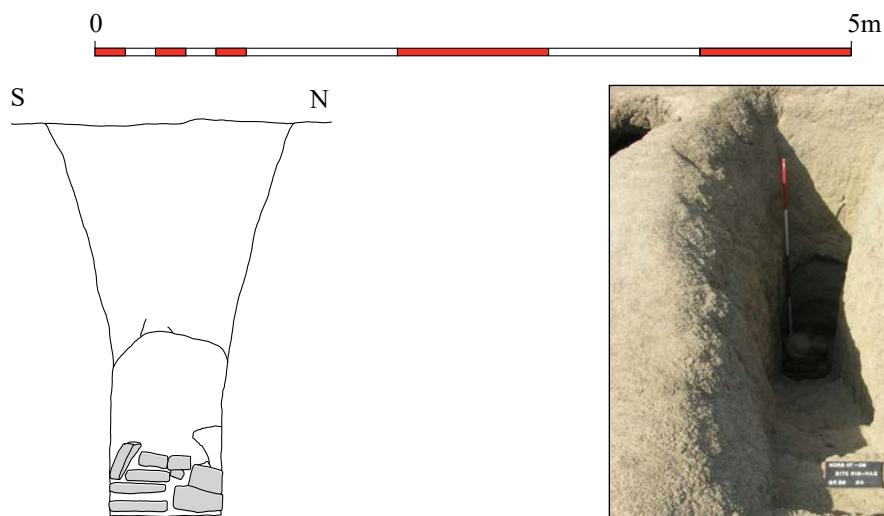


Plate 11.69. Grid square (HA2). Grave 39 – the descendery, looking west.

per part of the blocking wall at a depth of 1m, many of the bricks falling onto the burial. The robbers also disturbed the mud bricks covering part of the body. The robber pit was filled with sand amongst which were some pottery sherds, fragments of bone and one flint.

Pottery possibly associated with the burial
(see Welsby Sjöström 2023, 367, tab. 7.4, fig. 7.6)

beaker – 2689x

cup – 2011x

dish – 2314x

Grave (HA2)39 – skeleton (HA2)209, Figure 11.55 & 11.56, Plates 11.68-11.70

The long narrow descendery had a flight of 10 steps cut out of the alluvium. It was 7.1m long, 1.7m wide at the top of

the cut and descended to a depth of 2.8m below the surface of (HA2)28. An arched-shaped doorway in the nearly vertical west wall of the descendery, 1.2m high and 750mm wide (the full width of the descendery at this point), gave access into the sub-rectangular burial chamber 1.65m in length and approximately 1.5m high. The inhumation, of a



Plate 11.70. Grid square (HA2). Grave 39 – the descender looking north east.

young adult male, was placed in the centre of the chamber in an extended prone position with the head facing south. The left arm was extended alongside the body, the right arm was flexed at the elbow and placed under the torso, the hand flexed at the waist. A stone projectile point was recovered in the region of the left side of the first thoracic vertebra. The body was surrounded by a sandy deposit up to 240mm in thickness sealed by alluvium amongst which, quite high in the deposit, were a few human bones. This material had built up behind the blocking wall built of mud bricks (max. brick size 330 x 150 x 10mm) arranged as stretchers and shiners with one rowlock. It survived to a height of 470mm. At the base of the wall, resting on a thin deposit of alluvium, was mud-brick rubble. The descender was filled with the loose friable alluvium which extended over the blocking

wall into the chamber presumably when it collapsed into the void left by the robber pit. Dug from 120mm above the surface from which the descender was cut, the robber pit utilised, the edges of the descender on its north, south and west sides. It filled with wind-blown sand containing a very small number of pottery sherds and human bone.

Material associated with the burial

Stone

Cat. no. F-2375 – arrowhead, quartzite

Cat. no. ML-370 – grinding base

Pottery possibly associated with the burial

(see Welsby-Sjöström 2023, 367, tab. 7.4)

jar – 3500x

Grave (HA2)55

The descender along its entire length extended to the north of the excavation area and was not fully investigated. At its western end it was cut by a robber pit, again extending out of the excavation area. Adjacent to the hole, and in its uppermost loose sandy fill, was a scatter of mud-brick fragments, presumably from the partly demolished blocking wall closing off the burial chamber. The bricks were between 70mm and 80mm thick, 120-190mm wide and survived to a maximum length of 230mm. A sherd from a Meroitic cup was also recovered in this fill [(HA2)137]. Four fragments of bone were found in the wind-blown sand which had been deposited in the grave cut since it was first investigated in 2002.

Pottery possibly associated with the grave
cup – 3535x

Pottery from the descender fill

bowl – 3153x

Material from the robber pit

Pottery (see Welsby-Sjöström 2023, 367, tab. 7.4)

dish – 3145x with rim decoration 1112y, Neolithic decorated body sherd – 1113y, Neolithic

Stone

Cat. no. L-3 – blade, Egyptian flint

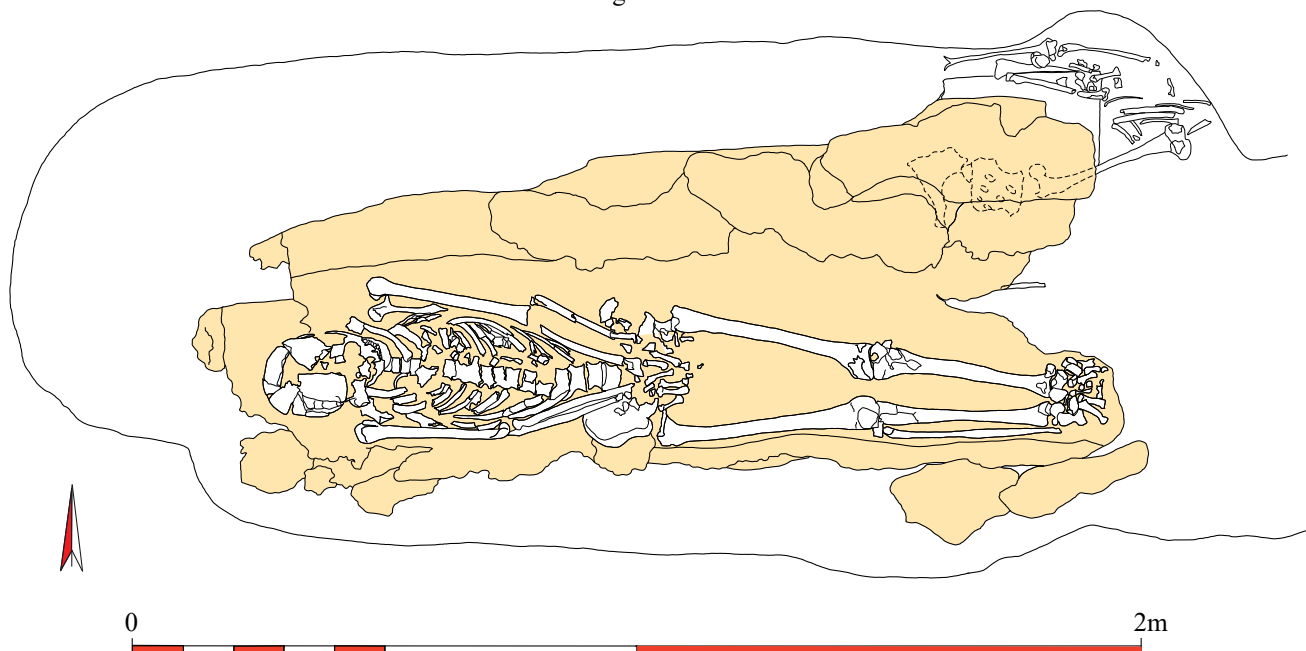


Figure 11.57. Grid square (HA2). Grave 58 – plan of the burial (scale 1:15).

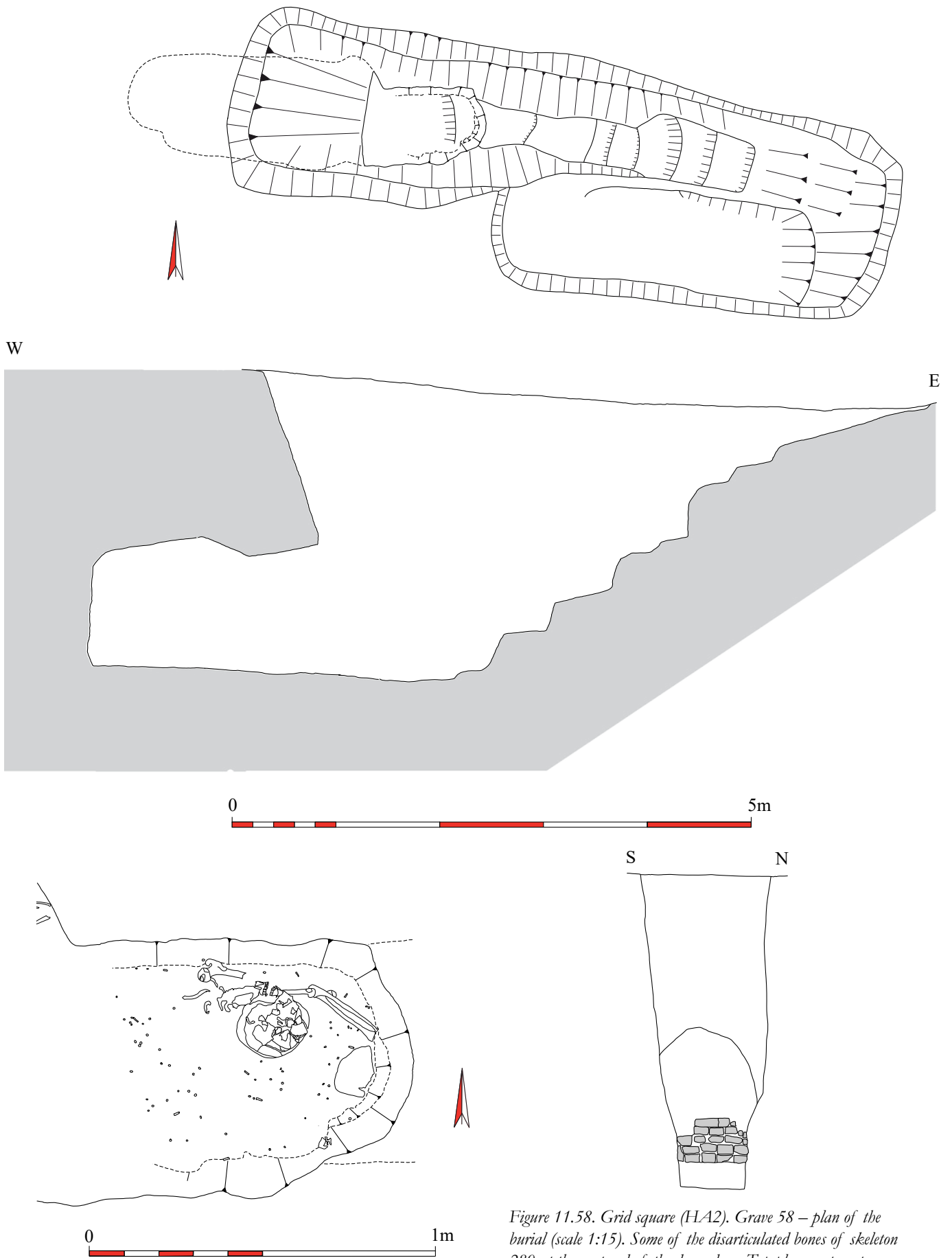


Figure 11.58. Grid square (HA2). Grave 58 – plan of the burial (scale 1:15). Some of the disarticulated bones of skeleton 280 at the west end of the descender. Top plan, east-west profile and elevation of the west end of the descender with the secondary blocking wall (scale 1:50).



Plate 11.71. Grid square (HA2). Grave 58 – the disarticulated bones of skeleton 280 and the extended inhumation, skeleton 142.



Plate 11.72. Grid square (HA2). Grave 58 – some of the bones of skeleton 280 and the blocking wall at the west end of the descender.

Grave (HA2)58 – skeletons, ‘primary’ (HA2)280, secondary (HA2)142, Figures 11.57 & 11.58, Plates 11.71 & 11.72. A substantial descender with a flight of seven poorly-cut steps dug into the alluvium. The steps ranged considerably in size from 530 x 200 x 210mm to 620 x 560 x 330mm and were curved in plan at the edge of the riser. The bottom step had a riser of approximately 830mm. The sides of the descender were also roughly cut. It was 6.45m long, from 640mm at the east end broadening to 1.8m wide at the top. At its west end it was 2.76m deep. Here an arch-shaped doorway led into the oval chamber 2.5m in length, 1.1m wide and approximately 1.3m high. In the north-east corner of the chamber was a pile of disarticulated human bones [(HA2)280], all that remains of an adult of indeterminate age and sex who was presumably the original owner of the tomb. The bones, set within a grey sandy fill 360mm in thickness, extended to the foot of the stairway. They were associated with a scatter of 2,144 cylindrical, spherical and ring beads concentrated in the area of the skull, alongside the arm bones and by the southern edge of the descender. Two pottery sherds were found among the bones.

On this sandy fill rested a plaster-coated coffin, set at a slight angle to the long axis of the chamber, occupied by

a young adult, probably female [(HA2)142] placed in an extended supine position with the arms slightly flexed at the elbows and the hands placed flat on the pubis. The coffin, was 520mm wide externally, with sides 40mm thick, but was destroyed both at the head and foot (max. length preserved 1.62m). It appeared to be rectangular rather than anthropomorphic in shape. Little remained although it was made of a very soft friable granular red material: presumably it was originally of wood but had been totally eaten by termites. What may be part of the lid was found lying on its north side. Associated with this burial was the mud-brick blocking wall which sealed the remains of the primary interment. Built on the sloping surface of the fill it survived to a maximum height of five courses, four of headers and the uppermost of stretchers. Abutting the wall within the chamber was up to 700mm of alluvium. The descender was filled with the loose friable alluvium which contained a few fragments of bone towards its west end, presumably material from the primary burial.

Cutting through this fill and the blocking wall was the sub-rectangular robber pit 5.5m in length and 2.08m wide. It was infilled with wind-blown sand except towards the bottom where there was mud-brick rubble from the blocking wall and human bone [(HA2)75].

Material associated with the burial

Jewellery

- Cat. no. B-1502 – 3 beads, faience
- Cat. no. B-1503 – 4 beads, faience
- Cat. no. B-1504 – 17 beads, faience
- Cat. no. B-1505 – 118 beads, faience
- Cat. no. B-1506 – bead, faience
- Cat. no. B-1507 – 70 beads faience
- Cat. no. B-1508 – 64 beads, faience
- Cat. no. B-1510 – 244 beads, faience
- Cat. no. B-1511 – 221 beads, faience
- Cat. no. B-1512 – 826 beads, faience
- Cat. no. B-1513 – 406 beads, faience
- Cat. no. B-1514 – bead, faience
- Cat. no. B-1515 – 97 beads, faience
- Cat. no. B-1516 – 14 beads, faience
- Cat. no. B-1517 – 44 beads faience
- Cat. no. B-1518 – 15 beads faience

Pottery (see Welsby-Sjöström 2023, 367, tab. 7.4, fig. 7.7) jar – 3501x found by the body but worn edges suggested it was a robber’s spade

Pottery from the robber pit

- bowl – 2635x
- decorated sherd – 1117y, Neolithic
- dish – 2586x

Grave (HA2)62

The descender was visible in the north-east corner of the excavation area extending to the east. It was cut by a trapezoidal robber pit 4.08 x 1.07m in size on the surface. Only the robber-pit fill was removed. There appeared to have been a western chamber but also possibly a niche on the south side of the descender. At this point there was a ledge cut into the earth suggesting that the tomb was of similar type to (HA2)94 and (HA2)119. A few mud-brick fragments were found in the fill towards its west end along with a large potsherd, perhaps used as a spade by the robbers.

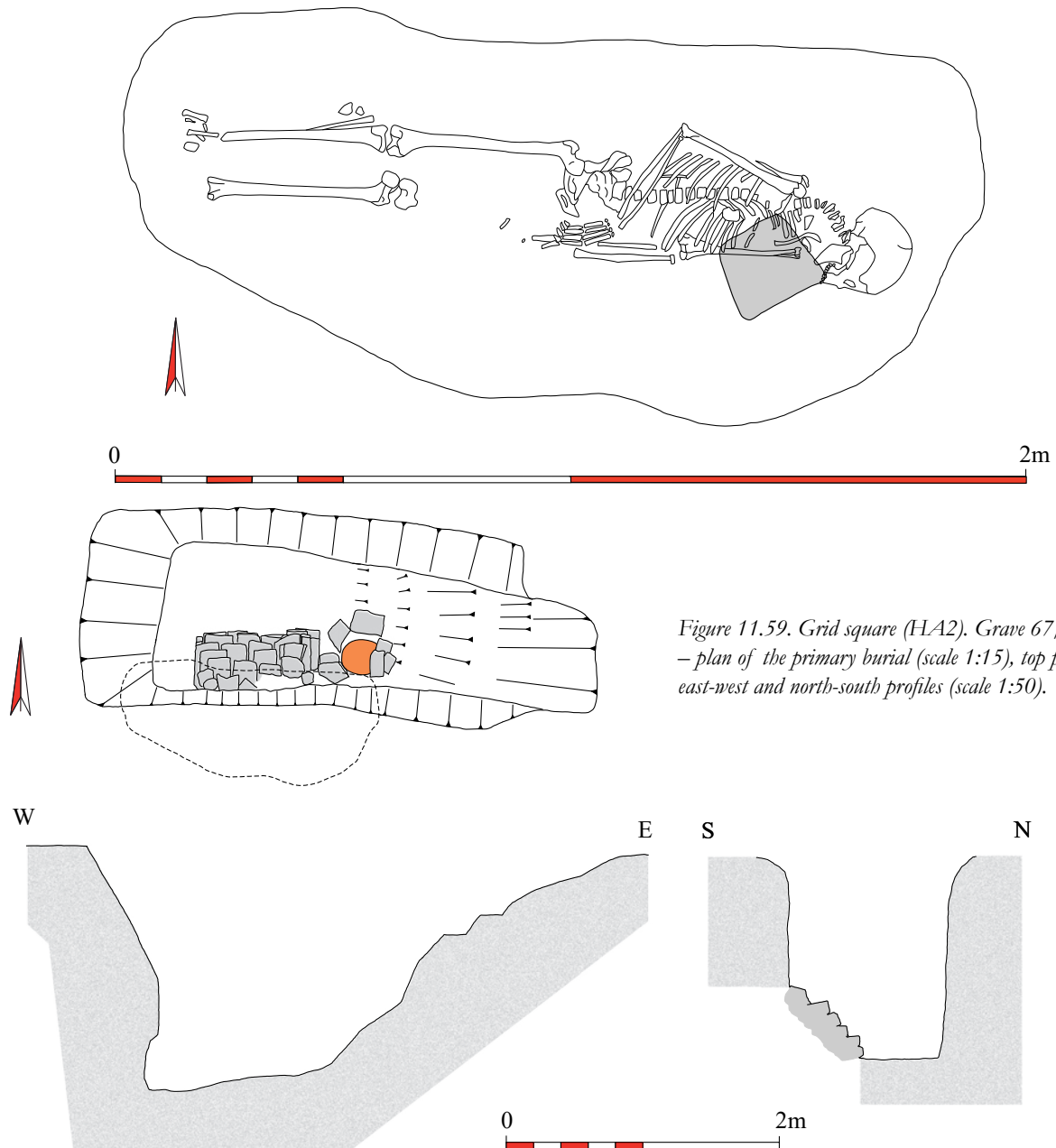


Figure 11.59. Grid square (HA2). Grave 67/229 – plan of the primary burial (scale 1:15), top plan, east-west and north-south profiles (scale 1:50).

Pottery from the robber pit
(see Welsby Sjöström 2023, tab. 7.4, fig. 7.6)
dish – 2682x

Grave (HA2)64

The oval robber pit, 1.55 x 0.89m in size was filled with soft wind-blown sand under a water-deposited crust. The pit fill continued into the grave chamber to the west at a depth of 1.3m below the surface. No further excavation was undertaken.

Material found in the robber pit

Jewellery

Cat. no. B-1519 – bead, faience

Grave (HA2)67/229 – skeletons, primary (HA2)230, secondary (HA2)192, Figure 11.59, Plates 11.73-11.75

This highly unusual grave has a sub-rectangular descender with a very steeply-sloping ramp leading down to the flat bottom measuring 1.4 x 1.19m at a depth of 1.8m. There was no chamber to the west but an oval niche 2 x 0.65m in size was dug on the south side to a little below the descender

floor. The body, of a pubescent individual, was placed in an extended position slightly on its left side with its head to the east looking south. The left arm was extended along



Plate 11.73. Grid square (HA2). Grave 67/229 – skeleton 230.



Plate 11.74. Grid square (HA2). Grave 67/229 – blocking wall, pottery vessel and skeleton 192 in grave 204.



Plate 11.75. Grid square (HA2). Grave 67/229 – the descandary and blocking wall, looking west.

the body, the right arm flexed at the elbow with the hand slightly flexed at the wrist. Resting partly on the left arm and on the rib cage was a mud-brick fragment. The entrance to the side niche was sealed by a mud-brick platform six courses in height, each course of headers slightly stepped back. Towards the eastern end of the structure a large pottery jar (type 3538x) appeared to have been inserted into the structure and was surrounded by bricks, some on edge. Covering the primary burial was a fine-grained deposit 200mm thick sealed by 450mm of alluvium, probably a mixture of material collapsed from the roof of the chamber and material seeping through the interstices of the blocking wall. The descandary was infilled with (HA2)205 which was cut by grave (HA2)204.

Pottery associated with the burial

(see Welsby Sjöström 2023, 367, tab. 7.4, fig. 7.3)

storage jar – 3538x

Pottery possibly associated with the burial

bowl – 2644x



Plate 11.76. Grid square (HA2). Grave 71 – blocking wall and entrance to the burial chamber.



Plate 11.77. Grid square (HA2). Grave 71 – the descandary cutting that of grave (HA2)119, looking east.

Pottery from the descandary fill

bowls – 3518x, 3619x

cup – 3621x

dish – 3620x

storage jar – 3616x

Grave (HA2)71 – Figure 11.60, Plates 11.76 & 11.77

During the excavation of the descandary at the surface it cut a little into the fill of the descandary of grave 119. The ramp of the descandary sloped steeply and a short distance to the west cut through the roof of the burial chamber of grave 119, perhaps presenting an opportunity for robbing out that grave. The descandary beyond this point fell almost vertically to its flat bottom from where an arch-shaped doorway led into

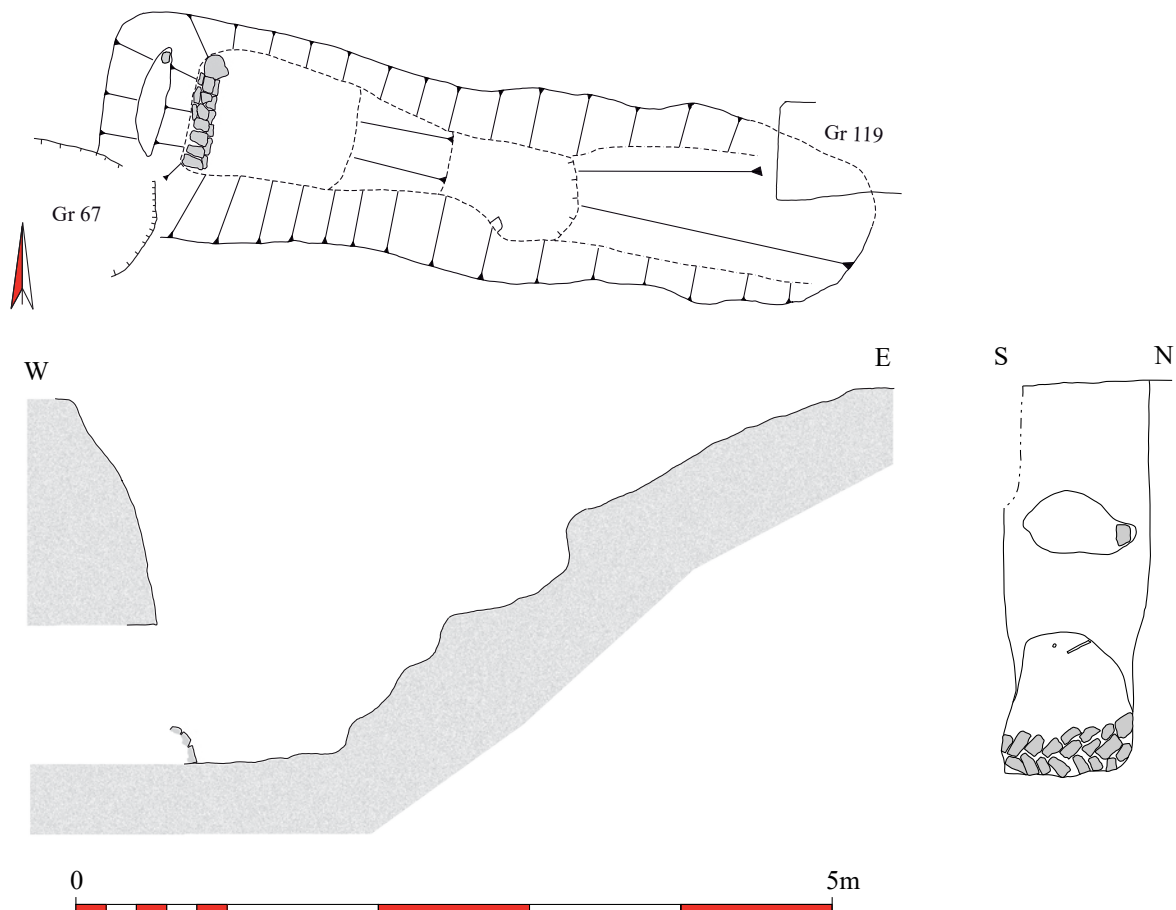


Figure 11.60. Grid square (HA2). Grave 71 – top plan, east-west profile and elevation of the west end of the descandary (scale 1:50).

the burial chamber. This was not excavated. Of the blocking wall, set on a thin layer of alluvium, a maximum of three courses of mud bricks remained to a height of 500mm, built in a herringbone pattern with saw-tooth headers. Within the alluvial fill midway down the descandary were articulated human feet with parts of the fibulae and a microlith came from close by. This was cut by a robber pit 3 x 1.94m in size filled with wind-blown sand. Two long bones lay on the surface of the grave fill, along with some small scattered bone fragments and a pottery sherd. Sand and silt deposits filled the doorway above the denuded blocking wall and one long bone was visible amongst this material. The bones noted above came from two individuals, an adult of indeterminate age and sex [(HA2)278] and a full-term baby [(HA2)279].

The relationship of graves 71 and 161 was unclear. They cut one into another but, in the identical fills, it proved impossible to be certain which grave came first.

Material associated with the burial

Jewellery

Cat. no. B-1520 – bead, faience

Cat. no. B-1521 – 2 beads, faience

Cat. no. B-1522 – 3 beads, ostrich eggshell

Stone

Cat. no. L-90 – microlith, flint

Pottery (see Welsby-Sjöström 2023, 367, tab. 7.4)

open-mouthed jar – 2697xm

Grave (HA2)79 – skeletons, primary (HA2)265, secondary (HA2)232, tertiary (HA2)195 and (HA2)281, Figures 11.61 & 11.62, Plates 11.78 & 11.79

The descandary, approximately 2.35m in length and 780mm wide with a maximum depth of 1.4m, had a steep flight of eight steps with narrow treads cut out of the alluvium. The risers of three of the steps were almost vertical, the other rounded into the treads. It led through a doorway into the rectangular burial chamber 1.7m in length and 900mm wide.



Plate 11.78. Grid square (HA2). Grave 79 – skeleton 232 over the primary burial, skeleton 265.

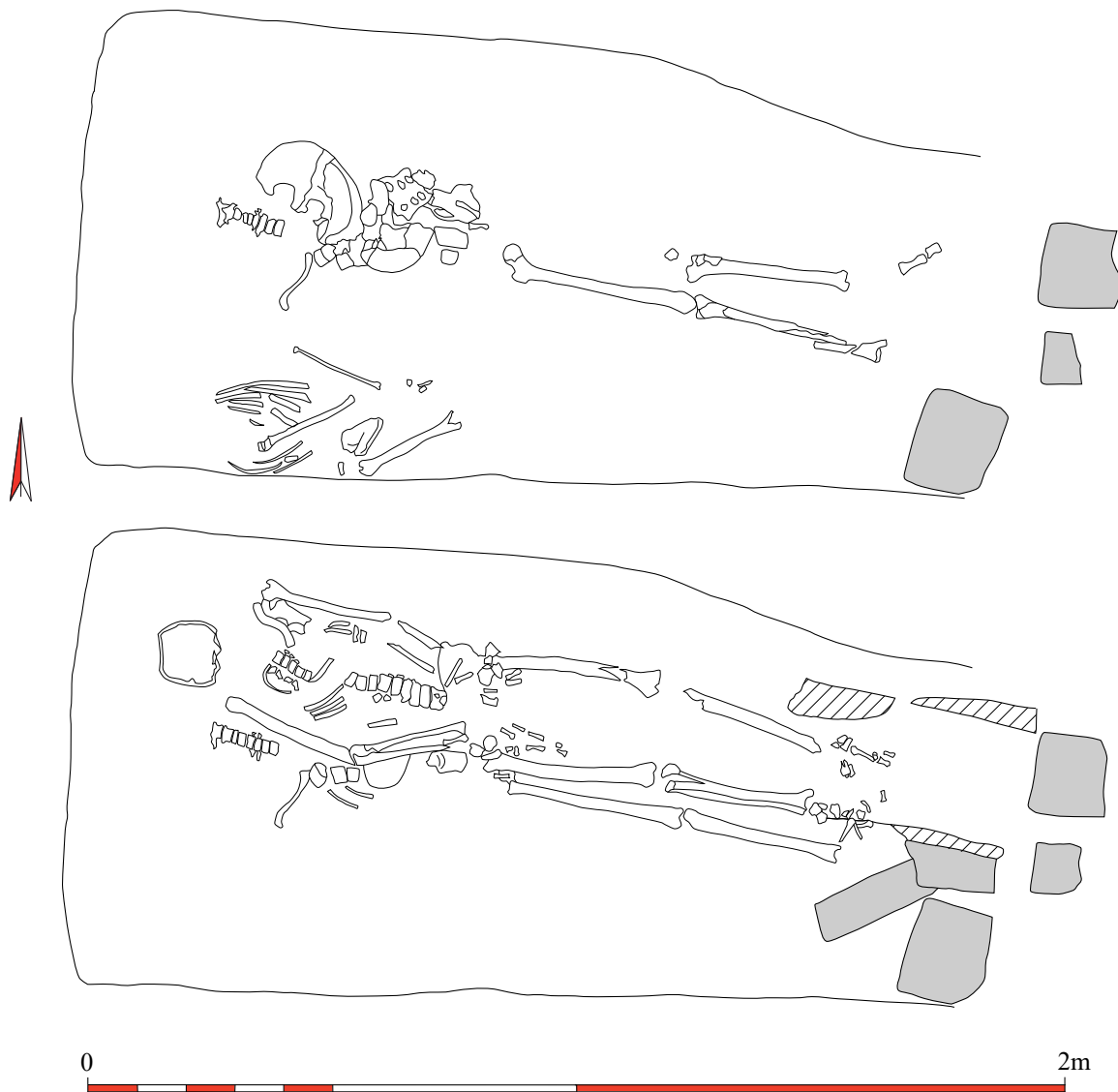


Figure 11.61. Grid square (HA2). Grave 79 – plan of the burials.
 Top the primary burial, skeleton 265; Bottom the secondary burial, skeleton 232 (scale 1:15).



Plate 11.79. Grid square (HA2). Grave 79 – looking north east.

Of the primary burial [(HA2)265] only the legs, pelvis and vertebrae remained in partial articulation and indicated that the body, of a young adult female, was placed in an extended supine position in the centre of the grave. In the south-west corner of the chamber were disarticulated bones, ribs, arm bones and a few vertebrae, from the same skeleton. These were part of the primary burial which was moved to one side on the insertion of the second body. Following the primary burial a blocking wall of mud brick was constructed laid as headers and stretchers, only two courses of which remained. The descandary was then filled with alluvial material [(HA2)223]. This was cut by a secondary grave. Resting partly on the lowermost bricks of the blocking wall and directly over the primary burial were traces of a plastered coffin tapering in width towards the foot where it was 280mm wide. It contained the body of a young adult female laid in an extended supine position with the arms flexed at the elbows and the hands placed flat on the pubis. The blocking wall was rebuilt with fragmentary bricks and one piece of white sandstone placed in a haphazard way on top of the remains of the well-built first-phase wall. The later

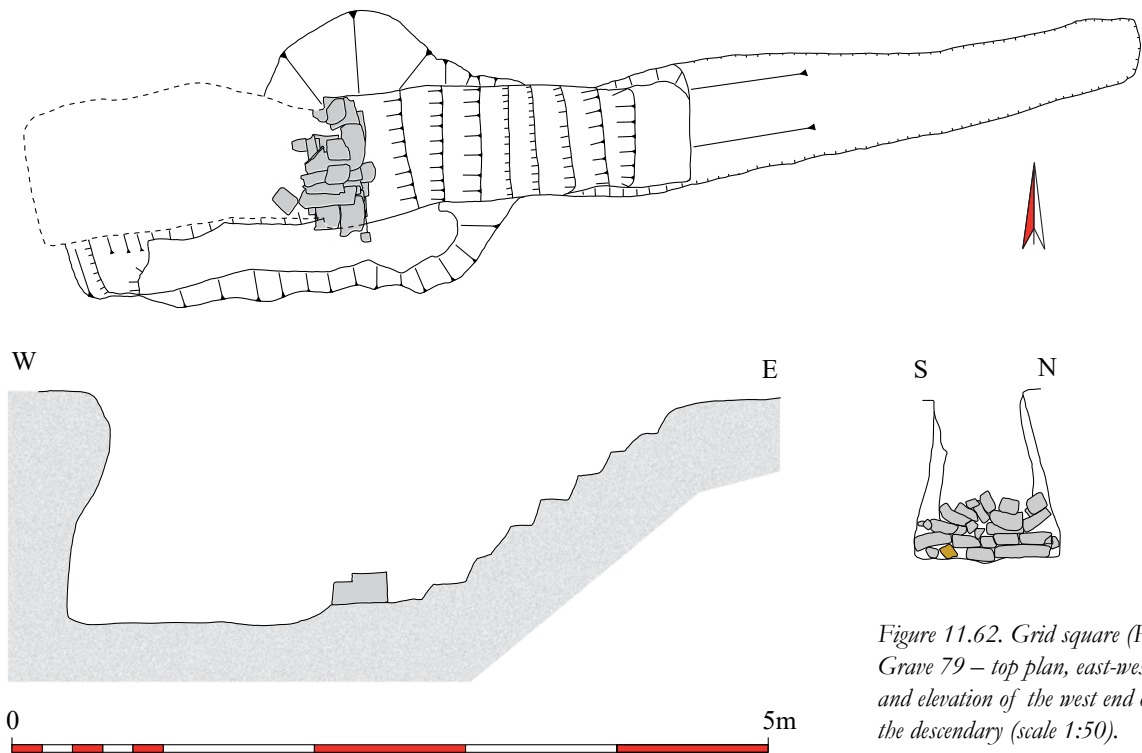


Figure 11.62. Grid square (HA2). Grave 79 – top plan, east-west profile and elevation of the west end of the descendency (scale 1:50).

history of this grave is complex because of the activities of the robbers, the collapse of the vault and the presence of substantial tree roots up to 140mm in diameter. Within the alluvium, presumably the roof of the vault, but also in the wind-blown sand above it (contexts (HA2)80, 188, 197) was mud-brick rubble, tiny blue beads and the bones of both an young adult female [(HA2)195] and a full-term baby[(HA2)281] with parts of some bones weathered, others well preserved. The robber pit was sub-circular, 1.62m in length and approximately 1m wide.

On the north side of the grave was a semi-circular pit while on the south side was a sub-rectangular cut a minimum of 360mm wide and 2m in length – reminiscent of a grave cut like that of grave 94. It is not clear what these were or how they related to grave 79. It is possible that

they post-dated the grave and had been disturbed by the collapse of the vault of grave 79 and the robbing of that grave. Extending for 3m to the east of the first step of the descendency was a shallow vertically-sided depression. It was not clear what function this had – perhaps it marked out a projected, much longer, descendency which was never dug (cf. grave (561)3).

Material associated with the burial

Jewellery

Cat. no. B-1523 – 25 beads, glass

Pottery (see Welsby-Sjöström 2023, 367, tab. 7.4)

bowl – 3085x

dish – 3620x

Pottery possibly associated with the burial

base, footring – 3934x

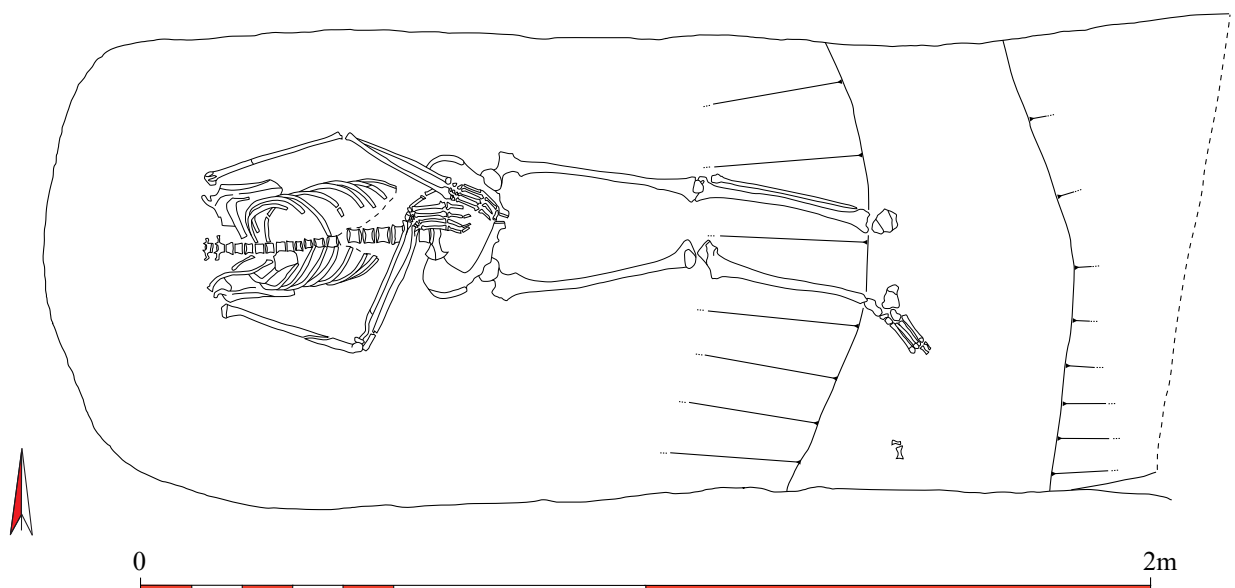


Figure 11.63. Grid square (HA2). Grave 83 – plan of the burial (scale 1:15).

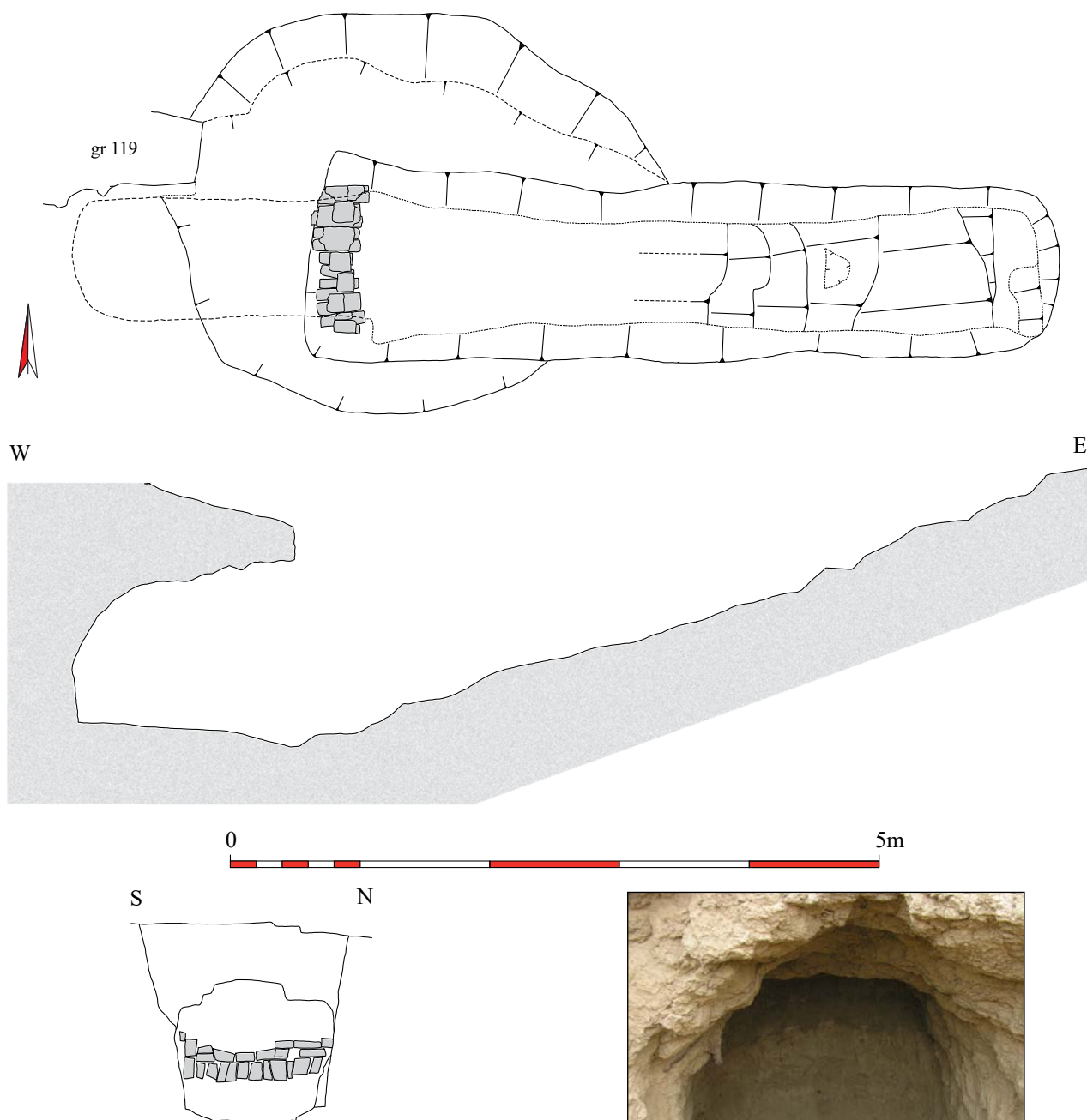


Figure 11.64. Grid square (HA2). Grave 83 – top plan, east-west profile and elevation of the west end of the descandary (scale 1:50).

- beaker – 3862x
- bowls – 2907x, 2910x, 3152x, 3399x, 3420x, 3503x, 3507x, 3509x, 3511x, 3950x, 4218x
- bread cone – 2655x
- jars – 3505x, 3710x

Grave (HA2)83 – skeleton (HA2)198, Figures 11.63 & 11.64, Plates 11.80-11.82

The descandary, 5.78m in length and 1.6m wide, was a ramp sloping down to a depth of 1.9m. It gave access into the ‘vaulted’ burial chamber 1.72m long by 1.2m wide and 1.5m high. Prior to the insertion of the primary burial the front of the ‘vault’ appeared to have collapsed, the resulting material being smoothed out but left *in situ*. The legs and feet of the deceased rested on this 350mm-thick heap of spoil and were thus at a much higher level than the rest of the body. The

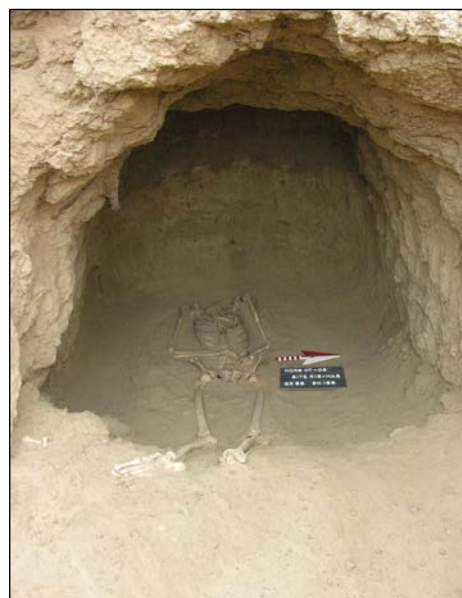


Plate 11.80. Grid square (HA2). Grave 83 – skeleton 198.

body, of a middle adult female, was placed in an extended supine position with the arms flexed at the elbows and the hands placed flat on the pubis. Resting on the fourth left hand metacarpal was a scarab. The blocking wall was constructed over the feet of the deceased. The lowermost course was of rowlocks above which remained two courses of headers. The descandary was infilled with the usual friable alluvium.



Plate 11.81. Grid square (HA2). Grave 83 – skeleton 198 with its skull against the roof of the grave within the silty fill.



Plate 11.82. Grid square (HA2). Grave 83 – the descender and the shallow circular pit on the surface looking east.

This was cut by a massive, but shallow, oval robber pit 4.4 x 3.5m in size and 700mm in depth (cf. grave (JG2)244). On locating the descender the robbers then dug into the bottom of their pit a small oval hole 960 x 560mm with vertical sides giving access into the burial chamber, removing the upper part of the blocking wall and the western ends of the second and third courses of the wall in the process. The robbers penetrated into the chamber and removed the head along with the first three cervical vertebrae. The sequence of events thereafter is unclear. The chamber filled with strata of alluvial and sand deposits to a depth of 1.04m, that is right up to the roof of the chamber. Set within these layers and touching the ‘vault’ was the head with its three

cervical vertebrae as though it had floated into this position. Thereafter the robber pits filled with wind-blown sand with odd sherds of pottery and bone fragments.

Material associated with the burial

Jewellery

Cat. no. B-1524 – bead, faience

Cat. no. Sc-3 – scarab, faience

Pottery possibly associated with the burial
(see Welsby-Sjöström 2023, 367, tab. 7.4)

bowls – 3534x, 3950x

jars – 2310x, 3500x

Grave (HA2)90 – skeletons (HA2)168 and 169, Figures 11.65 & 11.66, Plate 11.83

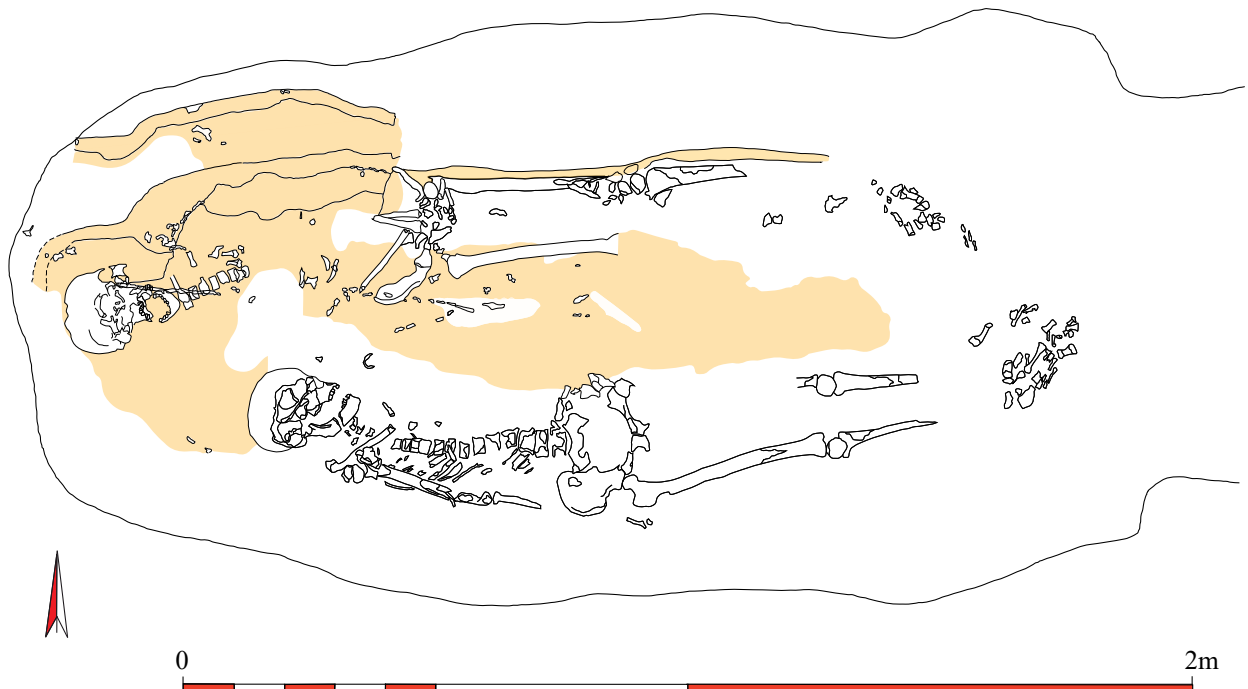


Figure 11.65. Grid square (HA2). Grave 90 – plan of the burial (scale 1:15).

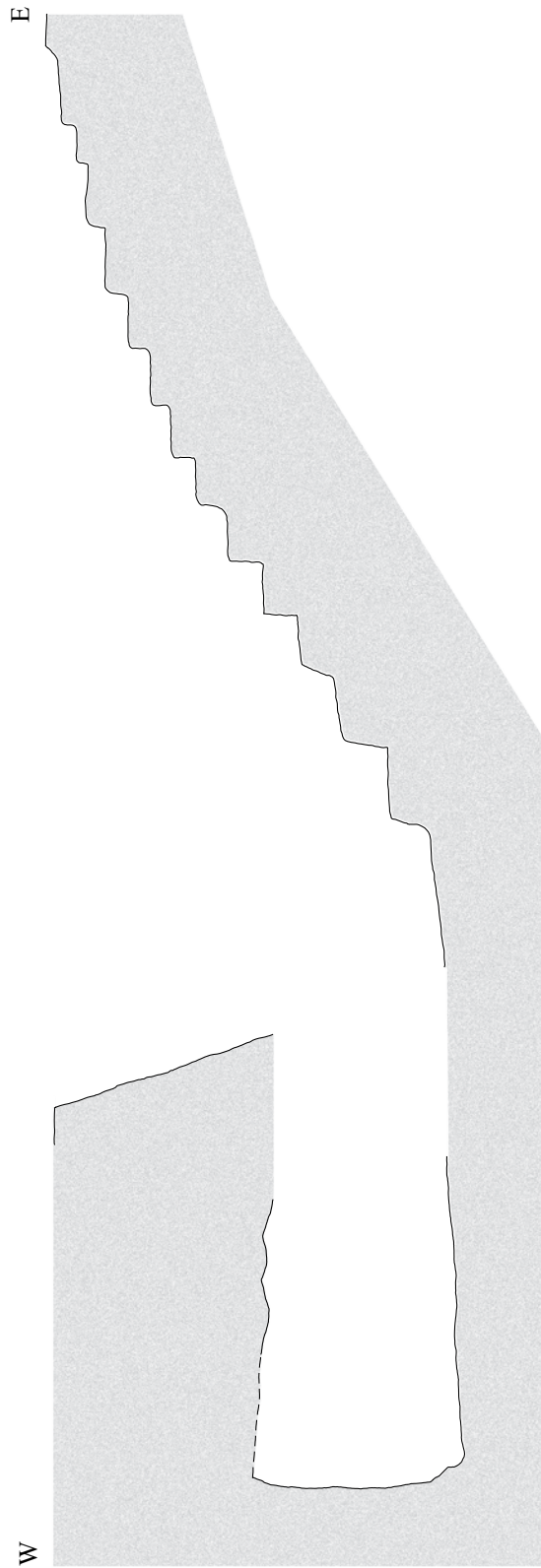
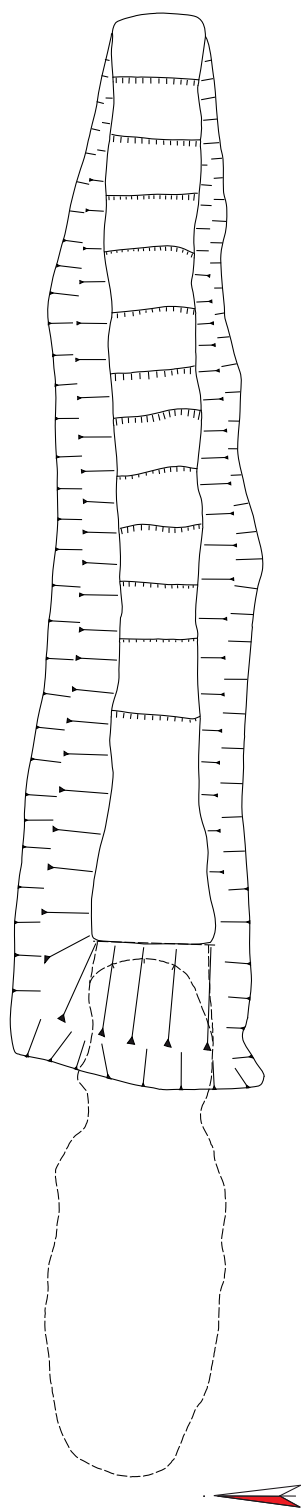


Figure 11.66. Grid square (HA2). Grave 90 – top plan and east-west profile (scale 1:50).



Plate 11.83. Grid square (HA2). Grave 90 – skeleton 168 and 169.

A well-cut descender 7.2m in length, a maximum of 1.8m wide and 2.7m deep. It was dug right through the alluvium onto the surface of the quartzite-pebble layer which overlay the bedrock. The 13 steps were of similar size apart from the lowermost two which were larger. It gave access via an arch-shaped doorway into a rectangular chamber with rounded ends 3.43 x 1.15m which contained two inhumations. The northern was placed in an anthropomorphic plaster-coated coffin very close to the western end of the chamber. The coffin was preserved to a length of 1.69m with a maximum width of 560mm and with sides surviving to a height of 120mm. Of the lid only the part covering the head and torso remained. It had been removed by the robbers and placed immediately adjacent to the coffin on its north side. The body, of a middle adult male [(HA2)169], was in an extended supine position with the arms flexed at the elbows and the hands crossed on the pubis. The other inhumation, probably of a middle adult female [(HA2)168], was not placed in a coffin and was set a little further to the east. As found she was slightly turned towards her left side. The skeleton was in an extended position with the arms alongside the body. The doorway was closed by a wall, which survived to a height of 700mm, constructed of mud bricks set as saw-tooth headers and the descender filled with alluvium. A small oval robber pit, 1.5 x 1.2m in size, with almost vertical sides was dug at the west end of the descender and removed the upper part of the blocking wall to give access into the burial chamber. Subsequently a deposit of fine-grained sand up to 360mm covered the bodies and was sealed by over a metre of alluvium from the descender fill and the collapse of the underside of the ‘vault’. The upper 1.62m of the robber pit filled with wind-blown sand.

Pottery possibly associated with the burial

(see Welsby Sjöström 2023, 367, tab. 7.4, fig. 7.6)

bowl – 3149x

beaker(?) base – 2694x

decorated sherd – 1116y

Grave (HA2)94 – skeletons, primary (HA2)171, 172 and 239, secondary (HA2)164 and 165, tertiary (HA2)154 and 157, Figures 11.67 & 11.68, Plates 11.84-11.91

This grave was located immediately to the south of grave 58. On the surface the descender fills ran one into another



Plate 11.84. Grid square (HA2). Grave 94 – phase 1, primary burials, skeletons 171, 172 and 239, looking east.



Plate 11.85. Grid square (HA2). Grave 94 – phase 1, primary burials, skeletons 171, 172 and 239, looking south.



Plate 11.86. Grid square (HA2). Grave 94 – phase 1, primary burials, painted plaster (cat. no. C-1) from the coffin associated with skeleton 172.

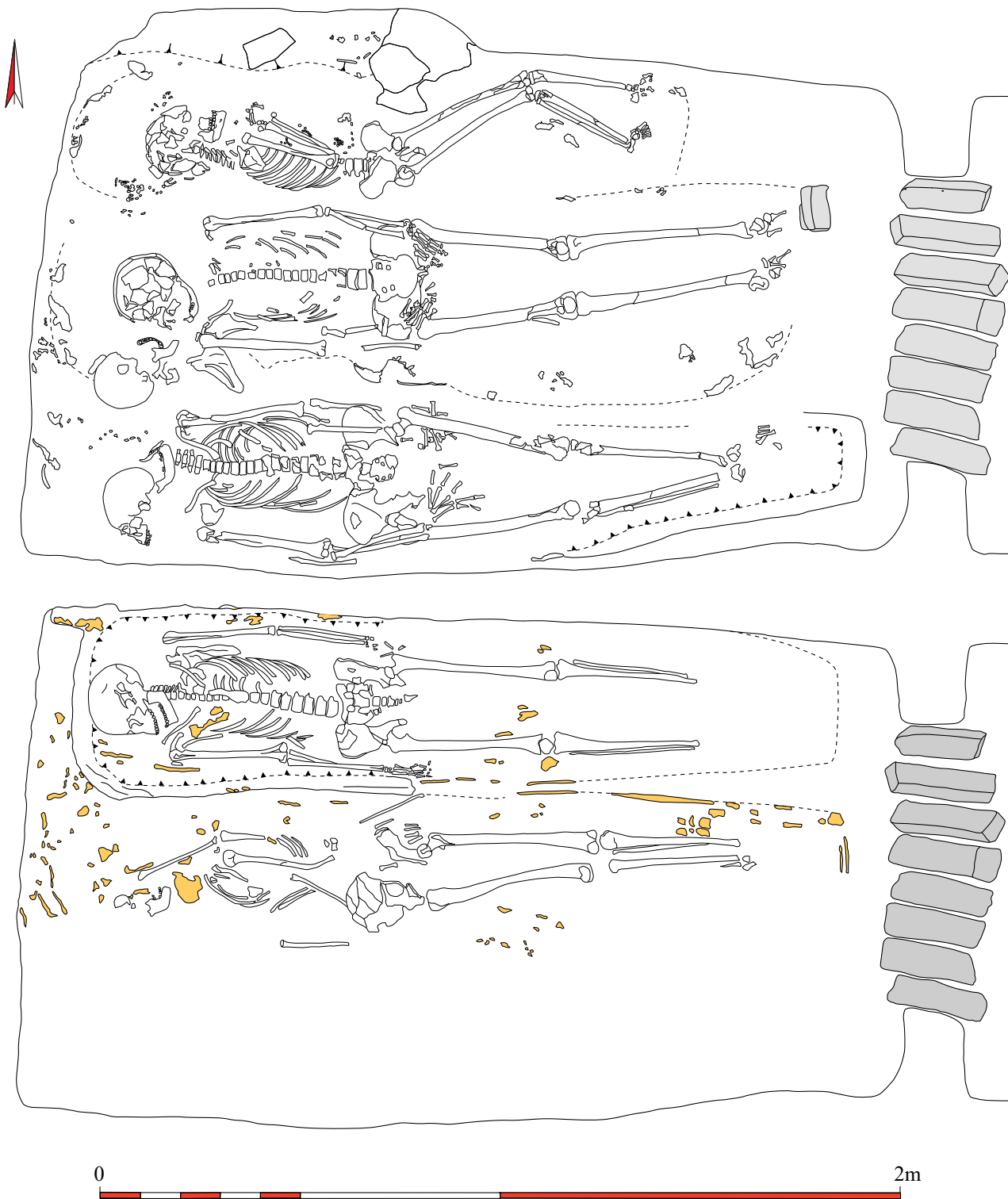


Figure 11.67. Grid square (HA2). Grave 94 – plan of the burials; Top phase 1 skeletons 171, 172 and 239; Bottom phase 2 skeletons 164 and 165 (scale 1:15).

and the first step of the grave (HA2)58 descender extends across the width of the descender of grave (HA2)94 although subsequent steps of both descendries are separated by a narrow tongue of undisturbed alluvium. This evidence suggests that both descendries were dug and filled at the same time. Beyond the first shallow step the descender of grave (HA2)94 dropped vertically for a depth of 740mm to another step and a further step to a landing. From this a flight of three steps led down to a square area at the en-

trance to the burial chamber, surrounded by a platform at the level of, and the same width as, the lowest step. This arrangement can be exactly paralleled in graves (HA2)119 and (HA2)62. Immediately within the arch-shaped doorway with its prominent jambs a shallow step 75mm high led to the burial chamber. There were three primary burials, each within a plaster-coated coffin, which together filled all the floor area of the slightly trapezoidal chamber measuring 2.3m long by 1.31-1.16m wide.

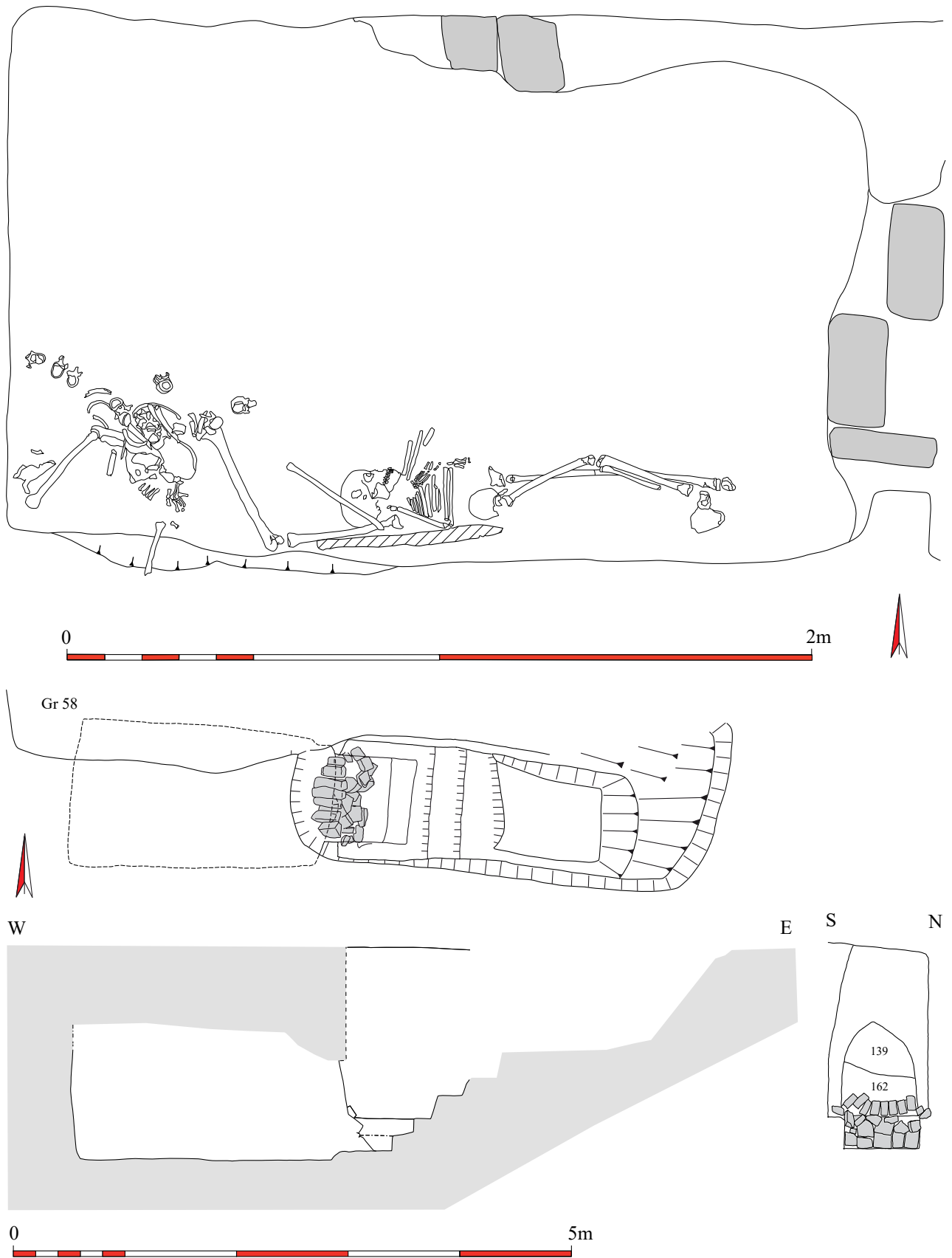


Figure 11.68. Grid square (HA2). Grave 94 – plan of the burials, phase 3 skeletons 154 and 157 (scale 1:15), top plan, east-west profile and elevation of the west end of the descendanty (scale 1:50).

Phase 1

Burial (HA2)171 – The poorly preserved plaster-coated coffin, perhaps of the same shape as that in which burial 172

was interred, retained traces of red and yellow decoration. The deceased, an adult of indeterminate age and sex, was in an extended supine position with the arms extended and



Plate 11.87. Grid square (HA2). Grave 94 – phase 1, skeletons 171, 172 and 239. View into the burial chamber from above with the descender of grave 58 in the foreground.

the hands placed flat beneath the pubis.

Burial (HA2)172 – The plaster-coated coffin, probably anthropomorphic in shape, was poorly preserved apart from a large section towards the feet which retained part of the painted decoration (cat. no. C-1). The body, of a middle adult female, is in a slightly flexed position on its left side with the skull facing down. The arm bones are disarticulated.

Burial (HA2)239 – The rectangular coffin was preserved as a ridge of compacted sand 50mm thick with whitewash on the exterior and measured 1.9m long by 550mm wide. The deceased, an adolescent, was laid in an extended supine position with the arms alongside the body and the hands placed flat on the lateral sides of the femurs. Covering the body was the crushed remains of the coffin lid, preserved



Plate 11.88. Grid square (HA2). Grave 94 – phase 2, skeletons 164 and 165, with skeletons 171 and 172 beneath.



Plate 11.89. Grid square (HA2). Grave 94 – phase 2, layer of mud bricks (HA2)163 over skeletons 164 and 165.

over the upper part of the skeleton.

The bodies and remains of the coffins were sealed by a sand deposit up to 360mm thick towards the door blocking. Resting on this material and to the west directly on the earlier skeletons were two further inhumations.

Phase 2

Burial (HA2)164 – The poorly-preserved coffin was anthropomorphic in shape and retained traces of yellow and black painted decoration by the skull and black and red along the body. The deceased, a middle adult probable female, was placed in an extended supine position with the arms extended alongside the body but slightly flexed at the elbows with the hands resting on the pubis.

Burial (HA2)165 – This skeleton, of a pubescent individual, was placed on its left side with the head facing north. The arms were flexed with the hands close to the face and the legs were slightly flexed at the knees. It wore a bracelet of blue beads on the right lower arm and there were many blue and white ring beads in front of the sternum. No coffin was noted although it sat directly over, and had partly collapsed into, that of the primary burial, skeleton 239. A pottery sherd was recovered from immediately north of the chest of this individual.

The lower parts of both burials were covered by a layer of



Plate 11.90. Grid square (HA2). Grave 94 – phase 3, skeletons 154 against the south wall of the chamber.



Plate 11.91. Grid square (HA2). Grave 94 – the west end of the descandary with remains of the blocking walls.

mud bricks {(HA2)163}, those over the coffin of (HA2)164 placed regularly across the body. It was sealed by alluvium [(HA2)146]. In the former layer were two further burials.

Phase 3

Burial (HA2)154 – The body of an older child was placed in an extended position on its right side with the right leg slightly flexed. The right arm was flexed at the elbow, the hand flexed at the wrist. The left arm was also flexed at the elbow and placed on the rib cage with the hand flexed at the wrist and placed flat on the rib cage. Only a few bones of the feet were preserved. The body had been placed on the surface sloping down markedly from the blocking wall towards the west.

Burial (HA2)157 – This body, of an adolescent, had been much disturbed. It had been placed on its right side in a semi-flexed position although whether it was *in situ* is uncertain. The right arm and leg bones were articulated. Some bones were displaced resting on the skull of (HA2)154, other parts of the skeleton may be those [(HA2)151,150] found in amongst the alluvial material collapsed from the inside of the burial chamber's 'vault' which was presumably disturbed by the robbers.

Pottery sherds, two beads (one cylindrical of orange faience, the other of ostrich egg-shell), two shells and part of what may have been a sandstone grinder, may have originally been associated with one or both of these burials.

Only the lowermost course of the primary blocking wall survived, carefully constructed of rowlocks against which, on the outside, were bricks set on their ends (sailors) laid back against the wall. Above this a narrow deposit of alluvium covered the denuded wall and was itself sealed by a course of bricks again set as rowlocks. The upper part had been removed during the insertion of later burials, presumably (HA2)153, and was sealed by the fine sand fill [(HA2)162] extending just inside the blocking wall where it overlay the lower part of skeleton (HA2)154. The upper part

of the doorway, presumably after the insertion of skeleton (HA2)157, was blocked by three small stones surmounted by a sandstone slab extending the full width of the doorway and packed around on the outside by mud-brick fragments and small stones. Within the chamber the void was filled by the collapsed roof.

Material associated with the burials with skeleton 154

Jewellery

Cat. no. B-1528 – bead, faience

with skeleton 165

Jewellery

Cat. no. B-1527 – 26 beads, faience

Cat. no. B-1530 – 53 beads, faience

Cat. no. B-1531 – bead, faience

Not found associated with a particular skeleton

Jewellery

Cat. no. B-1532 – 4 beads, sandstone?

Cat. no. B-1529 – bead, faience

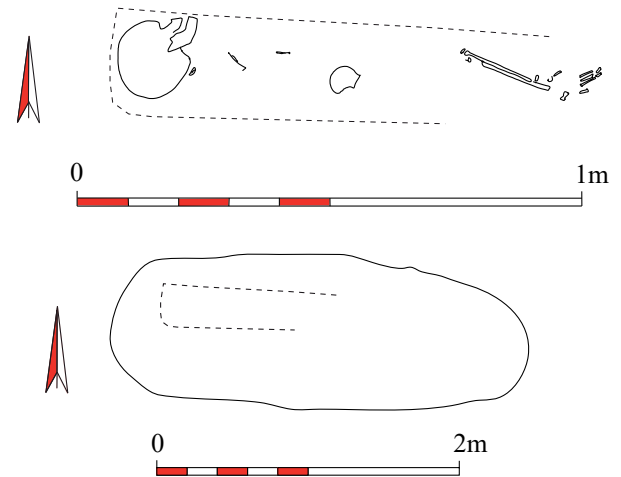


Figure 11.69. Grid square (HA2). Grave 96 – plan of the burial (scale 1:15) and top plan (scale 1:50).



Plate 11.92. Grid square (HA2). Grave 96 – skeleton 102.

Cat. no. B-1525 – 2 beads, ceramic

Cat. no. B-1526 – 2 beads ceramic

Stone

Cat. no. F-2408– vessel, alabaster

Pottery

beaker or cup rims – 2045x, 2492x

cooking pot – 4375x

jar – 3148x,

bowl – 3613x with basket impression 200y

Stone

grinder? – not described or registered

Grave (HA2)96 – skeleton (HA2)102, Figure 11.69, Plate 11.92

The oval grave pit was cut with vertical sides. Along the north side of the grave there was an additional cut increasing the grave's depth. Within this was placed the body of a young child in an extended position on its left side facing north. The left upper arm was under the body, the forearm visible posteriorly. The right arm was slightly flexed at the elbow with the hand in front of the femur. Around the left wrist was a faience bead bracelet. A tubular blue faience bead was at the right wrist and a globular bead was anterior to the neck. Set in the alluvial grave fill were three mud bricks, 350 x 150 x 80mm in size, covering the lower part of the grave slot with a fourth brick, 320 x 160 x 90mm, immediately beneath them. The grave had not been robbed.



Plate 11.93. Grid square (HA2). Grave 100 – skeleton 155.

Material associated with the burial

Jewellery

beads, faience, not described or registered

Cat. no. F-2343 – bead, cowrie shell



Figure 11.70. Grid square (HA2). Grave 100 – plan of the burial (scale 1:15) and east-west section (scale 1:50).

Grave (HA2)100 – skeleton (HA2)155, Figure 11.70, Plate 11.93

The rectangular descandary 3.74m in length by 780mm wide had a flight of six steps and attained a maximum depth of 1.19m. From here an arch-shaped doorway with prominent jambs gave access into the sub-trapezoidal chamber 1.58 x 0.94-0.7m in size. Resting directly on the floor of the chamber and extending through the doorway into the descandary was the anthropomorphic coffin 1.77m in length by 470-250mm in width. Poorly preserved traces of yellow, red and black painted decoration remain on the exterior (cat. no. C-2). The deceased, an adult of indeterminate age and sex, was laid in an slightly flexed position on its right side with the head facing south. The right arm was flexed at the elbow with the hand on the pubes, the left was alongside the body with the hand under the femur. The legs were flexed a little at the knees. The blocking wall was constructed of mud bricks and was built over the foot of the plaster-coated coffin. The bricks, which included many fragmentary examples, were not arranged in courses and formed a very rough blocking surviving to a height of 680mm. Within the chamber overlying the coffin was a deposit up to 300mm thick of silt.

The bulk of the descandary fill was removed by the robber pit. The robber pit was 3.74m in length but only 680mm wide and dug to a maximum depth of 1.19m where it penetrated into the chamber through a hole. It was filled with sand and some mud-brick rubble and pebbles.

Material associated with the burial?

Pottery

Only seven body sherds, from a wheel-made jar and handmade bowls, one possibly Kerma, or Meroitic, but no decoration.

Grave (HA2)112 – skeleton (HA2)129, Figure 11.71, Plates 11.94 & 11.95

The ovoid grave, 1.9m in length by 610mm wide, was cut vertically to a depth of 830mm and a very shallow chamber (end niche) hollowed out at the west end. The inhumation, of an infant, was laid on its back with the legs slightly flexed to the north. The arms were beside the body, both slightly flexed at the elbow. The skull was twisted to face south. A cat amulet was found at the neck. Four mud bricks (300 x 140 x 90mm) were set at an angle partly closing off the niche, other from the upper part had collapsed before the grave was backfilled. The grave was filled with loose alluvium containing a few sherds of pottery. It had not been robbed.

Material associated with the burial

Jewellery

Cat. no. F-2358 – amulet, faience

Grave (HA2)116 – Figure 11.72, Plate 11.96

The orientation of this descandary sets it apart from all the others found in grid square (HA2). It is aligned north east to south west with the burial chamber to the south west. Measuring 2.16m in length and 980mm wide it cuts through the south side of the descandary of grave (HA2)90. The flight of seven steps descend steeply. The sub-rectangular chamber, entered via an arch-shaped doorway is 2.4m long, 1.3m wide and 1.2m high, contained no trace of a burial but there was a single small pottery cup set upright on the

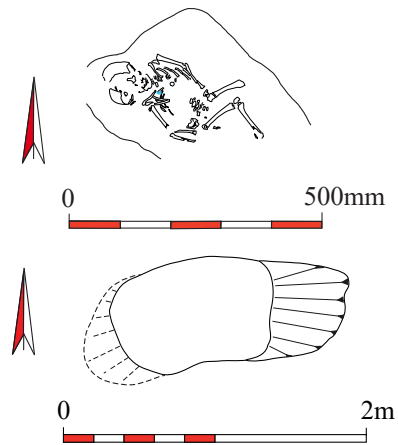


Figure 11.71. Grid square (HA2). Grave 112 – plan of the burial (scale 1:15) and top plan (scale 1:50).



Plate 11.94. Grid square (HA2). Grave 112 – skeleton 129.



Plate 11.95. Grid square (HA2). Grave 112 – mud bricks.

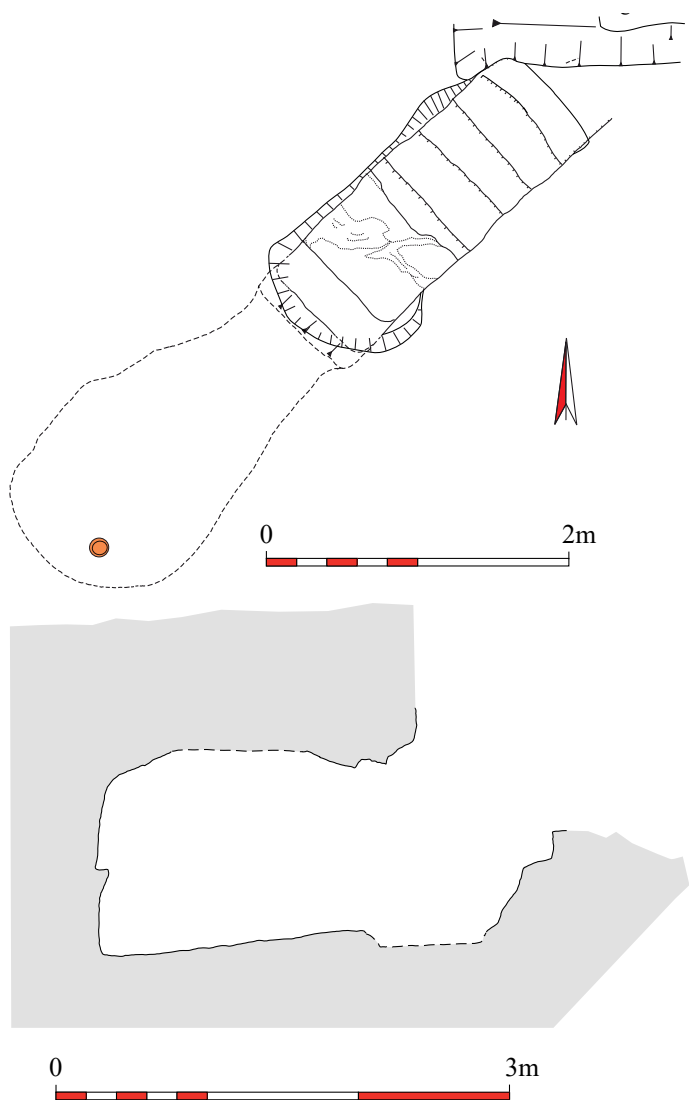


Figure 11.72. Grid square (HA2). Grave 116 – top plan and north east - south west profile of the burial chamber (scale 1:50).



Plate 11.96. Grid square (HA2). Grave 116 – view of the descender from the burial chamber.

floor. The chamber had been sealed by a mud-brick blocking wall, the lowermost course perhaps originally of headers surmounted by a second course of rowlocks. The largest of the brick fragments measured 230+ x 130 x 60mm in size. Following the entrance of the robbers into the chamber it filled with distinct strata of fine water-deposited alluvium, sand and collapse from the chamber's roof.

The oval pit [(HA2)105], 1.34 x 1.3m in size, may be a robber's hole, a failed attempt to rob either grave (HA2)58 or 116. It was only dug to a depth of 560mm. It was filled with wind-blown sand.

At some point the lower steps of the descender subsided into the chamber of grave (HA2)58 which extended partly under the descender.

Pottery associated with the burial

(see Welsby-Sjöström 2023, 367, tab. 7.4, fig. 7.3) offering cup – 2317x

Pottery possibly associated with the burial base – 3615x

Grave (HA2)119 – Figure 11.73, Plates 11.97-11.99

The descender, 3.18m long by 740-590mm wide at the level of the steps, was removed at its east end by the robber pit (HA2)86 and cut into in its south-west corner by the descender of grave (HA2)71. The flight of eight steps led down to a slightly trapezoidal area at the entrance to the burial chamber at a depth of 1.62m, surrounded by a platform at the level of, and the same width as, the lowest step (cf. graves (HA2)94 and (HA2)62). A further step in the arch-shaped doorway gave access into the well-cut chamber of unusual plan (2.32 x 1.41-0.7m, height c. 1.4m), the walls of which preserved clear tool marks. A thin tongue of alluvium partly separated this chamber from another contemporary chamber on its south side which was set at an angle of approximately 42° from the main chamber. No trace of any burial was found in these chambers although the blocking wall



Plate 11.97. Grid square (HA2). Grave 119 – the west end of the descender and the entrance to the burial chamber.

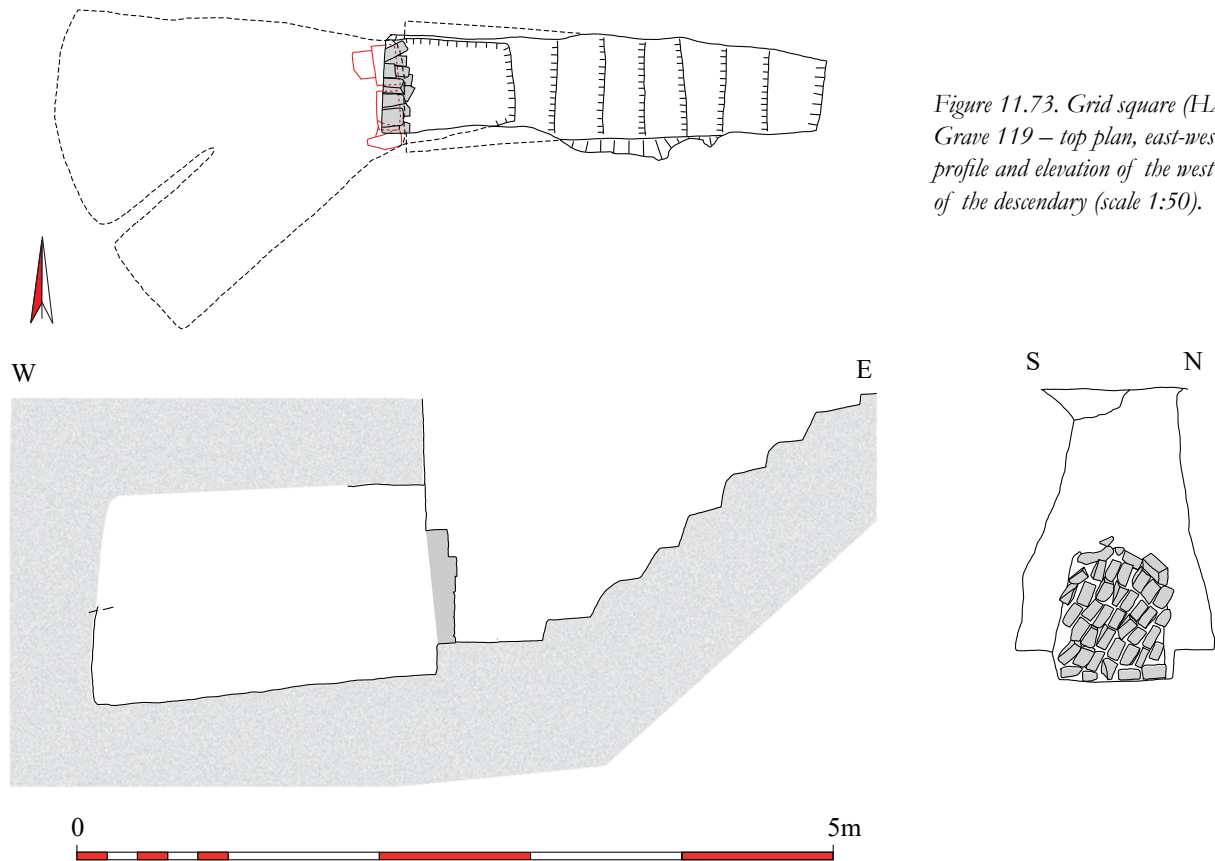


Figure 11.73. Grid square (HA2). Grave 119 – top plan, east-west profile and elevation of the west end of the descenderary (scale 1:50).



Plate 11.98. Grid square (HA2). Grave 119 – the descenderary from within the burial chamber.



Plate 11.99. Grid square (HA2). Grave 119 – the undisturbed mud-brick blocking wall and the step around the base of the descenderary.

remained intact. However, the roof of the main chamber had been cut through during the construction of the descenderary of grave (HA2)71 so it is possible that the people digging that grave may have robbed grave (HA2)119 although this could not be demonstrated stratigraphically. The lowest two courses of the blocking wall were built within the doorway up against the step down into the chamber, the upper part, constructed of closely-fitted saw-tooth headers but not in regular courses, extended well to the east of the door jambs.

The bricks, 300 x 140 x 80mm in size, filled the whole of the doorway attaining a height of 940mm on its eastern side. The descenderary was infilled with alluvium.

On excavation the chamber was filled with layers of alluvium and then a thick deposit of sand. The alluvium presumably is part of the collapsed roof and it was sealed by the sand which must have entered the chamber through the gaping hole part way down the descenderary of grave (HA2)71, which would appear to have already been totally filled with horizontal strata of silt. If the people digging (HA2)71 did rob grave 119 they would have had to dig through the material collapsed from the roof of the burial chamber to reach the body(ies) and grave goods. However no trace of any bone or other material which can be associ-

ated with burials in grave (HA2)119 was found in the fills suggesting that the grave had never been used even though it had been carefully sealed. Grave 282 cut into the fill of the descandary.

Material associated with the burial

Jewellery

Cat. no. B-1534 – bead, ostrich eggshell?

Cat. no. F-2344 – bead? cowrie shell

Pottery (see Welsby-Sjöström 2023, 367, tab. 7.4, fig. 7.6)

Pottery possibly associated with the burial

beaker base – 3150x

bowl – 2292x

Grave (HA2)161 – skeleton (HA2)247, Figures 11.74 & 11.75, Plates 11.100 & 11.101

The rectangular grave pit is 2.85m in length, 1.2m wide at the surface narrowing towards the bottom on the south

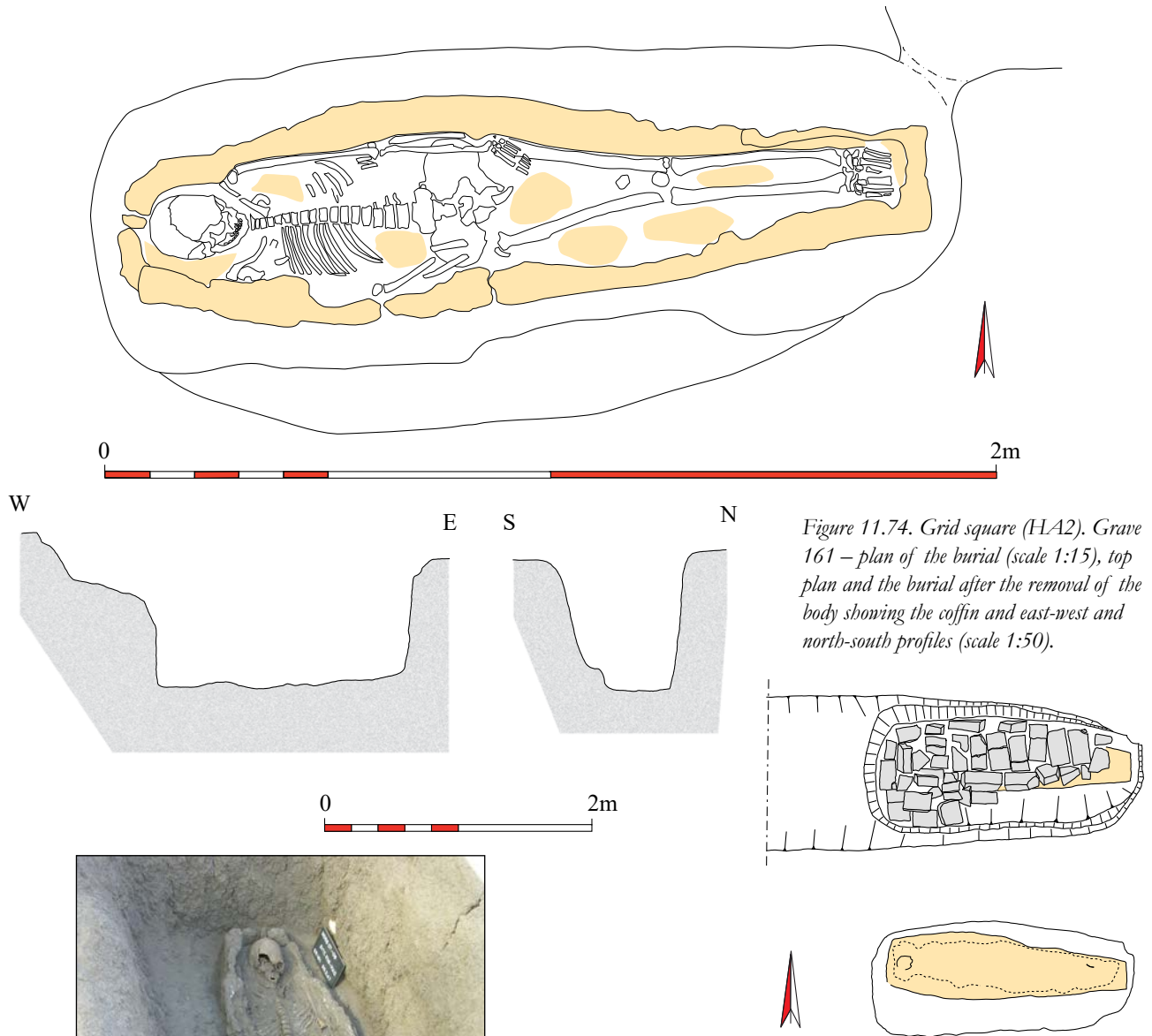


Figure 11.74. Grid square (HA2). Grave 161 – plan of the burial (scale 1:15), top plan and the burial after the removal of the body showing the coffin and east-west and north-south profiles (scale 1:50).



Plate 11.100. Grid square (HA2). Grave 161 – skeleton 247.

side to 800mm at the level of the burial and 970mm deep. It was cut by or cut the descandary of grave (HA2)71. The burial was placed on the floor of the pit in an anthropomorphic plaster-coated coffin retaining traces of red, blue, yellow and black paint. The deceased, an adolescent, was laid in an extended supine position with the arms flexed at the elbows and resting on the pubis. Two rectangular decorated faience plaques, one with a single longitudinal hole through it, the other with three, were found by the left wrist. The coffin was covered by a layer of mud bricks. A central row of bricks were set across the coffin with bricks and fragments on edge alongside (complete brick 300 x 150 x 80mm). Towards the west end these were covered



Plate 11.101. Grid square (HA2). Grave 161 – mud bricks covering the burial.

by a randomly-arranged pile of bricks. The grave was filled with a sandy silt which extended to the west of the grave cut in a pit 1.16m wide and 360mm deep up to the edge of excavation (length 800+mm).

Material associated with the burial

Jewellery

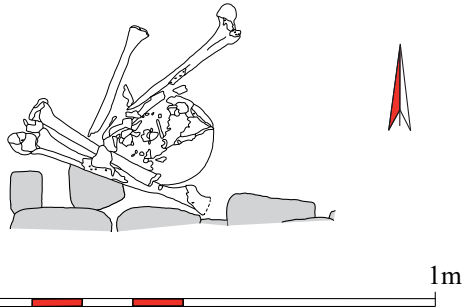


Figure 11.75. Grid square (HA2). Grave 204 – plan of some of the disarticulated bones (scale 1:15).



Plate 11.102. Grid square (HA2). Grave 204, skeleton 192 and the blocking wall of grave 67/229.

Cat. no. F-342 – amulet, faience
 Cat. no. F-341 – amulet, faience
Pottery possibly associated with the burial
 (see Welsby Sjöström 2023, tab. 7.4)
 beaker – 2955x

Grave (HA2)204 – skeleton (HA2)192, Figure 11.75, Plate 11.102

Cutting the fill [(HA2)205] of the descandary for grave (HA2)67/229 was a grave pit [(HA2)204] 3.4m long by 1.2m wide and 1m deep. On the bottom of this pit was a pile of nine mud bricks in the north-west corner, the one complete example measuring 350 x 150 x 80mm. Adjacent to these were disarticulated bones, including a skull, of a middle adult female. The fill [(HA2)68] of this pit was later cut by a robber pit filled with soft wind-blown sand, the interface between its fill and that of the secondary grave being a distinct layer of pebbles and black-ferruginous sandstones. From within this fill at a depth of 750mm a left tibia, patella and foot of a sub-adult were recovered. There was also some intrusive material from a possible foetus/perinate and some other skeletal material from a child.

Pottery from the robber pit

(see Welsby Sjöström 2023, 367, tab. 7.4)

amphora base – 2561x

bowls – 2039x, 2045x, 2345x, 3154x, 3156x

jars – 3155x, 3157x

Grave (HA2)207 – skeleton (HA2)237, Figure 11.76, Plates 11.103 & 11.104

The descandary, 3.1m in length, 1m wide and dug to a depth of 1.7m, has a flight of eight steps. It gives access via an arch-shaped doorway into the oval burial chamber 2.5m long, 1m wide and 1m high. The burial, an adult probably male of indeterminate age, was placed in an extended supine position, the arms extended with the hands on the pubis. The skull, rib cage and some of the bones of the arms were



Plate 11.103. Grid square (HA2). Grave 207 – the west end of the descandary with the blocking wall. On the primary descandary fill is a deposit of pottery and date stones.

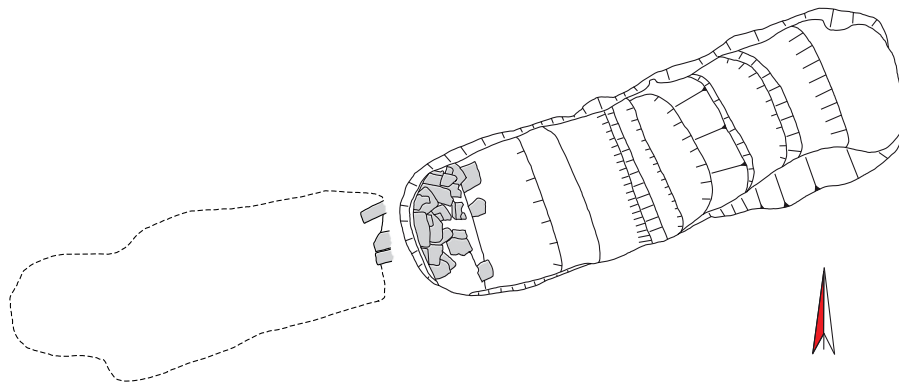
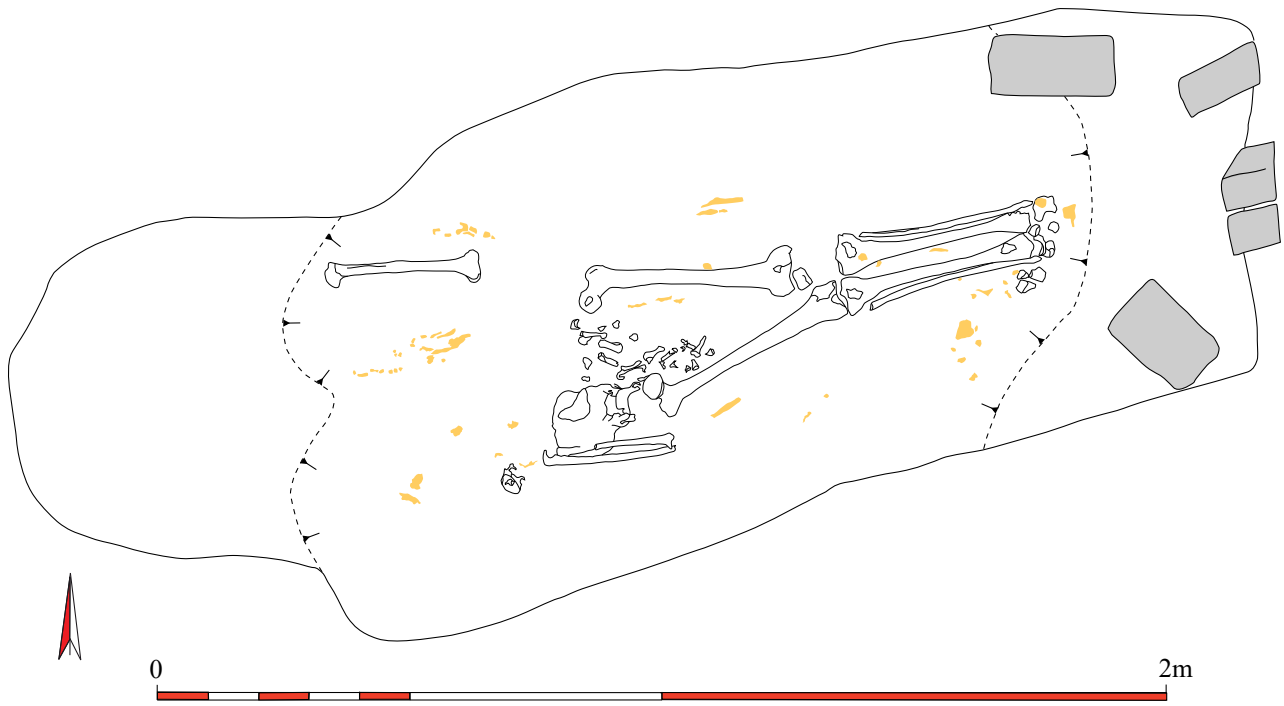
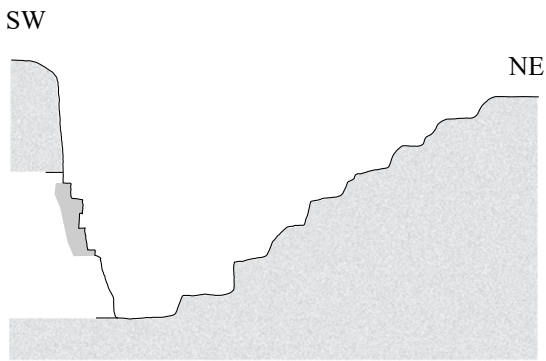
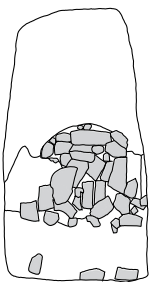


Figure 11.76. Grid square (HA2). Grave 207 – plan of the burial (scale 1:15), top plan, north east-south west profile and elevations of the west end of the descandary and the blocking wall as visible from within the burial chamber (scale 1:50).



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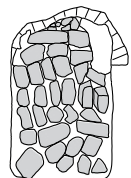


Plate 11.104. Grid square (HA2). Grave 207 – the blocking wall seen from inside the burial chamber.

missing. The body had been in a plaster-coated coffin of which only traces remained.

While from the east it appeared that the blocking wall is of two periods, within the chamber it could be clearly seen that it was of one build. The mud bricks were set in a very haphazard fashion along with some mud mortar to block the doorway.

On the surface of the descandary fill, in its centre, was a small deposit of sherds from a ring-handled pottery jar and date stones (Plate 12.2). The descandary was refilled with mixed sand and alluvium.

Material associated with the burial

Jewellery

Cat. no. B-1535 – bead, faience

Pottery possibly associated with the grave

(see Welsby Sjöström 2023, tab. 7.4)

beaker – 3529x

bowls – 3531x-3533x

bread cone – 2655x

handle – 2042x

jar – 3616x

storage jar – 3530x with handle

Grave (HA2)213 – skeleton (HA2)257, Figure 11.77, Plate 11.105

The descandary, 4m in length and 1m wide, has a flight of 11 well-cut regular-sized steps leading down 2.15m to the arch-shaped doorway into the narrow oval chamber 1.23m in length, 700mm wide and 1.23m high. Only the bottom of the plaster-coated coffin survived on which lay the extended supine inhumation, a middle adult of indeterminate sex with hands on the pubis and face turned to the north. Only the lowermost part of the blocking wall remained,

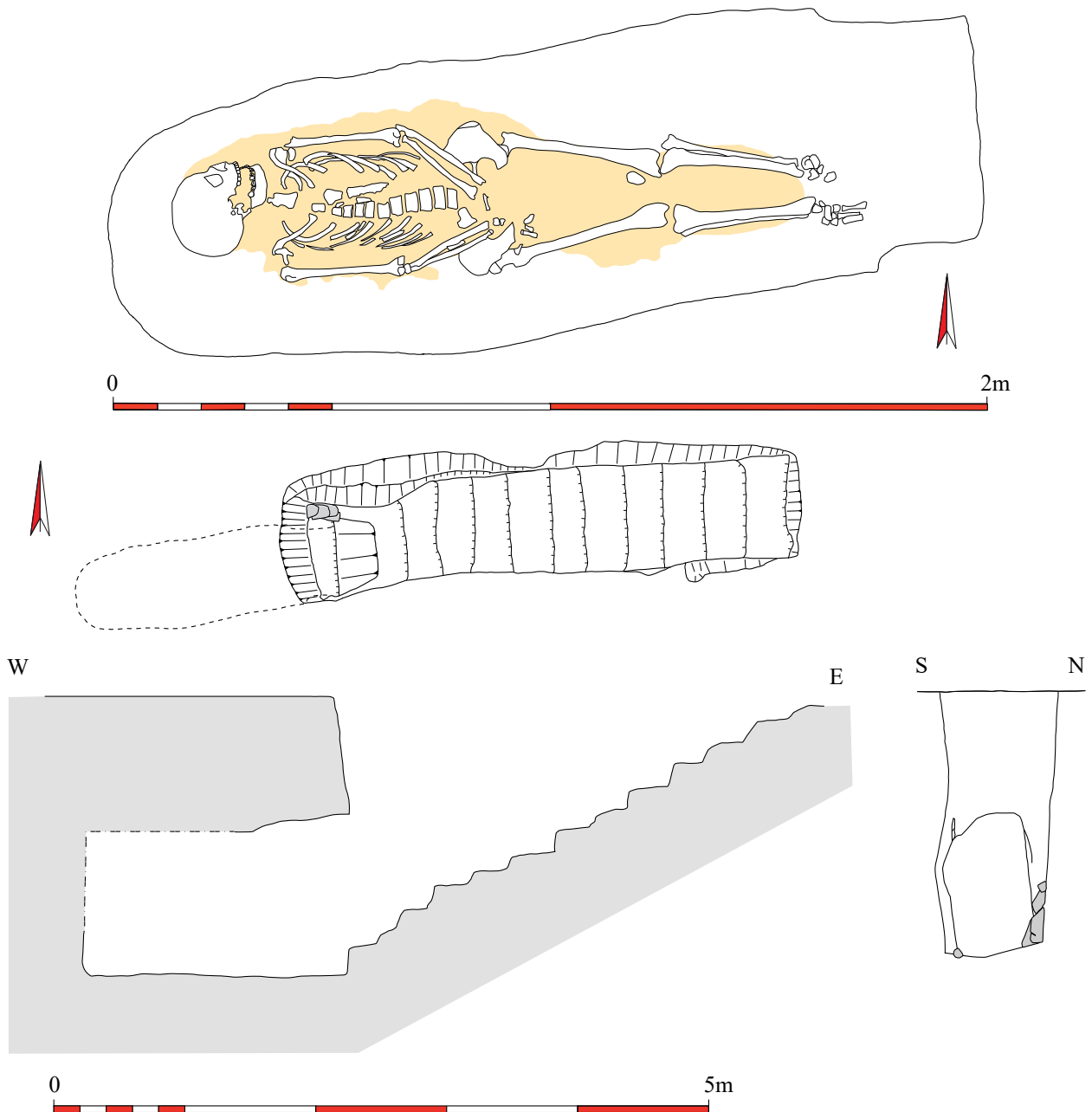


Figure 11.77. Grid square (HA2). Grave 213 – plan of the burial (scale 1:15), top plan, east-west profile and elevations of the west end of the descandary (scale 1:50).



Plate 11.105. Grid square (HA2). Grave 213 – skeleton 257.



Plate 11.106. Grid square (HA2). Grave 215 – skeleton 255 and blocking wall.

parts of two courses of headers. The alluvial backfill of the descender was cut by the robber pit 1.2 x 0.98m in size filled with alluvium from the descender fill mixed with wind-blown sand.

Material associated with the burial

Jewellery

Cat. no. B-1536 – bead, faience

Ceramic

Cat. no. F-328 – offering table

Stone

Cat. no. F-2396 – basin, sandstone

Pottery possibly associated with the burial

(see Welsby Sjöström 2023, 367, tab. 7.4)

bowls – 2310x, 2421x, 2869x

beaker – 3862x

Pottery from the descender fill

bowl – 3624x

decoration – 1000y

Pottery from the robber pit

beakers – 3527x

Grave (HA2)215 – skeleton (HA2)255, Figure 11.78, Plates 11.106 & 11.07

The descender, with seven steps, was 4.2m long, 1.2m wide and had a maximum depth of 1.8m. The arch-shaped doorway gave access into the narrow oval chamber widened in the middle of the north side. It was 2.2m long, 1m wide and 1.3m high. The anthropomorphic plaster-coated coffin, 460-190mm in width, had traces of red, black and yellow paint on the lid. The extended supine burial of a middle adult probably male had his right arm extended with the hand on the ilium and the left arm slightly flexed at the elbow and the hand on the pubis. The first course of the blocking wall was built from two rows of stretchers upon which was one course of rowlocks slightly inclined to the south and three courses slightly inclined to the north. The alluvial backfill



Plate 11.107. Grid square (HA2). Grave 215 – the descender and blocking wall.

of the descender was cut by the rectangular robber pit, 1.8 x 1.2m in size, filled with wind-blown sand and primary descender fill.

Material associated with the burial

Pottery (see Welsby-Sjöström 2023, 367, tab. 7.4)

jar – 3280x

Stone

Cat. no. F-2425 – stopper?, sandstone

Pottery from the robber pit

amphora – 3525x

bowl – 3503x

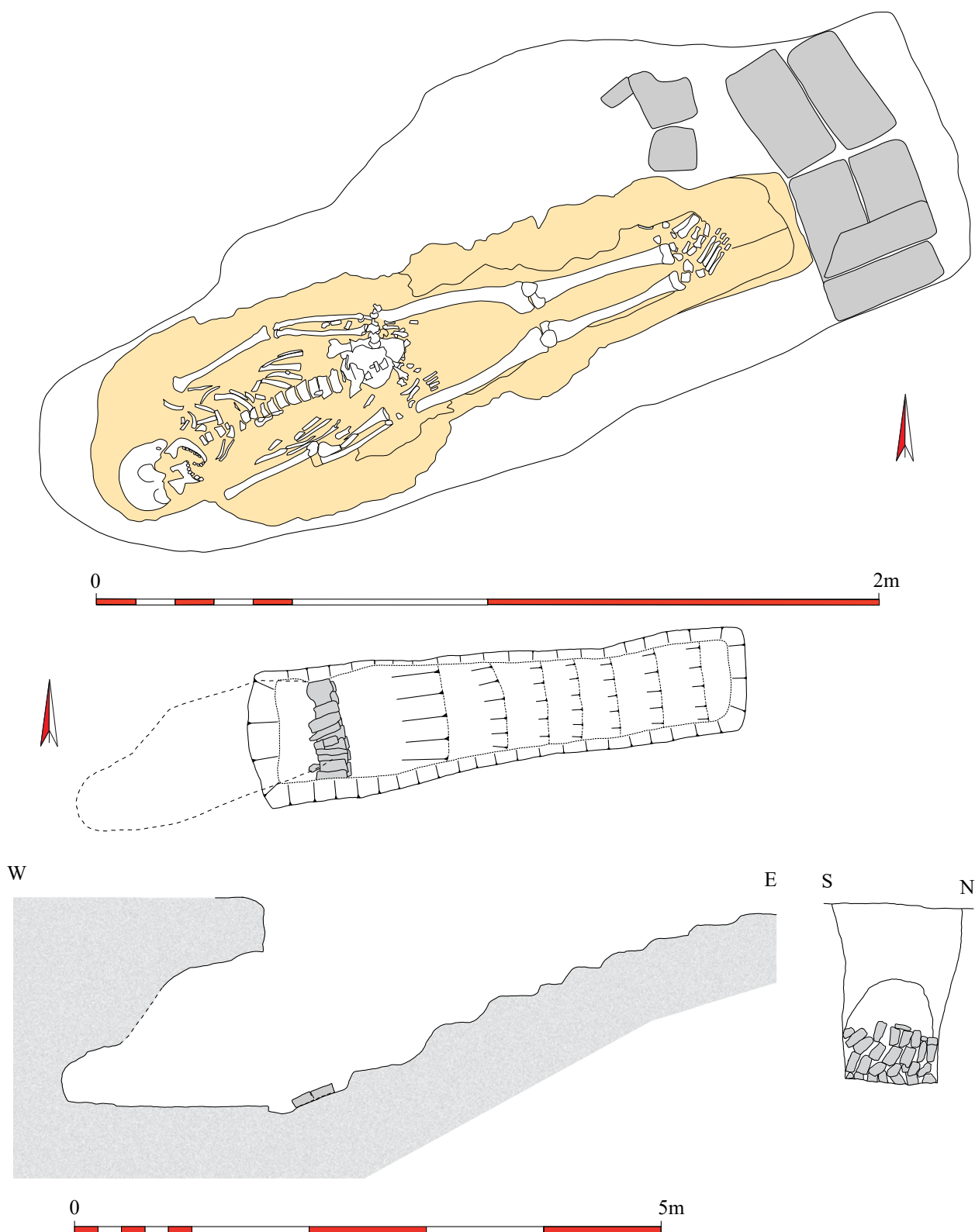


Figure 11.78. Grid square (HA2). Grave 215 – plan of the burial (scale 1:15), top plan, east-west profile and elevation of the west end of the descender (scale 1:50).

Grave (HA2)282 – skeleton (HA2)124, Figure 11.79, Plate 11.108

This grave was cut into the fill of the descender of grave (HA2)119 to a depth of 700mm below the surface. The body was placed within an anthropomorphic plaster-coated coffin, the lid of which was preserved *in situ*. Although very fragmentary the lappets of the wig were clearly visible.

The deceased, a young adult male, was laid in an extended supine position with the hands over the pubis. Half-way along the coffin on its north side was the base of a pottery vessel and another large sherd lay partly under the coffin towards the feet.

Material associated with the burial

Pottery (see Welsby Sjöström 2023, tab. 7.4, fig. 7.3)

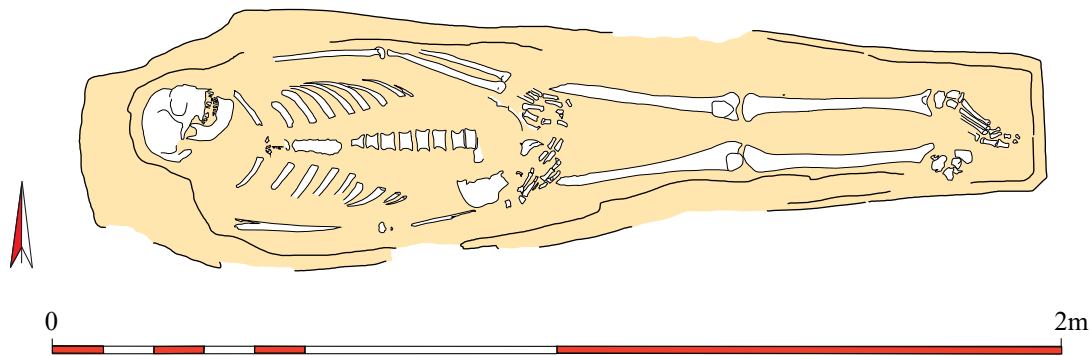


Figure 11.79. Grid square (HA2). Grave 282 – plan of the burial (scale 1:15).



Plate 11.108. Grid square (HA2). Grave 282 – the burial, skeleton 124, in the descendant of grave 119



Plate 11.109. Grid square (HA2). Unexcavated robber pits along the eastern side of the excavation area looking south.

vessel base – 3151x

As well as the excavated graves a number of other features were observed cut into the alluvium after removal of the overlying deposits across the area marked out for excavation. Parallel to the east side of the excavation was a row of four large pits suggesting the presence of east-west oriented descendaries into which robber pits had been dug (Figure 11.52, Plate 11.109). These were not investigated further.

Five other pits of uncertain function, and a linear feature, were also noted and excavated.

Pit (HA2)107

A small square cut within the fill of which was a stone. It was adjacent to grave 39.

Pit (HA2)135

Oval feature containing a pottery sherd.

Pit (HA2)222

A roughly rectangular pit rounded at its western end measuring 2.09 x 0.96m. Only the eastern part of the pit was excavated. The fill was of burnt material.

Pit (HA2)253

A ‘kidney’-shaped pit approximately 2.37 x 1.16m in size.

Pit (HA2)283

A slightly oval pit 700 x 628mm in size a little to the north of grave 67.

(HA2)275

A linear feature to the east of grave 79.

There were small burnt areas suggesting the location of hearths or small fires.

(HA2)16

A small pit containing burnt material or surface burning that had affected the subsoil below giving the impression of a pit.

(HA2)170

Burnt patch on the surface of the alluvium east of grave 39’s descendant.

(HA2)185

Burnt patch on the surface of the alluvium north of grave 83.

No trace of any tomb monuments survived in the excavation area. The presence of the alluvium immediately below the surface, into which all Kushite features were dug, suggests that any monuments standing proud of the Kushite ground surface would have been removed by erosion. Whether the surviving surface of the alluvium corresponds to the Kushite ground surface is unknown.

In a number of graves and their associated robber-pit fills were substantial tree roots indicating that at some point, presumably after the cemetery fell out of use, there was a substantial tree cover with sizeable trees across the area (Plate 11.110).



Plate 11.110. Grid square (HA2). Substantial tree roots surviving in the descandary of grave 79.

Area (J)

In the 2008-9 season excavations began in the north-eastern part of the cemetery. During the first season of the SARS Northern Dongola Reach Survey in early 1993 the presence of monuments made of dressed-sandstone blocks was noted in this area (Welsby 2001a, 148-149, fig. 3.97). During 11 seasons of excavation six dressed-stone pyramids were discovered in this area along with mud-brick tomb monuments and many graves.

Prior to excavation there were two substantial, roughly square, mounds covered in fragments of ferruginous sandstone with white and yellow sandstone embedded in the surface (Plates 11.111 & 11.112). These had been severely wind-eroded down to one level forming what appeared to be a stone pavement. They were formed from the collapse of four pyramids. Excavation of both mounds was undertaken along with an extensive area to the north and north west ultimately covering a total area of c. 4,075m² (Figures



Plate 11.113. Area (J) – general view following excavations in grid squares (JH3) and (JH4) looking south west.



Plate 11.111. Area (J) – general view following excavations in grid squares (JH3) and (JH4), looking south.

11.80 & 11.82, Plate 11.113). Towards the western side of the area were a few features which during the 1993 survey had been identified as tumuli (Plate 11.114), two of which were subsequently excavated.

This part of the cemetery narrowly avoided destruction



Plate 11.114. Area (J) – 'tumulus' in grid square (JE1).

during the construction of the tarmac road from Dongola to Kareima which passes 1km to the north east. In the search for gravel an excavating machine made two exploratory scoops into the ground, one immediately adjacent to the descendency of grave (JE3)115, the other in the flat area to the north. This latter activity destroyed at least one grave, human bone and pottery being visible in the upcast mound (Plate 11.115). In this area the gravel lies beneath several



Plate 11.112. Area (J) – excavation of the pyramids in grid square (JE3) looking south towards the mound covering the pyramid associated with grave (JC3)12.



Plate 11.115. Area (J) – scoop made by the road builders' excavating machine a little to the north of grid square (JH4).

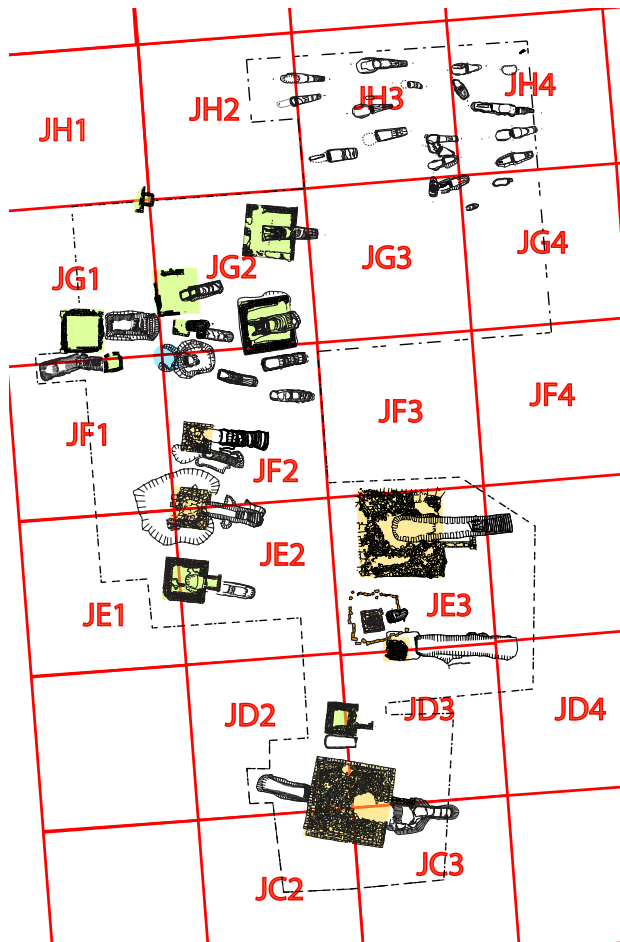


Figure 11.80. Area (J) – location of the grid of 20m squares.

metres of alluvium so the road builders moved on to discover extensive deposits of gravel less than 150m to the south east of the southern limits of the cemetery where a vast area was quarried, fortunately with little direct damage to the archaeology.

Features pre-dating the graves in grid squares (JF2), (JG1) and (JG2)

Establishing stratigraphic relationships across the cemetery was extremely difficult and frequently impossible. In many areas the grave cuts and the alluvium into which they were dug lay immediately below the wind-blown sand. Even when tomb monuments survived the relationships of one to another were usually unclear. In the areas under consideration here, however, some clear stratigraphy survived and indicated that there were three distinct phases of use. The phases discussed here cannot be correlated with those described in grid square (JE3) below.

- Phase A – structures utilising stout timbers
- Phase B – deposit of stone chippings
- Phase C – burials
- Phase D – robbing

Phase A (Figures 11.81 & 11.83, Plates 11.116-11.118) – Running almost due north-south was a line of nine post-holes [(JG2)303] cut into the alluvium over a distance of 6m. They are spaced 599mm to 839mm apart centre-to-centre. The

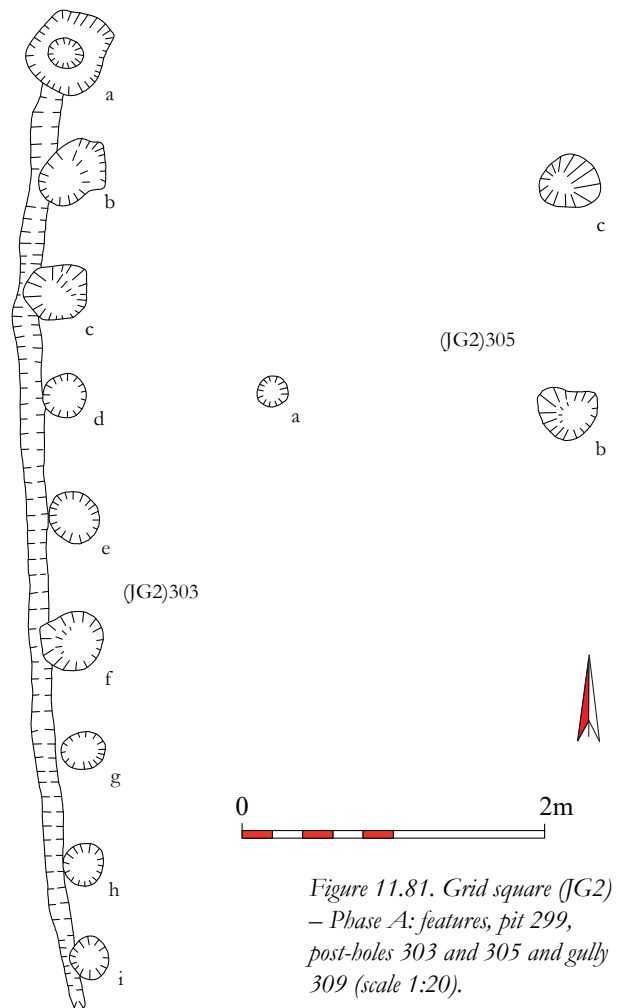
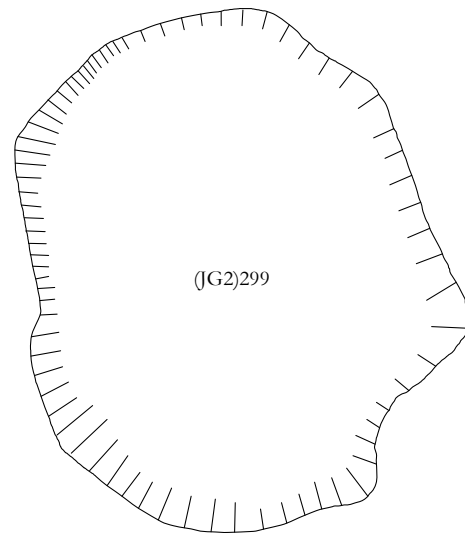


Figure 11.81. Grid square (JG2) – Phase A: features, pit 299, post-holes 303 and 305 and gully 309 (scale 1:20).

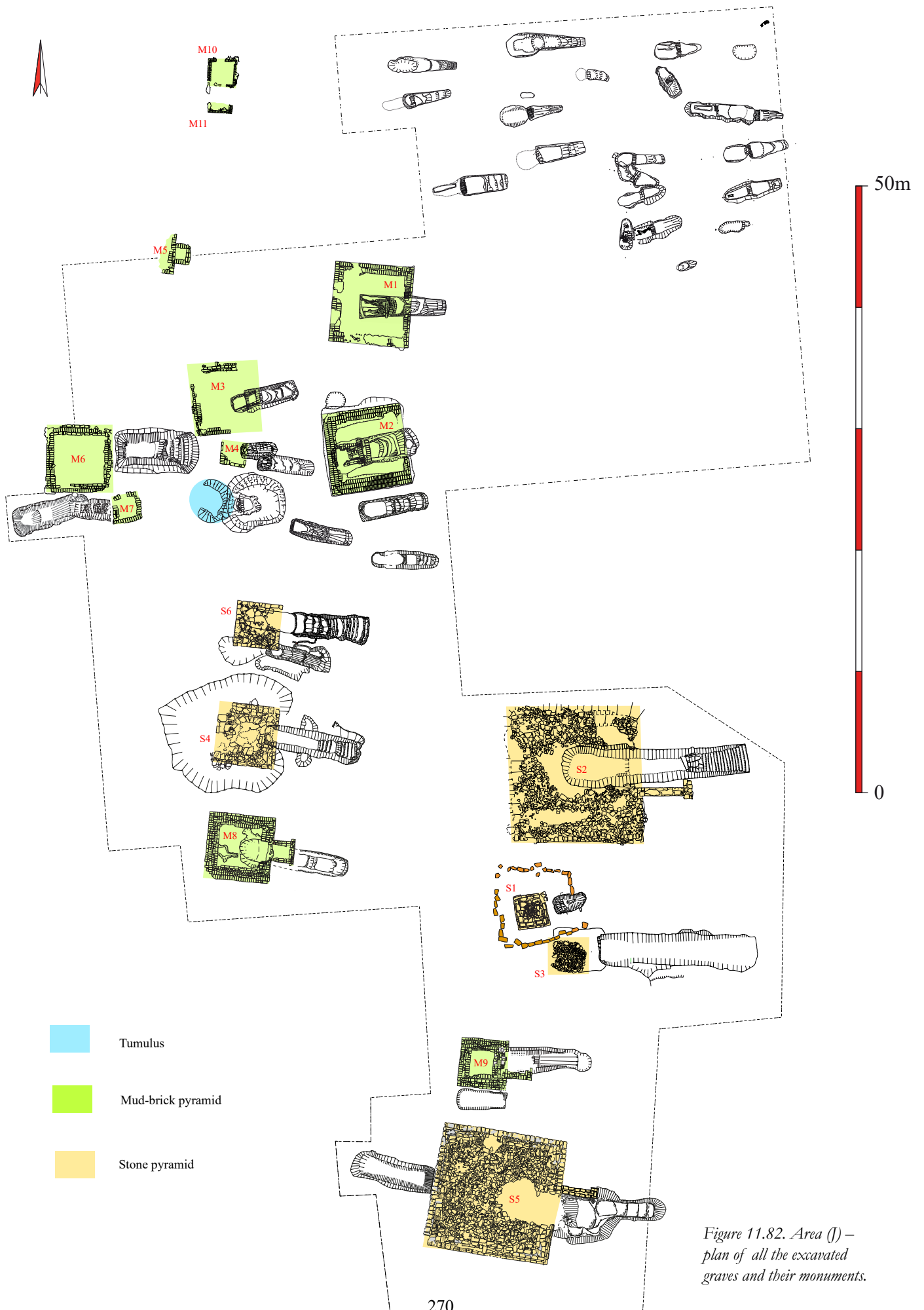


Figure 11.82. Area (J) – plan of all the excavated graves and their monuments.

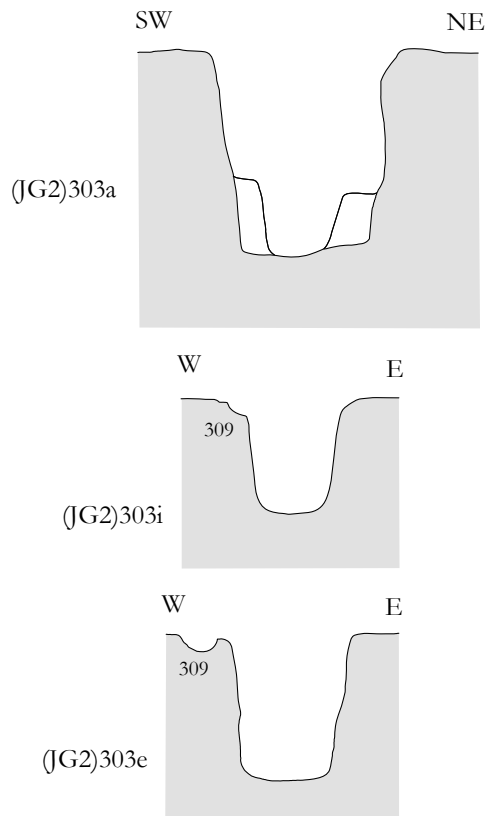


Figure 11.83. Grid square (JG2) – Phase A: profiles of three of the post-holes, one with its post-pipe and gully 309 (scale 1:20).

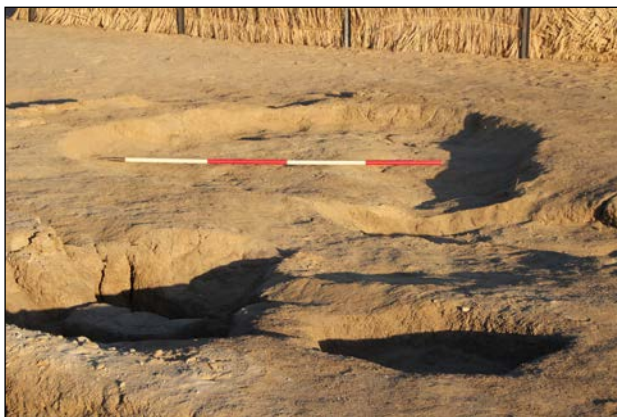


Plate 11.116. Grid square (JG2) – Phase A: pit 299.



Plate 11.117. Grid square (JG2) – Phase A: post-hole 303a with its post-pipe half-sectioned.



Plate 11.118. Grid square (JG2) – Phase A: post-holes 303 and gully 309 looking north.

northernmost preserved its post-pipe 190mm in diameter and the other post-holes probably held posts of a similar size. Immediately adjacent to the post-holes to the west was a gully, semi-circular in section, approximately 90mm wide and 60mm deep. In line with the fourth post-hole from the northern end was an alignment of two post-holes [(JG2)305] running east for a distance of 3.39m and then to the north where another post-hole survived. If there had been two additional holes on this line matching the western row, the first would be obscured by Pyramid M4 which was not removed during excavation while the last would have been removed by the descendant of (JG2)231.

Three metres to the north of the post-hole row was a large oval but shallow pit [(JG2)299] 3.5 x 2.7m in size and 200mm deep. It had steep sides rounding into the flat bottom.

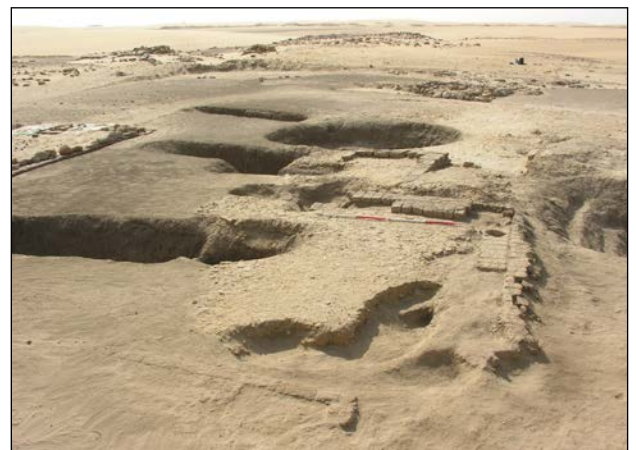


Plate 11.119. Grid square (JG2) – Phase B: the stone layer overlain by the mud-brick monument associated with grave (JG2)175 in the foreground looking south.

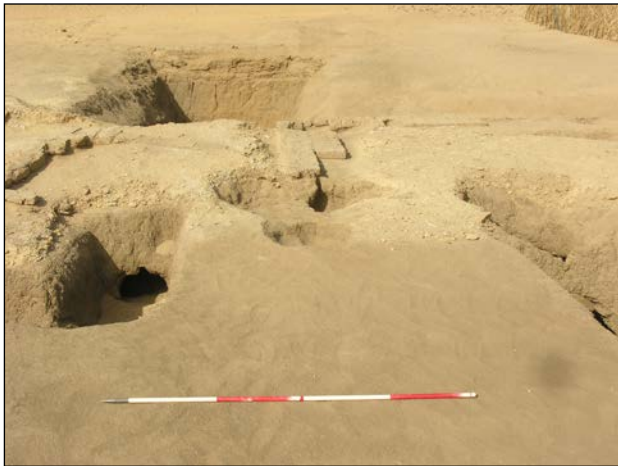


Plate 11.120. Grid square (JG2) – Phase B: stone layer cut by the descendaries of graves 171, 175 and 231 looking west.

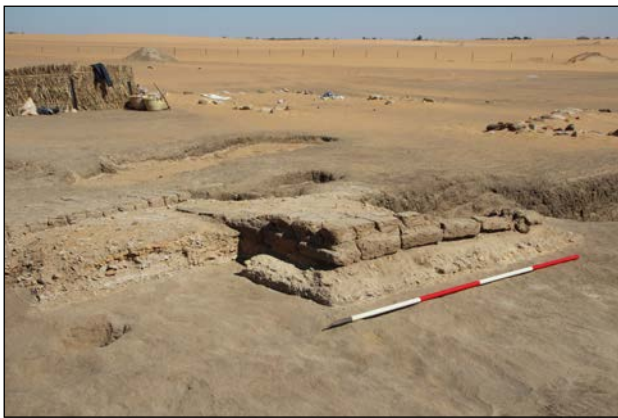


Plate 11.121. Grid square (JG2) – Phase B: section through stone layer sealed beneath the mud-brick monument over grave 171, looking north east.



Plate 11.122. Grid square (JF1) and (JG2) – Phase B: general view across the stone layer, looking north.

Phase B (Figures 11.130, 11.137 & 11.138, Plates 11.119-11.122, 11.245, 11.252, 11.253 & 11.259) – Covering an extensive area and filling and sealing the post-holes, gully and pit of Phase A was a deposit of stone chippings thickest in the centre and tailing off gradually particularly to the south and west. The deposit attained a maximum thickness of about 400mm and in places had distinct layers within it particularly noticeable beneath the later Pyramid M4. Here the lower layers were almost exclusively white sandstone

chippings while those above are predominantly of yellow sandstone.

Similar deposits to this are noted below where it is clear that they were associated with the final dressing *in situ* of facing stones used to revet pyramids S1-S6. No trace of such a pyramid was noted in the area of the deposit described here. This area may have been where the quarry-dressed blocks were trimmed to make them ready for use in the stone pyramids, the final dressing taking place when they were in position.

Phase C – Use of the area for burials. All the graves in this area were cut through the layer of chippings and their tomb monuments, where present, overlay it.

Phase D – Robbing of the graves. This may have happened over a long period of time, some graves perhaps being robbed for the first time before other graves were even dug.

Grid square (JC3)

Grave (JC3)12 – skeleton 26⁶ – Monument: Pyramid S5, 10.53 (E-W) x 10.36m (N-S), Figures 11.84-11.87, Plates 11.123-11.141

As with several of the high-status tombs in this area of the cemetery this one had been very extensively robbed on more than one occasion. The tomb was entered by a descendary sloping gently from the east for a distance 1.4m at which point there is a small step 200mm down. From there the descendary continued as a gentle slope for a further 2.6m where there is another step down of 280mm. In this section the descendary was 1.1m wide at the level of the steps.

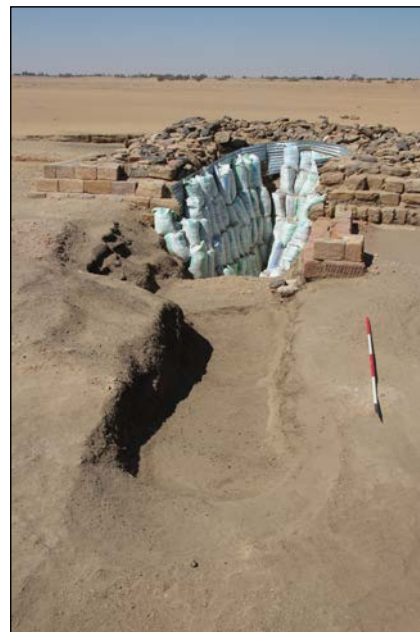


Plate 11.123. Grid square (JC3). Grave 12 – the phase 1 descendary, looking west.

⁶ Fragments of human bone came from a number of contexts associated with the robbing and may be from the grave. The association of some of the bones with the ivory inlays (cat. no. F-2328a) offers support to this suggestion. They may all be from the same individual, a young adult male. Whether the bones of a neonate or infant from (JD2)10 may also have been from the grave is unknown.

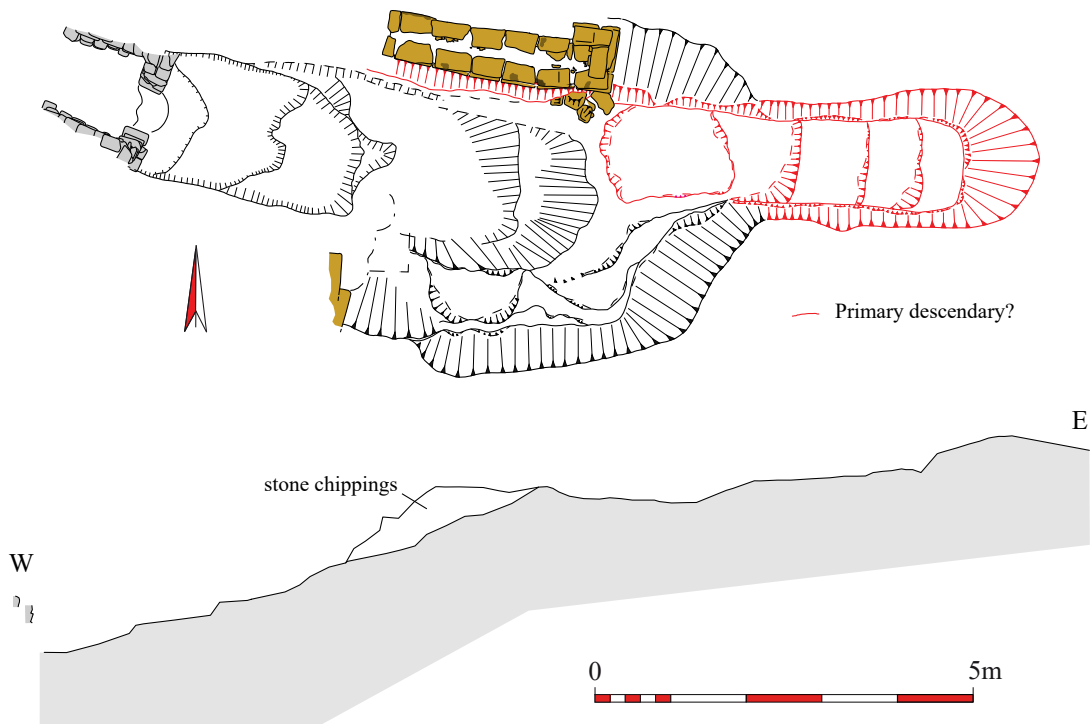


Figure 11.84. Grid square (JC3). Grave 12 – plan and profile of the descandary (scale 1:100).

From here to the west the descandary increased in width to approximately 2.3m. At this point the alignment of the descandary changes by more than 11° and the two sections of descandary were offset. The most likely explanation for the observed phenomena is that there were actually two separate descandaries. The earlier eastern one is very shallow and was probably not completed. It only attained a maximum depth of 740mm. It was superseded by a new descandary on a different alignment, approximately 1.6m wide at the base, which had a much steeper slope down to the tomb chamber. The descandary, sloping down at approximately 19° to the horizontal, attained a maximum depth of about 2.88m. Along the slope were a few shallow ill-defined steps and a bigger one where it dropped down into the construction pit of the tomb.

The robbing substantially destroyed the grave chamber making a detailed description of its original form difficult. It consisted of a mud-brick structure of which parts of its south, east and north walls survived. It presumably had been constructed in a pit dug down from the ground surface but the extent of that was no visible still being covered by remains of the pyramid's rubble core. The east wall was the best preserved and was over 1.75m in length surviving to a maximum height of nine courses (850mm). It was constructed of both headers and stretchers, the arrangement of which was not regular. A doorway not less than 510mm wide allowed access into the chamber. The west ends of both north and south walls were destroyed. The chamber had an internal width of about 1.1m and was a minimum of 1.15m in length. The side walls were founded at a lower level than the east wall with the lowermost courses projecting beyond the internal wall face. They were presumably masked by deposits placed within to level up the floor. The original floor was largely destroyed and the burial was totally disturbed with only very small fragments of human



Plate 11.124. Grid square (JC3). Grave 12 – the western section of the descandary and the east wall of the burial chamber, looking west.

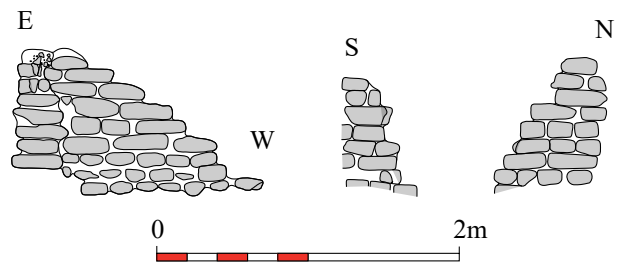


Figure 11.85. Grid square (JC3). Grave 12 – elevations of the south wall (inner face) and of the east wall (outer face) (scale 1:50).



Plate 11.125. Grid square (JC3). Grave 12 – the east wall of the burial chamber, looking west.

bone being found widely-dispersed in the robber-pit fill. Of the rich grave goods that one might expect under such a fine tomb monument only three beads of gold remained.

Before the descendency was filled following the burial a compact wedge of yellow sandstone chippings was placed towards the top of the slope presumably to provide a solid foundation for the projected offering chapel and perhaps for the pyramid where it overlay the descendency fill. Unfortunately the robber pit had removed this deposit to the west so its extent was uncertain. Immediately to the north of the descendency is a low mound of alluvium [(JC3)16], part of the upcast from the cut.

The pyramid measured approximately 10.56-10.36 x 10.22m at the foundation level. The angle of slope can be computed at approximately 60° giving a total height, assuming a flat top 900mm square (as in Bar.3 – Dunham 1957, fig. 63), of 8.5m. It was very-well constructed with a foundation course of quarry-dressed blocks revetting the core. The foundation course, of stones up to 600 x 400mm in size but, particularly on the north and west sides 250 x 250mm, was set in a construction trench or perhaps more likely a large, carefully-laid-out square construction pit – the outer face of the course came very close to the pit edges.



Plate 11.126. Grid square (JC3). Grave 12 – the south face of the pyramid. The foundation course, the quarry-faced blocks of the upper course of the socle and the finely dressed blocks above. Behind are the quarry-faced blocks forming the inner revetment of the core, looking north east. The section through the stone chippings layer can be seen on the far right of the photograph.

The first course of the superstructure, where preserved on the south and east walls, was set directly above the foundations, effectively forming a two-course-high socle, at least on the south and east sides of the pyramid. When the monument was completed this course had been largely masked by construction debris; there were at least three layers of sandstone chippings presumably from the final dressing of the superstructure blocks. This material to the north of the pyramid abutted the monument – Pyramid M9 – over grave (JD2)40 indicating that it is of later date. Here it sealed a long rectangular pit, rounded at its western end (Figure 11.89), which had been used to prepare the mortar bonding for the pyramid's revetting blocks.

The lower deposit, to the south of the pyramid, where it sat on a thin layer of wind-blown sand [(JC2)25] over the alluvium, consisted of discrete deposits [(JC2)16,19,24,26] of yellow and of white sandstone fragments and sealed two large post-holes [(JC2)20 and 22/31]. The former was 600mm in diameter (extending to a maximum width towards the top of 840mm) and 900mm deep, the latter 640mm in diameter and 990mm deep. Post-hole (JC2)20 had two distinct fills, the lower of loose alluvial material with occasional fragments of sandstone and two pottery sherds. The upper fill was almost entirely sandstone chippings. The other post-hole was filled with a mass of stone chippings, similar material to that in the deposit through which it was cut. Preserved through both fills was the post-pipe filled with fine sand. The post had been set into the pit at an angle of approximately 75° to a depth of 990mm and was 210mm in diameter at the top tapering throughout its length to a rounded point.

Another almost certainly contemporary post-hole [(JD2)57] was found close to the west face of the pyramid. It was 570mm in diameter and 350mm deep. If it had been one of a pair of post-holes, as along the south face of the pyramid, its companion to the north would have been removed by the western descendency (JD2)12.

These post-holes were presumably connected with the construction phase of the pyramid. They were infilled with sandstone chippings from the final dressing of the monument and partly sealed by that material. The two uprights close together may have been part of a *shaduf*, a counter-weighted pole which could have been used as a primitive crane to lift stone blocks into place on the monument. The use of a *shaduf* has been proposed by Hinkel (1984b; 1986; 1994, 62) at Meroe where a single timber post was embedded vertically in the centre of a number of pyramids.⁷

The upper deposit of sandstone chippings to the south [(JC2)3], with many pink and red sandstone fragments but also yellow and white commonly with a diameter of 100mm but up to 200mm, along with lavender lime-mortar fragments, abutted the second course of the pyramid and extended almost to its top masking the rough quarry dressing. On the west, north and part of the east face this deposit had been disturbed when the upper foundation course was robbed out. On the upper surface of both foundation courses

⁷ A similar double arrangement of post-holes has been observed at Jebel Barkal and is thought to be part of a winch mechanism used to raise material up to the top of the pinnacle during the carving of the inscriptions on its face (Kendall 1990).

Figure 11.86. Grid square (C3). Grave 12 and (D2) Grave 12 – plan of all features (scale 1:100).

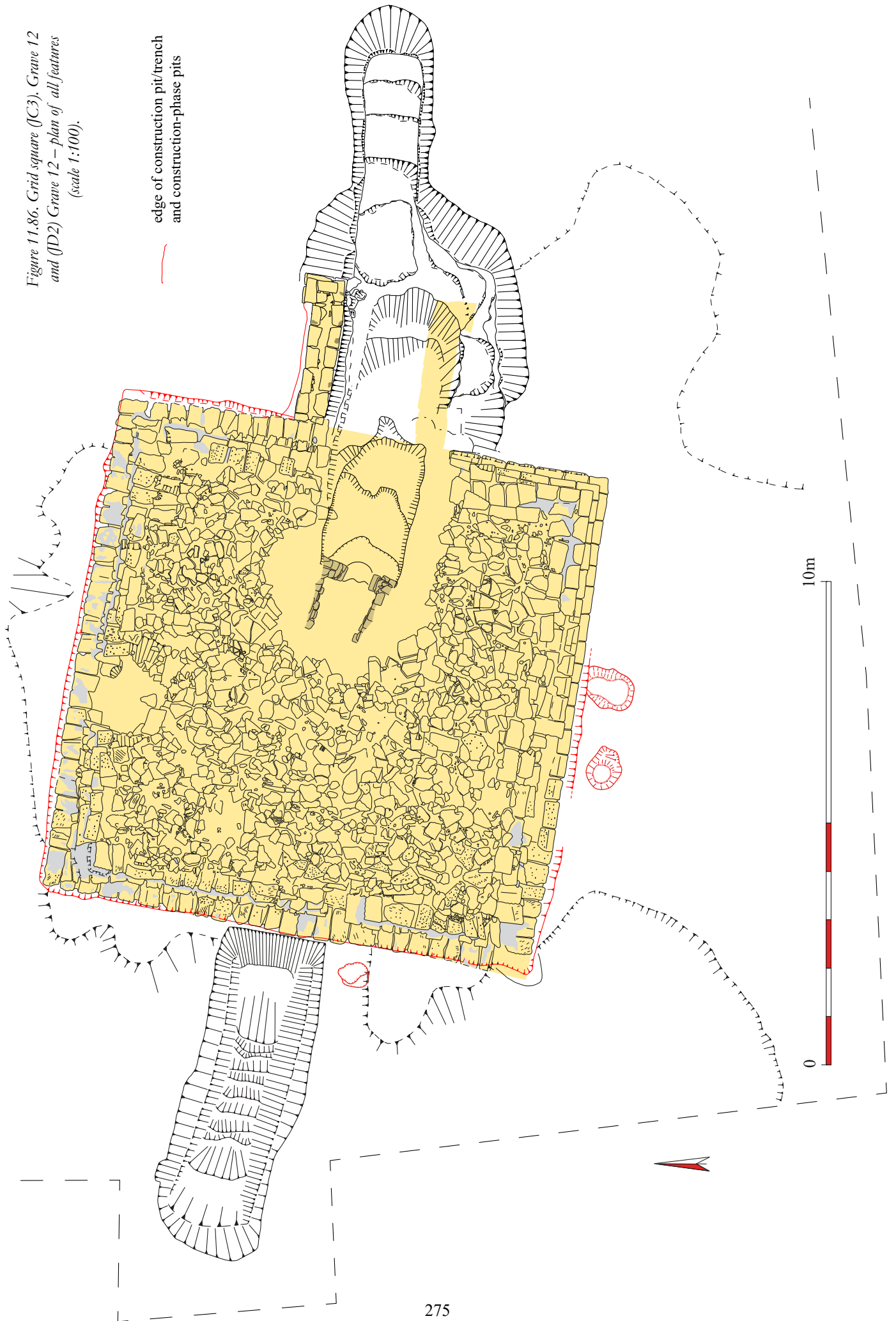




Plate 11.127. Grid square (JC3). Grave 12 – the pyramid and its offering chapel, looking south west.



Plate 11.128. Grid square (JC3). Grave 12 – the south face of the pyramid with the excavated construction trench and the two pits, looking east.

were many setting out lines but these were arranged in a random manner. The intended external faces of the blocks, which would have been finely dressed *in situ*, in many cases were placed against adjacent blocks or against the core. Set on the upper course of the socle two courses of finely-dressed stone blocks remained in part, each set back from the course below, the lower one by between 180mm and 200mm, the upper between 140mm and 180mm on the south face and on the east face 120 mm to 160mm. These courses were made of large blocks *c.* 270mm in height and approximately between 414mm and 600mm in length by between 220mm and 315mm wide. Most were set as stretch-



Plate 11.129. Grid square (JC3). Grave 12 – the north face of the pyramid, looking west.

ers but occasional blocks set as headers extended further into the core, one by 669mm. These blocks were bonded in a lavender-coloured lime mortar, very similar in appearance to that used in the pyramid over grave (JE3)115. On their upper surfaces were setting out lines both longitudinally to mark the position of the front face on the next course above and at 90° indicating the exact location of each block. Immediately within the dressed stone facing was a row of substantial quarry-faced blocks forming an inner revetment. Some of these blocks were of considerable size – up to 687 x 416mm. The core was of unshaped stones, the largest 600 x 400mm in size but more commonly 350 x 300mm and 300 x 200mm. The stones used were the soft white and yel-

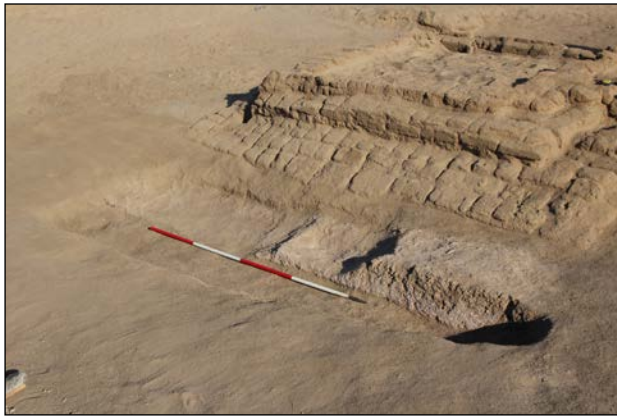


Plate 11.130. Grid square (JC3). Grave 12 – the mortar-mixing pit adjacent to Pyramid M9, looking north west.



Plate 11.131. Grid square (JC3). Grave 12 – the south face of the pyramid with pits 20 and 31.

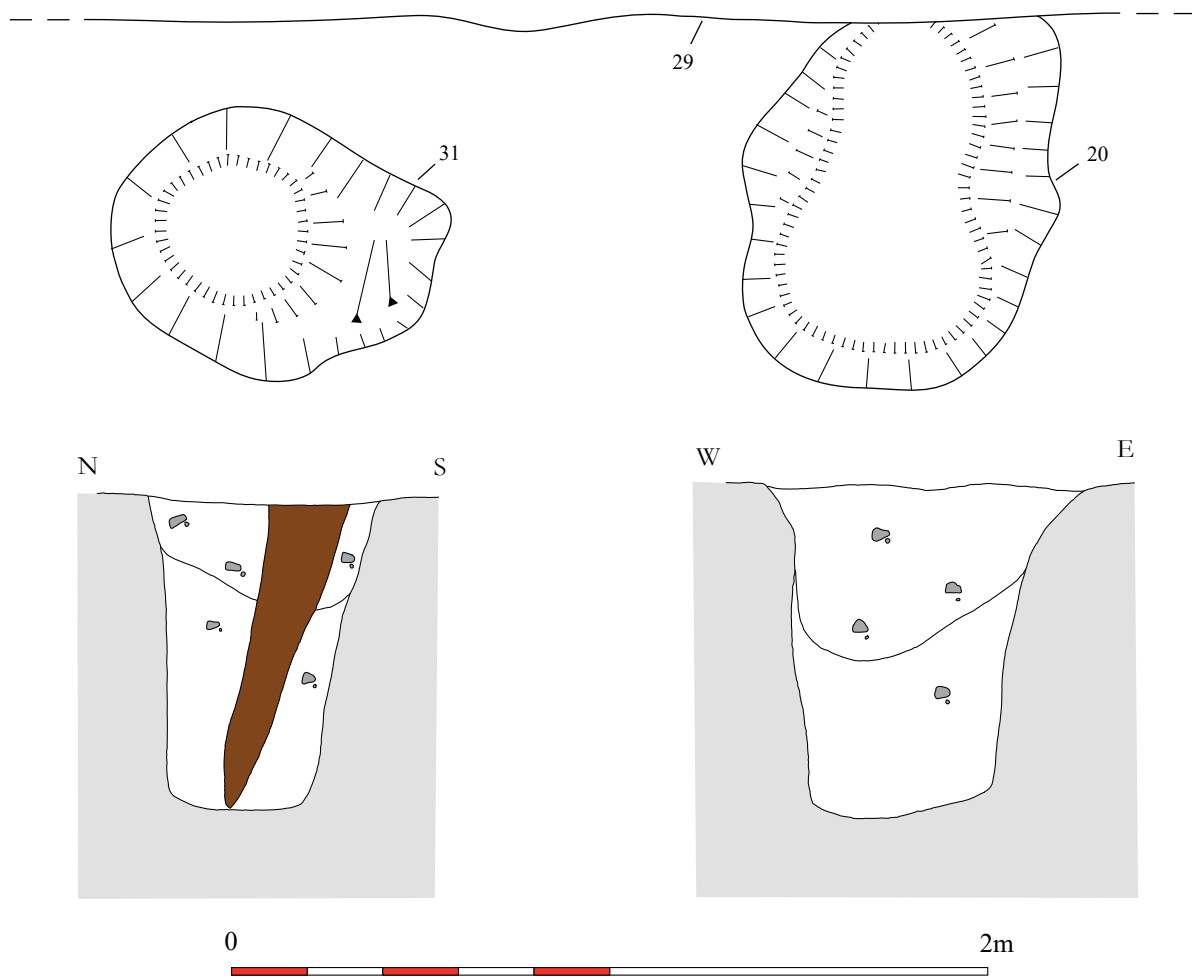


Figure 11.87. Grid square (JC3). Grave 12 – plans and profiles of pits 20 and 31 (scale 1:20).

low (also occasionally red) sandstones and pieces of much harder ferruginous sandstone. No bonding material was apparent. Towards the northern edge of the core, visible in the side of robber pit (JD2)3, were several mud bricks. The core survived to a maximum height of 1.08m above the upper surface of the construction deposit to the south and 1.3m above the surface on which the pyramid was built.

Against the eastern face of the pyramid was an offering chapel, the north wall of which survived to a height of one course above the one course of foundations. It was

constructed entirely of red sandstone blocks between 505 x 264mm and 404 x 196mm in size with smaller blocks against the face of the pyramid at ground level. Red sandstone was rarely used in the pyramid itself. The north wall was of two rows of stretchers (660mm thick in total) on a slightly projecting foundation course (at its east end by 60mm), and ended in a pylon to the east. The pylon projected 180mm to the north of the building line. The robber activities had removed all of the south and much of the east wall including the doorway. To support the pylon over the



Plate 11.132. Grid square (JC3). Grave 12 – half section of the fill of pit 31 with the post-pipe and fill of stone chippings.



Plate 11.133. Grid square (JC3). Grave 12 – the south face of the pyramid and the construction trench filled with small stones, looking west.

redeposited material in the descandary the latter had been infilled over a distance of at least 1.5m with stone chippings derived from the construction of the monument, forming a solid foundation. Further to the west the descandary fills had been removed by the robbers. On this rested rubble directly under the wall. The south wall had been completely robbed out but the foundation trench could clearly be seen cut into the alluvium indicating that the chapel was approximately 3.08m wide over its walls and would have extended 2.9m east from the first course of the pyramid's superstructure. Internally the room will have been approximately 2.38 x 1.78m in size.

Much of the superstructure from the chapel was found



Plate 11.134. Grid square (JC3). Grave 12 – the south face of the pyramid. The lowermost course of the superstructure has quarry-faced blocks contrasting with the finely dressed blocks above.



Plate 11.135. Grid square (JC3). Grave 12 – the north wall of the chapel, looking south east.



Plate 11.136. Grid square (JC3). Grave 12 – the north wall of the chapel oversailing the foundation course of the pyramid.

amongst the rubble in its vicinity. Presumably from the eastern doorway came a fragment from a lintel bearing the finely-carved tips of a vulture's wing. Two further blocks with shallow rebates along one edge may be parts of the door jambs. Also among the rubble were many red sandstone blocks from the chapel walls and a large number of voussoirs generally in white sandstone from the segmental vault which must have roofed the chapel.

The interior of the chapel had been covered in a thin



Plate 11.137. Grid square (JC3). Grave 12 – voussoirs from the vault over the chapel recovered from amongst the rubble.



Plate 11.138. Grid square (JC3). Grave 12 – architectural fragments including dressed stone blocks and two lintels on the east side of the pyramid.

layer of white lime mortar on which was polychrome painted decoration utilising red, yellow and blue with the decoration enhanced with extensive use of gold leaf. Only a small number of blocks retained their painted plaster which was poorly preserved and in some cases masked by mud deposited by rainwater runoff. The decoration included human standing figures, their upper bodies extending onto the intrados of the vault (see Taylor forth. b).

From amongst the rubble came a number of architectural elements which might be presumed to have come from this monument but if so it is not clear where they may have been originally sited. Alternatively they may have been reused from earlier monuments on the site in the rubble core.

Robbing of the tomb – The pyramid has been very extensively robbed on a number of occasions. At an early stage in the excavation of the pyramid, after removing a thin layer of sand, a large sand-filled robber pit was revealed delimited by disarticulated rubble to the north, south and east and by the core of the pyramid to the west (Plate 11.140). This pit sloped down gently from the east but immediately in front of, and within, the pyramid it was vertically-sided. Cutting through the core it had a diameter of 3m and extended to the east with a width of 2.4m. Dug down through the pyramid's core it continued into the underlying alluvium, attaining a total depth of a little over 4.2m below the highest remaining

part of the core. It was largely filled with sand containing a few sandstone inclusions and some blocks up to 400mm in size, material clearly fallen from the core.

This large robber pit, which contained plastic bags well down in the fill, penetrated through the floor of the tomb chamber removing its western wall and terminated in a well-rounded shallow pit infilled with fine, very soft silt.⁸ At the same time the robbers tunnelled into the south western side of the descandary to a depth of at least 2m. Tool marks were clearly visible on the walls of this tunnel and more plastic bags came from within it. The robber pit had been dug through a thick deposit of rubble. This rubble was also cut by two further roughly circular pits, one [(JD3)3] 2.49 x 2.2m in size penetrated down 680mm towards the pyramid's construction surface and revealed about half of the large lintel but no attempt had been made to remove this. The other pit [(JD2)3] 3.8 x 2.6m in diameter cut into the core and through the north face of the pyramid but was not carried down into the underlying alluvium. Both were largely filled with wind-blown sand. The large robber pit presumably dates to activities in the second half of the 20th century but preceding 1993 when the SARS team surveyed this part of the cemetery.

These robber pits outside the pyramid's core cut through a dense pile of rubble containing many facing stones from the chapel, voussoirs and two stone lintels. This was not remains of the monument and its chapel's collapse but a jumbled mass of stones indicating that it was the result of an earlier phase of robbing activity when the aim was to reach the tomb, not to remove building materials. That activity had caused considerable damage to the structural elements of the monument.

Robbing of the facing stones of the pyramid – The facing stones from the pyramid had been systematically robbed. Only on the south side and at the south-east angle, where the lowest courses of the pyramid were hidden under rubble including fallen facing stones and wind-blown sand, did up to two courses above the foundations survive. Around the other sides a robber trench cut through the construction deposits removing all blocks down to the lowest foundation course. Only at the south-west angle were a few blocks from the lowest course removed. Midway along the west side a small pit extended a short distance into the core. Along the east face of the pyramid the robber trench appeared to be dug from a high level through the rubble, as it may have been elsewhere, suggesting that the removal, at least of the facing stones from the lower courses, was a secondary phase of robbing after the substantial destruction of the monument.

Robbing of the western descandary – During the robbing all trace of the original descandary fill was removed. The cut then filled with wind-blown sand capped at the top close to the pyramid by a deposit of rubble [(JD2)25] deposited on the sloping fill and in its turn sealed by further wind-blown sand.

Material probably associated with the burial Jewellery

Cat. no. B-1539 – bead, gold

⁸ This very regular pit may predate the latest robbing phase but the relationship of the two was unclear.

Cat. no. B-1537 – bead, gold

Cat. no. B-1540 – bead, gold

Organic

Cat. no. F-2328a – inlays(?), ivory

Material from the rubble and sand probably associated with the burial

Metalwork

Cat. nos F-7 to F-10 – gold leaf

Stone

Cat. no. ML-371 – grinding base

Stone architectural elements from amongst the rubble

Cat. nos F-2495, F-2496 & F-2497 – 3 lintels, sandstone

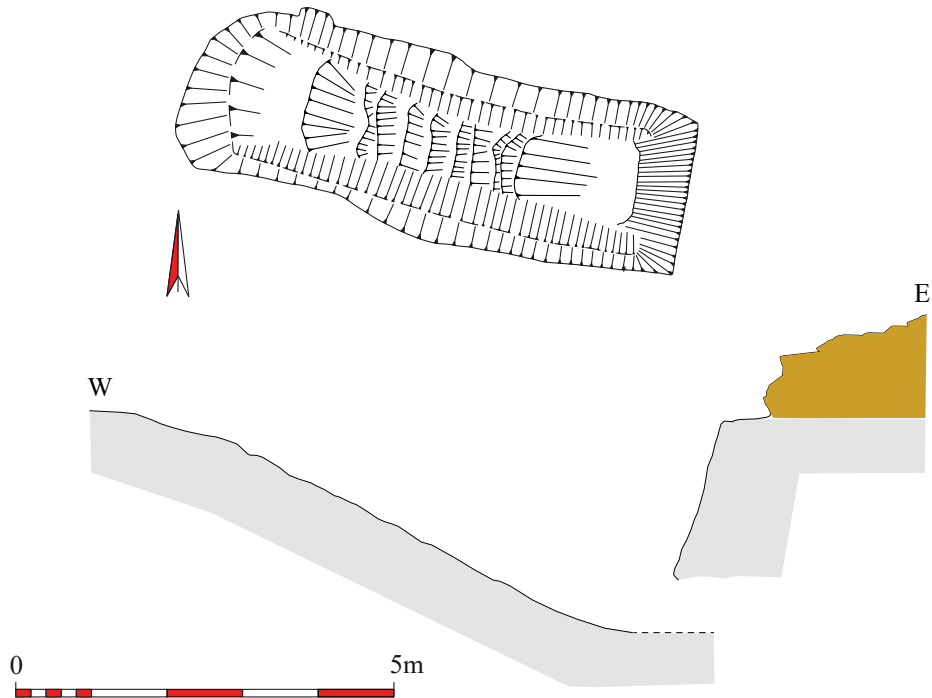


Figure 11.88. Grid square (JD2). Grave 12 – west descendery: top plan and profile (scale 1:100).



Plate 11.139. Grid square (JD2). Grave 12 – the west descendery and Pyramid S5, looking east.



Plate 11.140. Grid square (JC3). Grave 12 – Pyramid S5 under excavation, looking north east.

Cat. no. F-2484 – quadrant from a column, white sandstone

Cat. no. F-2486 – quadrant from a column, sandstone

Cat. no. F-2485 – column shaft fragment, sandstone

Cat. nos F-2479, F-2491 & F-2492 – 3 finials, sandstone

Cat. no. F-2453 – fragment bearing hieroglyphs, sandstone

Pottery from the robber pit

bowl – 3714x

For the pottery found in the vicinity in a variety of contexts, see Welsby Sjöström 2023, 367, tab. 7.5, fig. 7.6.

Grave (JD2)12 – Monument: Pyramid S5, Figures 11.86 & 11.88, Plate 11.139

Immediately to the west of the pyramid was another descenary 6.76m in length by approximately 2.3m in width at the surface reduced to 1.1-1.4m towards its base. It was dug to a maximum depth of about 2.86m. It had a steep slope with very shallow ill-defined steps perhaps largely formed naturally as the grave diggers cut through one strata of alluvium to the next. The tomb was hollowed out from the alluvium and had an entrance 1.2m wide and only 690mm high. It was filled with fine sand with mixed sand and alluvium below. The chamber was not excavated as it was too dangerous to proceed.

The east end of the descenary is parallel to, and very close to, the edge of the pyramid's western wall construction trench. During the digging of this descenary the alluvium removed was deposited in two low linear mounds [(JD2)10, (JC2)4] to the north and south of the cut up to 300mm thick resting on a layer less than 100mm thick of wind-blown sand [(JD2)24, (JC2)11] covering the natural.

Grid square (JD2)

Grave (JD2)40 – Monument: Pyramid M9, 4.05 x .4.06m, Figure 11.89, Plates 11.141-11.145

The descenary, sloping down from the east, was impossible to excavate fully. At its western end the descenary fill was cut by a large robber pit. Attempts to remove the sand fill of that pit resulted in the partial collapse of the eastern



Plate 11.141. Grid square (JD2). Grave 40 – the descenary, looking east.

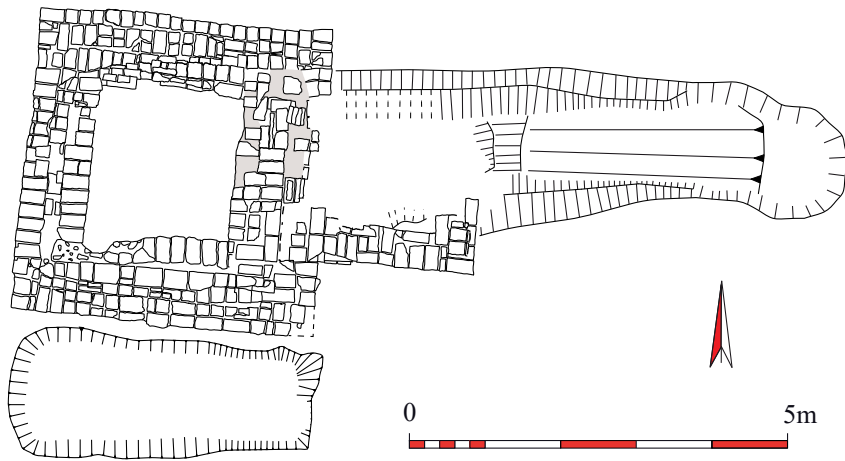


Figure 11.89. Grid square (JD2). Grave 40 – plan of the pyramid, chapel and the mortar-mixing pit associated with grave (JC3)12 (scale 1:100).

pyramid. The lower part of the monument appeared to be an earthen mound, 4.05 x 4.06m in size at the base, revetted by one to two courses of mud bricks which sat on the slope at an angle of approximately 45°. The bricks were 330 x 170 x 70mm in size. On this raised platform was set the superstructure of which two steps survived most clearly on the southern face of the monument. The lower step, of two courses, had bricks set horizontally, the wedge-shaped void between the revetting bricks and the pyramid proper being filled with alluvium and mud-brick rubble. The monument at the level of the lower step measured approximately 3.9 x 4.1m. The step was approximately 250mm in width. The second step only survived to a height of two courses in a few places. At that level the monument is 2.4 x 2.5m in size. The inner face of the pyramid's mud-brick facing formed a vertical wall of

wall of the pyramid, forcing work to halt. A vertical pit dug down to the burial chamber within the pyramid only clipped the western end of the burial chamber. Not wishing to destroy the pyramid, and taking account of safety issues, the excavations were aborted.

The descandary, cut into the alluvium, was more than 6.89m in length and a maximum of 2.36m wide at the surface. Its depth was not ascertained.

The grave was marked on the surface by a mud-brick

level the monument is 2.4 x 2.5m in size. The inner face of the pyramid's mud-brick facing formed a vertical wall of



Plate 11.144. Grid square (JD2). Grave 40 – inner face of the pyramid, north-west corner.

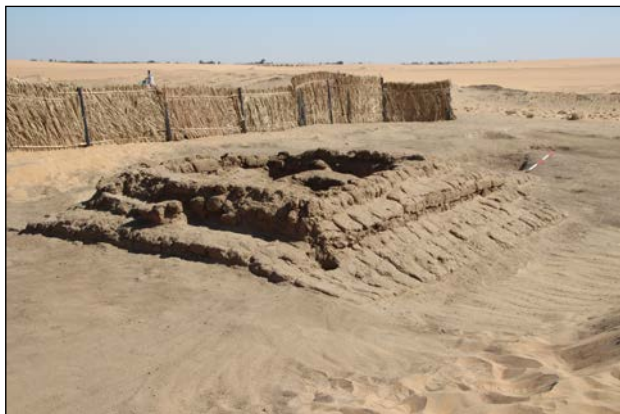


Plate 11.142. Grid square (JD2). Grave 40 – the pyramid looking north east.



Plate 11.143. Grid square (JD2). Grave 40 – the pyramid, south wall of the chapel and the unexcavated robber pit in the descandary.



Plate 11.145. Grid square (JD2). Grave 40 – post-hole in the centre of the pyramid.

three courses with the fourth course projecting a little beyond the wall line. The final preserved course was set back again in line with the lower courses. The upper part of the mud-brick facing must have been supported on the material forming the core, a mix of alluvium and sand [(JD2)54].

On its eastern side was a chapel of which the south wall, 520mm thick, of 1½-brick build, was preserved to a height of four courses, 490mm. Founded on the alluvium at the same level as the lower part of the revetment it oversailed it and abutted against the vertical face of the first step of the monument from which it projected 2.55m. At its east end it returned to the north, as a 1-brick wall, and was preserved for a length of 700mm, perhaps its original length. Within the chapel the sloping platform was dispensed with, the end wall being a continuation down of the eastern face of the pyramid's first step. The floor and north wall of the chapel have been removed by the robber pit dug into the descenary fill.

The western half of the pyramid's core was cut by a large pit [(JD2)44] filled with wind-blown sand.

Overlying the platform and abutting the pyramid was a large amount of mud-brick rubble which itself was overlain at least on its south side by stones presumably from the robbing of the core of Pyramid S5. On its west side there was much less rubble; the platform and lowest step of the pyramid being covered by a smooth, undulating mud surface sloping down from the monument. It was cut by two post-holes [(JD2)66 (Dia:160mm, Depth:140mm) and 68 (Dia:140mm, Depth:120mm)]. To the north was a large, roughly oval, pit [(JD2)48] 1.7 x 1.1m in size and up to 580mm deep in the bottom of which was a post-hole [(JD2)64] 370 x 240mm in size and 290mm deep. Within the pit was mud-brick rubble and a large dressed sandstone block, presumably from the facing of Pyramid S5, all covered by wind-blown sand. Another post-hole [(JD2)55] was visible cut into the alluvium by the south-east corner of the monument.

Pottery from the robber pit

bowl – 2321x

For the pottery found in the vicinity of this monument in a variety of contexts and in the robber pit fill, see Welsby Sjöström 2023, 367, tab. 7.5, figs 7.6 & 7.7.

Grid square (JE2)

Grave (JE2)14 – skeleton 33, Monument: Pyramid M8,



Plate 11.146. Grid square (JE2). Grave 14 – the descenary looking south east.

5.23-5.49 x 5.29-5.53m, Figures 11.90-11.93, Plates 11.146-11.151.

The descenary was approximately 9.06m in length, its western end being disturbed by a robber pit, cut through a layer of sandstone chippings up to 115mm thick. This deposit was created during the construction of the adjacent pyramid over grave (JF2)55 a few metres to the north. The descenary sloped down with some very shallow steps from the east for a distance of 3.3m at which point was a more prominent step down of 260mm. Here it measured 1.53m wide at the top and 1.03m at the step. Owing to the presence of the chapel over the descenary fill the next 2.5m was not investigated. The western end of the desc-



Plate 11.147. Grid square (JE2). Grave 14 – skeleton 33.

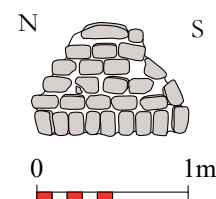


Figure 11.90. Grid square (JE2). Grave 14 – elevation of the inner face of the mud-brick blocking wall (scale 1:50).



Plate 11.148. Grid square (JE2). Grave 14 – inner face of the mud-brick blocking wall.

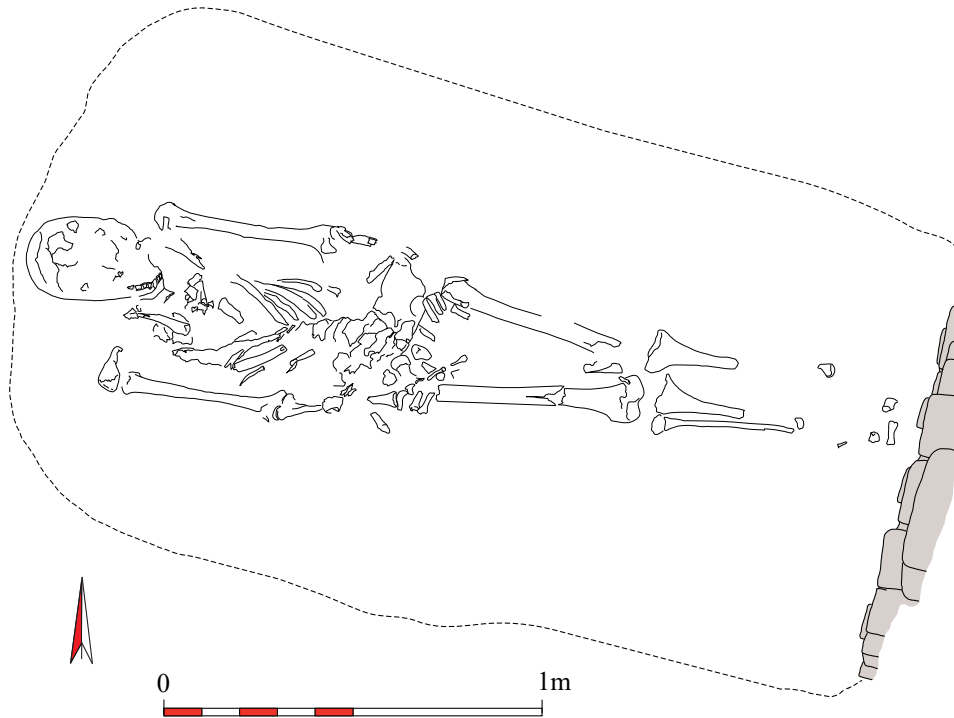


Figure 11.91. Grid square (J2). Grave 14 – plan of the burial (scale 1:15).

endary was occupied by a chamber rounded at its western end and with maximum dimensions at the base of 1.85 x 1.35m presumably hollowed out of the alluvium. The upper part of the chamber had totally collapsed. The presence of wind-blown sand beneath a layer of alluvium suggests that the chamber roof collapsed following the robbing of the grave. The chamber contained an extended inhumation aligned west-east and laid in a supine position with the arms by its side, the hands on the thighs. The body was that of a pubescent individual of undetermined sex.

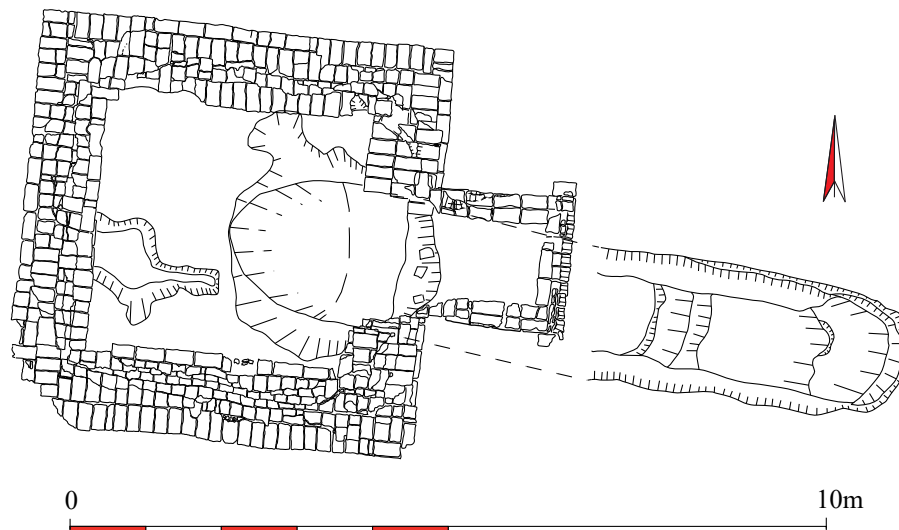
Following the burial the entrance to the chamber was sealed by a mud-brick blocking-wall up to 730mm in height. Only the west face was revealed in excavation. It consisted of a lowermost course of bricks laid as rowlocks with four courses of headers above and saw-tooth headers set to fill the gap between the horizontal courses and the intrados of the 'vault'. Bricks which could be measured were 374 x 170 x 95mm in size. The descendency was filled with a mixture

of alluvium and sandstone chippings. The tomb monument partly overlay this fill as did the chapel.

The tomb was marked by a pyramid measuring at the base 5.23-5.49 x 5.29-5.53m and surviving to a maximum height of 510mm. Each side was revetted by a facing, constructed of mud bricks 350-360 x 155-160 x 112mm in size, with the lowest course probably a single row of headers. On the east revetment, in the section provided by the robber pit, it can be seen that the lowest course was set into a foundation trench while each of the four courses above oversailed the inner face of the course below against which was packed the core of redeposited alluvium mixed with sandstone chippings. On the east side three courses of facing bricks survived, each set back 68mm from the one below, suggesting an angle of slope of approximately 60° and a height of about 4.7m for the pyramid.

The chapel projected 1.97m to the east of the lowest course of the pyramid. It was constructed throughout of

Figure 11.92. Grid square (J2). Grave 14 – plan of the descendency, monument, grave chamber and robber pit and profile (scale 1:100).



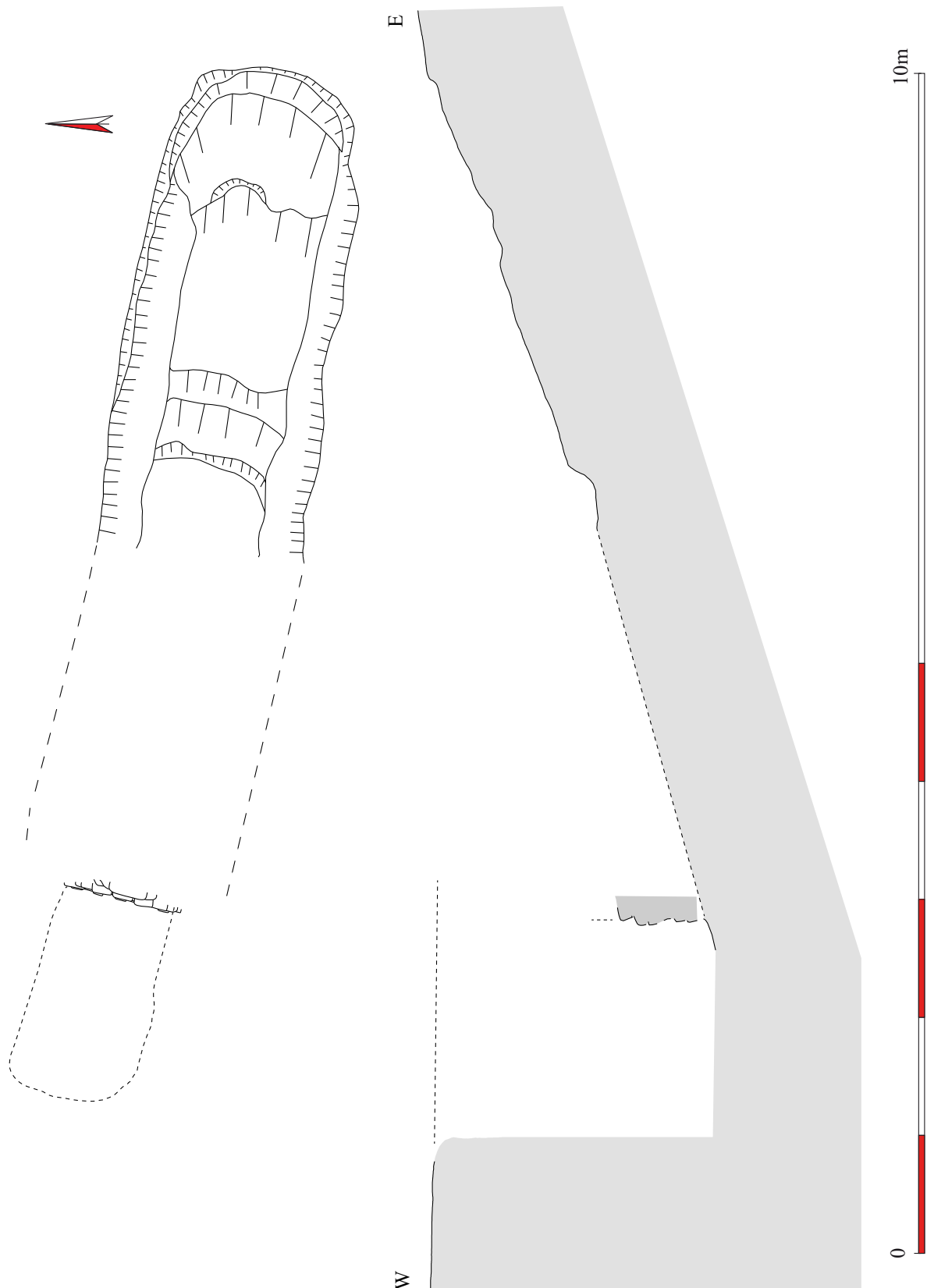


Figure 11.93. Grid square (JE2). Grave 14 – plan and profile of the descendency and burial chamber (scale 1:50).

mud bricks 350 x 160 x 112mm in size, with alternating courses of one header and two stretchers – 360mm thick. The lowest course was of headers. It survives to a maximum height of three courses. The east wall, which was carried right across the doorway at the level of the second course, the highest preserved, projected a little to north and south forming a pylon.

The monument was surrounded by a narrow (not more than 1.24m) spread of mud-brick rubble and some pieces of sandstone.

A roughly circular robber pit, 2.75 x 2.83m in size, was dug through the eastern part of the pyramid removing the central section of its east wall. It was vertically-sided, on three sides presumably approximating to the edges of the



Plate 11.149. Grid square (JE2). Grave 14 – the monument, chapel and unexcavated robber pit, looking west.



Plate 11.150. Grid square (JE2). Grave 14 – eroded remains of the monument.



Plate 11.151. Grid square (JE2). Grave 14 – the north chapel wall meeting the stepped face of the monument.

grave pit. In the lower fill was mud-brick rubble from the east wall of the monument, higher fills were largely of wind-blown sand.

To the south of the pyramid and partly overlying it was an oval tumulus-like feature 3.82 x 3.22m in size, a layer of quartzite pebbles and ferruginous sandstone and silt lenses over a mound of sand. This may be related to the robbing of the tomb; it does not appear to be associated with a separate grave.

Pottery from the descendary fill

bowl – 3094x

For the pottery found in the vicinity of this monument in a variety of contexts, see Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.7.

Grid square (JE3)

At least six phases of activity could be recognised in one part of the area.

Phase 1 – construction deposit, stone chippings

Phase 2 – mud-mortar mixing pits presumably associated with the construction of the tombs and pyramids associated with grave (JE3)115 and/or grave (JE3)132

Phase 3 – creation of grave (JE3)69, of its pyramid and enclosure wall

Phase 4 – digging of pits and post-holes in the vicinity some of which were cut into the secondary fill of grave (JE3)69's descendary (Table 11.2)

Phase 5 – pits and post-holes to the east of Pyramid S2 (Table 11.3)

Phase 6 – features and deposits associated with the destruction of the pyramids

Phases 1, 2 and 4-6 will be described here while the graves and pyramids will be described separately under Phase 3. No phasing was possible across the whole area and how the pits and stone paving immediately to the south of the chapel associated with grave (JE3)115 fit in chronologically could not be established with certainty.

Phase 1 – Deposits of small fragments of white and yellow sandstone fragments, some with an admixture of lime mortar, survived as isolated patches resting directly upon the natural alluvium. The descendary of grave (JE3)132 certainly cut one of these deposits 50mm thick. Another, (JE3)108, was sealed by the facing stones of the pyramid and the chapel associated with grave (JE3)115. It either relates to the construction of the tomb within that grave or to an entirely different but earlier monument. Similar deposits were found in association with other graves marked by stone pyramids, graves (JC3)12, (JF2)20 and (JF2)55.

Phase 2 (Figure 11.94, Plates 11.154 & 11.172) – A few metres to the south of Pyramid S2 were three pits. Pit (JE3)100 was oval and bowl-shaped (2.5 x 2.2m in size, 170mm deep) and filled with light brown silty sand and chunks of greyish to pale pink mortar. Pits (JE3)102 and 104 were very similar, the latter 2.4 x 2.2m in size and 60mm deep and had similar fills. A little to the east of pit (JE3)104 was an area of burnt alluvium with a centrally-placed ash-filled post-hole with charcoal at the bottom.

The western part of pit (JE3)102 had been removed by another pit [(JE3)71] 1.6 x 1.1m in size and up to 180mm deep. It was filled with layers of silty sand and gravel. Perhaps contemporary with pit (JE3)71 was pit (JE3)38 which appeared to be a long irregular oval, maximum width 1.08m, length 2.26m. Its silt and alluvium fill was sealed by the north-east corner of Pyramid S1 which had subsided a little into it. Pit (JE3)100 was cut by the descendency of grave (JE3)69, while its fill and that of pit (JE3)71 were sealed by the enclosure wall around the pyramid.

Phase 4 (Figure 11.94, Plate 11.152) – Immediately to the east of Pyramid S1 were several pits and post-holes (Table 11.2). These may all have been contemporary post-dating the secondary burials in grave (JE3)69 but, if all of one period, they extended across the line of the east wall of the enclosure suggesting that part of that wall had been removed by that time or that they predated the enclosure wall. Only (JE3)51, 55 and 67 actually cut the latest descendency fill, (JE3)68 cut the fill of mortar mixing pit (JE3)100 while (JE3)53, 106 and 109 cut the natural. Pit (JE3)38 was cut partly under the north-east corner of Pyramid S1, the corner of which has subsided a little into its fill of very fine silt and alluvium.

Phase 5 (Figure 11.95) – To the east of Pyramid S2, to the south

TABLE 11.2. POST-HOLES AND PITS BY PYRAMID S1.

	Shape	Dimensions (mm)	Depth (mm)	
(JE3)38	Sub-oval	2260+ x 1080	?	Silt & alluvium
(JE3)51	Sub-circular	980 x 750	480	Mixed sand & alluvium lenses
(JE3)53	Sub-circular	410 x 300	160	Mostly wind-blown sand
(JE3)55	Sub-circular	500 x 350	280	Wind-blown sand, some gravel
(JE3)67	Oval	250 x 200	380	Sand fill, some wood – root?
(JE3)68	Oval	300 x 150	150	Animal hole – probably
(JE3)74	Circular	ø 200	250	Silty sand, occasional mortar fragments, possible wood – root?
(JE3)102	Sub-circular	1170 x c. 1100	?	Silty sand and mortar fragments
(JE3)104	Pear-shaped	2400 x 2200	60	Compact mortar
(JE3)106	Circular	ø 90	160	Silty sand, few mortar fragments
(JE3)109	Oval	150 x 140	180	Silty sand, a little alluvium

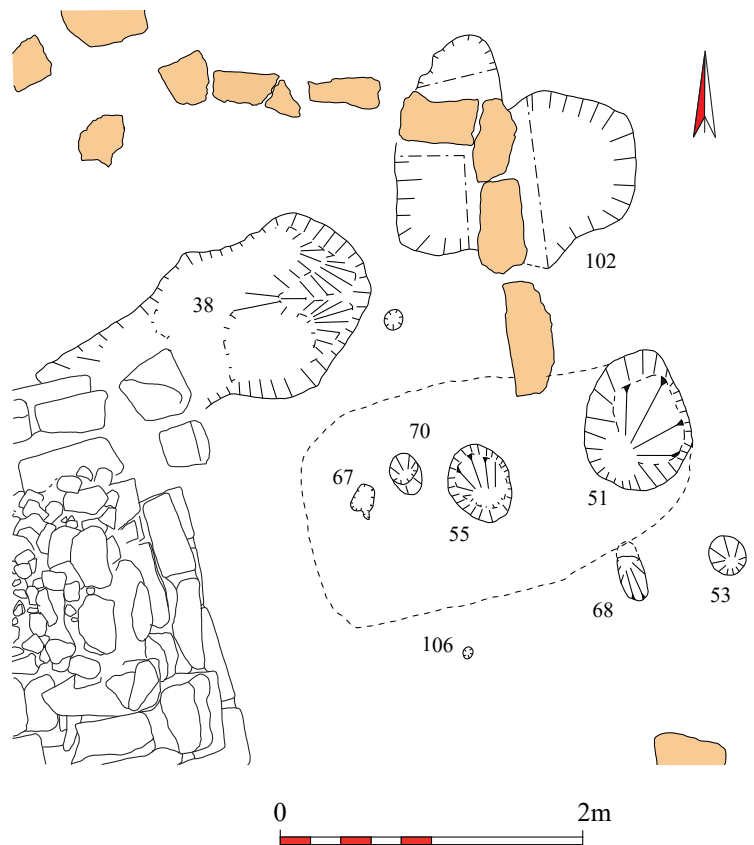


Figure 11.94. Grid square (JE3). Pits and post-holes of Phases 2 and 4 to the east of Pyramid S1 (scale 1:50).

TABLE 11.3. POST-HOLES AND PITS BY PYRAMID S2.

	Shape	Dimensions (mm)	Depth (mm)	
(JE3)94	Sub-circular	620 x 580	210	Grey/yellow sand, few alluvium particles
(JE3)99	Sub-circular	440 x 380	160	Grey/yellow sand
(JE3)118	Sub-circular	490 x 370	110	Sand & some alluvium particles
(JE3)121	Oval	650 x 500	200	Silty sand & alluvium, pot sherds, piece of sandstone
(JE3)126	Circular	ø 90	230	Slightly angled hole – root hole?

of its descendency, were several pits and a post-hole cutting into the natural. Pits (JE3)118, 94 and 121 are in a line, the first two 2.4m apart centre-to-centre, the latter 4.65m away. At the eastern end of the line another pit lay 905mm to the north centre-to-centre. Features of this phase could be earlier or contemporary with Pyramid S2.

Phase 6 (Figure 11.95, Plate 11.153) – Context (JE3)42 is a sandy silt layer which abutted Pyramid S2 at the level of its third course. Resting on it was a setting of 11 stone slabs [(JE3)60] 360-400 x 230-270 x 50-80mm in size forming a pavement 1.48 x 1.39m in extent. Resting on these were several dressed stone blocks which did not form any obvious



Plate 11.152. Grid square (JE3). Post-holes and pits, some cutting the descandary fill of grave 69, looking east.



Figure 11.95. Grid square (JE3). Pits of Phase 5 and stone slabs of Phase 6 to the east of Pyramid S2 (scale 1:100).



Plate 11.153. Grid square (JE3). Stone flags [60] to the east of Pyramid S2, looking north west.

Grave (JE3)69 – skeletons 88-90, Monument: Pyramid S1 2.6 x 2.8m, Figures 11.96-11.99, Plates 11.154-11.165 A very short descandary, 2.7m in length, was dug to a maximum depth of 1.2m below the contemporary surface. The descandary provided access into a small oval tomb chamber 1.25 x 1m in size and a maximum of 406mm in height, which only extended a little below the pyramid. No trace of the primary burial was found, but the lower part of the associated stone blocking wall remained. Subsequently, resting on a thin layer of re-deposited alluvium, were three infants, each aligned west-east in a slightly flexed position, the central one on its left side, the others on their right sides. The central one was accompanied by more than 100

structural feature. From their wedge shape it appears that they were voussoirs and thus presumably come from the destruction of the tomb in grave (JE3)115. One was 850mm long, 350mm thick and tapered from 260mm to 210mm.

Over the whole area was a mass of rubble with mud and sand lenses in the interstices. Those stones on the surface had been abraded by the wind-blown sand so that they appeared to form a smooth pavement of irregular blocks. Amongst the rubble extending up to the ground surface at the time of excavation were *in situ* elements of the cores of pyramids S1 and S2. Some robber pits cut into this rubble and had redeposited it at a higher level. Amongst one of these were a few mud bricks 340 x 170 x 110mm in size. On the highest points of the mound there was only a sparse cover of wind-blown sand but this increased dramatically in thickness away from the centre of the pyramids. Within these deposits were ‘surfaces’ with a greater admixture of gravel representing episodes in the gradual build-up of sand in the area. The rubble, containing some human bone, from the very latest robbing event overlay the wind-blown sand and contained a bullet.

Phase 3 – digging of the graves, construction of the tombs and monuments



Plate 11.154. Grid square (JE3). Grave 69 – the descandary, looking west.

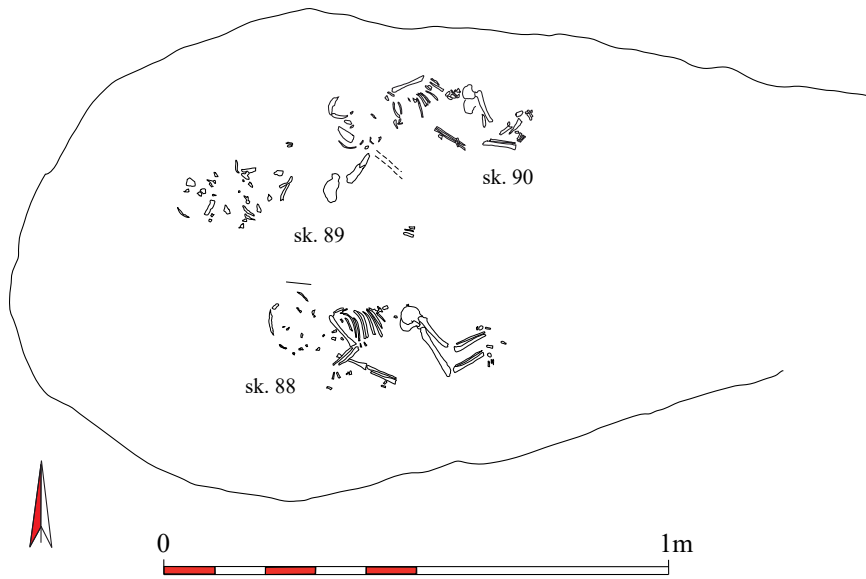


Figure 11.96. Grid square (JE3). Plan of the burials (scale 1:15).



Plate 11.155. Grid square (JE3). Grave 69 – the burial chamber, looking west.



Plate 11.156. Grid square (JE3). Grave 69 – skeleton 88.



Plate 11.157. Grid square (JE3). Grave 69 – the stone blocking wall, looking west.



Plate 11.158. Grid square (JE3). Grave 69 – the mud-brick blocking wall, looking west.

very small faience beads. The tomb was then sealed with a rough wall of stones, two large slabs rested against the opening with three smaller stones filling the gaps between them. This in turn was sealed by a mud-brick blocking wall, a lower course of headers on which sat a row of bricks set as sailors angled back against the stone blocking. Cut into the middle of the blocking wall through the header course was a post-hole 180mm in diameter and 120mm deep.

The blockings remained *in situ* until the time of excavation and appeared to completely seal the chamber although, on their removal, the tomb was found to be full of silt and sand. Overlying the fill of the descendency on its long axis was found a large fragment of a stone offering table, a smaller part of

which was found close by.

Pyramid S1 was constructed of large yellow sandstone blocks on average 600 x 300 x 300mm in size revetting a

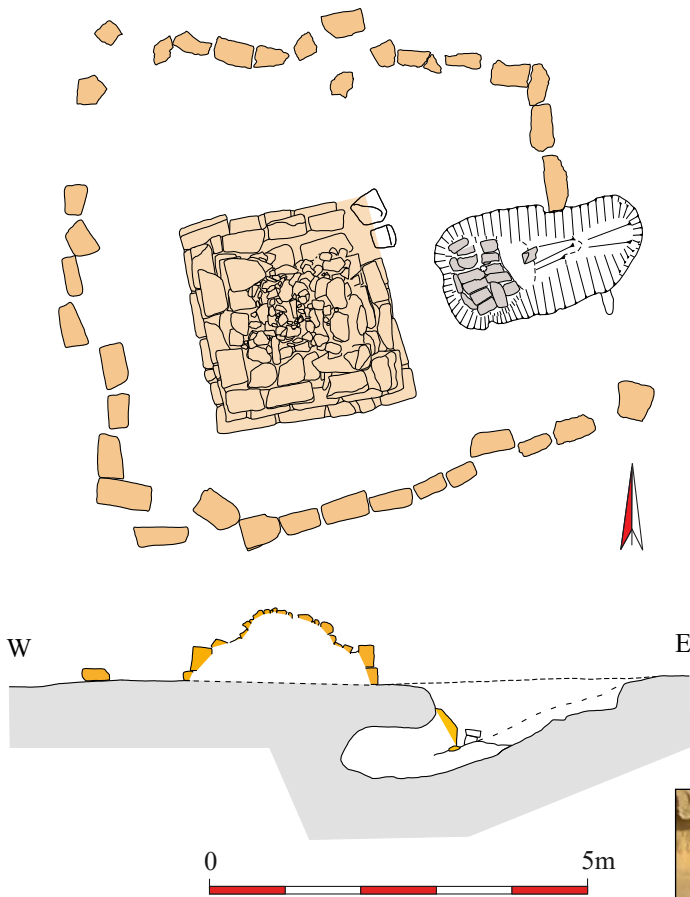


Figure 11.97. Grid square (JE3). Grave 69 – plan of the descendery, pyramid and enclosure wall and profile (scale 1:100).

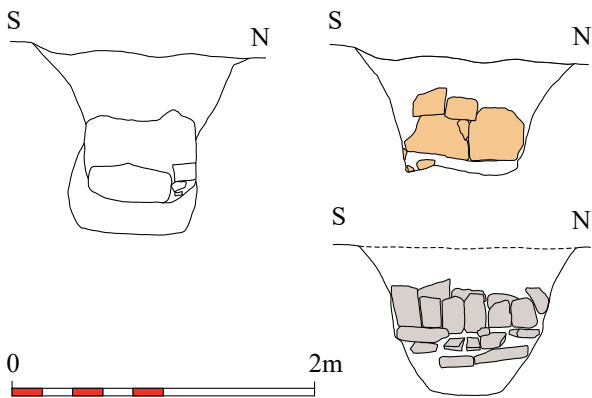


Figure 11.98. Grid square (JE3). Grave 69 – elevations of the entrance to the tomb chamber, the stone and the mud-brick blocking walls (scale 1:50).

stone-rubble core. The facing stones were well dressed and in places preserved on their upper surfaces shallow grooves forming setting-out lines for the blocks of the course above. At its base the monument measured 2.6 x 2.8m and survived to a maximum height of 1.2m.

The large size of the facing stones relative to the pyramid and the fact that many blocks on the south face of the monument showed evidence for extensive wind erosion (the prevailing wind at Kawa comes from the north) suggests that the blocks were re-used from some earlier monument, perhaps that marking grave (JE3)132.



Plate 11.159. Grid square (JE3). Grave 69 – setting-out lines on the courses of the pyramid's west face.



Plate 11.160. Grid square (JE3). Grave 69 – the south face of the pyramid.

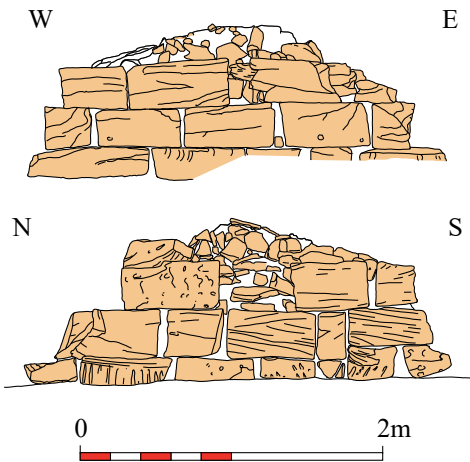


Figure 11.99. Grid square (JE3). Grave 69 – elevations of the south and west faces of the pyramid (scale 1:50).



Plate 11.161. Grid square (JE3). Grave 69 – the pyramid, looking south west.



Plate 11.162. Grid square (JE3). Grave 69 – the south-west angle of the pyramid.

No evidence was found to indicate that a funerary chapel had ever been constructed.

An enclosure wall was constructed of a single line of



Plate 11.163. Grid square (JE3). Grave 69 – the north wall of the enclosure, looking south west.

sandstone blocks many of them reused facing stones. The blocks were only roughly aligned and formed a rather irregular concentric boundary around the pyramid 0.99-1.1m from the pyramid on its west and south sides, 1.87m from the north side and 2.18m from the east side.

Pyramid S1 and its tomb were certainly later than the construction of at least one of the large pyramids lying to its north and south. The descendary cut through a large oval pit filled with the lavender-coloured mortar use in the construction of Pyramid S2 and the tomb under Pyramid S3 with one of which it must have been contemporary. The enclosure wall around Pyramid S1 overlay another mortar-mixing pit and was set on deposits which extended over the remains of Pyramid S3.

Material associated with the burials

Jewellery

B-1543a – 321 beads, faience

Stone

Cat. no. F-2480 – capstone

Pottery perhaps associated with the burial (Welsby Sjöström 2023, 369, tab. 7.5)

bowl rim – 3547x in robbers' spoil

body sherds of a Meroitic jar and bowls.

Grave (JE3)115 – skeletons 195 & 196, Monument: Pyramid S2 10.6+ x 11.19(?)m, Figures 11.100-11.102, Plates 11.165-11.180

The tomb had been entered down a broad descendary 2.36m wide at the surface, with a flight of at least 18 very shallow steps cut into the alluvium. The robbing had been so severe that virtually no trace of the tomb chamber remained, although it appears to have attained a depth of about 3.5m. Low down in the robber pit were three stone blocks, the two largest measuring 790 x 310 x ?mm and 800 x 380 x 320mm, which may be from the tomb chamber. Only a very small amount of human bone was recovered, none of it *in situ*. It was impossible to ascertain whether it came from

the primary or secondary phase of burial in the tomb. The bones were from two individuals, one an undetermined adult of undetermined sex (sk. 195), the other (sk. 196) a pubescent or adolescent non-adult of undetermined sex.

Owing to the robbing the exact dimensions of the pyramid are uncertain. The south face was at least 10.6m in length. Assuming that the chapel was set centrally in the east face and had a doorway 900mm in width this would suggest that the east face was about 11.19m in length. The pyramid was set directly on the alluvium which had been levelled in places to better accommodate the structure. It was constructed of a stone-rubble core revetted by a single thickness of dressed stones. Amongst the rubble was a painted stela⁹ and some architectural fragments presumably derived from other monuments in the area and here being reused.

⁹ Whether the stela was a part of the core or was simply resting on it having been moved by the robbers is uncertain.



Plate 11.164. Area (JE3). Grave 69 – the descender, pyramid and enclosure walls, looking west-north-west. The mortar-mixing pits to the north and east of, and cut by, the descender are clearly visible.



Plate 11.165. Grid square (JE3). Grave 69 – Pyramid S1 during excavation. The rubble, most of it from the destruction of Pyramid S2, is visible in the background overlying a layer of wind-blown sand, looking north east.

Much of the stone used in the construction of the facing was a very soft white sandstone. Although the blocks had well-dressed faces they were of widely differing dimensions. In the four steps of the pyramid surviving along its south face to a maximum height of 1.27m, the lowest step 490mm high was made up of four courses of stone, the next step 304mm high was of two courses while the third step 326mm high was of two and in places three courses. Only a single course remained of the uppermost step. Almost invariably in dressed stone pyramids each step was one course high. The deviation from this norm here suggests that the stones used were not originally quarried for this monument but were reused from another structure on the site.

Following the primary burial, an offering chapel was constructed against the east face of the pyramid. The south wall of dressed facing stones and a rubble core set in a lav-

ender mortar, 640mm in thickness, was constructed on the ground surface, the north wall presumably on the descender fill. The stones used in its construction were of regular size and appear to have been fashioned specifically for the construction of this monument. Where the chapel wall met the stepped face of the pyramid the blocks had been shaped to accommodate the steps rather than the two elements being bonded. Its eastern wall formed a pylon 719mm thick and projecting beyond the chapel wall by 259mm. In the centre of it was a doorway of which the lowermost block of the jamb survived, a rebated block of stone 917mm high by 285mm wide. As with the pyramid, no foundations were provided for the chapel and its south wall and pylon had subsided, leading to the collapse of the front of the pylon. Thirteen courses were found lying where they had fallen, indicating that the pylon attained a height of at least 2.5m.



Plate 11.166. Grid square (JE3). Grave 115 – primary steps cut into the alluvium, and secondary stone steps in the descender looking south east.



Plate 11.168. Grid square (JE3). Grave 115 – excavating the western end of the descender/robber pit looking east.



Plate 11.167. Grid square (JE3). Grave 115 – stone blocks in the robber pit looking south west.



Plate 11.169. Grid square (JE3). Grave 115 – the south face of Pyramid S2 looking north west.

The collapse of the pylon may have occurred before the reuse of the tomb.

A little above the primary stairway new steps had been constructed, using stones taken from the offering chapel to form a steeper flight. At the base of the surviving steps, hard up against the south side of the descender, was a post-hole 250 x 180mm in size and 460mm deep.

All remains of the secondary burial have been totally destroyed. The mud-brick rubble found in the robber pit may come from a blocking wall while some dressed stone blocks, including two much larger than any of the others used in the structure of the pyramid, apart from the door jambs of the offering chapel, may be from the structure



Plate 11.170. Grid square (JE3). Grave 115 – the south face of Pyramid S2, detail.

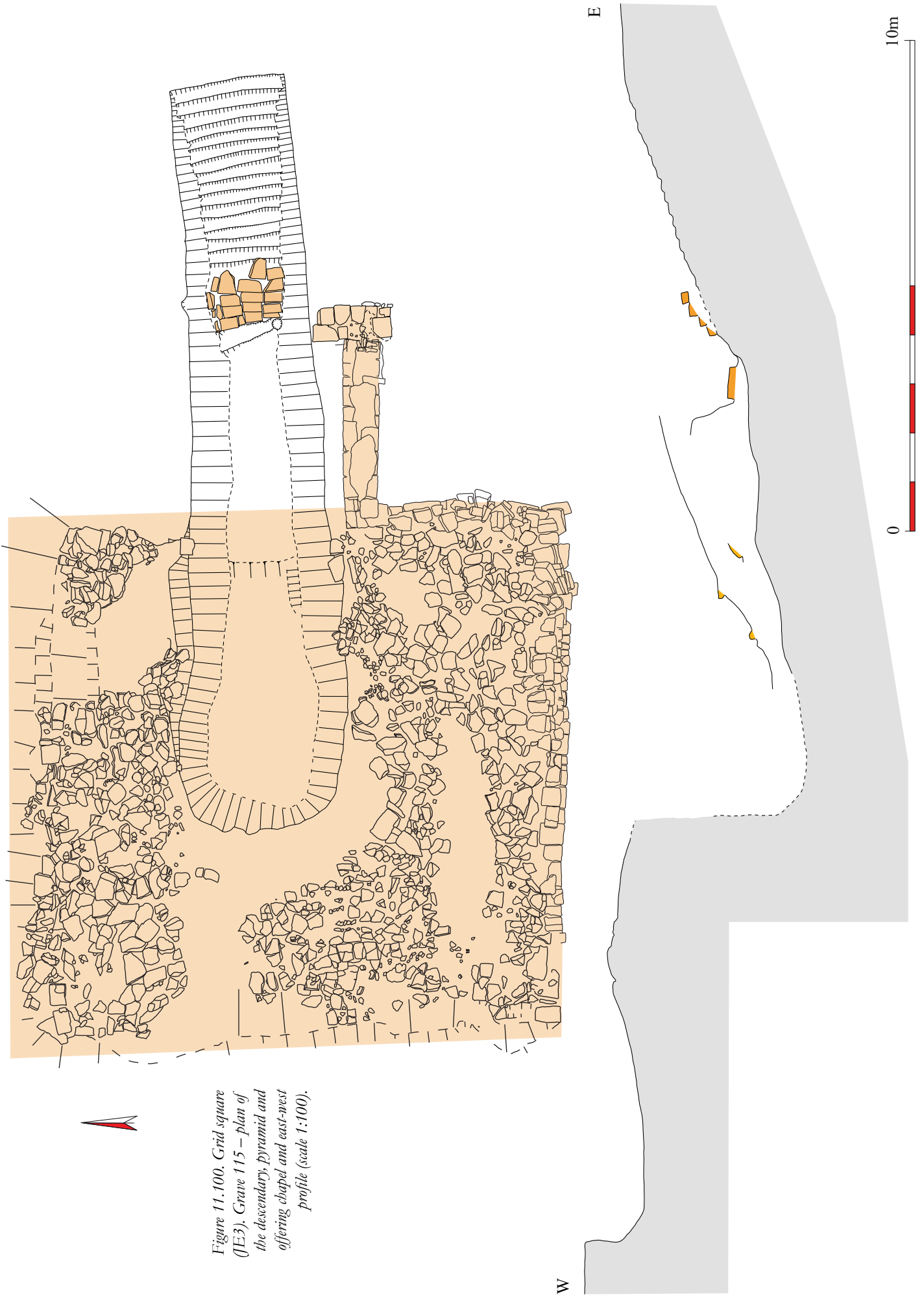


Figure 11.100. Grid square (JE3). Grave 115 – plan of the descendery, pyramid and offering chapel and east-west profile (scale 1:100).

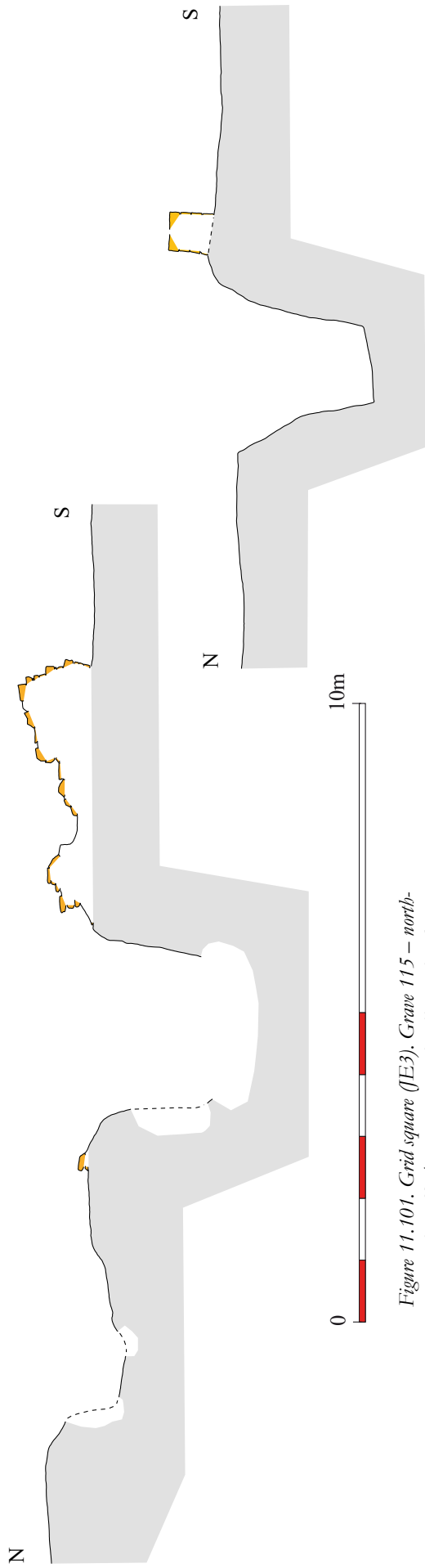


Figure 11.101. Grid square (E3). Grave 115 – north-south profiles/sections across the offering chapel, descendancy and pyramid (scale 1:100).

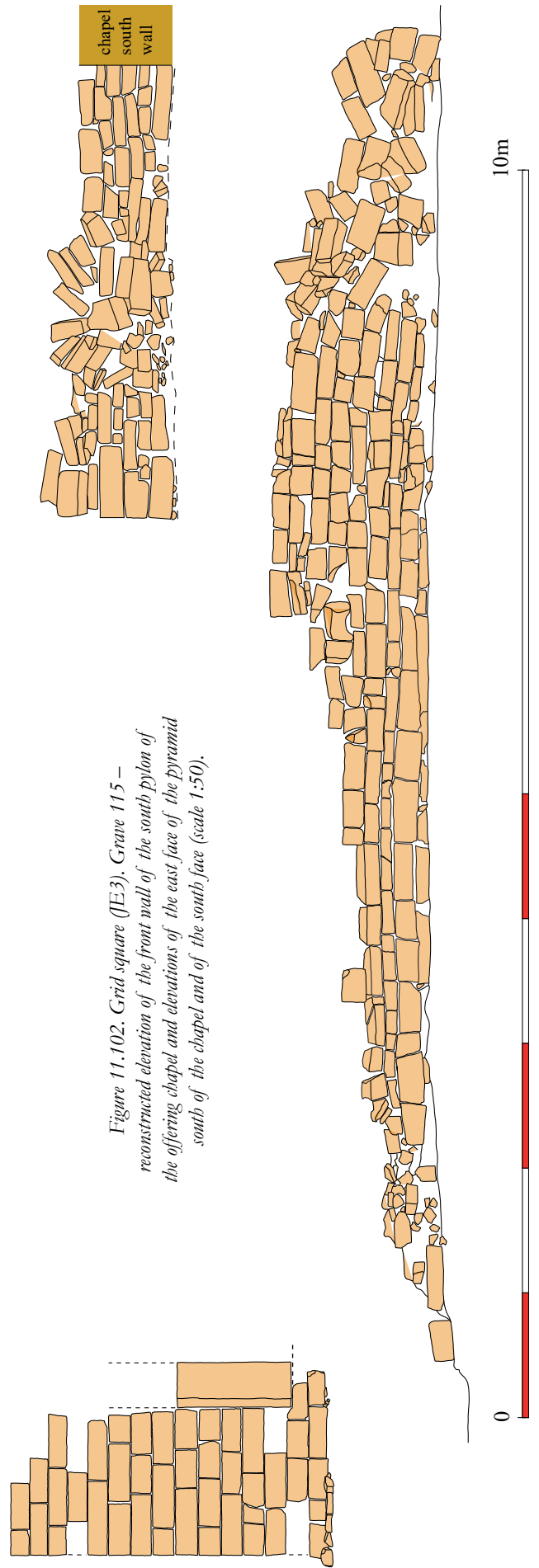


Figure 11.102. Grid square (E3). Grave 115 – reconstructed elevation of the front wall of the south pylon of the offering chapel and elevations of the east face of the pyramid south of the chapel and of the south face (scale 1:50).



Plate 11.171. Grid square (JE3). Grave 115 – the core and south face of Pyramid S2, looking east.



Plate 11.174. Grid square (JE3). Grave 115 – the south wall of the offering chapel abutting Pyramid S2.



Plate 11.172. Grid square (JE3). Mortar-mixing pits associated with construction activities relating to either graves 115 or 132.



Plate 11.175. Grid square (JE3). Grave 115 – the fallen east pylon of the offering chapel looking west.



Plate 11.173. Grid square (JE3). Grave 115 – the south and east walls of the offering chapel looking south west.



Plate 11.176. Grid square (JE3). Grave 115 – the collapsed east pylon.

of the tomb (see below). Very little human bone was recovered and of the many pottery vessels which must have been placed with the primary and/or secondary burials only fragments were found in the fill and among the rubble. The scale of the robbing suggests that the grave was originally

richly furnished.

This pyramid had been very badly destroyed. All the facing stones from the west wall and almost all those from the north wall had been taken, while the core had been almost totally removed when the tomb was robbed.

The excavation of the robber pit and descandary posed a number of logistical problems, as they were cut into the friable alluvium, itself in places surmounted by the unstable



Plate 11.177. Grid square (JE3). Grave 115 – the alluvial fill of the descandary, the robber pit with its sand fill, Pyramid S2 and its offering chapel, looking west.



Plate 11.178. Grid square (JE3). Grave 115 – the stone steps associated with a second phase of internments.



Plate 11.179. Grid square (JE3). The copper-alloy offering table (cat. no. F-93) in situ to the south east of Pyramid S2.

rubble core of the pyramid. The use of shoring was essential both for the well-being of the monument and of the excavators. The work was completed and the descandary backfilled without incident.

Material associated with the tomb and its monument
Stone

Cat. no. F-2447 – painted stela, sandstone

Cat. nos F-2443 & F-2445 – offering tables

Cat. nos F-2458, F-2462, F-2472 – 3 inscribed blocks

Metalwork

Cat. no. F-93 – offering table, copper alloy

Pottery from the descandary fill

beer jar – 3579x

Pottery from the robber pit

flagon – 3558x

For the pottery found in the vicinity of this monument in a variety of contexts and in the robber-pit fill, see Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.3.

Grave (JE3)132 – skeletons 184-190, Monument: Pyramid S3, Figures 11.103-11.106, Plates 11.181-11.199

The tomb under this pyramid was the best preserved of the elite tombs discovered so far at Kawa. Although robbers had entered the tomb and caused some damage the structure largely remained intact.

The alluvium at Kawa is very friable and although many small tomb chambers hollowed out of the alluvium are known, the Kushites appear to have been well aware of the problems of excavating a larger chamber. To solve this problem when the status of the deceased demanded a large tomb chamber, or as in this case when multiple burials were interred, a different approach was adopted. Here, as also in graves (JG2)2 and (JG2)150 (and presumably in graves (JC3)12 and (JE3)115), a vertically-sided, roughly rectangular pit, 4.12 x 3.52m in size, was dug into the alluvium from the ground surface and a free-standing structure was



Plate 11.180. Grid square (JE3). Pyramids S1 and S2, looking north east.



Plate 11.181. Grid square (JE3). Grave 132 – the descendary and rubble core of the monument looking west.

constructed within it. The east wall of this structure was carried up to ground level and the pit behind was then in-filled with alluvium.¹⁰ Thus during the burial ceremonies this tomb, and others of the same general type, will have appeared very similar to the smaller tombs hollowed out of the alluvium and the sequence of events after the burial will have been the same as elsewhere. The tomb lay at the west end of a massive descendary of the same order of magnitude as that associated with Pyramid S2. On the surface it was 2.4m wide and 13m in length.

¹⁰ The construction pit for the tomb was not excavated so details of the extrados and exterior walls of the tomb on its north, south and west sides are not available.



Plate 11.182. Grid square (JE3). Grave 132 – the west end of the descendary, the tomb's construction pit and the monument's rubble core, looking west-south-west.



Plate 11.183. Grid square (JE3). Grave 132 – the mud-brick wall revetting the construction-pit fill at the west end of the descendary.



Plate 11.184. Grid square (JE3). Grave 132 – excavating the burial chamber.



Plate 11.186. Grid square (JE3). Grave 132 – the junction of the east and north walls of the burial chamber.

What makes this chamber a unique survival at Kawa is that the chamber was constructed of dressed stone and was roofed with a stone barrel vault. Almost certainly the tomb chamber under Pyramid S2 was very similar as large voussoirs were found in its robber pit but all *in situ* traces of the structure of that tomb had been destroyed.

The chamber was rectangular measuring 2.6 x 2.1 m internally. It was constructed throughout of well-dressed sandstone blocks bonded in a lavender-coloured mortar some of which extended onto the facing. In a few cases where the



Plate 11.187. Grid square (JE3). Grave 132 – the intrados of the vault of the burial chamber.



Plate 11.185. Grid square (JE3). Grave 132 – the west wall of the burial chamber.

stones were not well laid they were roughly placed to mask the step between one block and another. The north wall was 659mm, the south walls 790mm in height to the springing

of the vault, a total of four and five courses respectively. The lower voussoirs, some of considerable size (up to 840 x 320mm), were well cut and neatly laid but the construction deteriorated towards the top of the vault as smaller irregular stones were used to complete the structure. Whereas almost all the vault is constructed of stretchers the keystones along a part of the vault's length are headers, are roughly dressed and have large gaps between them in contrast to the careful and skilled construction of the rest of the chamber. The maximum height of the vault was 1.81m. The vertical west wall was 11 courses in height. It, like the east wall, was built before the vault which abutted both end walls.

The east wall was 540mm thick and contained the doorway 784mm wide at the bottom, 763mm wide at the top, and 960mm high. The massive threshold slab, the full width of the wall, was 1.22m in length and 300mm high. It had been cut to form two steps, the outer (eastern) step was 360mm wide with a riser of 70mm. The inner step was 180mm wide. Flush with the exterior it supported the monolithic

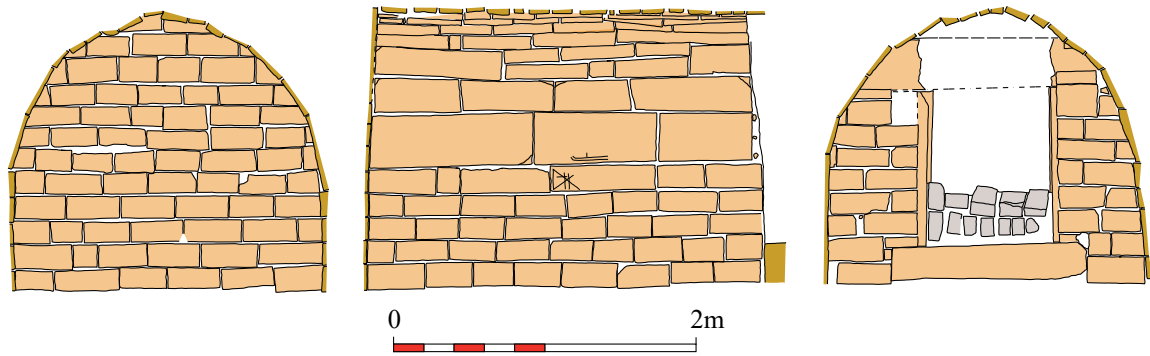


Figure 11.103. Grid square (JE3). Grave 132 – elevations of the west, north and east interior walls of the burial chamber (scale 1:50).

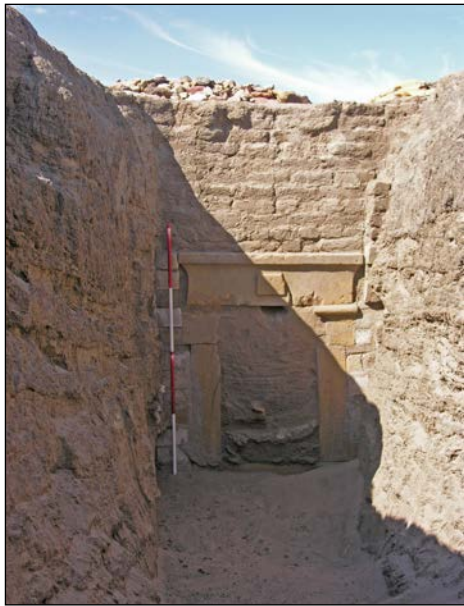


Plate 11.188. Grid square (JE3). Grave 132 – the west end of the descender.

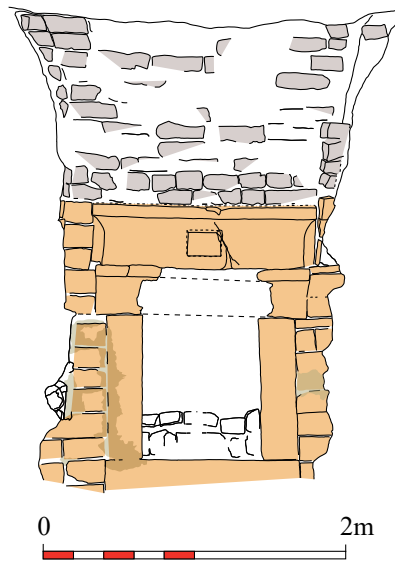


Figure 11.104. Grid square (JE3). Grave 132 – elevation of the west end of the descender (scale 1:50).

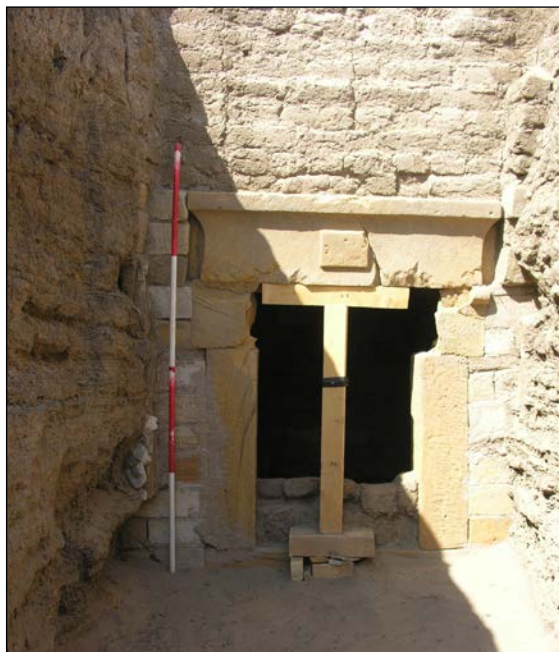


Plate 11.189. Grid square (JE3). Grave 132 – the doorway into the burial chamber and the mud-brick wall revetting the fill of its construction pit.

stone jambs (960mm high, 240mm wide, 360mm thick) resting on the wide step which in turn supported the lower and upper lintels both of which oversail the jambs by c. 80mm. The rest of the wall was built of small blockwork, a total of 13 courses. The lower lintel had been badly damaged by the robbers who had smashed through the central section which was pushed inside the tomb. Originally it



Plate 11.190. Grid square (JE3). Grave 132 – raised boss in the centre of the upper door lintel of the burial chamber.



Plate 11.191. Grid square (JE3). Grave 132 – the threshold in the doorway leading into the burial chamber.



Plate 11.193. Grid square (JE3). Grave 132 – incised blocks in the north wall of the burial chamber.



Plate 11.192. Grid square (JE3). Grave 132 – the east wall of the burial chamber and the upper stone lintel.

1. An equal-armed cross with each arm formed from two parallel lines. An X has then been carved over it and centred on the cross
2. An indistinct carving probably of a boat with an up-curving prow or stern, two box-like cabins and a tall mast

was a single block of stone 1.42 x 0.3m in size and 360mm thick with a torus moulding along its top edge. The lintel above was 1.47 x 0.41m in size and had a cavetto cornice. On its underside it was 260mm thick. In the centre of its eastern face was a rectangular boss 219 x 154mm protruding from the face of the stone. Resting directly on the uppermost course of blockwork and on top of the upper lintel was a wall of mud brick (330 x 180 x 100mm) extending up to the ground surface, a total of 11 courses. The irregular gap between the east wall of the tomb and the edge of the construction pit was infilled with blockwork in the lower part and mud bricks above.

In the centre of the north wall of the tomb three blocks have been decorated with scored lines.



Plate 11.194. Grid square (JE3). Grave 132 – the skeletons, looking west-south-west.



Plate 11.195. Grid square (JE3). Grave 132 – skeletons 184 and 185 with copper-alloy anklets.



Plate 11.197. Grid square (JE3). Grave 132 – skeleton 186.



Plate 11.196. Grid square (JE3). Grave 132 – skeleton 185, one of the silver(?) anklets (cat. nos F-31 & F-32).



Plate 11.198. Grid square (JE3). Grave 132 – skeleton 186 with the stone arrowhead (cat. no. F-2371) in situ.

3. A roughly-inscribed line tracing an inverted 'U'-shape.

The floor of the tomb was of sandy silt with lots of small fragments of sandstone on it. Resting directly on this were seven skeletons.

(JE3)184 – extended supine skeleton of an individual in late childhood aligned south-north. It wore copper-alloy anklets on the left (cat. no. F-58) and right (cat. no. F-60) legs.

(JE3)185 – flexed skeleton laid on its left side, of a young adult, possibly female, aligned south-north. Around each ankle was a very large anklet (cat. nos F-31 & F-32) possibly of silver around a plaster core.

(JE3)186 – supine skeleton of an undetermined adult male, arranged in a very unusual way. The arms were extended at 90° to the torso while the legs were flexed at the knee, each pointing away from the body with the lower legs parallel and far apart. The head had been removed and was found a little to the west within later deposits. The left lower arm overlay skeleton (JE3)187. There was red staining in the pelvic area and a chalcedony arrowhead (cat. no. F-2371) in a position which suggests that it had been lodged in the tissue of the upper left thigh.

(JE3)187 – the torso of an adolescent possible male was placed in a supine position with the arms flexed at the elbow

away from the body and with the left hand by the pelvis. The lower right arm lay under the torso of skeleton (JE3)186. The legs were flexed to the left side.

(JE3)188 – supine skeleton of a infant aligned north-south A copper-alloy anklet (cat. nos F-55 & F-56) was on each leg. Some bones lay under those of skeletons 184 and 189.

(JE3)189 – supine skeleton of an individual in late childhood with copper-alloy anklets (cat. nos F-57 & F-59) around the legs.

(JE3)190 – crouched skeleton of an individual in early childhood laid on its right side aligned south-north looking east.

Following the burials, which all appear to have been interred at the same time, the doorway was blocked by a wall of mud brick, each 350 x 170 x 90mm in size. The lowermost course of rowlocks rests directly on the wide step of the threshold and a course of headers remains upon it. Further bricks have been pushed out of position and lay on and amongst the silt layers which slope down into the tomb.

The descandary had no steps but a gentle slope gave access down to the doorway into the tomb. Its base was ill-defined. Little or no original descandary fill remained *in situ*.



Figure 11.105. Grid square (JE3).
Grave 132 – plan of the burials
(scale 1:15).

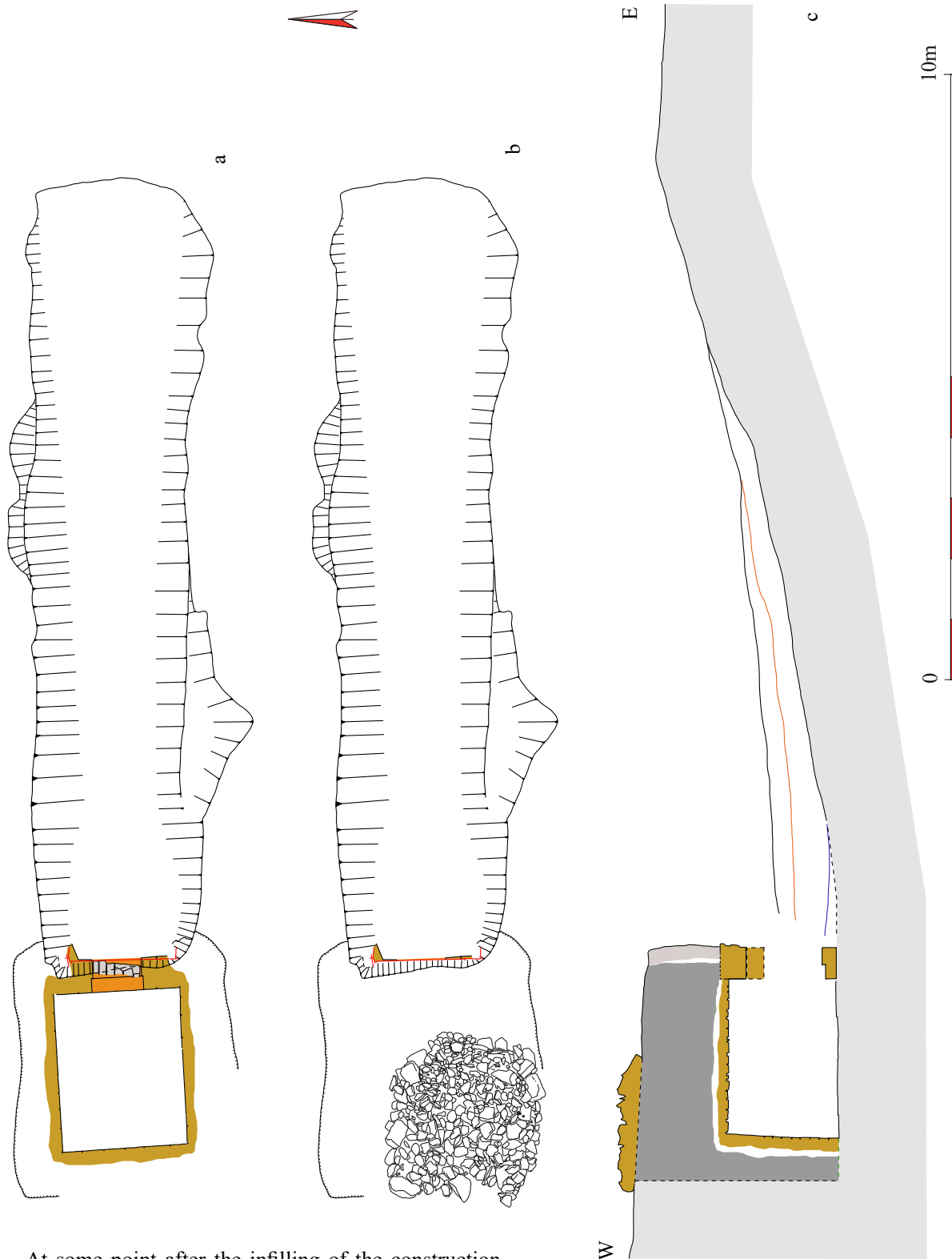


Figure 11.106. Grid square (JE3). Grave 132 – a: plan of the descender and burial chamber
 b: plan of the descender and core of the tomb monument, c: east-west profile (scale 1:100).

At some point after the infilling of the construction pit for the tomb, whether before or after the filling of the descender, the tomb monument was constructed. The rubble core of the pyramid measured a minimum of 2.81 x 2.67m in size. All its facing stones have been removed and this may be the source of those used to construct Pyramid S1. Certainly the enclosure wall around Pyramid S2 was founded at a higher level than the surface from which Pyramid S3 was constructed and extended over it. The original size of the pyramid cannot be ascertained although as the core still retains its roughly

square shape this may suggest that it was only the facing stones which were removed. If this was the case the pyramid would not have been more than about 3.5m square. However, on analogy with Pyramid S2 where the descender of the same order of magnitude of that under Pyramid S3, begins 8.8m to the east of the pyramid, Pyramid S3 could have been much bigger particularly as it forms the central monument of the row of three, its neighbours being approximately 10m and 10.6m square.



Plate 11.199. Grid square (JE3). Grave 132 – rubble core of the tomb monument, looking north east.

The descendency was infilled with multiple layers of fine or compacted silt with several apparent surfaces. The upper layers in particular were very sandy. The nature of these fills and the way they were deposited within the descendency suggests that the filling occurred naturally over a period of time. After the descendency had filled to the level of the ground surface from which it was cut a semi-circular robber pit was excavated at its western end 2.2 x 2.05m in size and dug to approximately the level of the bottom of the uppermost lintel. After it had filled with wind-blown sand and fine alluvium it was cut by another semi-circular pit 1.32 x 0.76m in size which cut through the base of the earlier pit and penetrated almost to the base of the doorway. By the doorway the pit was very narrow and to allow easier access into the tomb the central part of the lower lintel was smashed and fell into the tomb. The upper part of the blocking wall had presumably already been demolished during the earlier robbing phases.

Within the tomb the evidence suggests that the robbers disturbed only one skeleton, removing the skull of skeleton 186 which was found upended sitting upon about 200mm of silty sand a little to the west. Following the robbing similar material built up within the chamber and over the rubble from the partly demolished blocking wall. The later deposits¹¹ contained a greater component of sand and resting on one of them was the broken lower sandstone lintel. At the time of excavation a void remained between the uppermost fill and the intrados.

Material associated with the burials

Jewellery

Cat. no. B-1545 – pendant, chalcedony

Cat. nos F-58 & F-60 – anklets, copper alloy – skeleton 184

Cat. nos F-32 & F31 – anklets, silver? and plaster? – skeleton 185

Cat. nos F-55 & F-56 – anklets, copper alloy – skeleton 188

Cat. nos F-57 & F-59 – anklets, copper alloy – skeleton 189

Lithics

Cat. no. F-2371 – arrowhead, chalcedony – skeleton 186

Cat. no. F-2372 – arrowhead, quartz – skeleton 187

Pottery possibly associated with the burial
(Welsby Sjöström 2023, 369, figs 7.6 & 7.7)
basin – 4821x

dish – 230x

Pottery from the rubble core of the pyramid
beaker – 3225x rim, coarse, handmade

Grid square (JF1)

Only the eastern part of the grid square was investigated.

Grave (JF1)23 – Figure 11.107, Plate 11.200

The descendency was approximately 6.5m in length and with a width of about 2.24m at the surface. The even slope descended from the east to a maximum depth of 2.23m. The arched-shaped entrance, 1m wide at the base and 1.43m in height, was cut through the west end into the alluvium. The tomb chamber was not excavated.

At its eastern end the descendency was cut by the west-east descendency for grave (JG1)31. The descendency fill was also cut by a robber pit 3.29 x 2.2m in size penetrating to a maximum depth of 1.3m at which point an entry into the chamber was made perhaps resulting in a heightening of the doorway.

Pottery from the descendency fill

(Welsby Sjöström 2023, 369, tab/ 7.5)

basin – 4821x

bowls – 2039x, 2624x

cooking pots – 4475x, 4538x

Pottery from the robber pit

basin – 4821x

decorated sherd – 1283y



Plate 11.200. Grid square (JF1). Grave 23 – the descendency with that of grave (JG1)31 in the foreground, looking south west.

¹¹ A single phalange was found in one of these, (JE3)171, against the west wall.

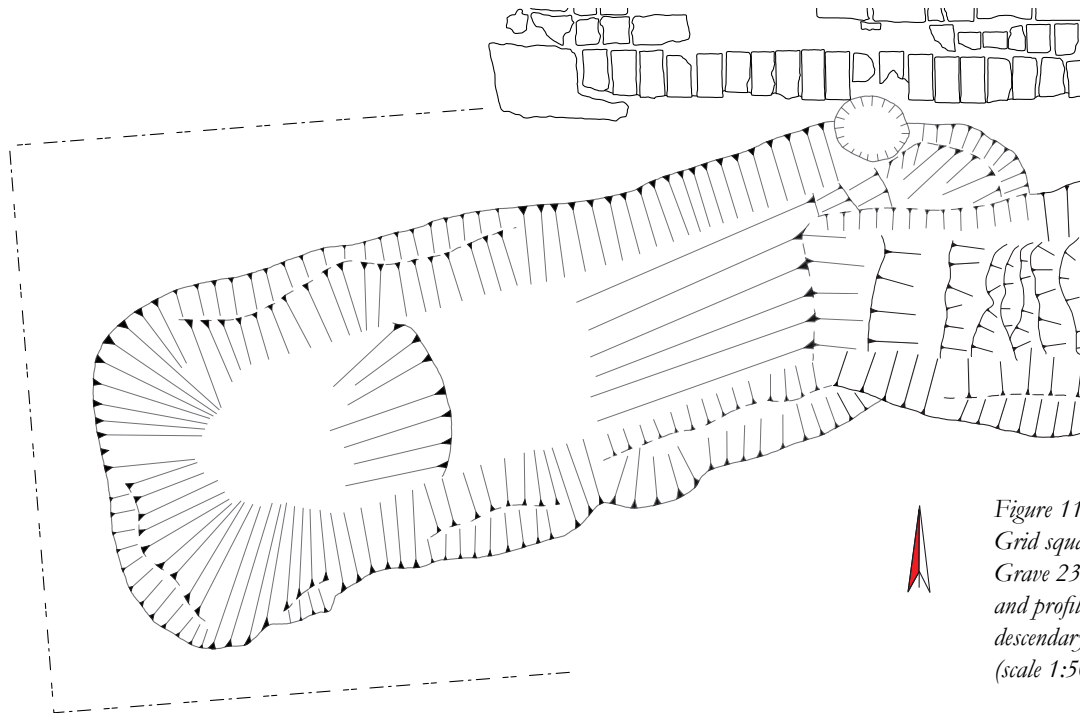
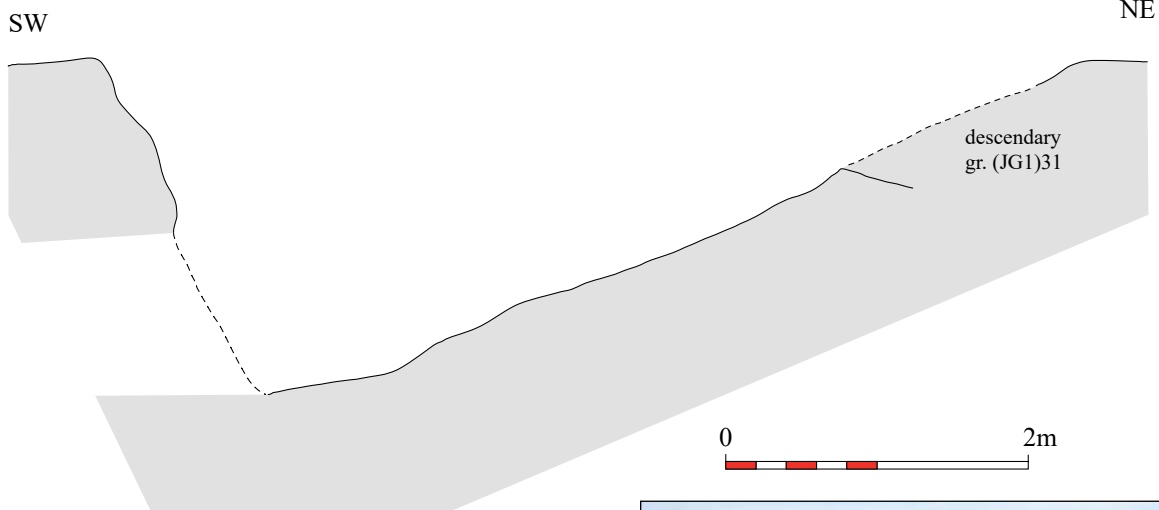


Figure 11.107.
Grid square (JF1).
Grave 23 – plan
and profile of the
descendancy
(scale 1:50).



Grid square (JF2)

In this grid square to the east of graves (JF2)55 and (JE2)14 was a north-south spread of rubble including facing stones 12.5m in length by up to 7.3m wide. This may be material from Pyramid S2 lying further to the east. The rubble was set in and sealed a thick deposit of wind-blown sand.

Finds from the surface not associated with any particular grave

Jewellery

Cat. no. B-1547 – bead, faience

Metalwork

Cat. nos F-89 & F-90 – 2 identical objects, copper alloy

Pottery (Welsby Sjöström 2023, fig. 7.6)

beaker base – 3303x

Grave (JF2)2 – skeleton 91, Figure 11.108, Plates 11.201-11.203

The descendancy was 5.12m in length, a maximum of 1.46m wide and attained a depth of 1.84m. The floor was a steep slope with some slight steps which may have been no more



Plate 11.201. Grid square (JF2). Grave 2 – the descendancy with that of grave (JG1)31 in the foreground, looking south west.

than the changes from one stratum of alluvium to another. Close to the bottom there was a single prominent step down 290mm. The burial chamber was hollowed out of the allu-

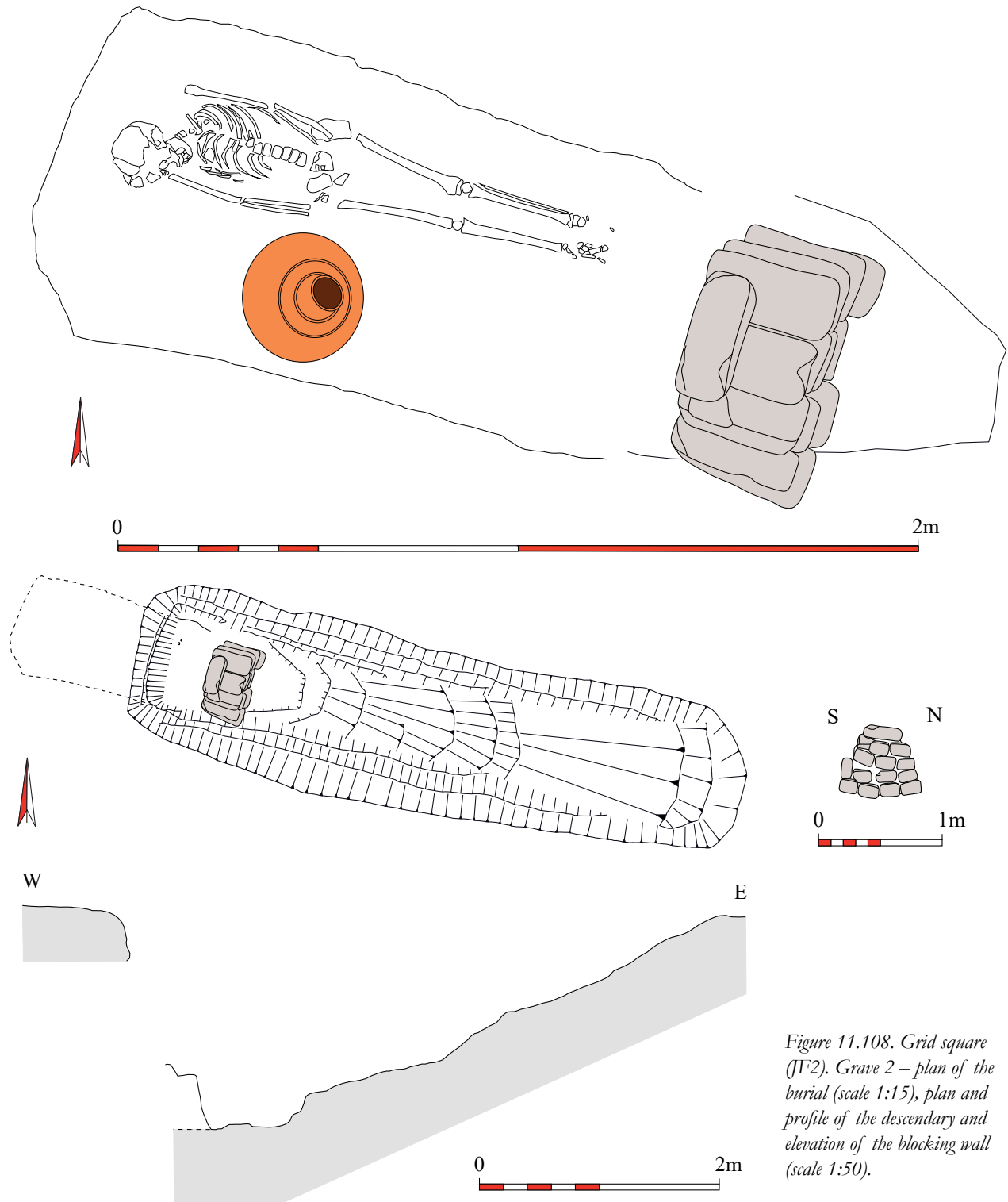


Figure 11.108. Grid square (JF2). Grave 2 – plan of the burial (scale 1:15), plan and profile of the descendary and elevation of the blocking wall (scale 1:50).

vium and accessed through a doorway a maximum of 1.39m in height. The edges of the tomb were difficult to define but it appeared to have been rectangular in plan rounded at in the south-west corner, a maximum of 660mm wide. It extended 1.6m west of the blocking wall. The chamber contained an extended supine body of an individual in late childhood aligned west/east with its head facing south east. The arms were by its side with the hands on the pelvis. Mid-way along the body on its south side was a wheel-made redware jar set upright and partly embedded into the surface on which the skeleton lay.

Set about 300mm in front of the doorway into the chamber¹² was the blocking wall surviving to a height of five courses (550mm) on its western face, each of mud bricks (330 x 160 x 95mm) laid as headers apart from one on edge and one stretcher. On its west side however, it was founded at a lower level with an additional three courses of stretchers indicating the there was a step down of approximately 300mm from the descendary into the tomb chamber. The

¹² The gap between the blocking wall and the doorway it was designed to block is an odd feature. It is possible that in the digging of the robber pit the western end of the descendary was cut back creating this gap.



Plate 11.202. Grid square (JF2). Grave 2 – skeleton 91, the blocking wall and the west end of the descender, looking east.



Plate 11.204. Grid square (JF2). Grave 20 – the descender and Pyramid S6, looking west.



Plate 11.203. Grid square (JF2). Grave 2 – skeleton 91.



Plate 11.205. Grid square (JF2). Grave 20 – the descender, looking east.

descender was filled with alluvium and some sandstone chippings with clear tip lines from the east visible.

Hard up against the west end of the descender was a small oval robber pit 960 x 890mm in size dug to a depth of 1.34m. In its lowest fill of sand and alluvium was a copper-alloy bowl. The upper fill was of wind-blown sand with a fragmentary mud brick within it.

Material associated with the burial
Metalwork

Cat. no.: F-82 – bowl, copper alloy
Pottery (Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.3)
jar – 4653x

Grave (JF2)20 – Monument: Pyramid S6 3.73 x 3.72m, Figures 11.109 & 11.110, Plates 11.204-11.208, 11.221 & 11.222

The descender between 2.31m and

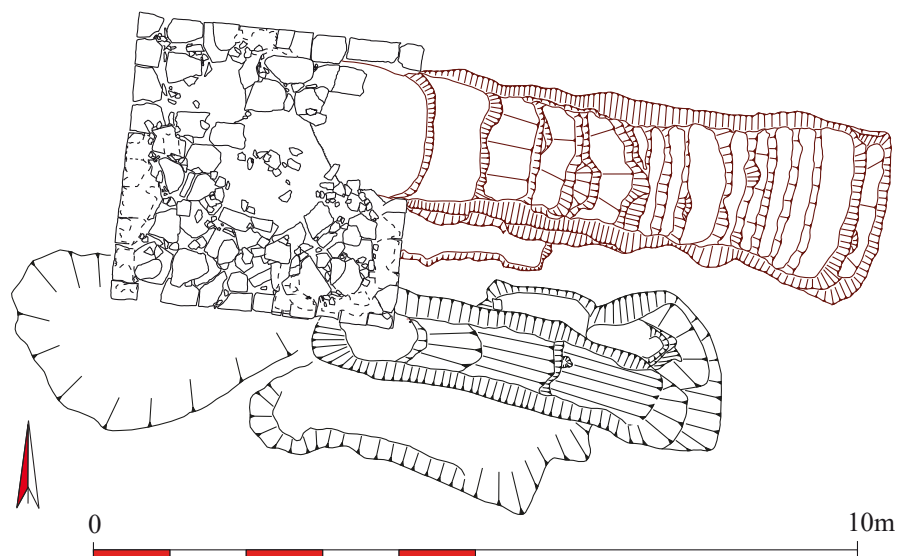


Figure 11.109. Grid square (JF2). Graves 20 and 79 – plan of the descenders, Pyramid S6 and pits (scale 1:100).

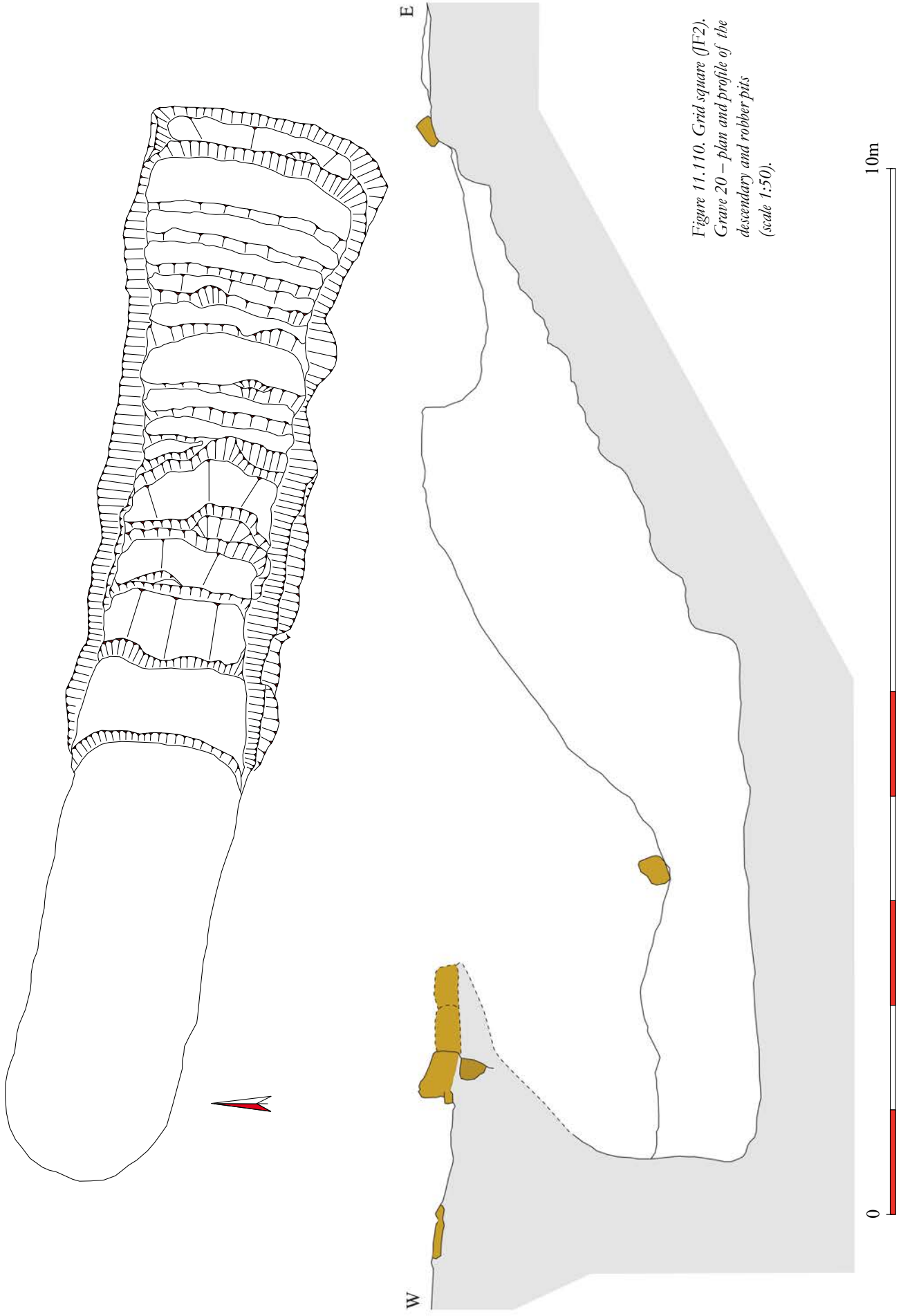


Figure 11.110. Grid square (IF2).
Grave 20 – plan and profile of the
descendary and robber pits
(scale 1:50).



Plate 11.206. Grid square (JF2). Grave 20 – the robber pit/ burial chamber and Pyramid S6, looking south west.



Plate 11.207. Grid square (JF2). Grave 20 – construction trench(?) for the south wall and pylon of the offering chapel, looking south west.



Plate 11.208. Grid square (JF2). Grave 20 – the east and south faces of Pyramid S6, looking west.

1.82m wide at the surface has a flight of 15 steps, most very shallow but a few with deeper risers and wide treads, leading down to the burial chamber at a depth of 2.33m below the contemporary ground level at the interface between the alluvium and a stratum of silver sand. The point of junction between the descendary and the grave chamber was unclear owing to extensive robbing. It is probable that the chamber, 1.61m in width, was hollowed out from the alluvium. Neither traces of the burial remained nor of the blocking wall *in situ*. A few pieces of human bone, of a neonate or infant, came from a deposit in the lowest fill of the robber pit and a large number of mud bricks 345 x 170 x 93mm in size, some of which preserved lime mortar bonding material, was found within the chamber presumably from its destruction along with a large sandstone block (390 x 200 x 105mm). The descendary was filled with alluvium and partly sealed by sandstone chippings which were densely packed near the surface.

The monument, almost exactly square at 3.73 x 3.72m, was faced with well-dressed blocks of white and yellow sandstone (sample dimensions 320 x 240 x 130mm, 330 x 290 x 145mm, 360 x 300 x ?mm, 360 x 340 x 150mm, 375 x 230 x 130mm) with a maximum of two courses surviving to a height of 390mm above the bottom of the foundation trench, the outer faces set flush forming a socle on which the superstructure sat. A further course was represented by a few very eroded fragments of stone. Amongst the rubble was one dressed corner block 330 x 300 x 120mm in size bearing the setting out lines for the next course. These were set back from the dressed faces indicating that the superstructure had the form of a stepped monument, almost certainly a pyramid. The lowest course was set against the face of the foundation trench about 240mm deep, on the east and north sides 1.07 and 1.06m wide respectively, with rubble filling the rest of the trench behind the facers. The foundation trench was vertically-sided towards the interior but a wide shallow bowl-shape to the south and south west where it was up to 2.15m wide. The core was of a mixture of rubble from 300 x 300 x 20mm to 200 x 150 x 100mm

in size, and dressed blocks of white and yellow sandstone.

Attached to the east face of the monument was an offering chapel of which only the foundation trench for its south wall and the south end of its east wall remained. The east wall extended beyond the building line to the south indicating that it will have had a double pylon façade 360mm thick. The northern part of the east wall and the north wall lay over the descandary fill and had been totally destroyed by the robbing. As the fill of the foundation trench was alluvium it suggests that its stones were robbed either during or before

the latest robbing of the tomb. The chapel projected about 1.93m from the east face of the monument.

The descandary was cut by two robber pits. One towards the eastern end of the descandary was 3.97m in length and between 2.1 and 4.6m wide. At one end it penetrated onto the descandary steps, at the other it stopped at a depth of 610mm within the fill. It contained some small fragments of human bone. The other (western) robber pit 4.85m long cleared out the full width of the descandary and throughout the area of the chamber. A low mound of alluvial upcast

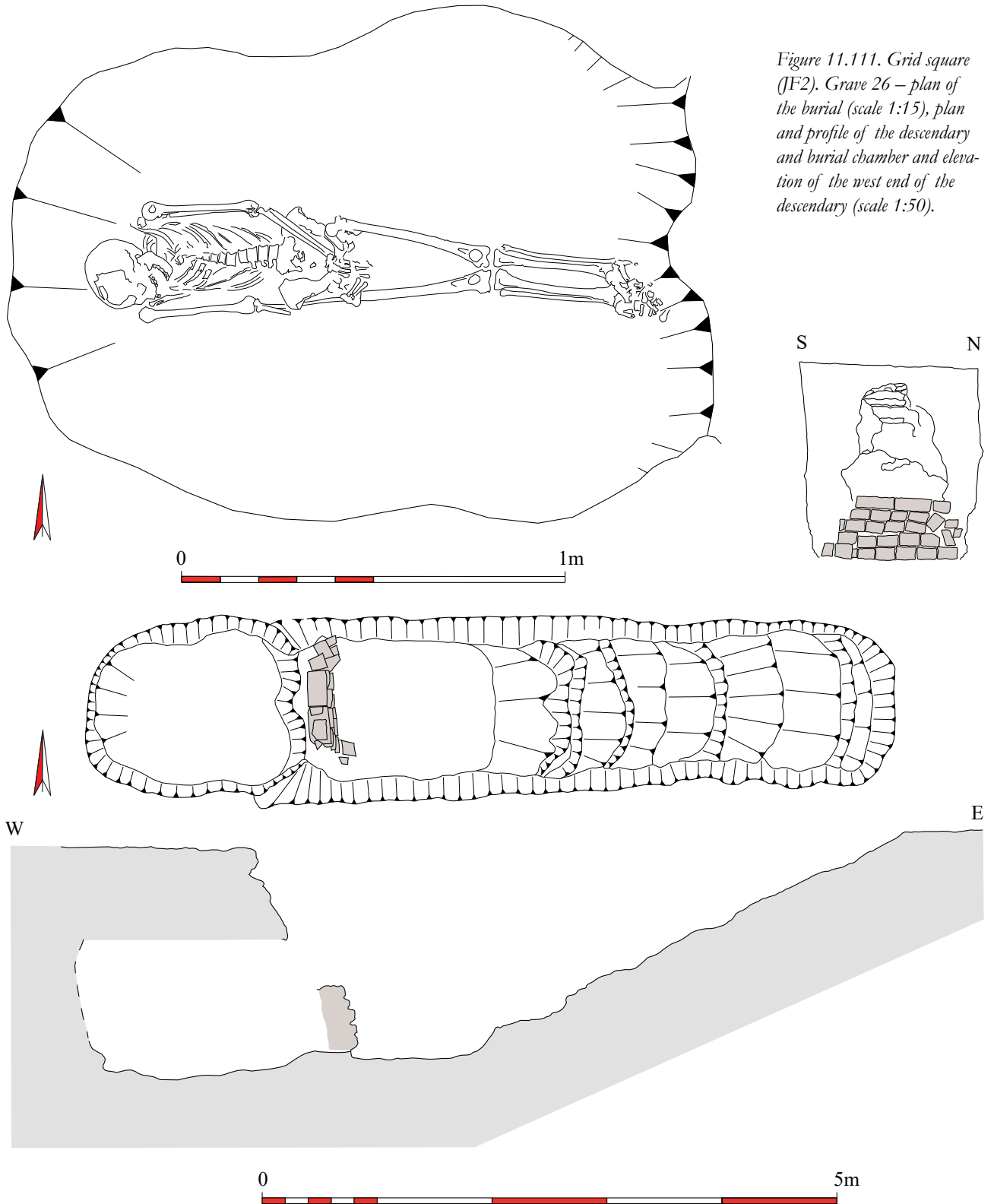


Figure 11.111. Grid square (JF2). Grave 26 – plan of the burial (scale 1:15), plan and profile of the descandary and burial chamber and elevation of the west end of the descandary (scale 1:50).

mixed with some sandstone chippings flanked the descender on its south side 7.96m in length and up to 5.24m wide, presumably redeposited descender fill from the digging of the western robber pit. Piled along the south side of the robber pit were stone blocks, both facing stones and others from the core, the largest 420 x 310mm in size, and mud bricks. The robber pit infilled with wind-blown sand. Another small pit cut into the north-west corner of the monument into the core to a depth of 80mm. The remains of the pyramid were surrounded by rubble with some lime mortar and a little mud brick towards the east all set in and on sand.

Material associated with the burial

Metalwork

Cat. no. F-167 – object, copper alloy

Pottery in the rubble south of the monument

(Welsby Sjöström 2023, 369, tab. 7.4)

cups – 3570x, 4764x

sherd – 1262y

Pottery from the robber pit

sherd – 1261y

Grave (JF2)26 – skeleton 64, Figure 11.111, Plates 11.209-11.212

The descender, attaining a maximum depth of 2m, was 5.65m long and from 1.25-1.5m wide. It gave access down a



Plate 11.211. Grid square (JF2). Grave 26 – skeleton 64, looking south west.



Plate 11.209. Grid square (JF2). Grave 26 – the descender, looking west.



Plate 11.212. Grid square (JF2). Grave 26 – the robber pit at the western end of the descender looking east.



Plate 11.210. Grid square (JF2). Grave 26 – the mud-brick blocking wall and entrance into the burial chamber, looking west.

flight of seven steps, the uppermost with a riser of 300mm, the lowest of 600mm and the others of 500mm, through an arch-shaped doorway into the tomb carved into the alluvium. The tomb measured 1.78m in length, was 1.18m wide and about 1.64m high. It contained the extended skeleton of a young adult female. The left arm and hand were crossed over the pelvis, the right hand was on the upper thigh and the right foot was on top of the left. The entrance to the chamber had been blocked by a mud-brick wall (bricks 340 x 170 x 100mm) five courses of which survived, the lower four of headers, the uppermost a single row of stretchers.

No trace of a tomb monument was noted.

A small, circular pit 1.09m in diameter and 1.2m deep was dug at the west end of the descender giving access

into the tomb. The fill consisted of sand, some fragments of sandstone, human bone and pottery sherds.

Material possibly associated with the burial?

Pottery

jar – 2 wheel-made sherds

bowl – sherd with red slip

Grave (JF2)27 – skeleton 75, Figures 11.112 & 11.113, Plates 11.213-11.215

The descendery, 5.7m in length and 1.24m wide, had six steps with, from top to bottom, risers of 300mm, 300mm, 250mm, 300mm, 300mm and 200mm to a maximum depth of 1.7m. It gave access presumably through an arch-shaped doorway into the tomb chamber but the ‘arch’ had been destroyed by the robber pit.

The skeleton of an infant was buried in a flexed position on its right side with the head facing south. The body had been placed in a plaster-coated coffin 950mm long by a maximum of 250mm wide (190mm wide at the foot), and was accompanied by many faience beads at the neck. Immediately to the east of the feet within the coffin was a copper-



Plate 11.214.
Grid square (JF2). Grave 27 – skeleton 75 and the copper-alloy vessel.



Plate 11.213.
Grid square (JF2). Grave 27 – the descendery and blocking wall, looking east.



Plate 11.215.
Grid square (JF2). Grave 27 – traces of the coffin and a string of faience beads after removal of the skeleton.

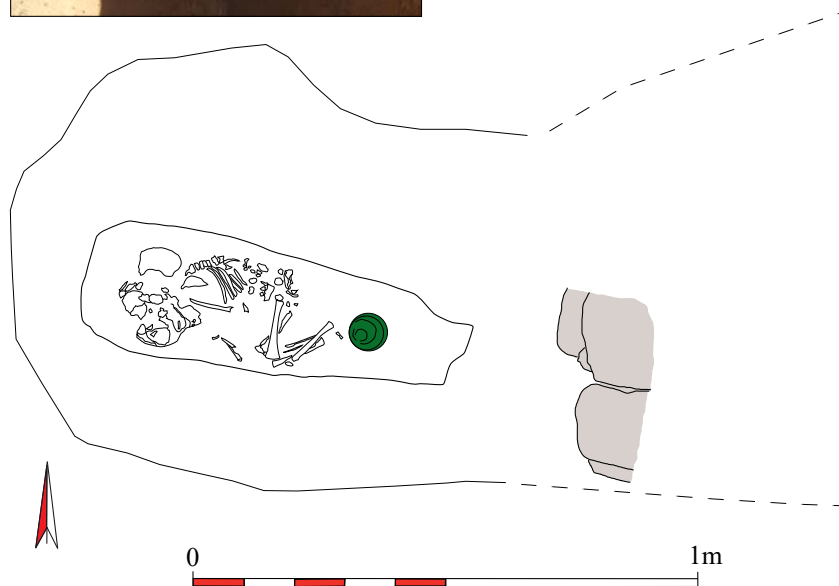


Figure 11.112. Grid square (JF2). Grave 27 – plan of the burial (scale 1:15).

alloy beaker placed upside-down. The blocking wall was very substantial. Built of mud bricks 360 x 180 x 80mm in size it was 950mm thick, two rows of headers in the uppermost course visible. On the east face the lowermost course, of headers, projected a little to the east. The second course was of rowlocks with another course of headers above.

No trace of a tomb monument was noted.

The robber pit was an oval cut 1.1 x 0.9m in size and 1.1m deep.

Material associated with the burial
Jewellery

Cat. no. B-1548 – 45 beads, faience

Cat. no. B-1549 – bead, faience

Cat. no. B-1550 – 33 beads, faience

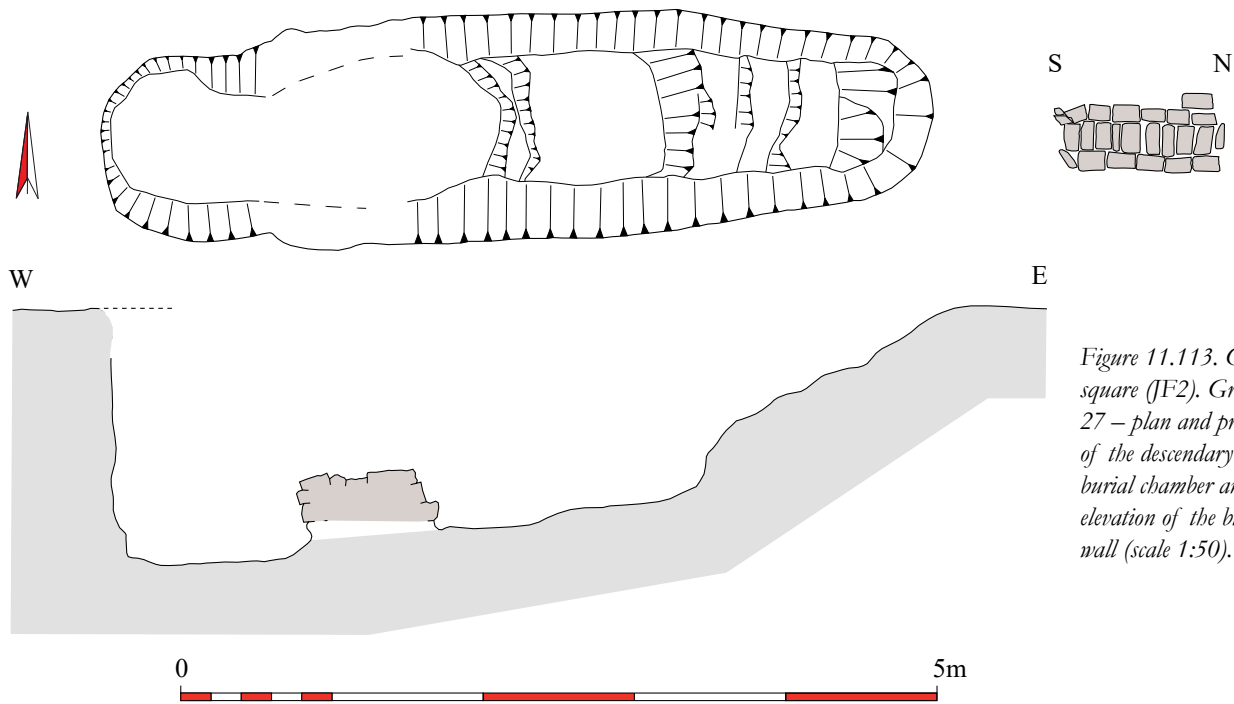


Figure 11.113. Grid square (JF2). Grave 27 – plan and profile of the descender and burial chamber and elevation of the blocking wall (scale 1:50).

Metalwork

Cat. no. F-77 – beaker, copper alloy

In robber pit and descender fills

Pottery

jar – 2 sherds, handmade and wheel-made

Grave (JF2)55 – Monument: Pyramid S4 5.1 x 5m, Figures 11.114 & 11.115, Plates 11.216-11.219

The descender was 8.1m in length to the end of the burial

chamber and approximately 2m wide at the surface. A flight, originally of 11 shallow steps, led down 2m to the natural sand layer on which the chamber had presumably been built. No trace of the chamber (and of the burial) remained although many large mud bricks came from the robber pit (see below).

After the filling of the descender with alluvium it was sealed by a layer of stone chippings preserved to a maximum thickness of 100mm, material derived from the dressing on site of the pyramid blocks.

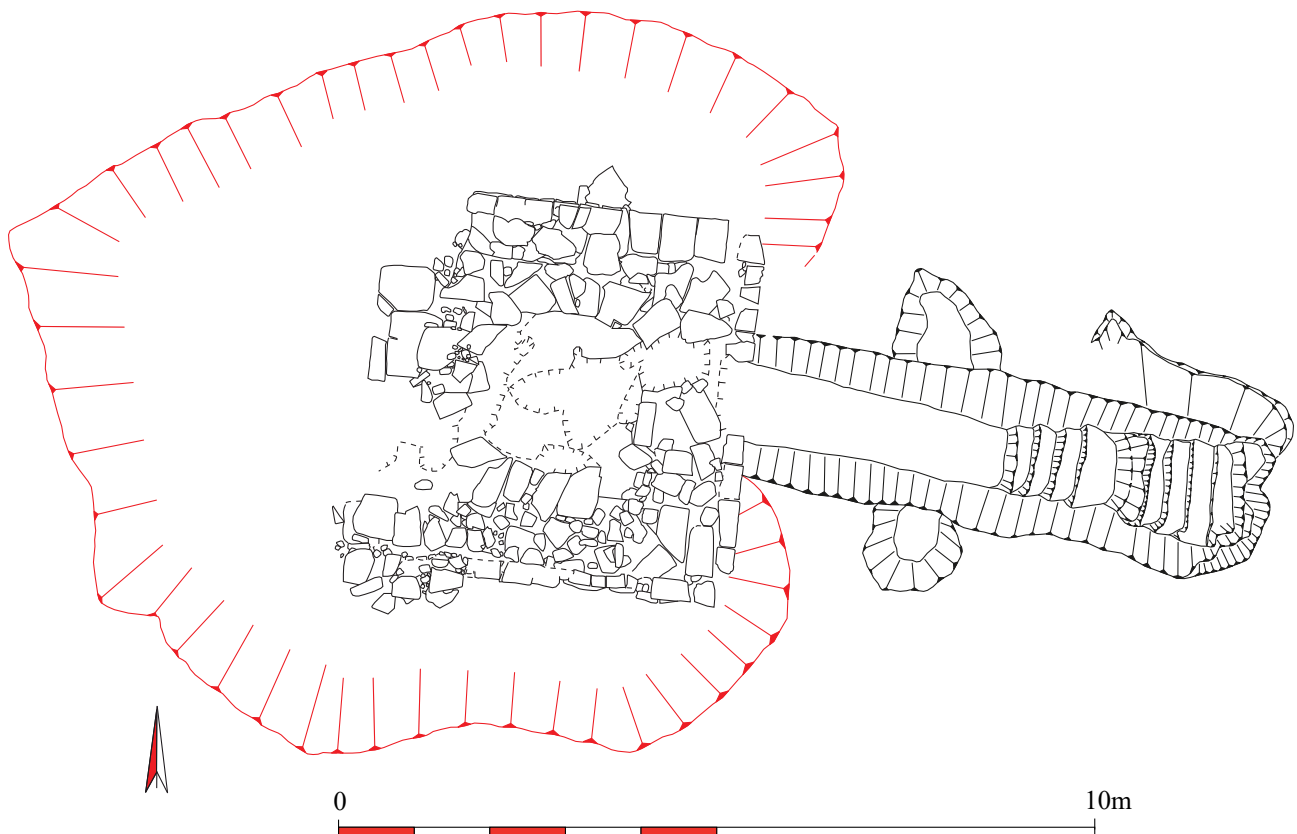


Figure 11.114. Grid square (JF2). Grave 55 – plan of the descender, Pyramid S4 and its construction pit (scale 1:100).

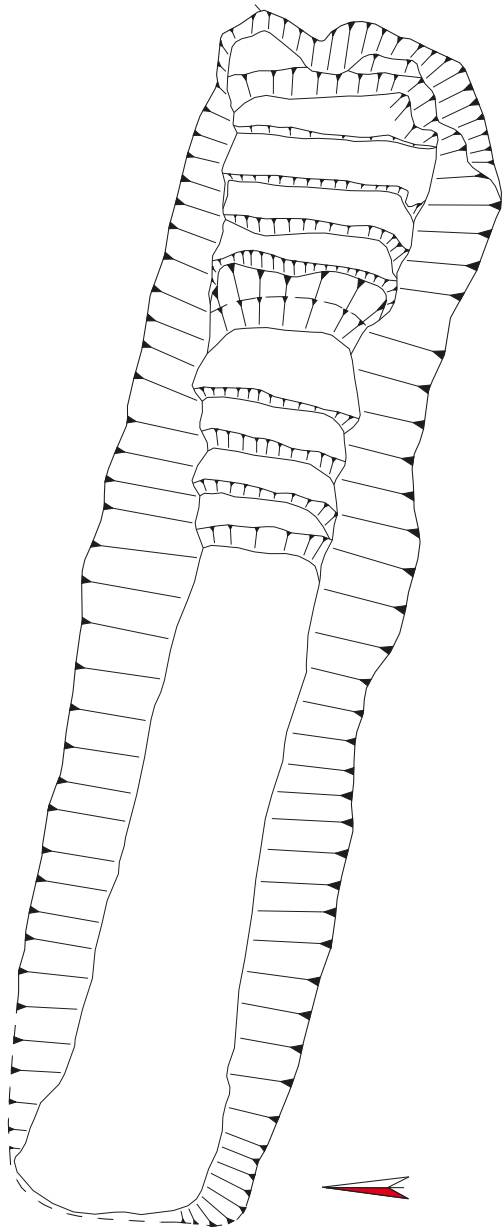


Figure 11.115. Grid square (F2).
Grave 55 – plan and east-west
profile of the descendery
(scale 1:50).

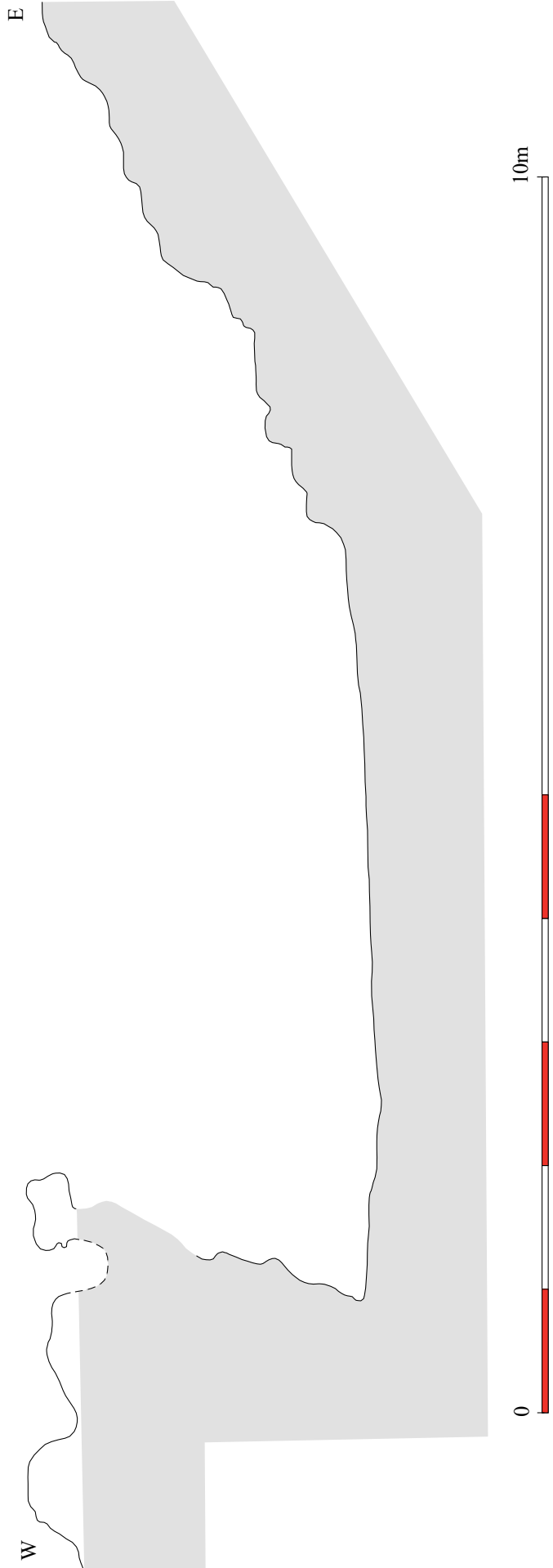




Plate 11.216. Grid square (JF2). Grave 55 – the descender and Pyramid S4, looking west.



Plate 11.217. Grid square (JF2). Grave 55 – the eastern end of the descender, looking north east.



Plate 11.218. Grid square (JF2). Grave 55 – section through the stone chippings layer, looking north west.

The monument, 5.1 x 5m in size, was constructed within a large shallow bowl-shaped depression approximately 10m in diameter and with a maximum depth of 260mm. It survived to a maximum height of three courses, the uppermost of those on the north face set back about 36mm from the building line indicating the beginning of the stepped face of the pyramid. It was constructed of well-dressed

white sandstone blocks 606-265 x 300-450mm in size bonded in lime mortar, some laid as headers. The facing stones were backed by a rubble core of stones up to 689 x 524mm in size within which a rough kerb of large, unshaped stones delimited an oval area of alluvium 2.1 x 2.25m in size. Partly under the north wall was a large stone slab resting on the bottom of the foundation pit. It did not appear to have had any special function. On the east face where the monument was built on the descender fill an additional partial foundation course, of red sandstone, flush with the face of the two socle courses above, was provided.

The robber pit, 5.3m in length, 1.6m wide and a maximum of 2m deep, cut through the fill towards the eastern end of the descender and had removed all



Plate 11.219. Grid square (JF2). Grave 55 – Pyramid S4, detail of the north face, looking south.

the fill from the rest of the descender and every trace of the tomb chamber cutting a little through the sides of the chamber's construction pit. A single mud brick, not *in situ*, was found in the area of the chamber on the bottom of the robber pit. Presumably to stabilise the sides of the robber pit many mud bricks had been placed on the slope. Those on the north side measured 330 x 160 x 90mm, those on the south side 360 x 160 x 100mm on average. A pottery lid (4550x) was found resting on the surface of the descender fill on the slope made by the robber-pit cut.

On the north and south sides of the robber pit mounds of upcast, resting on a thin layer of wind-blown sand and the stone chippings layer over the natural, contained the bones of a neonate, some other unidentified human bones and pottery.

Rubble from the pyramid surrounded the monument and had fallen into the robber pit along with alluvium from the core as it gradually filled with wind-blown sand. One dressed facing stone bore a graffito or mason's mark (cat. no. F-2454).

Dug into the west wall and core of the pyramid was a small pit of irregular shape within which a substantial tree had grown. Several other small pits cut into the core and the alluvium in its centre further to the east. None penetrated

down into the natural.

Material associated with the burial

Metalwork

Cat. no. F-71 – nail? copper alloy

Pottery from the descandary fill

base – 4098xb

beaker – 4832x

bowl – 4825x

lid – 4550x

storage jar – 3616x

decorated sherd – 1263y

Pottery from the robber pit

feeder cup – 3124x

Material associated with the monument

Architectural stonework

Cat. no. F-2454 – block with graffito/mason's mark

For the pottery found in the vicinity of this monument in a

variety of contexts, see Welsby Sjöström 2023, 369, tab. 7.5.

Grave (JF2)79 – skeleton 88, Figures 11.116 & 11.117, Plates 11.220-11.222

The descandary, 5.4m in length, ranged in width from 1.1m at the east end to 1.2m to the west. There were 12 steps in total giving access to the tomb chamber at a depth of 1.9m. While the descandary was roughly parallel with that of grave (JF2)20 to the north, the chamber was not hollowed out through the vertical west end but was at an angle of about 14° through the north-west corner. The sub-oval chamber was 900mm in length and up to 700mm wide. It contained the articulated skeleton of an infant with the head to the east lying on its back with the legs slightly bent upwards. It is between 1.5 and 3 years of age. Alongside the head on its south side was a pottery bowl set upright.

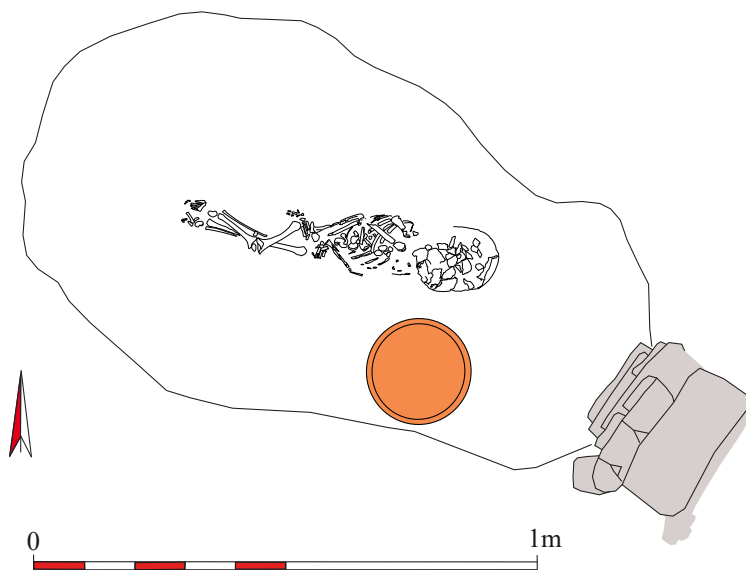


Figure 11.116. Grid square (JF2). Grave 79 – plan of the burial (scale 1:15).



Plate 11.221. Grid square (JF2). Grave 79 – the descandary and the blocking wall underlying Pyramid S6, looking west.



Plate 11.220. Grid square (JF2). Grave 79 – the burial chamber with skeleton 88 and the blocking wall's inner face, looking east-south-east.



Plate 11.222. Grid square (JF2). Grave 79 – the descandary with part of its fill in place sealed by Pyramid S6, looking west.

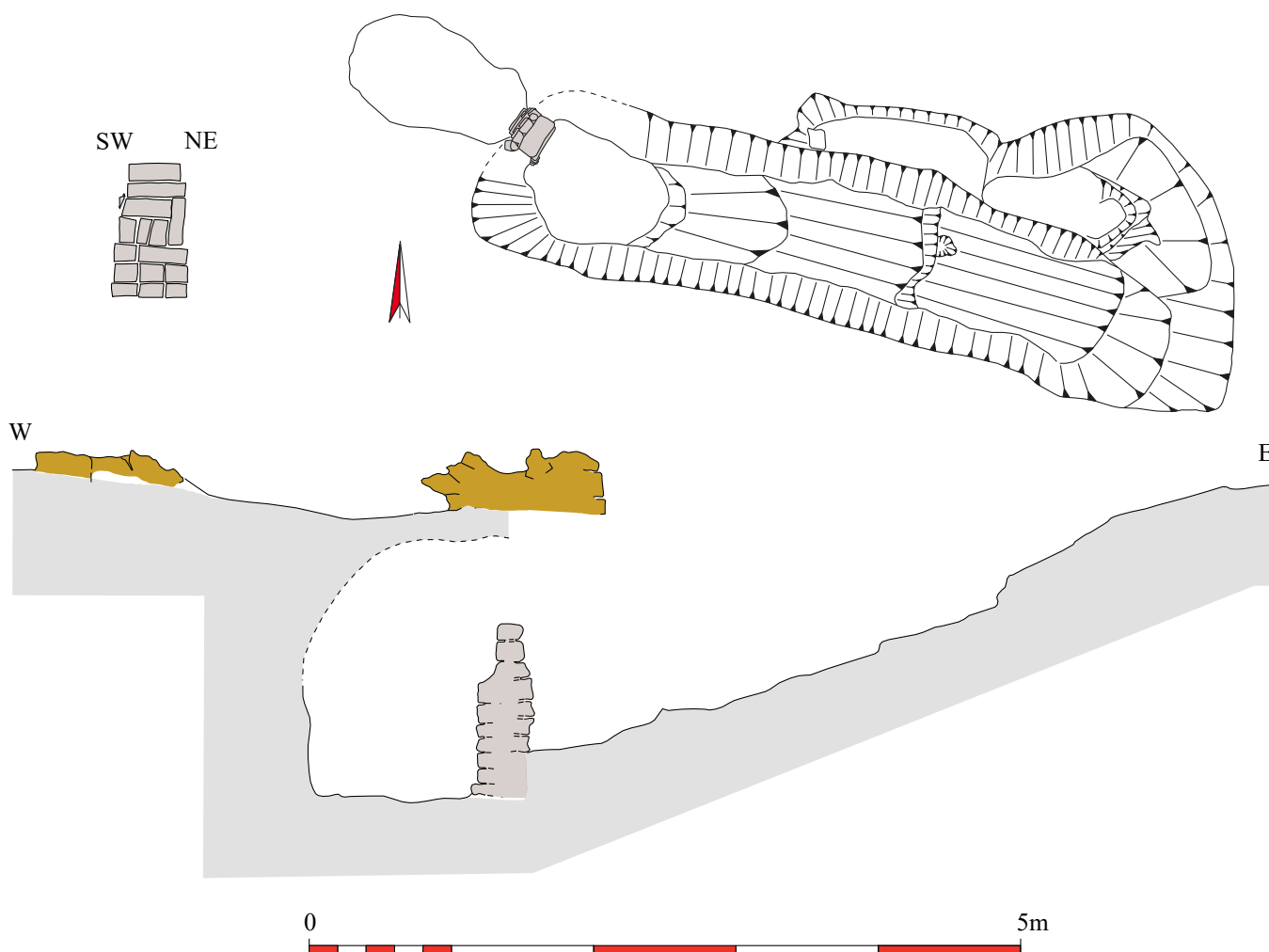


Figure 11.117. Grid square (JF2). Grave 79 – plan and profile of the descender and burial chamber and elevation of the outer face of the blocking wall (scale 1:50).

The entrance to the chamber was blocked by a wall of mud bricks, 320 x 180 x 120mm in size, surviving to a height of seven courses – mixed headers, stretchers and a soldier. The wall did not meet the south ‘jamb’, the gap being infilled with earth or possibly *jalous*.

The fill of the descender, alluvium and sand with small fragments of white and yellow sandstone, had a concentration of mud-brick fragments at its western end 500-800mm below the surface. The lowest course of the stone monument over grave (JF2)20 was set into this deposit.

Grave (JF2)79 clearly predated the monument yet the change in angle between the descender and the grave chamber suggests that it had been designed to lie under and thus be marked by the monument planned to cover grave (JF2)20. This seems an unnecessary arrangement when both graves were laid out before the monument was constructed. Another possibility is that grave (JF2)79, notwithstanding the strange alignment of the tomb, actually relates to an earlier monument. Immediately adjacent to, and on the north side of, the descender was a shallow trench 1.7m long at both ends of which a single mud brick remained. This looks very much like the foundation trench of a chapel and if so suggests the presence of a monument, presumably of mud brick, immediately to its west. No trace of such a monument survived – all traces would

have been removed on the construction of the monument over grave (JF2)20.

Pottery associated with the burial

(Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.3)

bowl – 4540x

Grid square (JG1)

The spread of stone chippings extended into this area, where it was cut by the descender of grave (JG1)12 and by the construction trench for the east side of the monument over grave (JG1)31.

Grave (JG1)12 – skeleton 34 – Monument: Pyramid M6, 5.6 x 5.74m, Figures 11.118-11.120, Plates 11.223-11.229
The descender was rectangular, 6.92m in length and 3.43-3.75m in width. It attained a maximum depth of 3.21m. The steep steps with narrow treads gave access into the tomb chamber entered through an ‘arched’ doorway 1.27m wide and 870mm in height. The skeleton of an undetermined adult of undetermined sex, had been disturbed but the tibia and fibula were still closely associated and may not have been moved far. Not all the bones could be excavated as the west end of the chamber was too difficult of access. Traces of painted plaster indicate that a coffin had been provided. At the level of the skeleton was a copper-alloy beaker, a

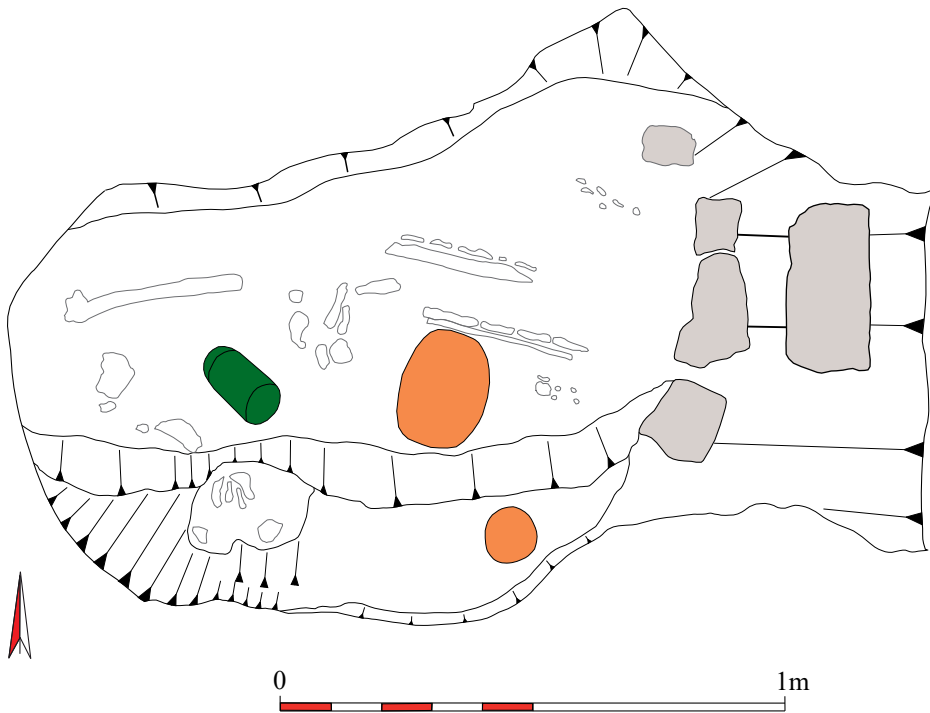


Figure 11.118. Grid square (JG1). Grave 12 – the burial chamber (scale 1:15). The chamber was not fully excavated so its original form is unclear.

large ceramic jar and an elegant pot stand while a further jar came from a higher level over the bones.

The exact form of the blocking wall is unclear. At its north end three courses of headers survived. Further to the south a course of stretchers sat on one of headers was visible. To the west of these may be another row of headers and there is a slope of mud-brick rubble extending down into the burial chamber. Bricks were 340 x 170 x 100mm and 330 x 160 x 100mm in size. The blocking wall sat on a layer about 300mm thick of alluvial fill. Beneath this a hard surface extended from the descender into the chamber. No trace of a primary blocking wall set on this was noted. The descender fill was mainly alluvium with sparse sandstone chippings. It spilt over immediately to the east and south of the cut.

The grave was marked on the surface by an almost square monument 5.6 x 5.74m in size, its sides constructed of mud bricks which survived to a maximum height of two courses. They were laid in courses of two headers and two stretchers flanking a row of headers giving a ‘wall’ 750mm thick. Half



Plate 11.223. Grid square (JG1). Grave 12 – the stepped descender, looking north east.

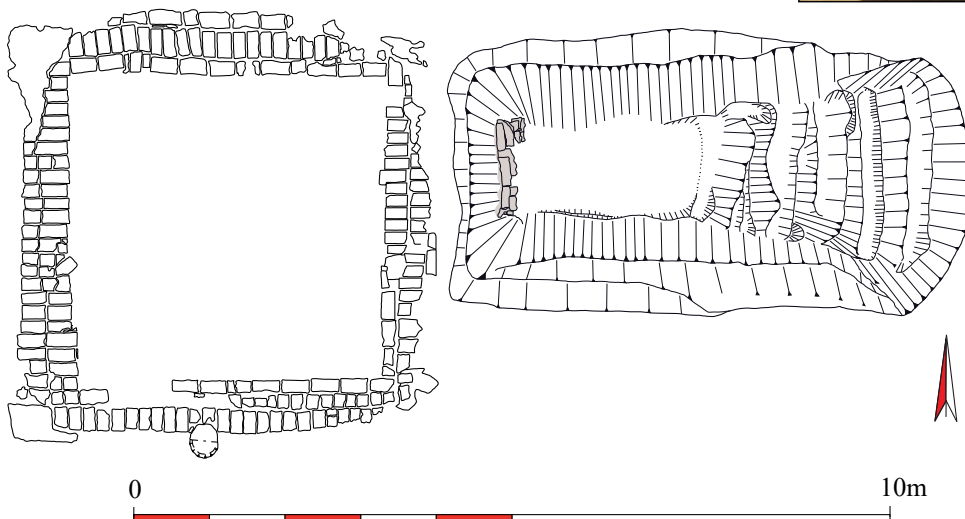


Figure 11.119. Grid square (JG1). Grave 12 – the descender and Pyramid M6 (scale 1:100).

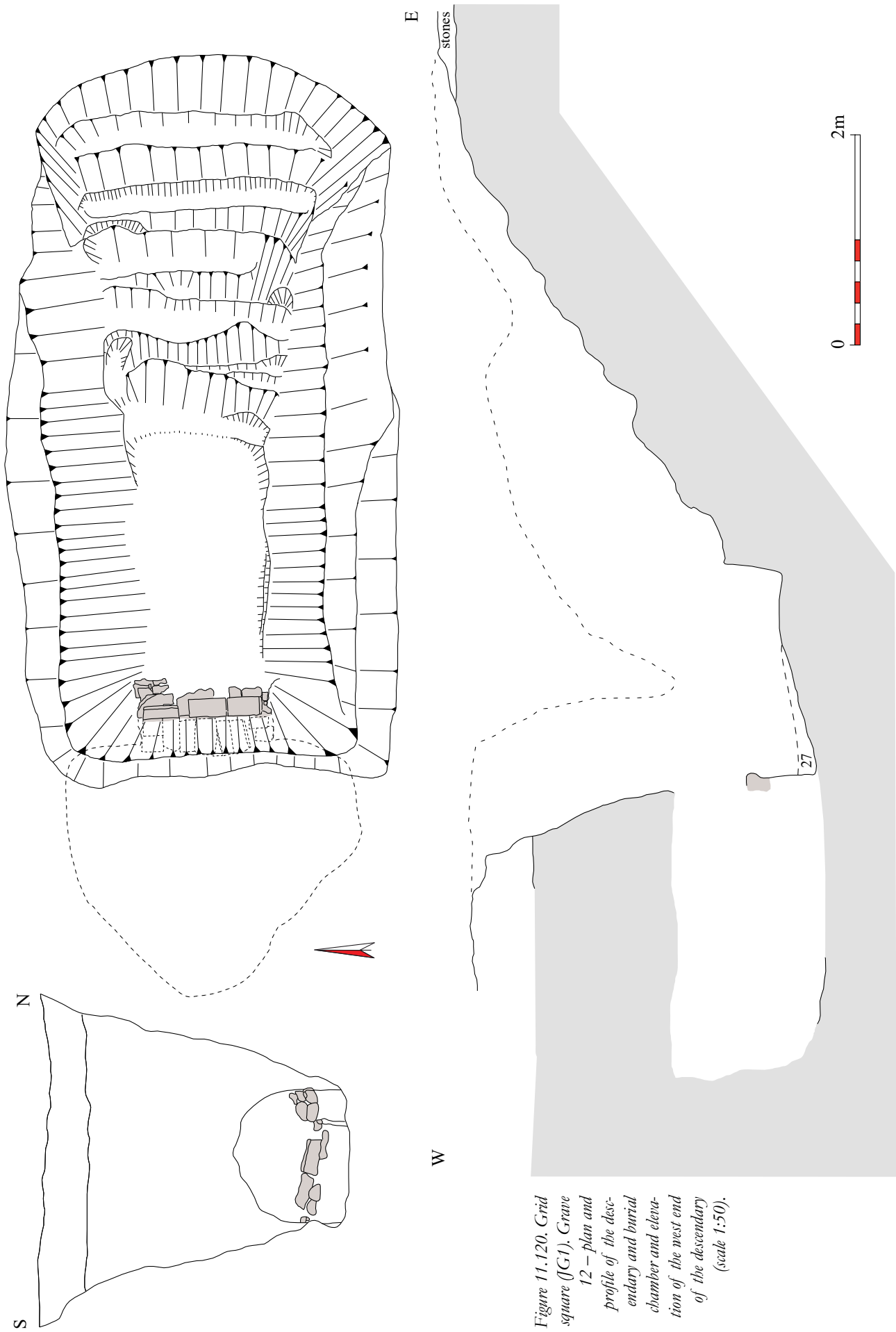


Figure 11.120. Grid square (G1). Grave 12 – plan and profile of the descendency and burial chamber and elevation of the west end of the descendency (scale 1:50).



Plate 11.224. Grid square (JG1). Grave 12 – the west end of the descandary.



Plate 11.227. Grid square (JG1). Grave 12 – the ceramic grave goods.



Plate 11.225. Grid square (JG1). Grave 12 – the burial chamber and blocking wall with the ceramic grave goods.



Plate 11.228. Grid square (JG1). Grave 12 – the robber pit and descandary fill, looking north east.



Plate 11.226. Grid square (JG1). Grave 12 – skeleton 34 and the copper-alloy beaker.

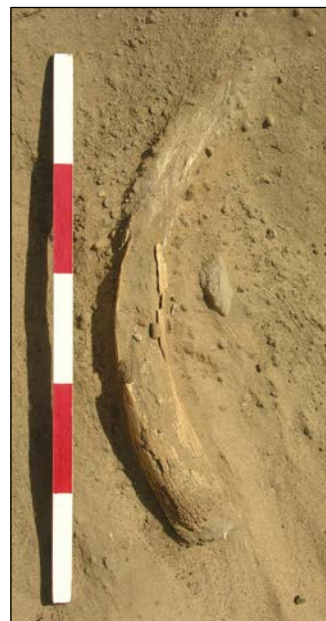


Plate 11.229. Grid square (JG1). Grave 12 – the horn core in the fill of the robber pit.

bricks are also used in the west and south walls. Bricks were 370 x 170mm, 362 x 170mm and 330 x 180mm in size.

The robber pit sloped down towards the east end of the descandary but digging was then stopped and the main pit

continued down against the west end of the descandary to the level of the tomb. On the slope of the robber pit towards its east end was the horn core of a cow 525mm in length and a maximum of 59mm in diameter. The pit was infilled with

wind-blown sand towards the top and with sand and alluvium lower down.

Cutting through the south side of the monument was an oval post-hole [(JF1)19] 370 x 420mm in size and 260mm deep. It was filled with sandy alluvium and occasional stone fragments. Another post-hole [(JF1)21] 410 x 220mm in size and 170mm deep, filled with wind-blown sand, was found close by. It cut the fill of the robber pit of grave (JF1)23.

Material associated with the burial

Metalwork

Cat. no. F-75 – beaker, copper alloy

Pottery (Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.4)

jars – 4551x, 4552x

pot stand – 4654x

Pottery from the robber pit

jars – 2039x, 2893x, 3101x, 4445x

Grave (JG1)? – Monument: Pyramid M5, 3.31 x 0.92+m

Only the monument over this grave was partially revealed during removal of the surface sand. It was an approximately square structure delimited by ‘walls’ of mud brick to the east side of which was attached a mud-brick chapel projecting 1.21-1.23m and 1.69m wide over the walls. Its north and south walls were of a single row of headers, its east wall of two rows of stretchers. Bricks ranged in size from 350 x 150mm and 370 x 170mm to 380 x 180 x 90mm.

Grave (JG1)31 – skeleton 51, Monument: Pyramid M7, 2.35 x 2.31m, Figures 11.121 & 11.122, Plates 11.230 & 11.231

Very unusually at Kawa the descendary of this grave extends down to the tomb chamber from the west. Its total length was approximately 5.4m; the western end cut into the fill of grave (JF1)23. It was at least 3.8m long and was over 1.88m wide at its eastern end. It attained a maximum

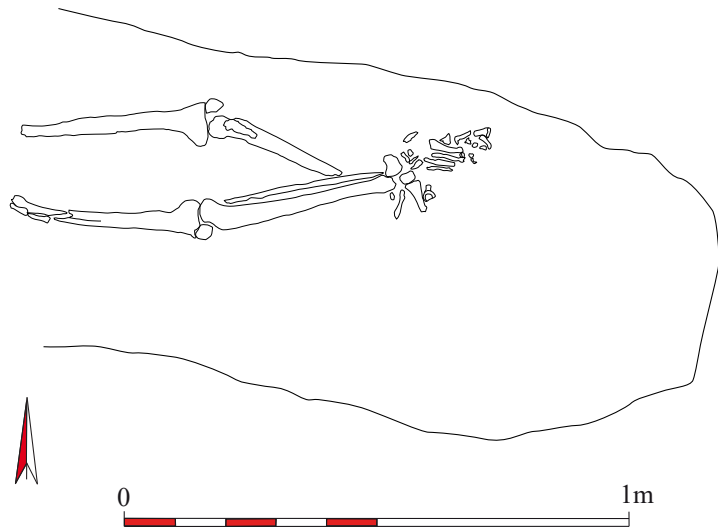


Figure 11.121. Grid square (JG1). Grave 31 – the eastern end of the burial chamber (scale 1:15).



Plate 11.231. Grid square (JG1). Grave 31 – Pyramid M7 looking east.



Plate 11.230. Grid square (JG1). Grave 31 – the eastern end of the burial chamber and skeleton 51.

depth of 2.61m below the contemporary ground surface and sloped steeply down. Several distinct fills were present within it resulting from its deliberate filling with alluvium containing small stones throughout.

Only the eastern part of the grave chamber was excavated being accessed by a vertical shaft dug by the archaeologists, access into the chamber being otherwise too difficult. The chamber was 700mm in width and over 1.4m long. The young adult male was buried in a supine position with the legs crossed at the ankle, the left hand on the femur and the right hand under the pelvis. The head was placed to the west. Although not robbed, no grave goods were found although they may have been present towards the western end of the chamber.

The monument over this grave was an approximately square structure 2.35 x 2.31m in size delimited by ‘walls’ of mud brick. Its walls were of a single row of headers except at the south end of the west wall were a row of stretchers formed the outer wall face, with a row of half bricks laid as headers forming the inner face. Bricks sizes included examples with dimensions of 380 x 180mm and 380 x 190mm. The west wall of the pyramid lay over the fill in the eastern end of the descendary and was provided with a



Figure 11.122. Grid square (JG1). Grave 31 – the descandary and Pyramid M7 and profile of the descandary (scale 1:50).

foundation of bricks laid as headers projecting well to the west of the building line.

A robber pit was cut within the monument in its south-west corner 960 x 800mm in size, filled with coarse sand and rare small stone fragments.

Pottery from the descandary fill

(Welsby Sjöström 2023, 369, tab. 7.5).

base – 4822x

bowl – 4510x

cooking pot – 4562x

Pottery from the robber pit

bowls – 4355x, 4507x

Grid square (JG2)¹³

Grave (JG2)2 – skeletons 23, 35 & 43, Monument: Pyramid M1, 6.47-6.57 x 6.54-6.77m, Figures 11.123 & 11.124, Plates 11.232-11.237.

The trapezoidal grave cut included both the descandary and the burial chamber within it. It was 7.1m in length and was approximately 2.3m wide at the contemporary ground surface. The descandary sloped down to a depth of 1.5m over a distance of 4.78m. To the west a mud-brick chamber was constructed. Its west wall against the end of the grave cut was carried vertically to a height of 1.2m, a total of 12

courses of stretchers (bricks 330 x ? x 110mm) above a footings course of headers which extended 230mm to the east of the wall face. The side walls of the chamber were up to six courses in height (the base of the south wall stepped up to the west), a mix of headers and stretchers. Above this was a typical ‘Nubian’ vault, each rib angled slightly to the west. The ribs were made of single rows of ‘stretchers’. Resting on the vault so formed was layer of mud mortar and then another layer of bricks set as rowlocks on the extrados and as headers lying flat against its haunches. This layer in its turn was also covered in mud mortar. The vault attained a maximum height internally of about 830mm. Bricks used included examples 310 x ? x 90mm and 320 x ? x 70mm in size. The floor of the chamber was 2.27m below the ground surface at the time of excavation.

The vault survived at its east end in a perilous state and it was not possible to remove the fill of the chamber beneath it. The eastern end of the chamber was formed of a wall across the descandary extending right up to the ground surface which revetted the coarse alluvial fill deposited onto the extrados of the vault. It was one stretcher in thickness and had been whitewashed on its eastern face.

Running down the centre of the chamber, and set on a layer of fine sand, was a *mastaba*, covered in a layer of mud which had been whitewashed, 570mm in width and attaining a height of 220mm above the floor of the chamber. At

¹³ For pottery from the topsoil see Welsby Sjöström 2023, fig. 7.6.

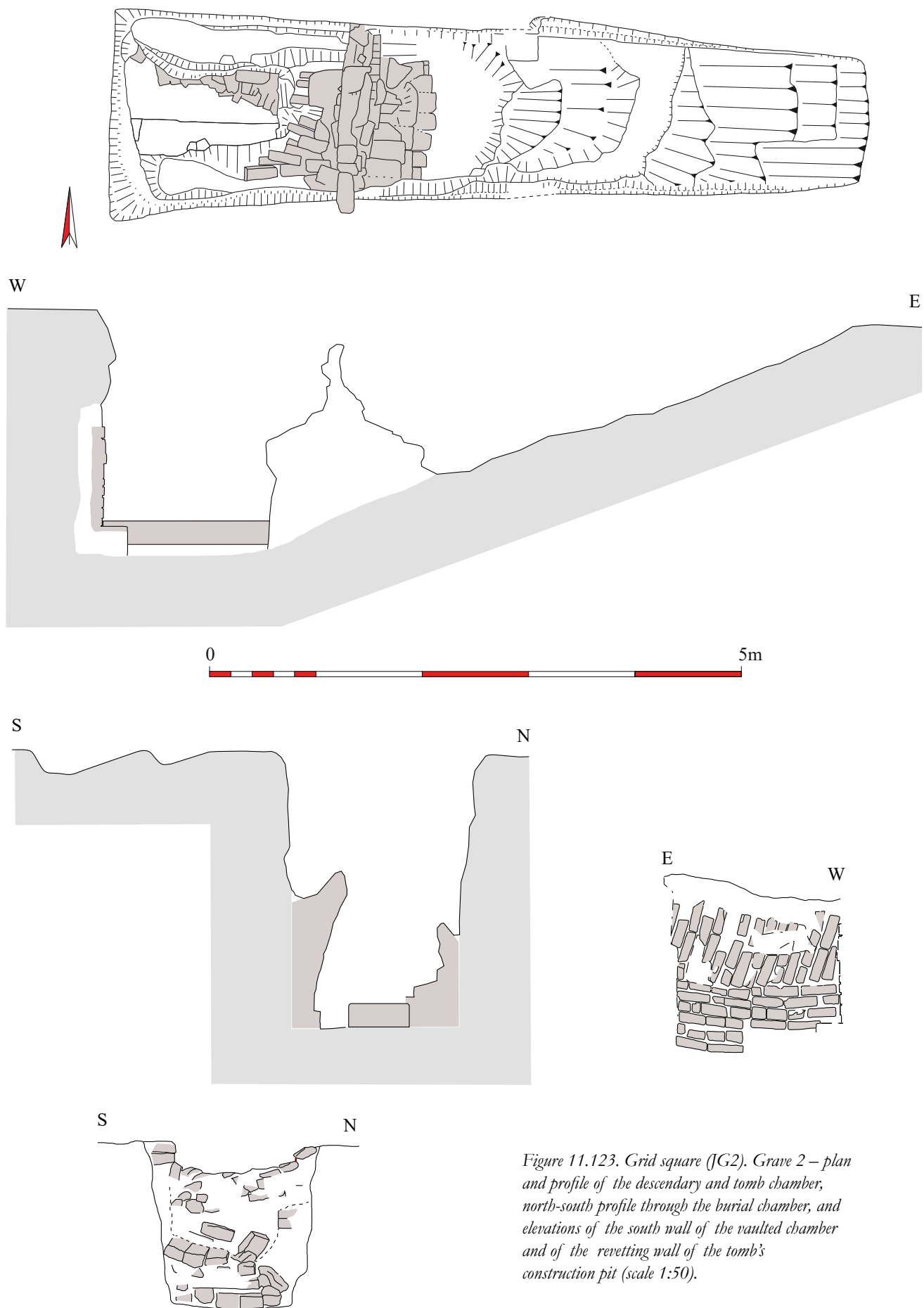


Figure 11.123. Grid square (JG2). Grave 2 – plan and profile of the descandary and tomb chamber, north-south profile through the burial chamber, and elevations of the south wall of the vaulted chamber and of the revetting wall of the tomb's construction pit (scale 1:50).

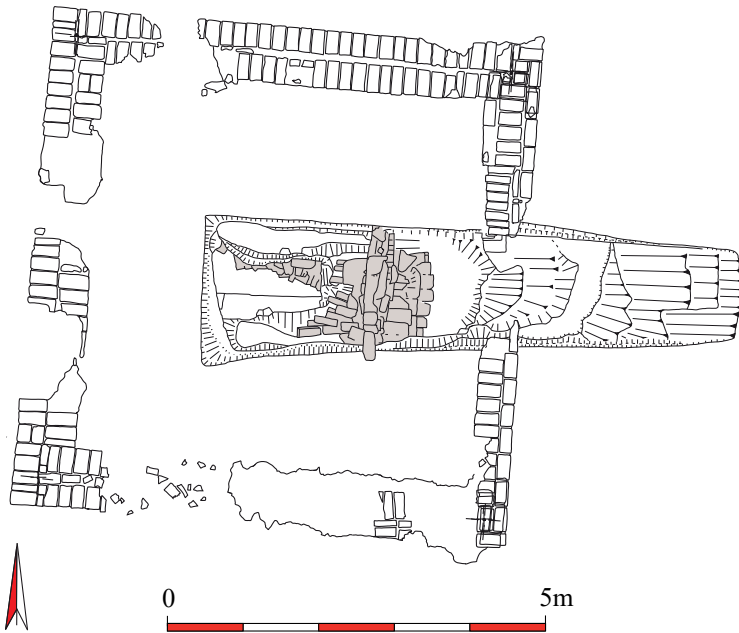


Figure 11.124. Grid square (JG2). Grave 2 – the descendant, burial chamber and Pyramid M1 (scale 1:100).



Plate 11.234. Grid square (JG2). Grave 2 – the burial chamber, west wall.



Plate 11.232. Grid square (JG2). Grave 2 – the descendant, burial chamber and Pyramid M1, looking west.

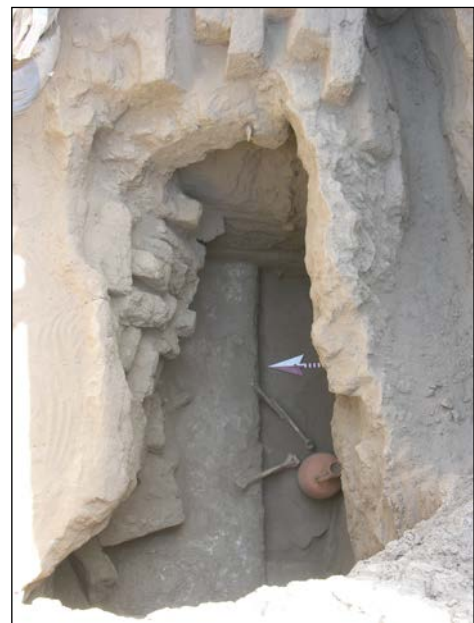


Plate 11.235. Grid square (JG2). Grave 2 – the burial chamber, looking east.



Plate 11.233. Grid square (JG2). Grave 2 – the burial chamber with the revetting wall closing off the construction pit on its eastern side, looking south.



Plate 11.236. Grid square (JG2). Grave 2 – disarticulated human bone and the ceramic amphora.



Plate 11.237. Grid square (JG2). Grave 2 – the mastaba in the burial chamber, looking west.

its west end it extended over the projecting footings of the west wall. The extensive robbing of this tomb has made it impossible to hazard a guess as to the arrangement of the deceased. A few long bones rested against the *mastaba* and on the fine silt floor of the chamber while a skull was in the south-west corner. Amongst the 220mm of fine silt accumulated above this floor were many bones [(JG2)43] from a torso including a few articulated vertebrae from an undetermined adult, probably male. Another skull [(JG2)23], from an undetermined adult, probably female, was found between the vault and the north wall of the grave pit. A copper-alloy beaker was found in amongst the fill; the amphora may have remained *in situ*, up against the south wall of the chamber towards its western end.

Built up against the east face of this wall was the blocking wall which was not removed during excavation. It would have sealed the doorway through the chamber's east wall but was also extended well beyond it. Surviving to a maximum height of five courses it was constructed from mud bricks 300 x 170 x 80mm in size.

The grave was marked on the surface by a square monument 6.47-6.57 x 6.54-6.77m in size delimited by walls of mud brick set in a construction/foundation trench usually 850mm wide. This survived to a maximum depth of 270mm but may have been deeper if the Kushite ground surface has been removed by erosion. In the lowest course the bricks were laid mainly as two rows of headers (740mm thick) but the east wall was thinner, being one row of headers and one of stretchers. Some bricks in the west wall were set at an angle. Bricks were 340 x 170 x 80mm in size.

The grave may have been used on more than one occasion. At some point the upper part of the east wall of the chamber had been demolished over a width of nearly 1m and to a depth of 920mm, that is to the level of the top of the vault. The gap in the wall was subsequently infilled with mud-brick rubble (bricks 320 x 170 x 70mm).

There were two sand-filled robber pits. One was dug at

the western end of the descendary and sloped down to the east wall of the burial chamber. The other cut down immediately to the west of that wall down through the vault. A number of other small robber pits had been dug into the walls of the monument to remove mud bricks.

Material associated with the burial

Metalwork

Cat. no. F-65 – beaker, copper alloy

Organic

Cat. no. F-2320 – *kohl* pot, ivory

Pottery (Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.6) amphora – 4338x

Pottery from the robber pit

bowls – 2025xc, 3696x, 3697x

incense burner – 3698x

jars – 2310x, 3699x, 3837x

Grave (JG2)33 – skeletons 35

Cut into and slightly outside the south-east corner of the monument associated with grave 2 was a small shallow pit 840 x 800mm in size and a maximum of 300mm deep. In the base of the cut were bones from the skeleton of an individual in early childhood and two body sherds from pottery vessels of Meroitic date.

Grave (JG2)150 – skeletons 64 & 65, Monument: Pyramid M2, 6.5-6.63 x 6.68-6.74m, Figures 11.125-11.128, Plates 11.238-11.244

As with grave (JG2)2 the rectangular grave cut included both the descendary and the burial chamber within it. It was 6.35m in length and ranged in width from 2.25m to 2.5m. The grave had been used on at least two occasions.

Phase 1

The descendary, sloping at the top and then with a flight of steps, gave access to a depth of 2.25m over a distance of 4.85m. To the west a mud-brick chamber was constructed. This had been much destroyed by robbing activities and the marks of the *toria* blades were clearly visible.

The walls of the chamber were well built from mud bricks 330 x 160 x 90mm, 320 x 160 x 85mm and 320 x 160 x 80mm in size. The west wall, set in a shallow construction trench, abutted the end of the grave pit, while the north and



Plate 11.238. Grid square (JG2). Grave 150 – the Phase 2 wall revetting the construction pit fill and the descendary, looking north east.



Plate 11.239. Grid square (JG2). Grave 150 – the phase 2 wall revetting the construction-pit fill and forming the east wall of the burial chamber, looking east.



Plate 11.241. Grid square (JG2). Grave 150 – the phase 1 wall in the descandary with the entrance through the phase 2 wall into the burial chamber, looking west.

south walls were freestanding, 500mm and 380mm thick respectively. At a height of between four and five courses a ledge along both north and south walls acted as the impost for the vaulting bricks of which only five remained *in situ*, each 320 x 165 x 105mm in size. The walls were carried above the level of the springing of the vault and corbelled over the extrados of the vault. No doorway was visible in the east wall of the chamber so one must assume that the east end of the chamber was left open until after the burial at which point the wall was built across to seal it. The lowest course of the wall on its west side, a row of stretchers, rested on a 120mm thick silt deposit within the chamber. The course above, of headers, rested partly on the floor of the

descandary. Within the tomb were several bricks probably the remains of a *mastaba* of the type seen in grave (JG2)2. It survived to a height of two courses, 180mm, was 570mm wide and at least 840mm in length.

Close to the centre line of the descandary in its sloping eastern part was a bowl-shaped pit 860 x 750mm in size and 220mm deep. It was filled with ash, charcoal and burnt earth.

The grave was marked on the surface by a square monument 6.5–6.63 x 6.68–6.74m in size delimited by walls of mud brick set in a rather irregular construction/foundation trench. This survived to a maximum depth of 210mm but may have been deeper if the Kushite ground surface has



Plate 11.240. Grid square (JG2). Grave 150 – the burial chamber, looking east.



Plate 11.242. Grid square (JG2). Grave 150 – the phase 1 and 2 walls across the descandary at its west end, looking west.



Figure 11.125. Grid square (JG2). Grave 150 – Plans of the burial chamber and the descender, east-west profile of the chamber and descender, elevation of the phase 1 and 2 walls closing off the west end of the burial chamber and retetting the construction pit fill, and elevation of the west wall of the burial chamber (scale 1:50).

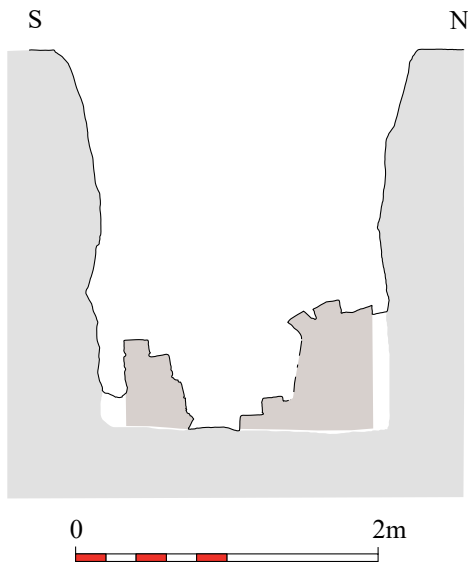


Figure 11.126. Grid square (JG2). Grave 150 – north-south profile/section across the burial chamber (scale 1:50).



Plate 11.243. Grid square (JG2). Grave 150 – the south face of Pyramid M2 with the sectioned construction trench, looking east.

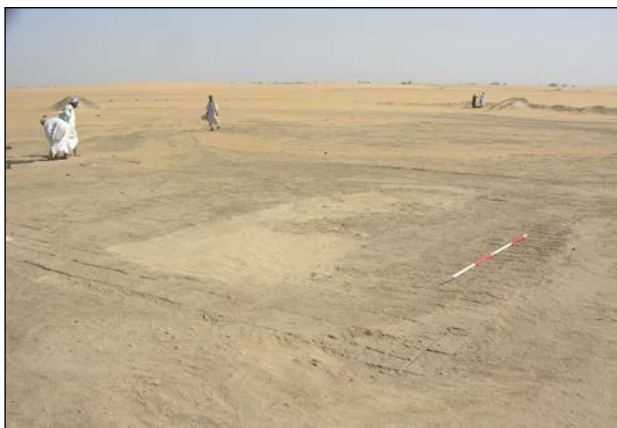


Plate 11.244. Grid square (JG2). Grave 150 – general view of Pyramid M2 and the sand-filled robber pit, looking north east.

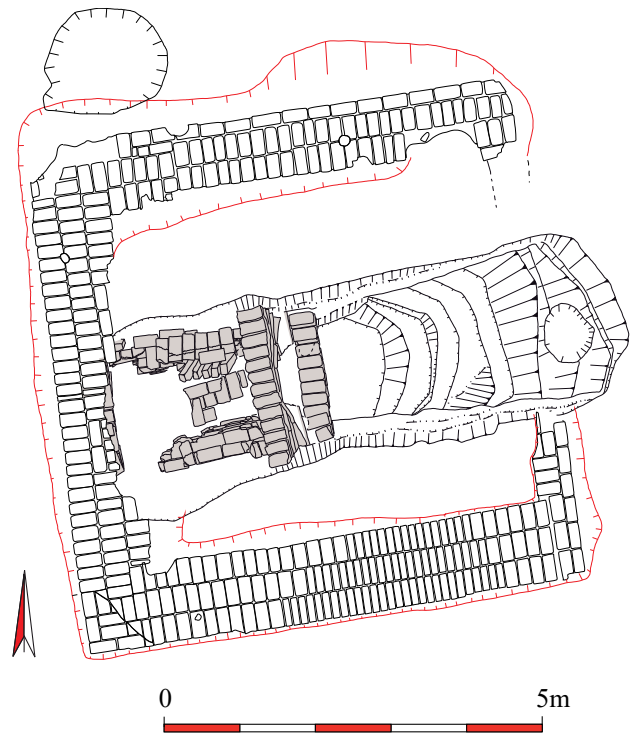


Figure 11.127. Grid square (JG2). Grave 150 – plan of the burial chamber, descendery, Pyramid M2, the construction trench and pit 192 (scale 1:100).

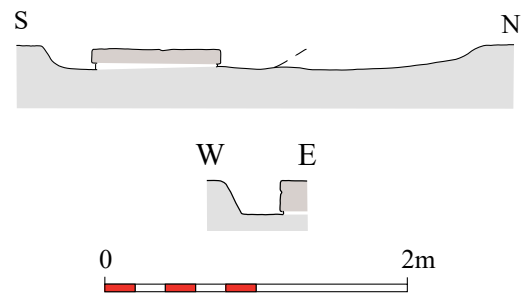


Figure 11.128. Grid square (JG2). Grave 150 – profile of the construction trench for the north face of Pyramid M2 and pit 192, and of the construction trench as visible on the west side of the west face (scale 1:50).

been removed by erosion. In the lowest course the bricks in the north wall were laid mainly as two rows of headers and one of stretchers (830mm thick), the west and south walls were of three rows of headers, many in the south wall rowlocks (1m thick) but the east wall was thinner. Little of this wall remained but what did was at its south end of one row of headers and one of stretchers before narrowing to two rows of stretchers. At its northern end it was of two rows of headers. Bricks were 335 x 160 x 105mm, 335 x 165 x 100mm, 330 x 165 x 115mm and 300 x 170 x ?mm in size.

Phase 2

On its reuse the descendery fill was removed to a little above the primary steps with five new rounded steps being created [(JG2)199]. The east wall of the chamber was also removed to the level of the secondary descendery's floor and replaced by a wall built over its eastern end immediately west of the chamber's eastern wall. This wall, of bricks 330 x 165

x 100mm in size, extending almost to the ground surface, would have revetted the fill deposited onto the extrados of the vault. It was 330mm thick, the upper 10 courses being headers. The first stretcher course below that projected a little to the east of the wall face.

The robbing had removed all trace of this secondary phase of use within the tomb.

On the robbing of the grave a pit removed much of the fill towards the western end of the descandary. In the lower part of its fill were more than 20 mud bricks (330 x 165 x 100mm in size) along with human bone and some fragments of gold leaf. Another robber pit was dug down immediately over the chamber destroying the vault and walls. Bones were found from two individuals, skeleton 64 of an undetermined adult, probably male, and skeleton 65 of an infant.

Material probably associated with the burials

Metalwork

Cat. no. F-204 – sheet, iron, wood, copper alloy

Cat. no. F-237 – object, iron, fabric, wood

Cat. no. F-168 – sheet or blade, copper alloy

Cat. no. F-171 – band, copper alloy

Cat. nos F-20 to F-26 – 15+ gold leaf fragments
– slag

Pottery (Welsby Sjöström forth., 369, tab. 7.5, fig. 7.6)

jar – 4494x with decoration 1231y

Pottery from the construction trench fill associated with the monument

Coarse ware rims, not closely dateable

Pottery from the robber pit and post-robber pit fills

Coarse ware rims, not closely dateable

beaker – 2878x, 3460x

decorated sherds – 1206y, 1282y

graffito – 161g

Grave (JG2)171 – skeleton 215, Monument: Pyramid M4, 2.22 x 1.79+m, Figures 11.129-11.131, Plates 11.245-11.247

The western end of the sub-rectangular descandary cut through the layer of stone chippings and down into the



Plate 11.245. Grid square (JG2). Grave 171 – the descandary, looking west.

alluvium below to a maximum depth of 1.55m. It was 4.6m in length and 1.35m wide with a flight of four steps with sloping treads. The chamber, hollowed out of the alluvium, was accessed via an 'arched' opening. It was 'U'-shaped and measured 1.66 x 0.72m with a height of 890mm. The grave was clearly designed to be occupied by a much smaller individual than the deceased who was interred here. The body of a middle adult male projected well to the east of the chamber and a small box constructed of mud brick was built to enclose it within the descandary where it was 780mm in length. Internally it tapered from 280mm to 265mm in width. The bricks ranged in length from 252-320mm and 155-180mm in width. The descandary fill, of alluvium, silt

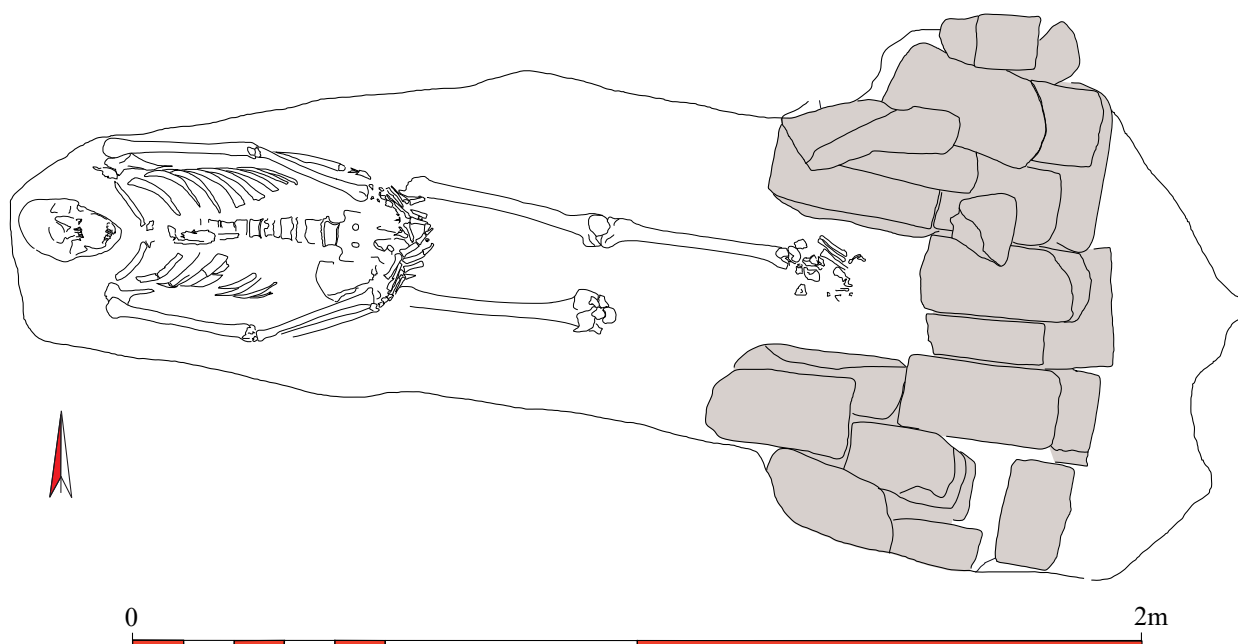


Figure 11.129. Grid square (JG2). Grave 171 – plan of the burial chamber (scale 1:15).

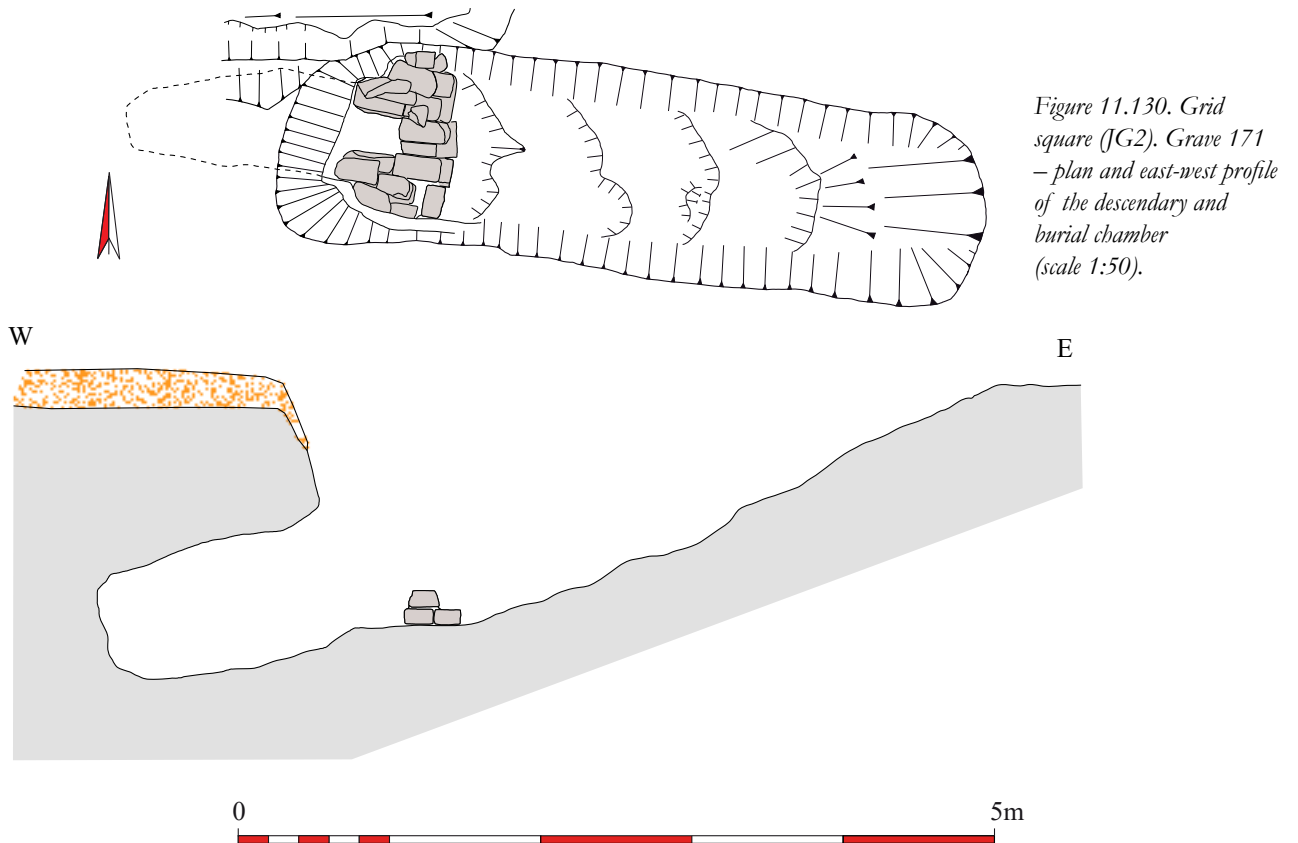


Figure 11.130. Grid square (JG2). Grave 171 – plan and east-west profile of the descandary and burial chamber (scale 1:50).



Plate 11.246. Grid square (JG2). Grave 171 – the mud bricks extending the burial chamber into the western end of the descandary, looking west.



Plate 11.247. Grid square (JG2). Grave 171 – Pyramid M4, looking north west.

and fine sand, contained occasional sandstone chippings and one block c. 150 x 80mm in size.

A small monument, of which only the south wall and parts of the east and west walls remained, was associated with this grave. It measured 2.22m by more than 1.79m in size and survived to a maximum height of two courses, the upper of which was inset indicating that this was most likely the base of a stepped pyramid. The lowest course was a single row of stretchers, the one above a course of headers oversailing the stretchers towards the interior of the monument. Bricks were 370 x 200 x 70mm and 350 x 180 x 70mm in size. The walls were set in a shallow construction trench cut into the stone chippings layer to a maximum depth of 240mm.

The robber pit 1.4m in length was dug up to the west end of the descandary and sloped steeply on its eastern

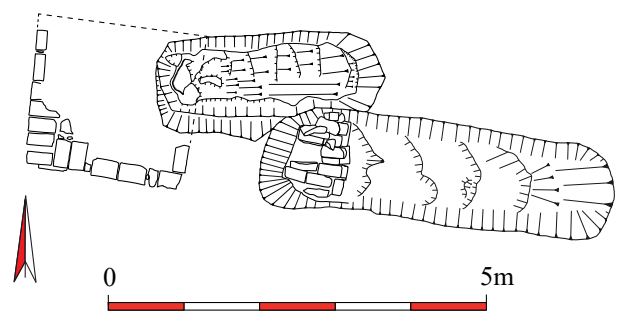


Figure 11.131. Grid square (JG2). Plan of the descandaries of graves 171 and 231 and Pyramid M4 (scale 1:100).

side. Human bones were found in its lower fills along with mud-brick rubble.

The descendency of this grave and that of grave (JG2)231 intercut but the relationship of the two was unclear as the pit dug to rob the grave had removed the relationship between the two graves. Grave (JG2)171 is on axis but slightly south of the centre line of the small mud-brick monument (Pyramid M4) while grave (JG2)231 has a slightly different orientation to the monument but partly lies beneath it. With which grave the monument is associated is uncertain; it might have been associated with both.

Pottery recovered from the descendency fill
(Welsby Sjöström 2023, 369, tab. 7.5)

beaker/cup – 4442x
jar – 2893x

Grave (JG2)175 – skeleton 66, Monument: Pyramid M3, 5.93 x 3.93+m, Figures 11.132 & 11.133, Plates 11.248-11.252

The rectangular descendency was 5.6m long, 1.25m wide and 2.6m deep. It had a flight of seven steps, the first very



Plate 11.250. Grid square (JG2). Grave 175 – the descendency and east wall of the burial chamber, looking west.



Plate 11.248. Grid square (JG2). Grave 175 – the descendency and east wall of the burial chamber, looking west.



Plate 11.251. Grid square (JG2). Grave 175 – disturbed human bones in the burial chamber.



Plate 11.249. Grid square (JG2). Grave 175 – the east wall of the burial chamber with its arched doorway, looking east.

deep at 900mm. It gave access through an ‘arched’ doorway 1.28m wide and 1.96m high into a rectangular chamber 2.16m in length and 980mm wide internally. This grave is of unusual form. It has a chamber hollowed out of the alluvium, the standard form of the smaller graves, but within this a mud-brick barrel-vaulted tomb has been constructed extending out into the descendency. This measured approximately 2.55 x 1.15m over the walls. The side walls of the tomb only attained over much of their length a height of four courses before the springing of the vault, the bricks laid as ‘stretchers’ forming a Nubian vault angled towards the west. At the east end of the tomb however, the walls are six courses high, the vault rising to accommodate this dramatic change in level.

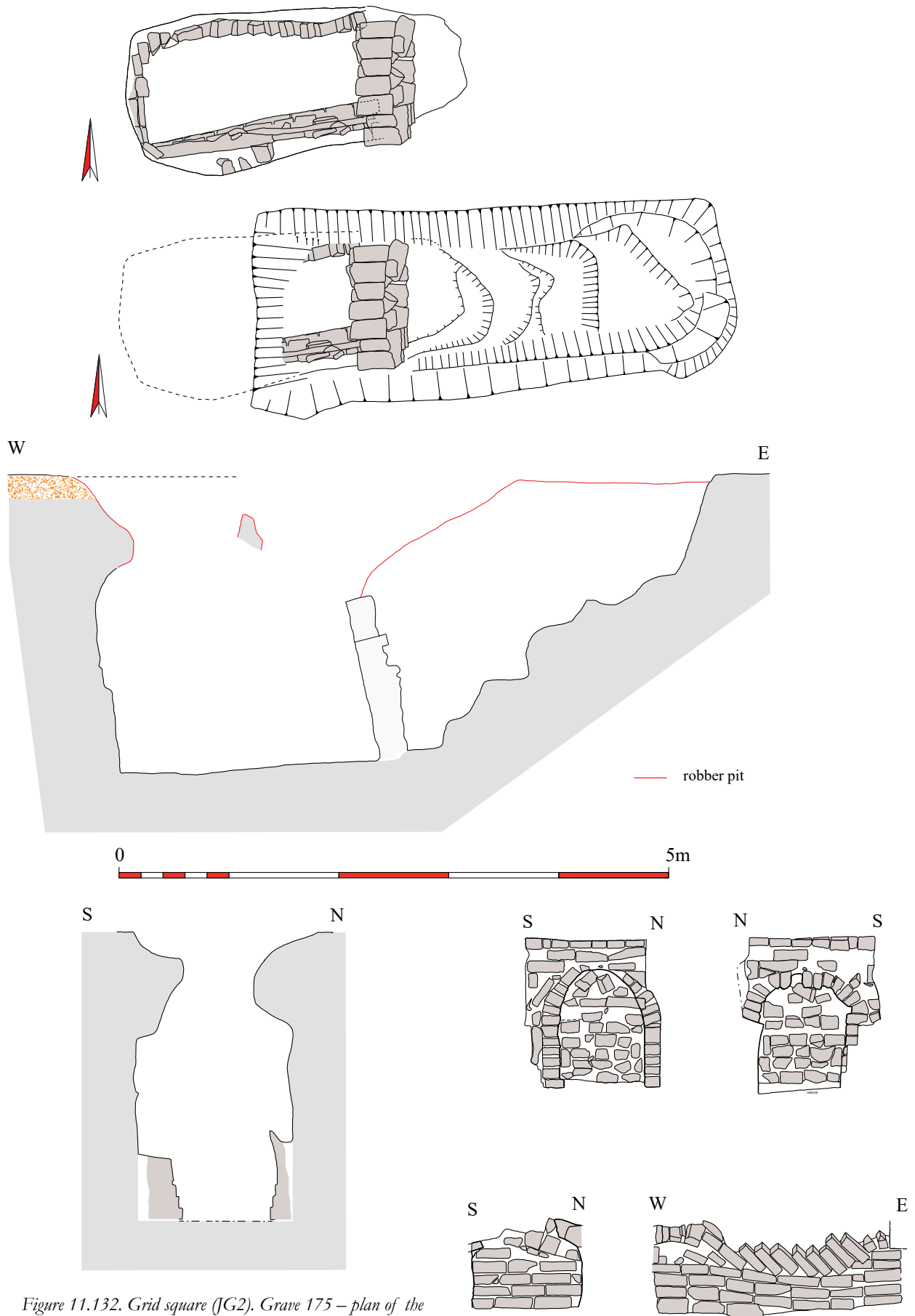


Figure 11.132. Grid square (JG2). Grave 175 – plan of the descender and burial chamber, east-west and north-south profiles and elevations of the east, west and north walls of the burial chamber and of the west wall from the exterior (scale 1:50).



Plate 11.252. Grid square (JG2). The stone chippings layer on which rest Pyramids M3 and M4 associated with graves 175 and 171 respectively, looking south.

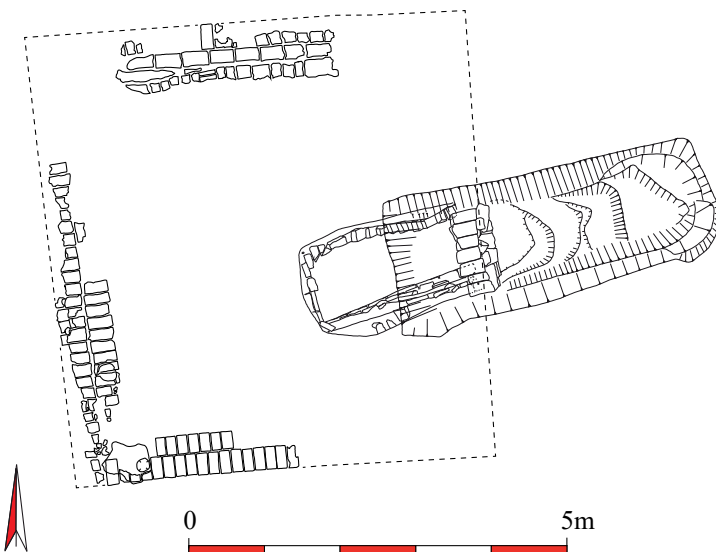


Figure 11.133. Grid square (JG2). Grave 175 – plan of the descendary, burial chamber and Pyramid M3 (scale 1:100).

The east wall of the tomb, 340mm thick and surviving to a height of 1.41m, was bonded into the side walls. In its lower part it consisted of two door jambs built of a single header each with, at a height of 450mm, a well-constructed arch of bricks set radially as headers. Between some of the voussoirs large pottery sherds were used as chinking. The doorway was 766mm wide and about 1.08m in height. To allow space for the north jamb the side of the descendary had to be undercut. Filling the space between the south jamb and the descendary side was a rough packing of bricks, as also in the spandrels. Above the arch three courses of brick remain. The face of the sixth course and above was set 100mm to the west of those below. The skeleton had been much disturbed but there was a concentration of bones towards the north-west corner of the tomb. This suggests

the possibility that they were pushed to one side, a common occurrence when a secondary burial was inserted. However the bones of only one individual were recovered, an undetermined adult, probably male. The bones were associated with small fragments of painted plaster, presumably from the coffin, and gold leaf.

Following the burial the doorway was blocked by a rough wall of mud bricks (340 x 180 x 60mm) with wide mortar beds and with large gaps infilled with mortar and alluvium. This blocking was set on a layer of silt 120mm thick which abutted the walls of the tomb.

Of the tomb monument only parts of the west, north and south faces survived. It was 5.93m by at least 3.93m in size. The south and west walls were constructed of two rows of headers, the north wall of a header and two stretchers although some

of the 'stretchers' are replaced by half bricks. The walls were 660mm, 730mm and 940mm thick, the bricks 330 x 150mm and 370 x 170mm in size. The construction/foundation trenches cut through the sandstone-chippings layer.

The grave had been robbed through two pits. One was dug in the western end of the descendary entering the tomb through its vault between the tomb's east wall and 'arched' doorway cut into the alluvium. Its steep eastern slope was revetted by a rough wall made from mud-brick rubble. The other, a circular pit 1.4m in diameter narrowing to 950 x 650mm, was dug straight down presumably through the core of the tomb monument and through the vault into the west end of the chamber. The lower robber-pit fills extending across the tomb were of alluvium mixed with lenses of wind-blown sand and mud-brick rubble. A number of shallow pits cut into the walls of the monument removing bricks down to the base of the foundations.

Pit (JG2)277 (Figure 11.138, Plates 11.259 & 11.260), which is oval, 1.87 x 1.15m in size, appears to predate the south wall of the monument. It has a flat bottom at a depth of 340mm on which is a row of three mud bricks as though part of a wall. Their function is unclear. They are well off alignment with the south wall of the monument which is, in any case, founded well above them.

Material associated with the burial

Metalwork

Cat. nos F-27 to F-29 – 4 fragments, gold leaf

Pottery from the descendary fill

(Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.7)

amphora – 4439x

bowls – 2039x, 2642x, 4440x

jar – 4438x

Pottery from the robber pit

bowl/cooking pot – 2339x

bowls – 2790xa, 4355x
 jar – 4438x
 bowl – 4440x

Grave (JG2)231 – skeleton 251, Figures 11.131 & 11.134, Plates 11.253 & 11.254

The sub-rectangular descendary had two shallow steps and then sloped down to a depth of 1.1m. It is 3.02m in length and 1.4m wide. The chamber was entered via an ‘arched’ opening and was small, only 476mm in length. The relationship of the descendary with Pyramid M3, the monument associated with grave 171, was unclear. It may have partly destroyed the monument or the monument may have been built subsequent to the infilling of its descendary.

On the robbing of the grave the body of an individual in early childhood seems to have been dragged out into the descendary where the totally disarticulated remains were found. The mud-brick rubble from within the fill may have come from a blocking wall or from the monument which partly overlay the descendary fill.



Plate 11.253. Grid square (JG2). Grave 231 – the descendary with that of grave 171 in the foreground, looking west-north-west.

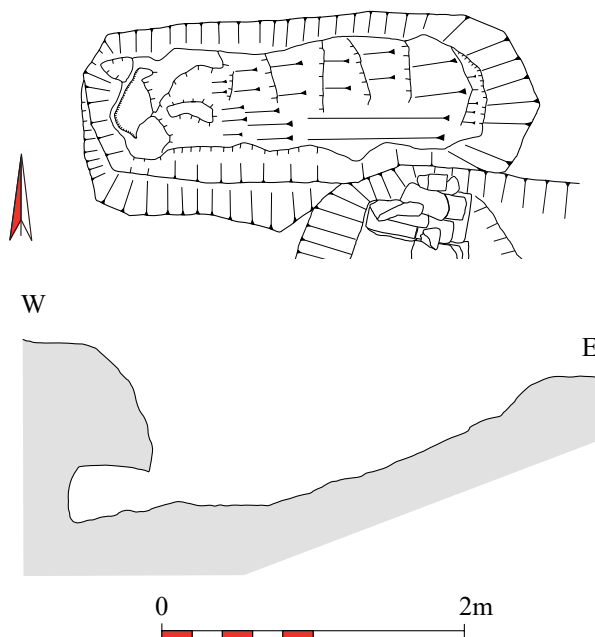


Figure 11.134. Grid square (JG2). Grave 231 – plan and profile of the descendary (scale 1:50).



Plate 11.254. Grid square (JG2). Grave 231 – disarticulated bones in the descendary, looking west.

Material associated with the burial

Jewellery

Cat. no. Sc-13 – scarab

Grave (JG2)244 – skeletons 312, 313 & 314; Monument: Tumulus, diameter 3.5m, Figures 11.135-11.137, Plates 11.255-11.258

This was an extremely unusual grave, both on account of the form of its descendary and its tomb monument. The



Plate 11.255. Grid square (JG2). Grave 244 – the circular pit, the descendary, blocking wall and tumulus, looking west.



Plate 11.256. Grid square (JG2). Grave 244 – skeletons 312-314 in the burial chamber, looking west.

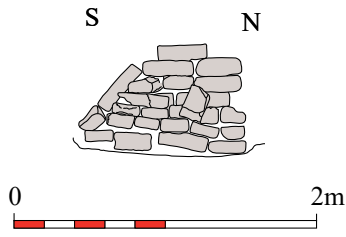


Figure 11.135. Grid square (JG2). Grave 244 – elevation of the blocking wall (scale 1:50).

descendary [(JG2)185], cutting through the stone-chippings layer was slightly oval (4.75 x 4.45m) with steeply-sloping sides rounding into the flat base at a depth of 1.35m below the surface of the alluvium, with a maximum depth below the surface of the stone-chippings layer of 1.58m. Cut into floor was a more typical trapezoidal descendary [(JG2)244] with a shallow step and a steep slope from the east, steep sides and a maximum depth of 892mm (length

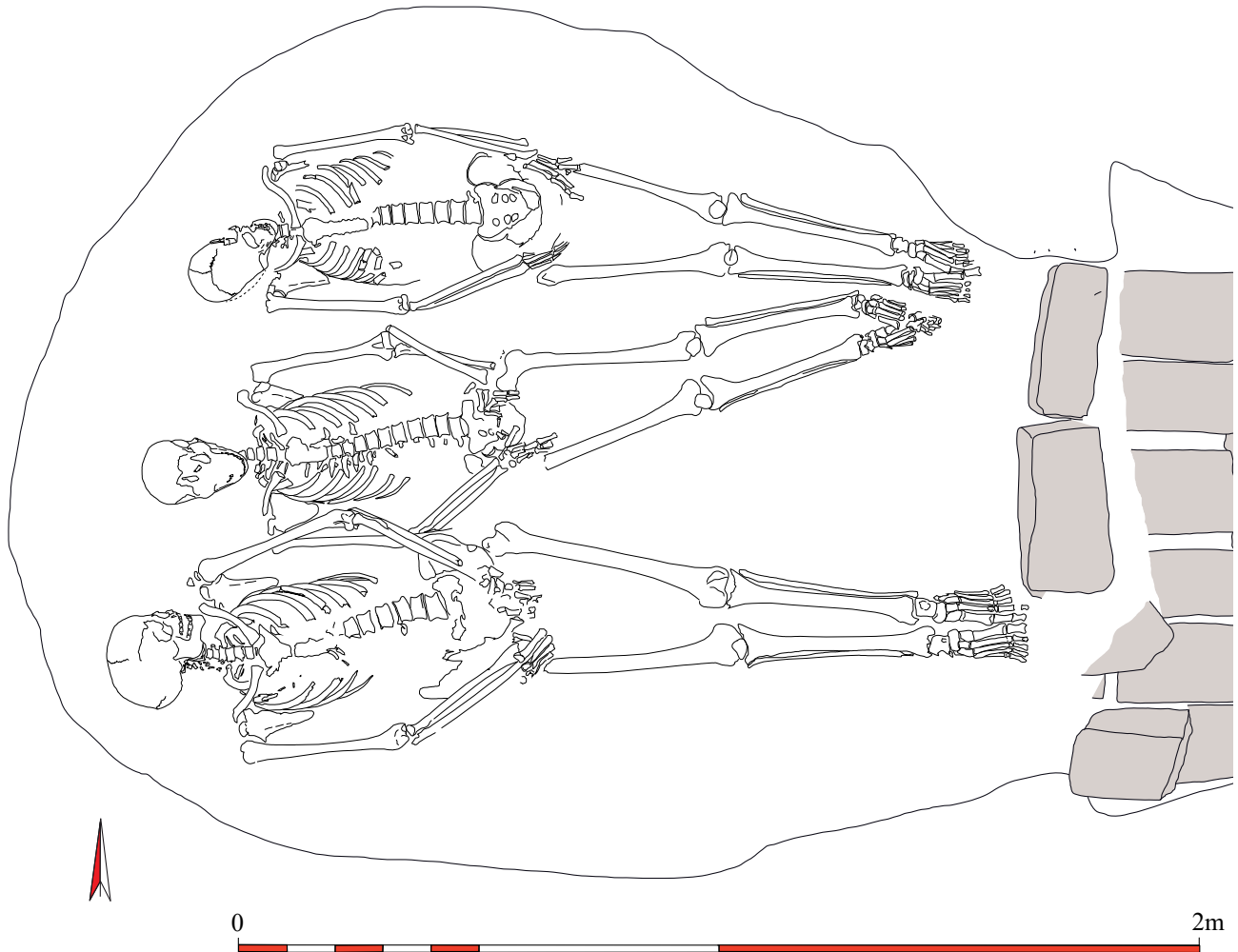


Figure 11.136. Grid square (JG2). Grave 244 – plan of the burial chamber (scale 1:15).



Plate 11.257. Grid square (JG2). Grave 244 – the 'tumulus' prior to excavation, looking south west.



Plate 11.258. Grid square (JG2). Grave 244 – the 'tumulus' and sand-filled circular pit, looking north west.

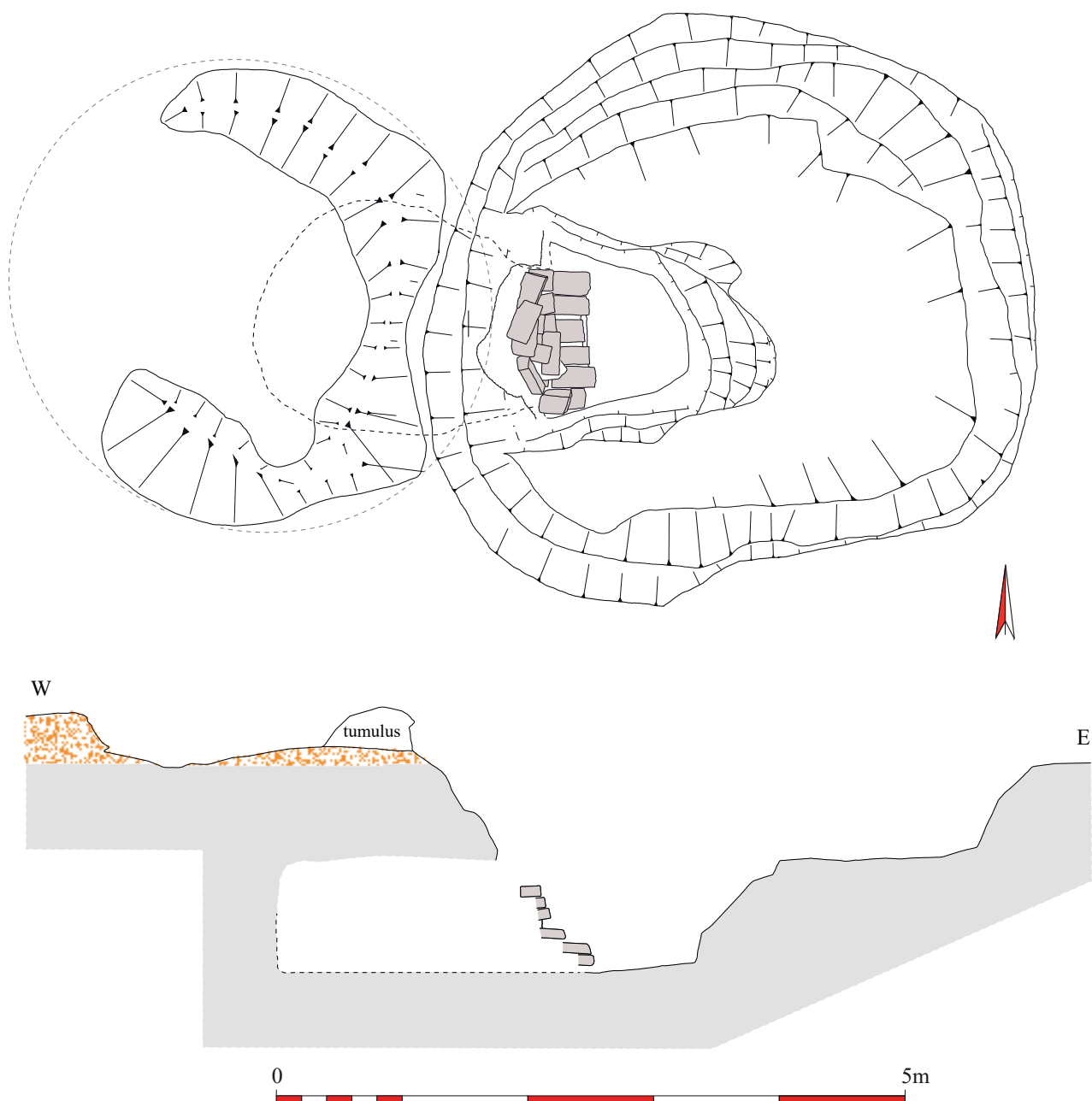


Figure 11.137. Grid square (JG2). Grave 244 – plan and profile of the descender, burial chamber and tumulus (scale 1:50).

2.36m, maximum width 1.96m) giving access through an ‘arched’ opening 920mm wide by 940mm in height into the ‘U’-shaped chamber 2.17 x 1.72m in size and about 900mm high. Within lay three supine skeletons laid in a row all with their heads to the west and with the hands on the pelvis. The legs were parallel. Skeleton 312 was of a middle adult male, skeleton 313 of a young adult male and skeleton 314 of a young adult of indeterminate sex. In the immediate vicinity and beneath the skeletons was a reddish deposit containing fragments of wood suggesting that they had been placed in coffins. The fragment of painted plaster indicated that these were plaster coated.

The blocking wall was built of mud bricks 340 x 180 x 100mm, 300 x 150 x 80mm and 300 x 180 x 120mm in size and survived to a height of seven courses. The lowest was of 1½-brick construction, headers on the east face, alternating in the course above. On this were stretchers

set back to the west, followed by courses of stretchers and headers + stretchers each set back from the one below, and finally by two courses of stretchers set flush. Additional bricks rested at an angle to the wall face. Built up against the wall face was a deposit of silty sand, with sandstone chippings and larger pieces plus large pottery sherds, while two pieces of mud brick sit on top. This deposit effectively sealed the entrance to the chamber.

After the filling of the descender a circular tumulus 3.5m in diameter, was constructed immediately to the west only slightly impinging on the descender edge. It was made from a mound of small pieces of black-ferruginous sandstone with an admixture of some white-quartzite pebbles in an earth matrix surviving to a height of 300mm – its central and western part have been removed by robbing.

The stratigraphy of this grave is difficult to interpret. The large oval pit [(JG2)185] was well cut, regular and aligned

with the lower descendary cut. However it was entirely filled with wind-blown sand as was the upper part of the lower descendary. The wind-blown sand, interleaved with lenses of silt collapsed in from the tumulus, extended up to the surface at the time of excavation and at that level certainly filled a pit which cut through the stone deposit derived from the disturbance of the tumulus. We thus appear to have evidence on the one hand that the oval pit was associated with the construction of the grave while on the other that it was a robber pit dug to allow entry into the grave after a significant elapse of time following the partial destruction of the tumulus. One other grave at Kawa, excavated so far, is associated with a circular pit, grave (HA2)89.

Before the robbing of the grave a pit was dug into the centre and west side of the tumulus penetrating only a short distance through the stone-chippings layer to the alluvium. During this activity the material from the tumulus was thrown outwards. Following erosion of the loose sediments and sand the stones were left forming a prominent oval mound (8.45 x c. 6.9m) which when cut into by the robber pit for grave (JG2)244 on its east side modified it to a 'kidney'-shape. This 'tumulus' had a similar appearance to many in the cemetery yet bears little resemblance to the original tomb monument in size.

Pottery associated with the burial

(Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.7)

bowl – 4444x

Pottery from the robber pit

jar – 4443x

'Grave' (JG2)282 – skeleton 67, Figure 11.138, Plates 11.259 & 11.260

An oval pit 910 x 810mm in size, with gently-sloping sides to the south and a vertical side to the north, was dug into the alluvium to a depth of 265mm. Low down in the loose silt fill was a small number of bones from an infant. Whether there was actually a burial in this pit is uncertain. The upper fill on the southern side of the pit contained large dressed-sandstone blocks up to 410mm in length. Their absence on the northern side of the pit suggests that it has been partly robbed as did the lenses of wind-blown sand in the fill. The

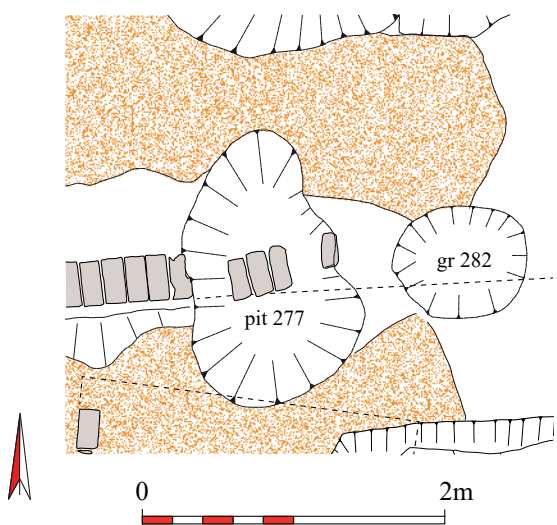


Figure 11.138. Grid square (JG2). Grave 282 and pit 277 with the outline and walls of Pyramids M3, and M4, and the stone chippings layer (scale 1:50).



Plate 11.259. Grid square (JG2). 'Grave 282' and pit 277, looking west.



Plate 11.260. Grid square (JG2). 'Grave' 282 half sectioned with stone upper fill and pit 277, looking west.

pit will have lain partly beneath, or was cut through by, the monument over grave (JG2)175.

Grid square (JG3)

Grave (JG3)6 – skeletons 13 & 14, Figure 11.139, Plates 11.261-11.263

This grave cut into the burial chamber of grave (JG3)23 removing the earlier burial above the heads of the femurs. Its descendary was between 720mm and 900mm wide and survived to a length of 3.1m. It sloped down to the level of the base of the chamber for grave (JG3)23. The opening 950mm wide gave access into a sub-trapezoidal chamber aligned north-south. Towards its north end at the base it was 560mm wide, expanding to the south to 735mm. The

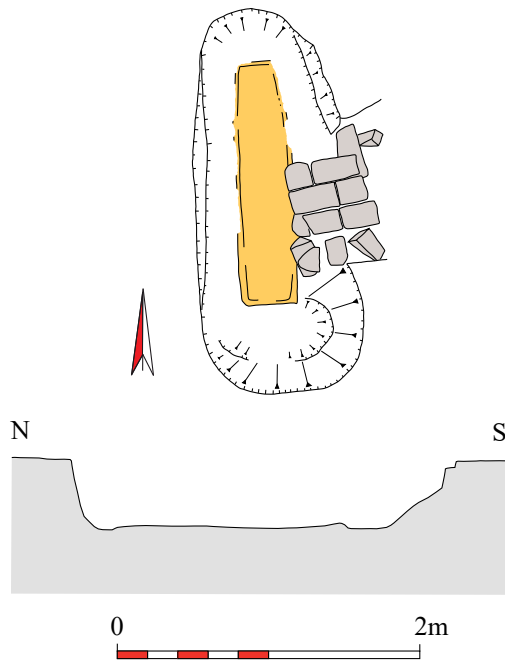


Figure 11.139. Grid square (JG3). Grave 6 – plan of the burial chamber and blocking wall and north-south profile (scale 1:50).



Plate 11.261. Grid square (JG3). Grave 6 – the burial chamber and blocking wall with the chamber of grave (JG3)23 and its blocking wall in the background, looking north east.

deceased was placed in a trapezoidal coffin 1.46m in length and from 239mm to 384mm in size externally with ‘sides’ 80mm thick. Bones of a young adult female (skeleton 13) and of an individual in late childhood (skeleton 14) had been totally disarticulated.

The blocking wall, which sits on a layer of fill within grave (JG3)23, was constructed of bricks 320 x 150 x 100mm in size and survived to a height of three courses, each of one row of headers and one of stretchers.

Within the descender fill [(JG3)18] were some human bones from the body in grave (JG3)23.

The first robber pit was visible cutting the descender fill and itself was cut by another robber pit surviving as an oval 1.25 x 1.05m in size directly over the burial and the blocking wall. It was filled with sand and contained some pottery sherds.

Material associated with the burials

Jewellery

Cat. no. B-1552 – beads

Grave (JG3)23 – skeleton 21, Figure 11.140, Plates 11.261-11.262

The slightly trapezoidal descender was approximately 800mm in width and survived for a length of 1.2m. It sloped down gently to a depth of up to 300mm below the alluvial surface at the time of excavation. It gave access to the sub-rectangular chamber 750mm wide and over 1.5m long. The deceased, an undetermined adult of undetermined sex, had been laid in an extended position slightly on its right side with the legs a little flexed, head to the west. The legs remained *in situ* along with the right hand and part of the lower right arm. The rest of the body had been removed during the digging of grave (JG3)6; some of the disarticulated bones were found in that grave.



Plate 11.262. Grid square (JG3). Grave 23 – the base of the descender, the burial chamber and blocking wall with the blocking wall and chamber of grave (JG3)6 in the background, looking north west.



Plate 11.263. Grid square (JG3). Grave 23 – the burial chamber and blocking wall with the blocking wall of grave (JG3)6 in the background, looking west.

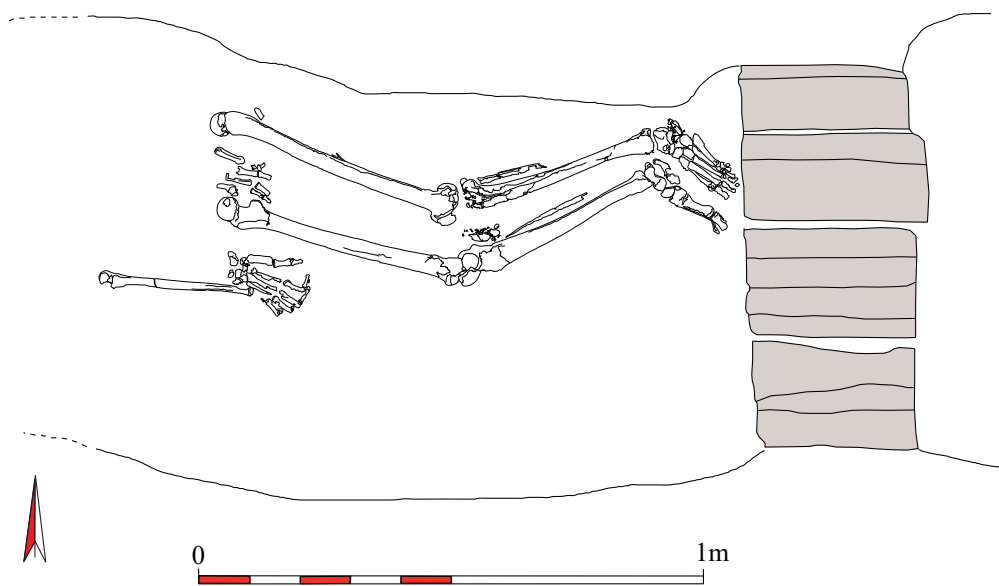


Figure 11.140. Grid square (JG3). Grave 23 – plan of the burial chamber (scale 1:15) and of the descendency and chamber (scale 1:50).

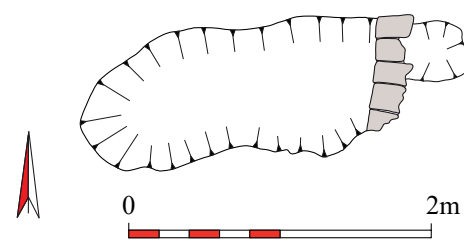
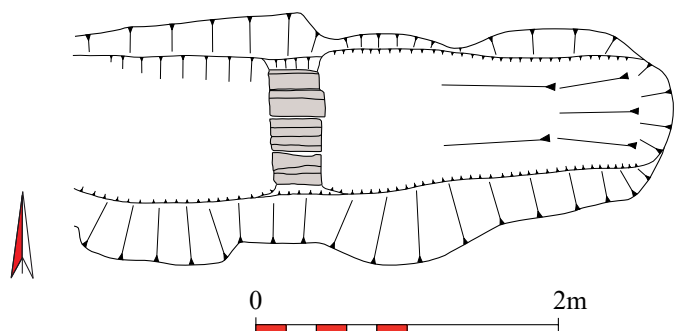


Figure 11.141. Grid square (JG4). Grave 2 – plan of the burial chamber and the blocking wall (scale 1:50).

The blocking wall, of mud bricks 320 x 150 x 10mm in size, survived as a single course of saw-tooth headers angled to the north. The bricks have lines of finger marks impressed into them.

An oval robber pit 1.2 x 1.1m in size cut into the eastern end of the burial chamber.

Grid square (JG4)

The area of this grid square had suffered much from erosion which had removed the alluvium in some cases close to the level of the base of the descendaries. Some graves may have disappeared entirely.

Grave (JG4)2 – Figure 11.141, Plate 11.264

Only the floor of the burial chamber and the lowest two courses of the blocking wall survived along with a very small part of the descendency. No human bones were recovered.

Grave (JG4)8 – Figure 11.142, Plate 11.265

The roughly circular burial chamber was cut into the western part of an oval flat-bottomed pit and extended as a subterranean chamber a little further to the west. The area available for the burial was very small. No human bone was found.

Grid square (JH3)

Grave (JH3)5 – skeleton 80, Figure 11.143, Plate 11.266

The sub-trapezoidal descendency had very ill-defined steps. It was a maximum of 890mm in width and survived to a length of 1.82m and a depth of 510mm. The burial chamber was



Plate 11.264. Grid square (JG4). Grave 2 – the burial chamber and blocking wall, looking north east.



Plate 11.265. Grid square (JG4). Grave 8 – the grave and pit, looking south-south-west.

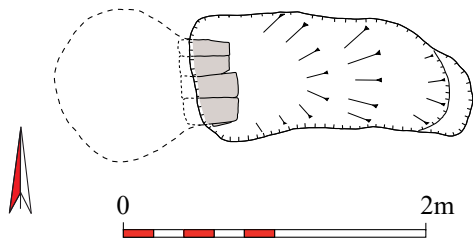


Figure 11.143. Grid square (JH3). Grave 5 – plan of the grave (scale 1:50).



Plate 11.266. Grid square (JH3). Grave 5 – the descender, blocking wall and burial chamber, looking west.

circular (dia. 940-980mm) and contained a small number of bones from the disarticulated skeleton of an individual in early childhood. Other bones were recovered from contexts associated with the robbing. The blocking wall survived to a height of two courses, the lowest of headers, the other of rowlocks. The mud bricks are 310 x 170 x 90mm in size. The small oval robber pit, 750 x 500mm in size, had three mud bricks resting on its sloping sides.

Pottery from the robber pit

jar base sherd like type 288 lx used as a spade by the robbers

Grave (JH3)9 – skeletons primary 99, secondary 90 and 140, Figure 11.144, Plates 11.267 & 11.268

The trapezoidal descender had three shallow steps with risers of 210mm, 290mm and 130mm. It varied in width at the surface from 0.89-1.48m and survived to a length of 3.72m and a depth of 1.2m. The oval chamber was 2.18m in length and 1.45m wide. It contained the scattered bones of an individual in early childhood (sk. 99) within a layer of pale grey silt.

After a build-up of lenses of fine silt, some fragments of alluvium and lenses of wind-blown sand (370mm thick) the scattered bones of the secondary interment, of an individual in late childhood (sk. 90), lay on the surface within the chamber. Bones were also recovered from a third burial, of another individual in early childhood (sk. 140). The associated blocking wall rested on the silt surface. It survived to a height of five courses, the lower two of rowlocks, the upper three of headers. The mud bricks were 370 x 180 x 70mm in size.



Plate 11.267. Grid square (JH3). Grave 9 – the descender and blocking wall, looking west.



Plate 11.268. Grid square (JH3). Grave 9 – the blocking wall, looking west.

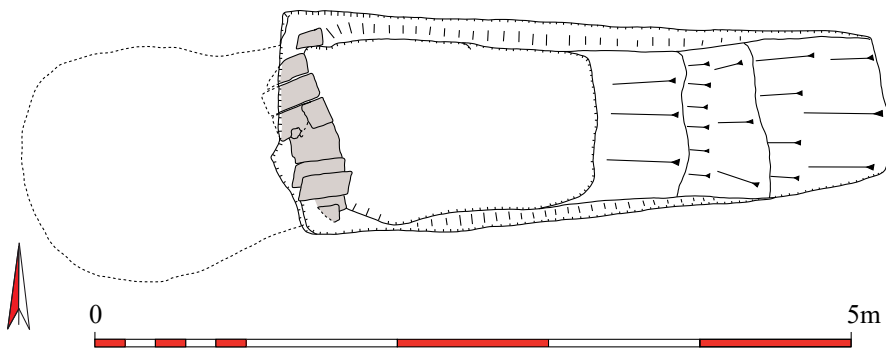


Figure 11.144. Grid square (JH3). Grave 9 – plan of the grave (scale 1:50).



Plate 11.269. Grid square (JH3). Grave 11 – the descender and blocking wall, looking west.

Two robber pits cut into this grave, one 1.3 x 0.65m in size was dug at the west end of the descender and penetrated into the burial chamber.

Material associated with the burial

Jewellery

Cat. no. B-1554 – bead, glass

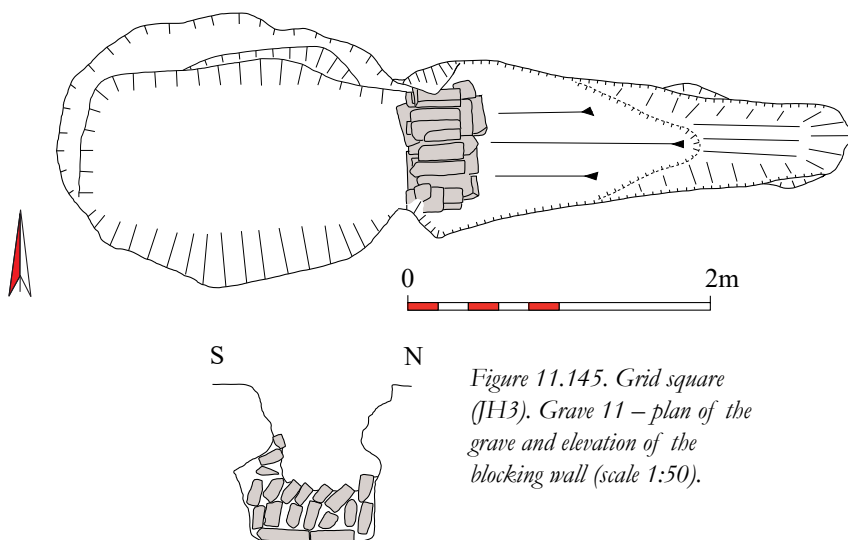


Figure 11.145. Grid square (JH3). Grave 11 – plan of the grave and elevation of the blocking wall (scale 1:50).

Grave (JH3)11 – skeletons 74, Figure 11.145, Plate 11.269

The markedly trapezoidal sloping descender was from 0.45-1.18m wide surviving to a length of 2.97m and a depth of 800mm. It gave access through a doorway with prominent ‘jambs’ into an oval chamber, rectangular at floor level and 2.08 x 0.97m wide. Scattered over the chamber were the bones of an adolescent. The substantial blocking wall of mud bricks 310 x 190 x 100mm in size, had battered

faces. At the base it was 660mm wide, narrowing to one row of headers at the sixth course, the highest surviving. In elevation from the west it has the lowest course of stretchers, two of rowlocks and three of headers. From the east they are angled.

There was a robber pit towards the east end of the descender and another over the burial chamber with mud bricks in its fill. Within the chamber bones were found scattered in a very soft silt and a grey silt matrix above sealed by ceiling collapse and wind-blown sand: the final fill of the robber pit.

Material associated with the burial

Jewellery

Cat. no. B-1555 – 66 beads, faience

Cat. no. B-1564 – bead, stone, chalcedony

Cat. no. B-1565 – bead, stone, chalcedony

Cat. no. B-1561 – bead, ostrich eggshell

Cat. no. B-1556 – 5 beads, glass

Cat. no. B-1557 – bead, glass

Cat. no. B-1558 to B-1569 – 3 beads, glass; metal, gold

Cat. no. B-1563 – 32 beads, stone

Cat. no. B-1562 – bead, stone

Pottery from the robber pit

(Welsby Sjöström 2023, 369, tab. 7.5)

jar – 3689x

Grave (JH3)21 – skeleton 82, Figures 11.146 & 11.147, Plates 11.270-11.274

The slightly trapezoidal descender had about four ephemeral steps. It was between 1.07 and 1.6m wide and survived to a length of 4m and a depth of 1.15m. It narrowed markedly at the doorway giving access into the roughly rectangular chamber 2.4m long by 1.02m wide and a maximum of 850mm high.

The extended supine skeleton of a young adult, probably male, with its hands on each hip, was aligned west-east and placed in a plaster-coated coffin against the north side of the chamber. The coffin with walls 15mm thick was 1.9m long and a maximum of 430mm wide – it tapers slightly towards each end. A small copper-alloy Osiris figure came from by the left shoulder. Close to the south side of the coffin was a beer jar set upright with a copper-alloy cup set



Plate 11.270. Grid square (JH3). Grave 21 – the descenary and blocking wall, looking west.



Plate 11.272. Grid square (JH3). Grave 21 – the burial chamber, looking west.



Plate 11.271. Grid square (JH3). Grave 21 – the blocking wall and burial chamber, looking west.

in its mouth, Resting against this pot was a copper-alloy *clepsydra* (not shown on the plan), the other end presumably originally resting on the coffin lid. Up to three courses of blocking wall remained, of mud bricks 340 x 150 x 70mm laid as rowlocks.

The robber pit was 1.49 x 1.4m in size on the surface and extended the full width of the descenary. It was infilled with sand and silt, material very similar to that of the descenary.

A few small fragments of bone on the surface immediately to the west of the grave may not be associated with it.

Material associated with the burial

Metalwork

Cat. no. F-86 – *clepsydra*, copper alloy

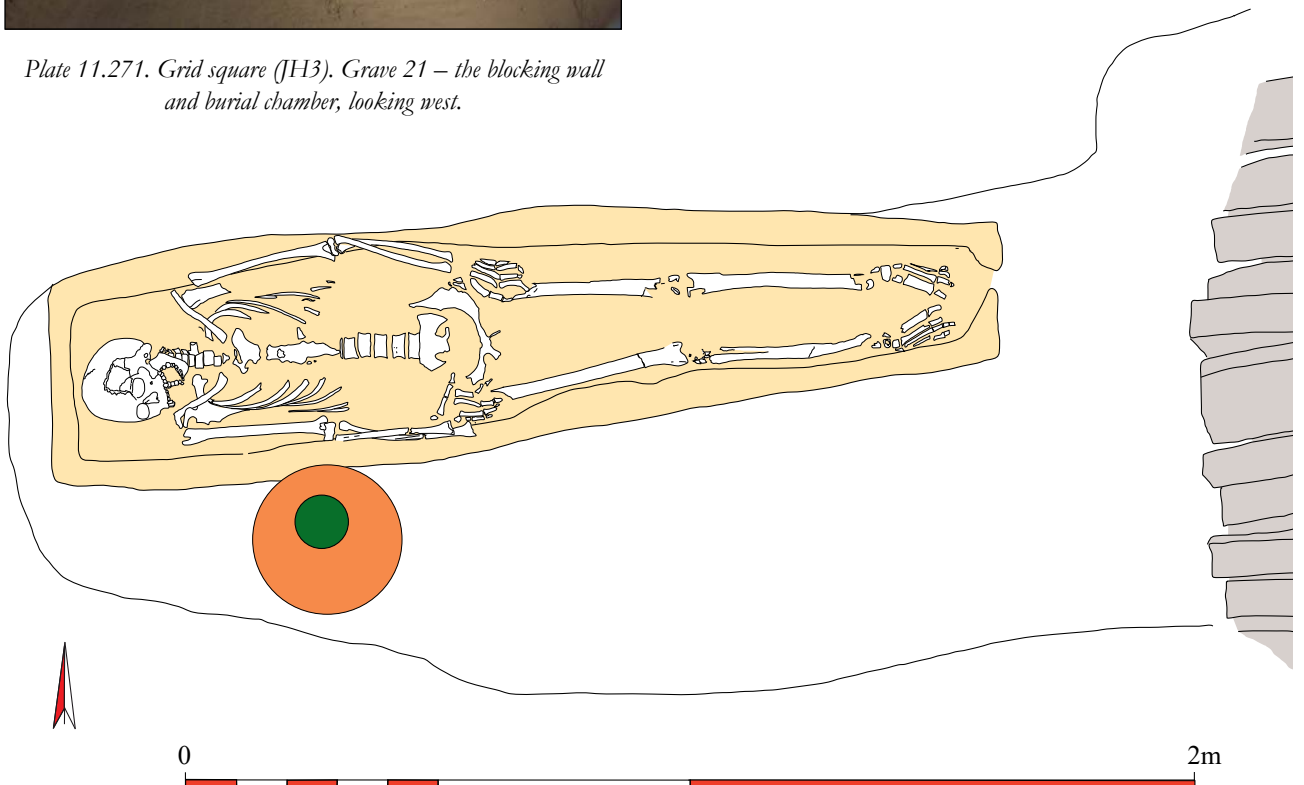


Figure 11.146. Grid square (JH3). Grave 21 – plan of the burial (scale 1:15).

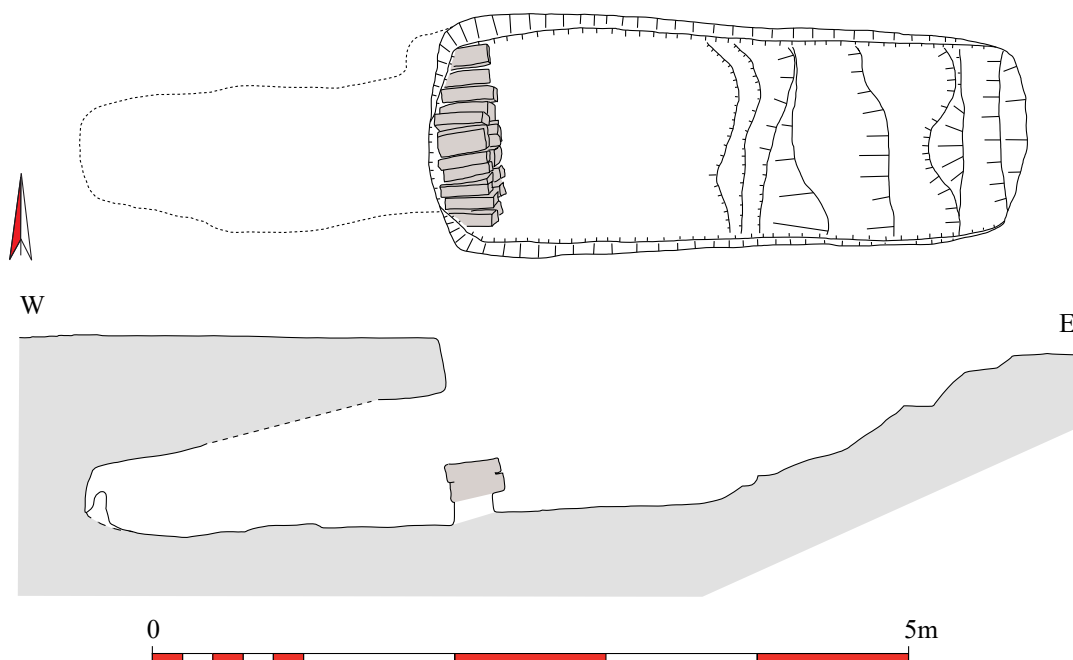


Figure 11.147. Grid square (JH3). Grave 21 – plan and east-west profile of the descendary and burial chamber (scale 1:50).



Plate 11.273. Grid square (JH3). Grave 21 – skeleton 82, the pottery jar and copper-alloy beaker, looking west.



Plate 11.274. Grid square (JH3). Grave 21 – the pottery jar, copper-alloy beaker and clepsydra, looking west.

Cat. no. F-83 – bowl, copper alloy
 Cat. no. F-92 – Osiris figurine, copper alloy
 Cat. nos F-170 & F-202 – fragments, copper alloy
 Pottery (Welsby Sjöström 2023, 369, tab. 7.5)
 jar – 4335x

Grave (JH3)36 – skeleton 88/126, Figure 11.148, Plates 11.275 & 11.276

The sub-trapezoidal descendary 0.62-1.14m in width and surviving to a length of 3.28m and a depth of 1.72m, had a flight of four rounded steps with gently sloping risers of 333mm, 331mm, 261mm and 387mm, leading down to the rectangular chamber with a rounded west end. The chamber was 2.5m long, 0.74m wide and a maximum of 1.16m high. Human bone was found scattered throughout the chamber



Plate 11.275. Grid square (JH3). Grave 36 – the descendary, looking west.



Plate 11.276. Grid square (JH3). Grave 36 – the descandary, looking west.

but the legs were *in situ* indicating that the young adult, probably female, was laid in a supine position, west-east. It was associated with many beads. Two course of blocking wall survived, the lower of headers with the closure brick a saw-tooth header, the upper of rowlocks, some slightly angled to the north. The mud bricks ranged in size from 400 x 150 x 90mm to 300 x 140 x 80mm. The surviving courses of the blocking walls are set well to the east of the entrance to the chamber.

There appear to have been two robber pits in the descandary, the later one smaller and cutting into the fill of the other.

Material associated with the burial

Jewellery

- Cat. no. B-1581 – bead, glass; metal, gold
- Cat. no. B-1567 – 4 beads, faience
- Cat. no. B-1570 – bead, glass
- Cat. no. B-1584 – bead stone

- Cat. no. B-1577 – 6 beads, glass
- Cat. no. B-1587 – 2 beads, stone, quartzite
- Cat. no. B-1571 – bead, glass
- Cat. no. B-1578 – 6 beads, glass
- Cat. no. B-1573 – 22 beads, glass
- Cat. no. B-1582 – 7 beads, glass; metal, gold
- Cat. no. B-1572 – 7 beads, glass
- Cat. no. B-1574 – 2 beads, glass
- Cat. no. B-1566 – bead faience
- Cat. no. B-1575 – 5 beads, glass
 - 8 beads, gold leaf over a glass core
- Cat. no. B-1583 – bead, gold in glass?
- Cat. no. B-1568 – 8 beads, faience
- Cat. no. B-1585 – 2 beads, stone, chalcedony
- Cat. no. B-1586 – 3 beads, stone, chalcedony
- Cat. no. B-1580 – 9 beads, glass
- Cat. no. B-1576 – 11 beads, glass
- Cat. no. B-1579 – 10 beads, glass
- Cat. no. B-1569 – bead, faience

Pottery from the descandary fill

(Welsby Sjöström 2023, 369, tab. 7.5)

beer jar – 2881x neck and shoulder with decoration 1173x

bowl – 3692x

cooking pot – 4475x

Grave (JH3)39 – skeleton 125, Figures 11.149 & 11.150, Plates 11.277-11.279

This grave appears to have been inserted under the tomb monument associated with grave (JH3)110. The descandary was orientated at an angle of approximately 337° with the chamber angled to approximately 300°. The descandary was sub-trapezoidal ranging in width from 0.4-1.04m wide and survived to a length of 1.3m. At its south-east end there was a single step but there may have been others; the surface into which this grave had been cut was much eroded, the grave only surviving to a maximum depth of 520mm. The

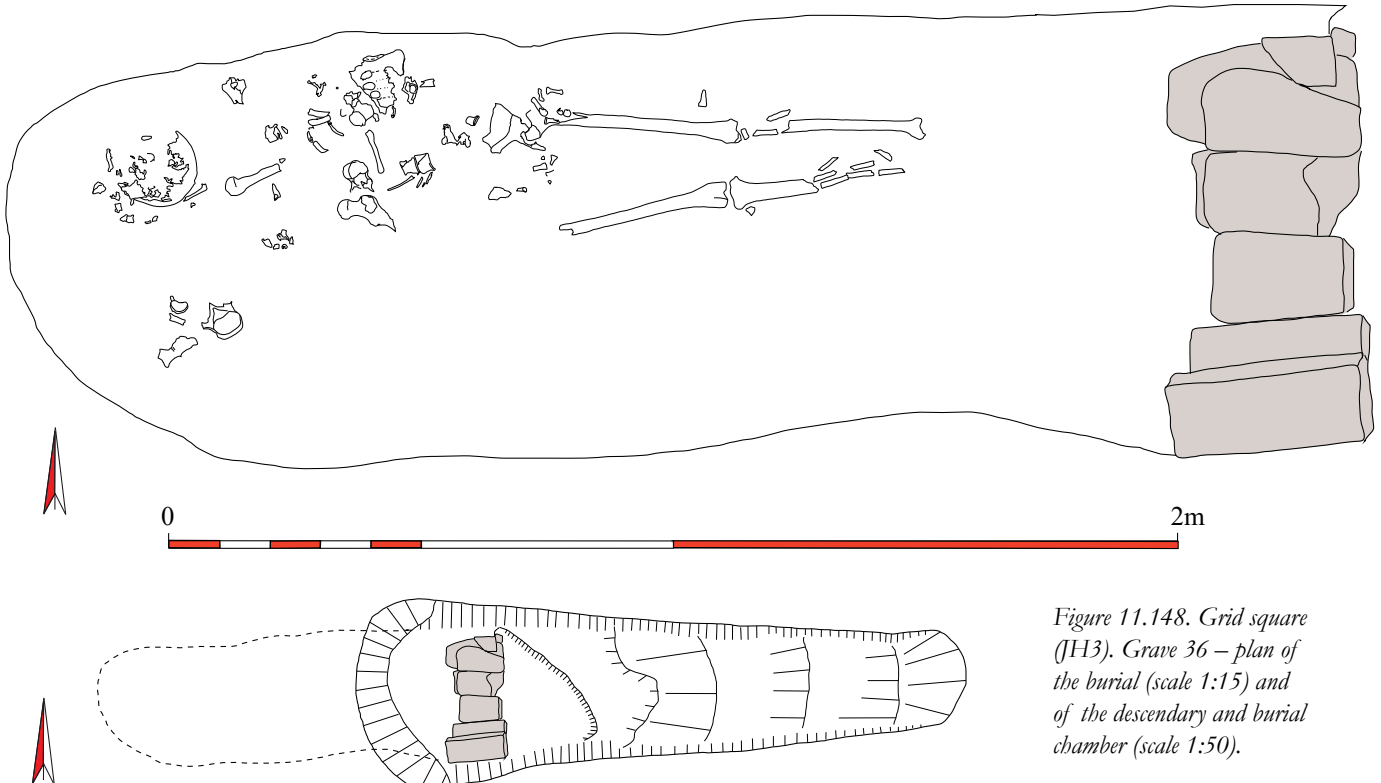


Figure 11.148. Grid square (JH3). Grave 36 – plan of the burial (scale 1:15) and of the descandary and burial chamber (scale 1:50).

Plate 11.277. Grid square (JH3).
Grave 39 – general view with grave
110 on the left and 114 in the
background, looking south east.

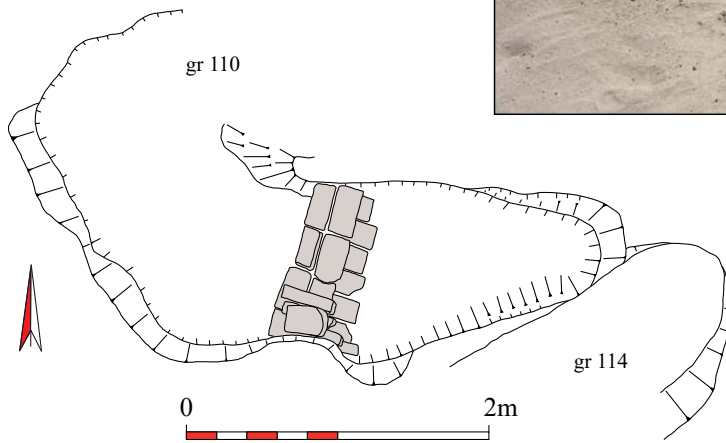


Figure 11.150. Grid square (JH3).
Grave 39 – plan of the descandary
and burial chamber (scale 1:50).

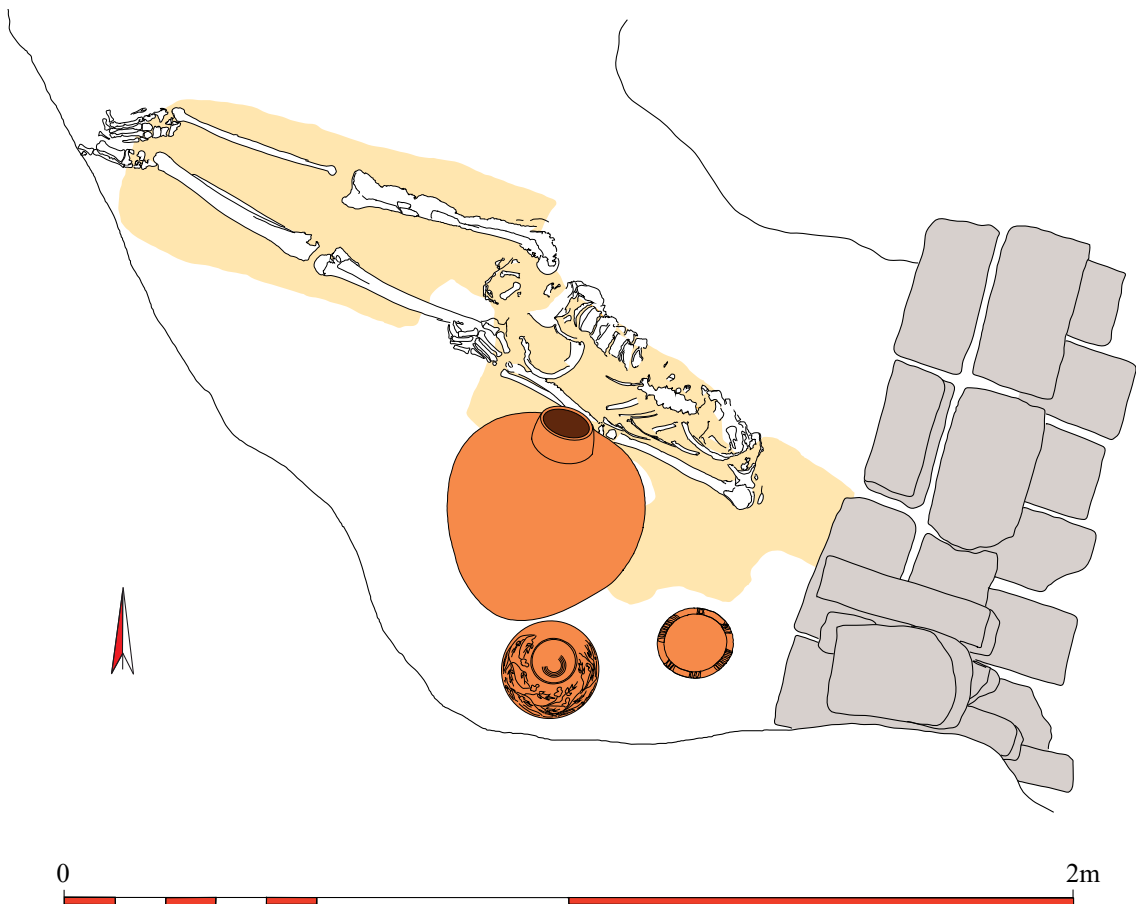


Figure 11.149. Grid square (JH3). Grave 39 – plan of the burial (scale 1:15).



Plate 11.278. Grid square (JH3). Grave 39 – the burial chamber, skeleton 125 and the ceramic grave goods, looking south-south-west.



Plate 11.279. Grid square (JH3). Grave 39 – the burial chamber, skeleton 125 and the ceramic grave goods, looking south west.

chamber, which was irregular in shape, extended into that of grave (JH3)110 but did not attain as great a depth and hence did not disturb the burial in the earlier grave. The extended inhumation of a middle adult of undetermined sex was aligned south east to north west, the head which was not found *in situ* resting close to the blocking wall. It lay within a plaster-coated coffin at least 1.62m long and 350mm wide, on the left side of which were four pottery vessels (4327x, 4331x, 4333x & 4334x), the cup set upright in the mouth of jar 4333x. The blocking wall survived to a height of four courses (430mm), the lowest of headers, followed by stretchers, rowlocks and finally headers. Two piles of brick rubble lay in the robber pit. Examples of bricks were 300 x 170 x 80mm and 340 x 170 x 80mm in size.

The descendency fill appeared to be cut by the descendency of grave (JH3)114.

Material associated with the burial

Jewellery

Cat. no. F-206 – ring, iron

Pottery (Welsby Sjöström 2023, 369, tab. 7.5, pl. 7.4)

beaker – 4332x

bowl – 4331x

cup – 4334x

jars – 3690x, 4327x, 4333x

Pottery from the robber pit
jar – 3690x

Grave (JH3)43 – skeletons 141 & 142, Figure 11.151, Plate 11.280

The trapezoidal descendency had vertical sides and gave access via five steps down to the burial chamber at a depth of 1.38m below the modern ground surface. It varied in width from 0.65-1.39m and survived to a length of 3.4m. The ceiling and upper part of the chamber had been removed by wind erosion and the sides had partially collapsed. At floor level it was approximately 2m in length and 750mm wide. The grave had been much disturbed by robbing which had removed the descendency fill and the blocking wall; no bones or grave goods remained *in situ*. Mud-brick fragments from the blocking wall were 175mm wide by 90mm thick. In the lower fill within the chamber, which contained bone fragments, was a sliver of wood. Bones were found from two individuals. Skeleton 141 was of a young adult of undetermined sex, skeleton 142 was of an individual in late childhood or puberty.

Material associated with the burial

Jewellery

Cat. no. B-1589 – bead, faience

Cat. no. B-1590 – 2 beads, faience

Cat. no. B-1591 – bead, faience

Cat. no. B-1592 – 2 beads, faience

Cat. no. B-1593 – bead, faience

Cat. no. F-37 – finger ring, copper alloy

Cat. no. F-2353 – pendant, stone

Cat. no. F-2360 – ram head amulet, stone

Cat. no. Sc-4 – scarab, faience

Pottery (Welsby Sjöström 2023, 369, tab. 7.5)

beer jars – 3694x, 3695x

Pottery from the descendency fill

unguentarium – 3693x

Pottery from the grave or robber pit fills

beer jar – body sherd



Plate 11.280. Grid square (JH3). Grave 43 – the descendency, looking west.

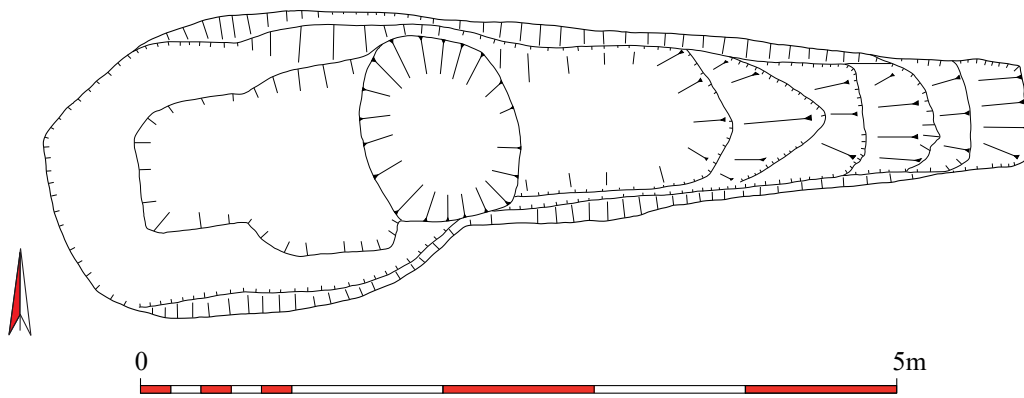


Figure 11.151. Grid square (JH3). Grave 43 – plan of the descender and burial chamber (scale 1:50).

‘Grave’ (JH3)69 – Plate 11.281

A small pit 1.18m in length and 400mm wide sloping down gently from the surface at the east to a maximum depth of 150mm. It looked like the eastern end of a descender and was aligned as the other graves in the area but did not extend down to a burial chamber to the west. Its function is unclear. A very small amount of skeletal material was found in its fill along with a neck from a type 2881x jar. Skeleton 143 was of an undetermined adult of undetermined sex, skeleton 144 of an infant. These presumably came from other graves in the vicinity rather than representing two additional individuals.



Plate 11.281. Grid square (JH3). ‘Grave’ 69 – looking south west.

Grave (JH3)110 – skeleton 136, Figure 11.152, Plates 0.282 & 11.283

The slightly trapezoidal descender 760-900mm wide gave access down three shallow steps to the burial chamber at a depth below the modern surface of 740mm. It survived to a length of 2.3m. The oval chamber was 1.42m long by 1.1m wide. It contained an extended supine inhumation of an individual in late childhood aligned west-east with the head facing north and the hands on the pubis. The toes of the left foot slightly overlay those of the right. It had been placed in a wooden coffin only traces of which remained. A copper-alloy bowl had been placed upside down to the south of the upper right leg. The blocking wall survived to a maximum height of three courses (510mm), the lowest of headers, the upper two of saw-tooth headers angle to the north. Examples of brick sizes included 320 x 150 x 85mm and 340 x 180 x 80mm.

Material associated with the burial

Metalwork

Cat. no. F-77 – bowl, copper alloy



Plate 11.282. Grid square (JH3). Grave 110 – the descender, looking west.



Plate 11.283. Grid square (JH3). Grave 110 – the burial chamber with skeleton 136 and the copper-alloy bowl, looking south.

Pottery (Welsby Sjöström 2023, 369, tab. 7.5)
jar – a wheel-made sherd

Grave (JH3)114 – skeleton 123, Figure 11.153, Plates 11.284-11.286

The descender was ‘U’-shaped, 940mm wide and survived to a length of 1.9m. It gave access at a depth of 710mm below the modern surface to the narrow burial chamber

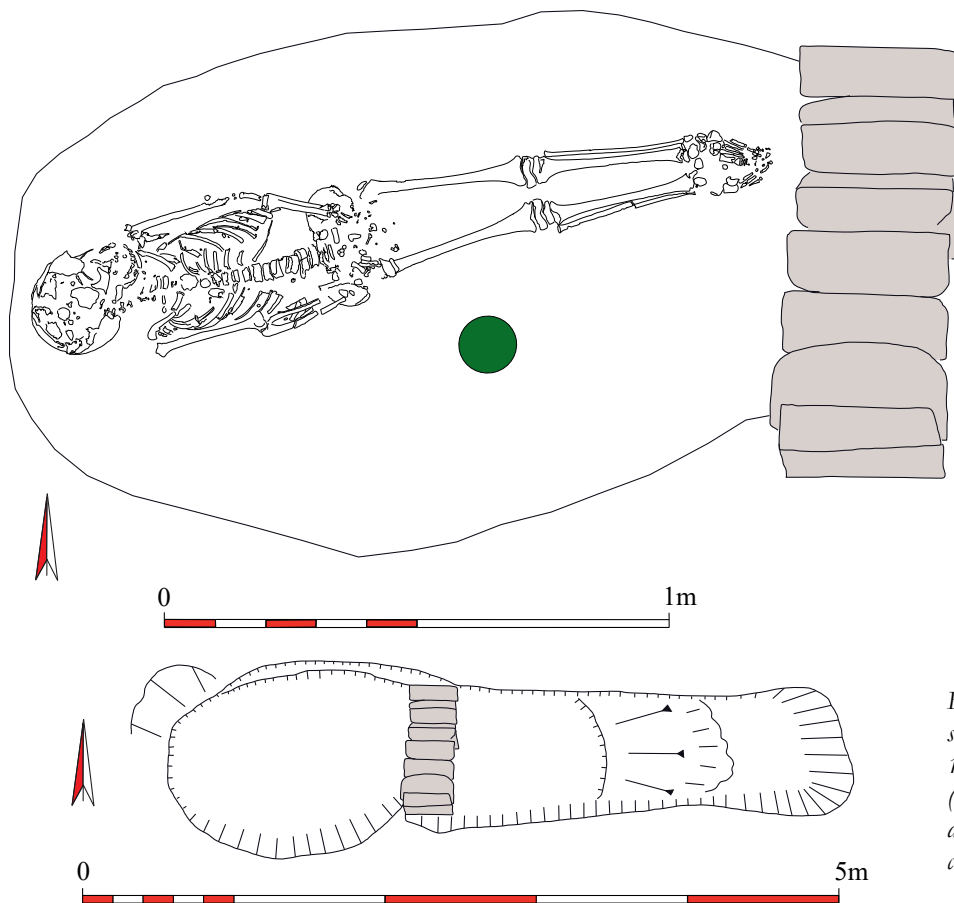


Figure 11.152. Grid square (JH3). Grave 110 – plan of the burial (scale 1:15) and of the descender and burial chamber (scale 1:50).



Plate 11.284. Grid square (JH3). Grave 114 – the descender and burial chamber; grave 39 to the north, looking west.

2.04m long and 790mm wide. This contained the body of a young adult, probably female, laid in a supine extended position. The skull had been disturbed and rotated while the lower mandible lay by the lower right arm and the upper legs and pelvis had been removed. Up to three courses remained (470mm) of the blocking wall, the lowest of two rows of stretchers, with a course of headers above and another of saw-tooth headers angled south. Among the mud bricks were examples measuring 350 x 170 x 80mm, 320 x 160 x 75mm and 330 x 140 x 70mm. In the robber pit was much mud-brick rubble and long bones from the legs which had been disturbed when the robber pit penetrated a little through the floor of the grave. Bone was scattered on the surface over



Plate 11.285. Grid square (JH3). Grave 114 – the burial chamber with skeleton 123, looking east.

an area of about 1.5m in diameter in the area of this grave before excavation.

Material associated with the burial

Jewellery

Cat. no. B-1598 – 11 beads, glass
– 49 beads, glass

Cat. no. B-1599 – 26 beads, gold leaf over glass
– 143 beads glass

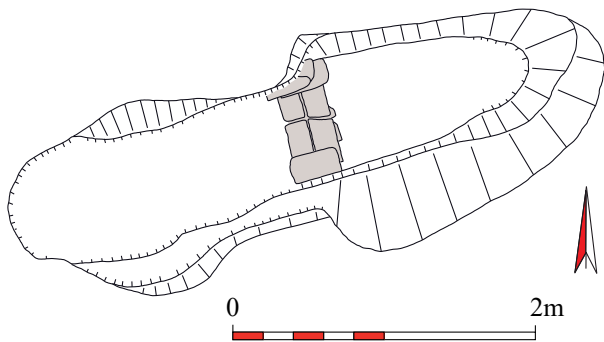
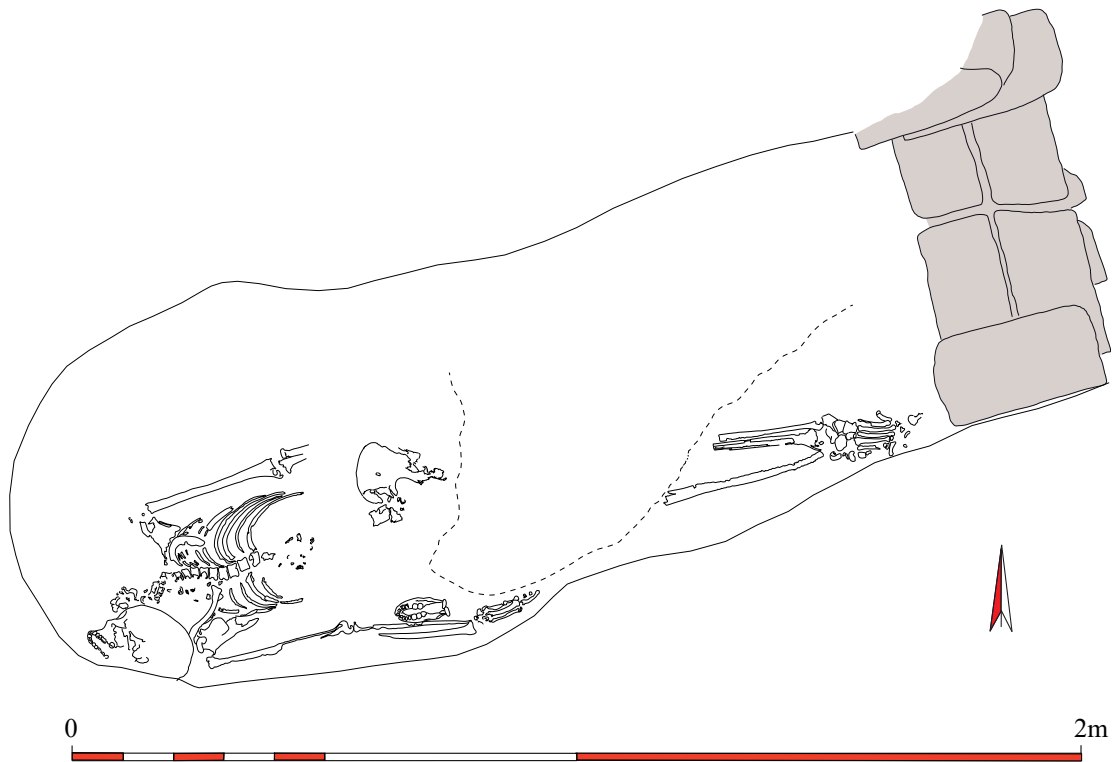


Figure 11.153. Grid square (JH3). Grave 114 – plan of the burial (scale 1:15) and of the descender and burial chamber (scale 1:50).

Cat. no. B-1595 – 133 beads glass
Pottery from the grave fill
 (Welsby Sjöström 2023, 369, tab. 7.5)
 wheel-made sherd
Pottery from the robber pit
 wheel-made sherd

Grave (JH3)116 – skeleton 133, Figure 11.154, Plates 11.287-11.289.

The slightly trapezoidal descender widened from 570mm to 1.19m over its surviving length of 3.4m. No clear steps were visible. It descended to a depth of 1.38m allowing access into the oval chamber 2.27 x 1.19m in size and up to 200mm deeper than the descender. The extended supine skeleton of a middle adult, probable female, was aligned west-east, the right arm by its side, the left hand resting on the pubis. Multiple strings of beads were found at the neck and a scarab lay on the right hand. Along the south



Plate 11.286. Grid square (JH3). Grave 114 – mud-brick rubble in the robber pit, looking east south east.



Plate 11.287. Grid square (JH3). Grave 116 – the burial chamber with skeleton 133 and the grave goods, looking west.

Cat. no. B-1600 – 19 beads, gold leaf over glass
 Cat. no. B-1564 – 48 beads, glass
 Cat. no. B-1601 – 45 beads glass
 Cat. no. B-1602 – 10 beads, glass

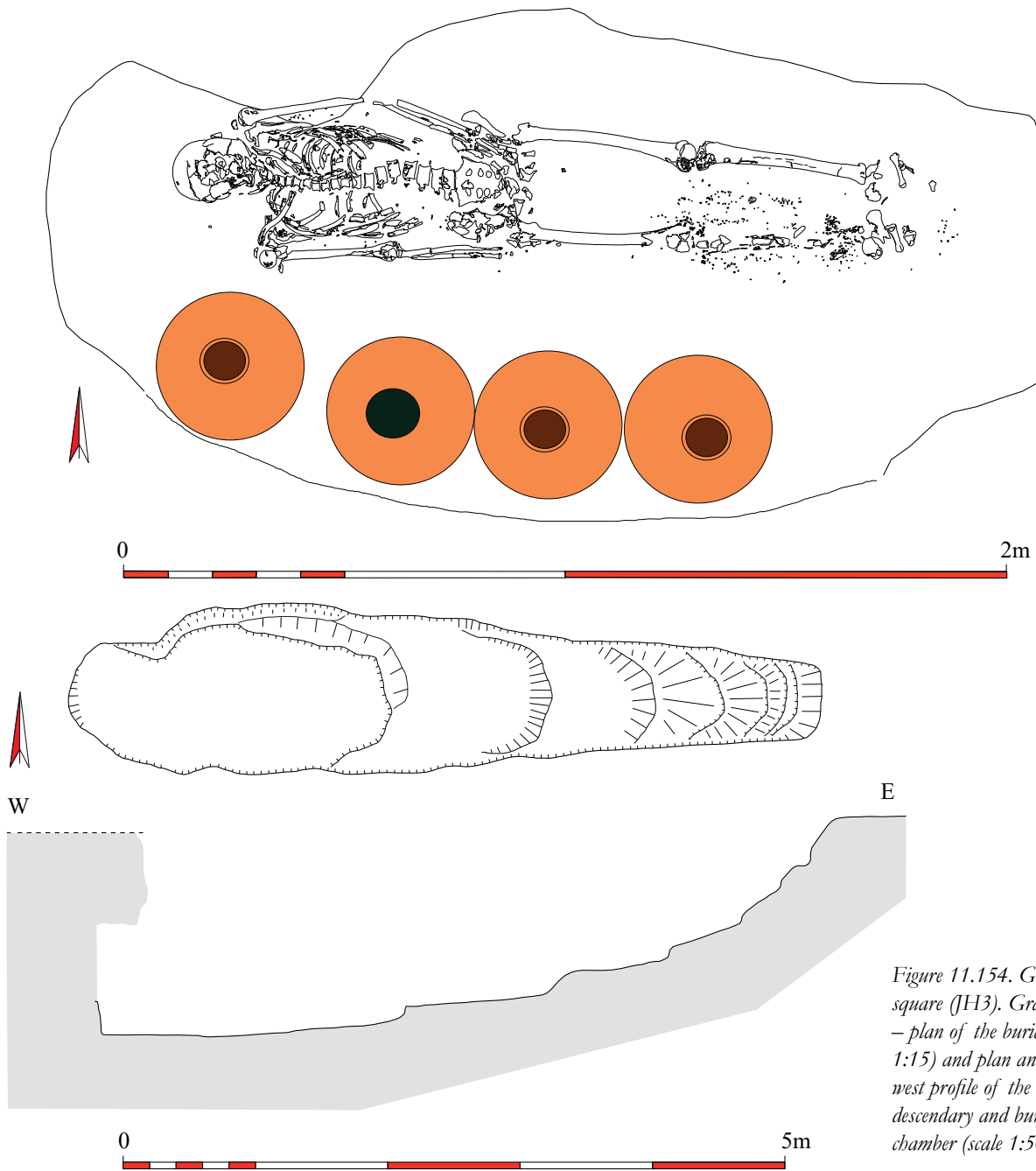


Figure 11.154. Grid square (JH3). Grave 116 – plan of the burial (scale 1:15) and plan and east-west profile of the descandary and burial chamber (scale 1:50).



Plate 11.288. Grid square (JH3). Grave 116 – bead necklaces associated with skeleton 133.

side of the chamber were four large painted jars, one of which had an upturned hemispherical copper-alloy bowl over its mouth.

The bricks forming the blocking wall had been removed entirely but the impressions of two bricks survived indicating its location. Rubble from the wall was found immediately to the east.

The robber pit, filled with wind-blown sand, cleared out most of the descandary fill. The collapse of the chamber ceiling post-dates the robber pit.

Material associated with the burial

Jewellery

Cat. no. F-38 – finger ring, copper alloy

Cat. no. Sc-7 – scarab, faience.

Cat. no. F-53 – pair of earrings, copper alloy

Cat. no. B-1612 – 4 beads, gold in glass

Cat. no. B-1603 – 20 beads, glass



Plate 11.289. Grid square (JH3). Grave 116 – the ceramic and copper-alloy grave goods, looking west.

- Cat. no. B-1613 – bead, stone, agate
- Cat. no. B-1614 – bead, stone, agate
- Cat. no. B-1607 – 84 beads, gold leaf over glass
- Cat. no. B-1611 – 20 beads, silver(?) leaf over glass
- Cat. no. B-1608 – 53 beads, gold leaf over glass
- Cat. no. B-1609 – 50 beads, gold leaf over glass
- Cat. no. B-1610 – 5 beads, gold leaf over glass
- Cat. no. B-1604 – 13 beads, glass
- Cat. no. B-1605 – 13 beads, glass
- Cat. no. B-1606 – 5 beads, glass

Metalwork

- Cat. no. F-84 – bowl, copper alloy

Pottery (Welsby Sjöström 2023, 369, tab. 7.5, fig. 7.5, pl. 7.4)

jars – 4326x & 4328x-4330x

Grid square (JH4)

All the graves had been much damaged by aeolian erosion which had removed the alluvium into which they had been dug, probably well in excess of 1m of deposits, so that only the lowermost part of the chamber and descendary survived. The ceramic material recovered was entirely body sherds of Meroitic date.

Grave (JH4)2 – skeleton 3

This grave had been totally removed by erosion leaving a pile of bones on the surface of a pubescent individual.

Grave (JH4)4 – skeleton 6, Figure 11.155, Plate 11.290

Only the very bottom of the grave survived within which lay the supine extended skeleton of a middle adult of undetermined sex aligned west-east. This was preserved from the skull to the pelvis, the legs had been removed by erosion.

Grave (JH4)8 – skeleton 19, Figure 11.156, Plates 11.291 & 11.292

The trapezoidal descendary 0.45-1.06m wide, survived to a maximum depth of 980mm. Two steps remained giving

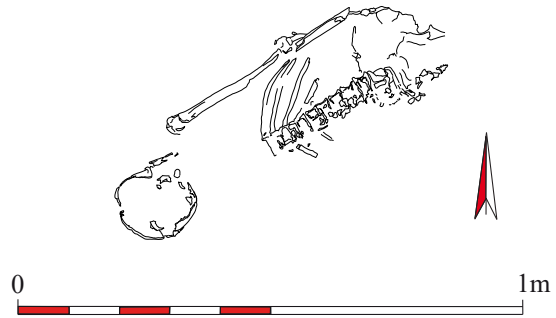


Figure 11.155. Grid square (JH4). Grave 4 – plan of the burial (scale 1:15).

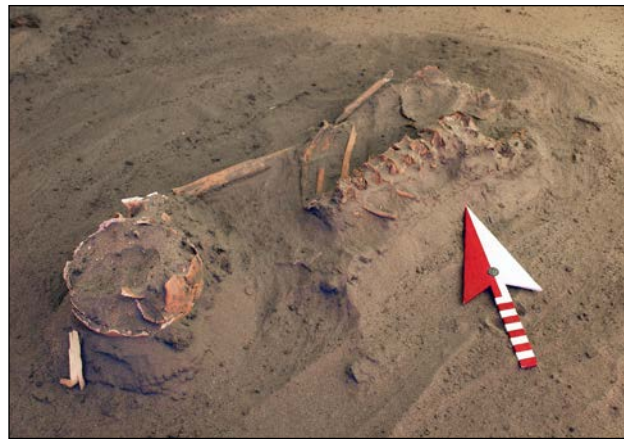


Plate 11.290. Grid square (JH4). Grave 4 – skeleton 6.

access down to the chamber 1.85m long and up to 1.32m wide. The supine skeleton of a middle adult of undetermined sex was extended and aligned west-east. The skull was found in the pelvic area while parts of the arms, the lower vertebrae and some elements of the pelvis were not *in situ*. It appeared that, while the lower right leg was in place, the lower left leg had been removed and the femur and part of the pelvis have been shifted to the east lying next to the lower right leg bones. The body had been placed in a plaster-coated coffin of which the long sides and much of the base survived.

A single course of the blocking wall remained, of row-



Plate 11.291. Grid square (JH4). Grave 8 – burial chamber, blocking wall and the descendary, looking north east.

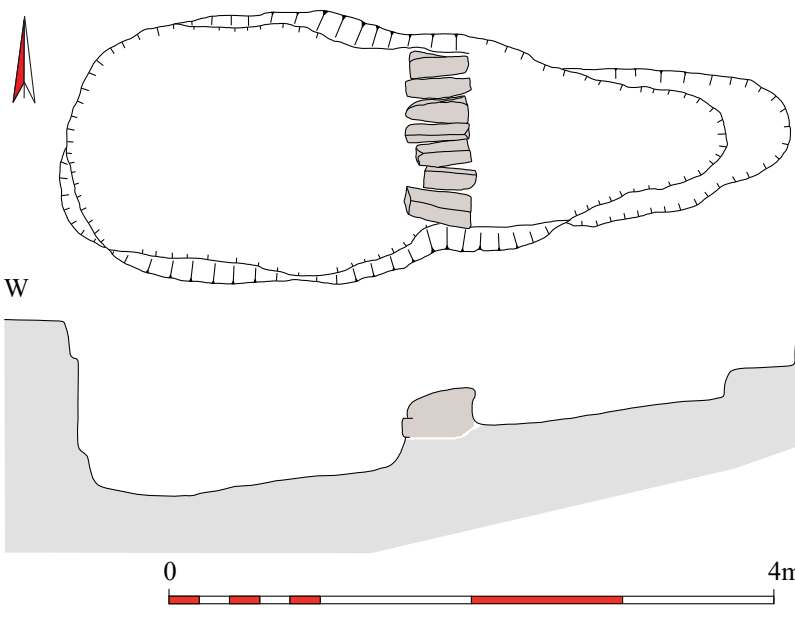
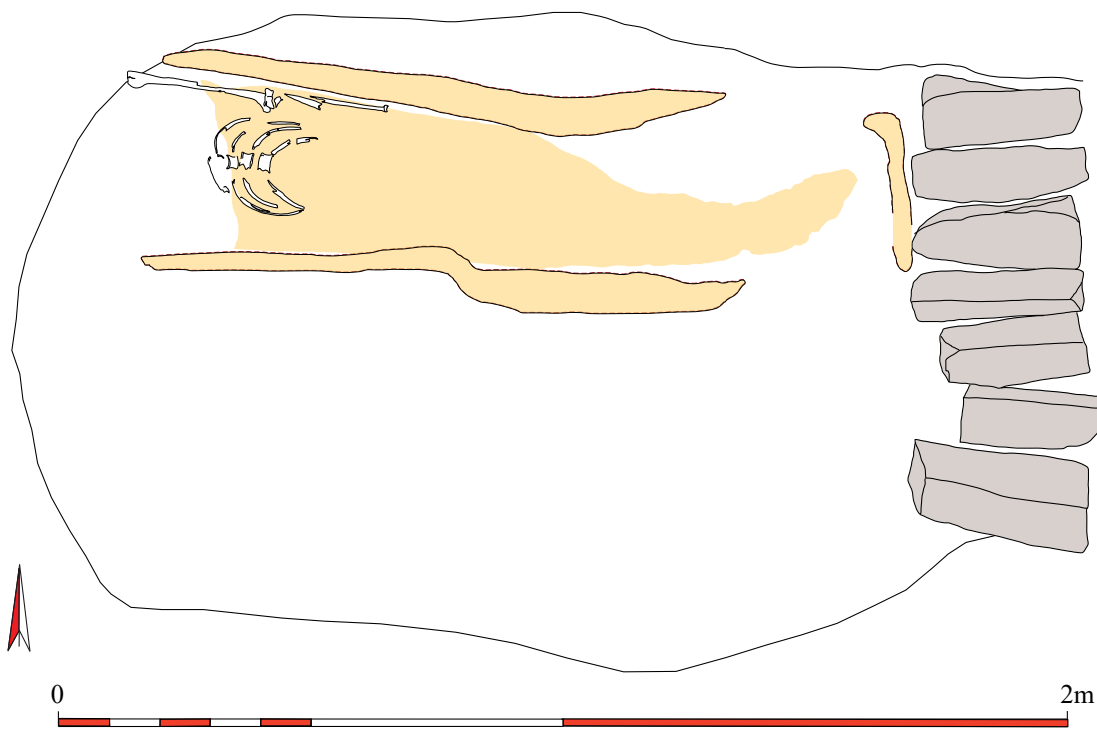


Figure 11.156. Grid square (JH4). Grave 8 – plan of the burial (scale 1:15) and plan and east-west profile of the descendency and burial chamber (scale 1:50).

locks and slightly angled to the south. The mud bricks were 350 x 150 x 90mm in size.

Within the robber-pit fill were many disarticulated bones.

Grave (JH4)12 – Figure 11.157, Plates 11.293 & 11.294

The trapezoidal descendency 0.75-1.3m wide had four ephemeral steps leading down to the oval chamber 2.08m long, 1.3m wide and survived



Plate 11.292. Grid square (JH4). Grave 8 – the burial chamber with the partly disarticulated bones of skeleton 19, looking north.



Plate 11.293. Grid square (JH4). Grave 12 – the western end of the descendency with the blocking wall along with the later blocking wall and burial chamber of grave 47, looking west.

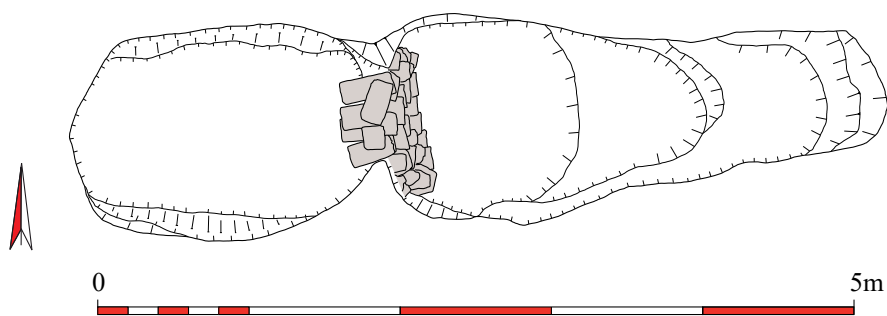


Figure 11.157. Grid square (JH4). Grave 12 – plan of the descandary and burial chamber (scale 1:50).

the mud bricks 340 x 160 x 90mm in size.

Grave (JH4)35 – skeleton 50, Figures 11.158 & 11.159, Plates 11.296-11.298

The rectangular descandary cut through the upper part of the chamber of grave (JH4)24. It was 1.07m wide and survived to a length of 2.56m and a depth of 600mm. It gave access into a rectangular chamber 2.2 x 0.89m in size. The extended skeleton of a mid-



Plate 11.294. Grid square (JH4). Grave 12 – the burial chamber of the inner face of the blocking wall 47, looking east.



Plate 11.295. Grid square (JH4). Grave 24 – the descandary, blocking wall and burial chamber with the blocking wall and burial chamber of grave 35 beyond, looking west.

to a depth of 1.19m. Although not robbed no skeleton was found in this grave.¹⁴ It was infilled with material very similar to the natural and the chamber was sealed by a blocking wall of mud bricks 340 x 170 x 80mm in size. These were arranged in a rather irregular fashion but with basically the lowest course of headers, then three courses of saw-tooth headers angled south, three courses of headers and the uppermost course of a header and a stretcher, a total height of 990mm. The descandary was infilled with alluvium and sand, becoming more sandy towards the bottom.

For the secondary burial see Grave (JH4)47.

Grave (JH4)24 – skeleton 51, Figure 11.158, Plates 11.295 & 11.296

The trapezoidal descandary 400-930mm in width survived to a length of 2.35m and to a depth of 530mm. The oval chamber was 2.25 x 1.19m in size. It contained the very well-preserved skeleton of an old adult female laid in an extended supine position aligned west-east with the hands folded over the pelvis. The head faced north.

The blocking wall, sitting on a 150mm-thick layer of sandy fill, survived to a height of five courses of headers,



Plate 11.296. Grid square (JH4). Grave 24 – the blocking wall and burial chamber with the blocking wall and burial chamber of grave 35 beyond, looking west.

¹⁴ Several small bones from a child were found in associated deposits, designated skeleton (JH4)61.

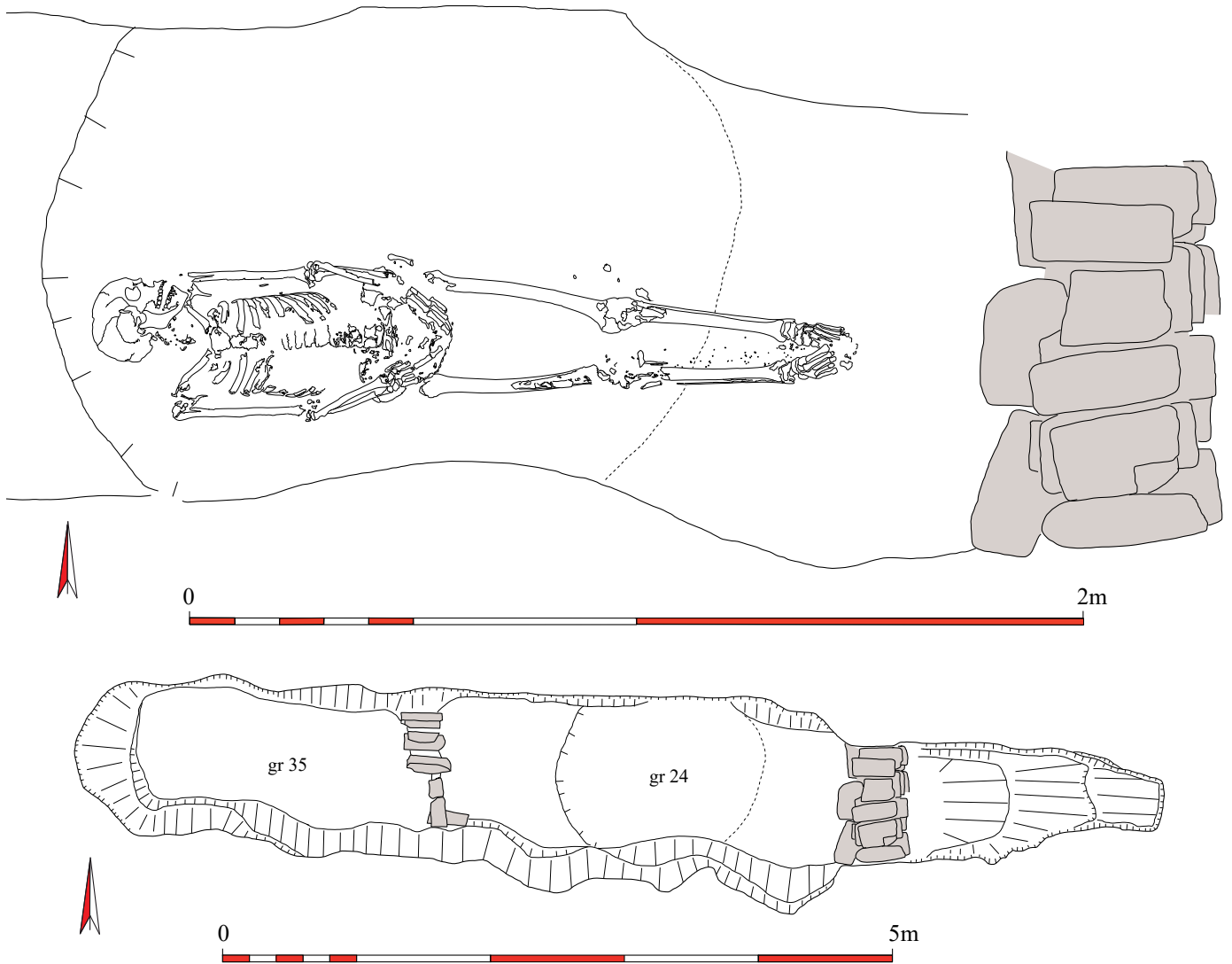


Figure 11.158. Grid square (JH4). Grave 24 – plan of the burial (scale 1:15) and plan of the descandaries and burial chambers of graves 24 and 35 (scale 1:50).



Plate 11.297. Grid square (JH4). Grave 35 – skeleton 50, looking east.



Plate 11.298. Grid square (JH4). Grave 35 – mud-brick rubble by the blocking wall, looking west south west.

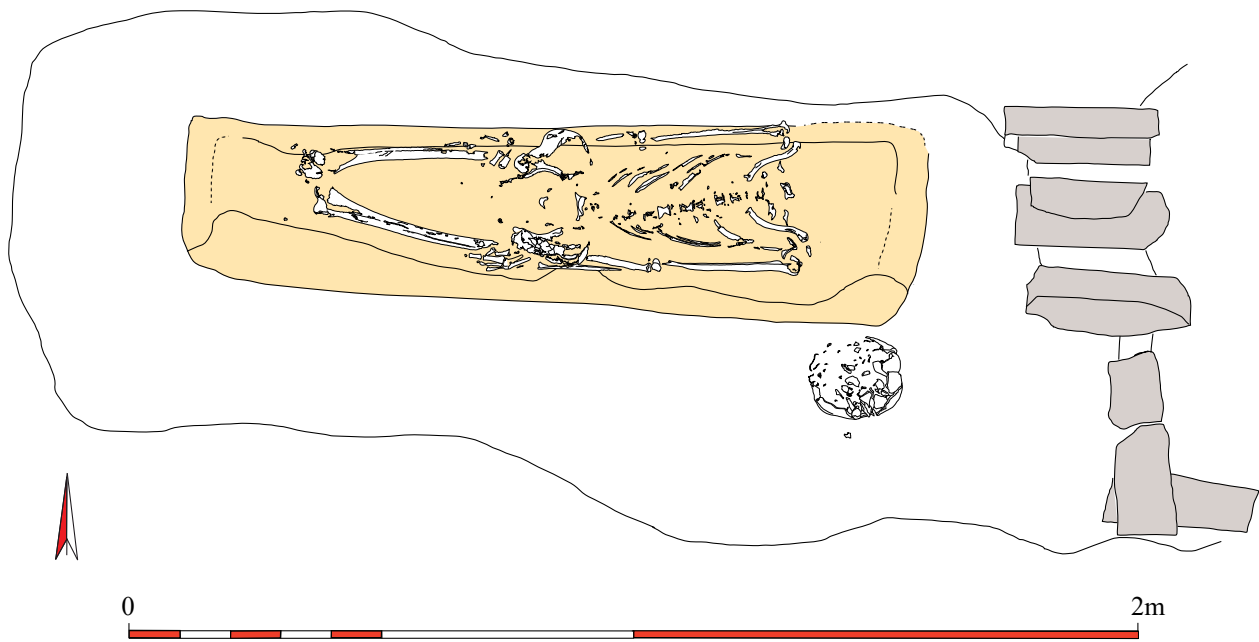


Figure 11.159. Grid square (JH4). Grave 35 – plan of the burial (scale 1:15).

dle adult, possible female, was placed in a supine position aligned east-west within a plaster-coated coffin 1.47m long by 400mm wide at maximum. It tapered from east to west.

The blocking wall was much destroyed on its south side. What remained was part of four courses of rowlocks with a total height of 600mm, made from mud bricks 350 x 160 x 85mm. Adjacent to the blocking wall was a pile of mud-brick rubble.

An oval robber pit 1.35 x 1.07m in size cut through the east end of the descandary of grave (JH4)35 and penetrated to a little above the burial in grave (JH4)24. Another robber pit cleared out much of the grave chamber fill. It was

infilled by wind-blown sand

Material associated with the burial

Jewellery

Cat. no. F-203 – finger ring, copper alloy

Cat. no. B-1616 – 3 beads, glass

Cat. no. B-1617 – bead, glass

Grave (JH4)36 – skeletons 52 and 56, Figure 11.160, Plates 11.299 & 11.300

The rectangular descandary was 1.2m wide and survived to a length of 1.16m and a depth of 750mm. It gave access into the trapezoidal chamber with a length of 1.48m and tapering from 1.2m to 0.76m. The skeletons of two individuals (sk.

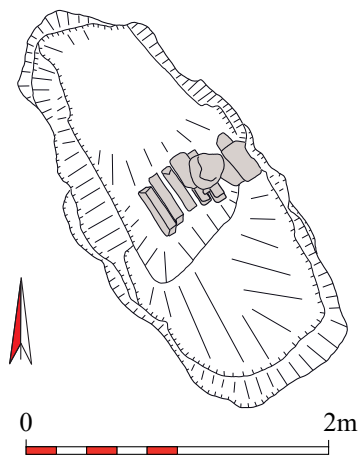
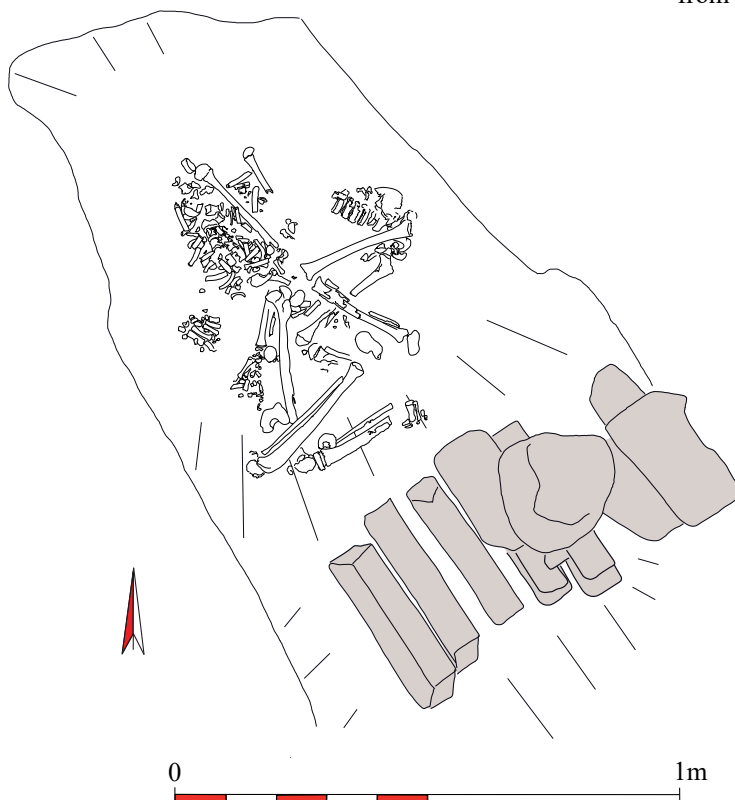


Figure 11.160. Grid square (JH4). Grave 36 – plan of the burial (scale 1:15) and plan of the descandary and burial chamber (scale 1:50).

52 – late childhood; sk. 56 – puberty) were laid in a flexed position on their right sides aligned north west – south east, one partly upon the other. The blocking wall, of mud bricks 340 x 170 x 90mm



Plate 11.299. Grid square (JH4). Grave 36 – the burial chamber with skeletons 52 and 56 and the blocking wall, looking east north east.



Plate 11.300. Grid square (JH4). Grave 36 – looking north.

in size, survived to a height of three courses, the lower of saw-tooth headers angled south, the second similar but with the bricks angled to the north, and headers above. It was set in a foundation trench dug a little below the level of the descenary/chamber floor.

A slightly irregular oval robber pit cut into the descenary penetrating the tomb over the denuded blocking wall. It filled with wind-blown sand. Another oval robber pit cut down directly into the grave chamber.

Grave (JH4)47 – skeleton 22, Figure 11.161, Plates 11.293 & 11.301

Little of the descenary of this grave survived having been eroded away. It was 1.02m wide at its west end and survived for a length of 360mm and a depth of 140mm. It gave access to an oval chamber 1.56m x 1.12m in size. The skeleton of an infant was aligned west-east and slightly angled to the north on its left side. Two courses of the blocking wall survived, both of rowlocks slightly angled to the north. The



Plate 11.301. Grid square (JH4). Grave 47 – burial chamber, skeleton 22 and the blocking wall with the descenary of grave 12 beyond, looking east north east.

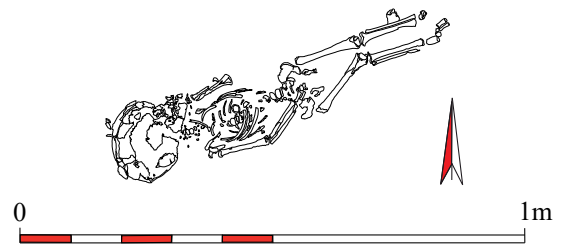


Figure 11.161. Grid square (JH4). Grave 47 – plan of the burial (scale 1:15).

mud bricks were 340 x 160 x 75mm in size.

Grave (JH4)53 – skeleton 55, Figure 11.162, Plate 11.302
Only the very bottom of the burial chamber survives, 1.95 x 1.14m in size, on which are two piles of disarticulated bones from an undetermined adult of undetermined sex.

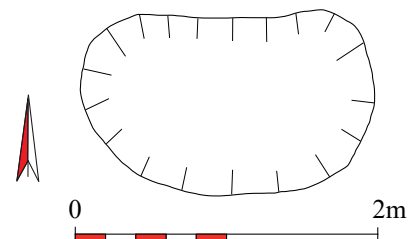


Figure 11.162. Grid square (JH4). Grave 53 – plan of the burial chamber (scale 1:50).

Grave (JH4)106 – skeletons 108 and 113, Figure 11.163, Plate 11.303

The markedly trapezoidal descenary, of which three shallow steps survived, gave access into an oval tomb chamber 2m in length through a doorway 1m wide. Within the tomb an individual had been placed in a plaster-coated coffin of which only traces remained. This measured internally



Plate 11.302. Grid square (JH4). Grave 53 – skeleton 55.

320mm towards its eastern end with sides 20mm thick. The body (sk. 108) was aligned east-west in a supine position but only the tibias were *in situ*, although other skeletal elements were present. Many disarticulated bones of a older child (sk. 113) were recovered from the robber-pit fill and on the surface. The lower courses of the blocking wall of mud-brick (av. 320 x 150 x 90mm) survived, the lowest course of headers, a course of saw-tooth headers and a third course of headers. The wall sits on a deposit of alluvium over the floor of the cut. Owing to the severe erosion in this part of the cemetery the upper parts of the grave had been removed including the roof of the chamber, the maximum depth of the descandary surviving was 480mm.

This grave had been robbed very recently.



Plate 11.303. Grid square (JI4). Grave 106 – the descandary, burial chamber and blocking wall, looking south west.

Grid square (JI4)

Grave (JI4)1 – skeleton 2

A very badly eroded grave lay 14m to the north of the excavation area. The outline of the cut was not visible but

parts of both femurs appeared to be *in situ* surrounded by the scattered bones of an individual in early childhood. Grave goods comprised a pottery vessel, large numbers of beads and a pendant.

Material associated with the burial

Jewellery

- Cat. no. B-1619 – bead, faience
- Cat. no. B-1623 – bead, faience
- Cat. no. B-1628 – 5 beads faience
- Cat. no. B-1629 – 14 beads, faience
- Cat. no. B-1630 – bead, faience
- Cat. no. B-1631 – 5 beads, faience
- Cat. no. B-1632 – 3 beads, faience
- Cat. no. B-1634 – 14 beads, glass
- Cat. no. B-1635 – 19 beads, glass
- Cat. no. B-1636 – 15 beads, glass
- Cat. no. B-1637 – bead, glass
- Cat. no. B-1638 – 17 beads, glass
- Cat. no. B-1639 – 52 beads, glass
- Cat. no. B-1640 – bead, glass
- Cat. no. B-1641 – 2 beads, glass
- Cat. no. B-1642 – bead, glass
- Cat. no. B-1643 – bead, glass
- Cat. no. B-1644 – bead, stone black
- Cat. no. B-1645 – 6 beads, glass
- Cat. no. B-1646 – 5 beads, glass
- Cat. no. B-1647 – 18+ beads, glass
- Cat. no. B-1648 – bead, glass
- Cat. no. B-1649 – 63 beads, glass
- Cat. no. B-1650 – 20 beads, glass
- Cat. no. B-1651 – 12 beads, glass
- Cat. no. B-1652 – bead, stone, quartzite
- Cat. no. B-1654 – bead, stone, phyllite
- Cat. no. B-1653 – bead, stone, quartzite
- Cat. no. F-279 – figurine, faience
- Cat. no. F-2355 – lip or nose plug or an earring, stone, fine grained

Pottery (Welsby Sjöström 2023, 369-70, tab. 7.5)

jar – 4336x

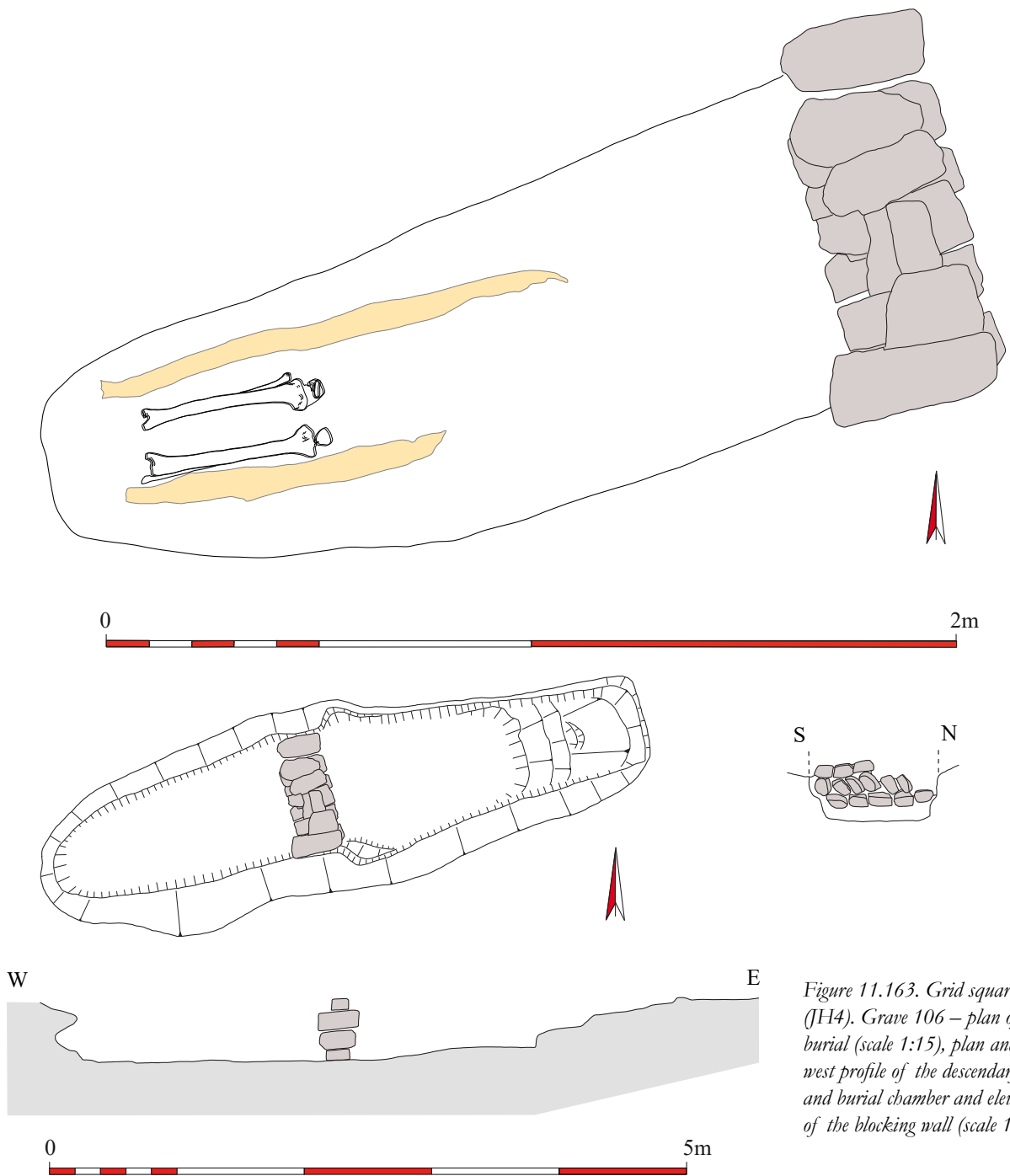


Figure 11.163. Grid square (JH4). Grave 106 – plan of the burial (scale 1:15), plan and east-west profile of the descending and burial chamber and elevation of the blocking wall (scale 1:50).

12. The Kushite cemetery at Gematon (site R18)

Derek A. Welsby

The excavations in the Kushite cemetery, a few hundred metres to the north east of the urban centre at Kawa (Plate 12.1), have investigated just over 1% of the total estimated



Plate 12.1. The central part of the cemetery from the town, looking east north east.

area of burials. Of these graves, four of which were examined by Griffith in 1929, only a handful appear to be of Napatan date; surprising given that the adjacent town achieved its greatest extent at that period. Surface pottery collected from across the site during the survey in 1993, where dateable, was consistently of Meroitic date. Unless there is a Napatan-period cemetery in an entirely different location one may suppose that the cemetery in the Napatan period covered a smaller area than its Meroitic successor and that this was only touched by the excavations in grave (KE5)5 and in area (GD3). This would be an exactly opposite scenario to that seen in the town where the Napatan period settlement appears to be much larger than than of the later Kushite period.

The graves and associated features showed a wide range of diversity even though most are probably broadly contemporary.¹ A total of 122 graves were investigated at Kawa between 1993 and 2018 of which 113 were fully excavated. The cemetery was designated as site R18 during the Northern Dongola Reach Survey of 1993-1997 (Welsby 2001a, 148).

Graves without descendaries

Only 31 graves of this type were excavated, 27% of the total investigated. They fall into a variety of sub-types:-

- 1a - narrow slot with a flat base
- 1b - narrow slot with a side niche
- 2a - oval to sub-rectangular pit with a flat base
- 2b - oval or sub-rectangular pit with a side niche

¹ For a general discussion of Kushite non-royal burials see Francigny 2016.

2c - oval or sub-rectangular pit with part of the base dug to a lower level to contain the deceased

2d - oval or sub-rectangular pit with an end niche

No monuments were found associated with graves of Type 1 and only two was noted associated with graves of Type 2. This may not reflect the original situation as many of these graves were certainly found in areas which appear to have seen much erosion since the Kushite period which could have removed all traces of monuments. The three secondary burials in area (KE5) were dug into a pre-existing tumulus.

Graves of Type 1a

(GD3)7	(GD3)87	(GD3)109
(GD3)119	(GD3)133	(GD3)136
(HA1)1093	(HA1)1097	(KE5)17

The burial chamber

All examples of this grave type are aligned east-west.

The internments

Five examples with skeletal elements preserved *in situ* were extended inhumations aligned west to east. Grave (KE5)17 was highly unusual. In it bones of two individuals were carefully piled at the west end and mud bricks placed partly over and next to them dividing them off from the rest of the grave cut (Fathi Khider 2001, 225, fig. 4.48). Individuals in these graves ranged from infants to middle adults, the two where the sex could be ascertained were female. All contained a single individual apart from the two in (KE5)17.

The grave goods

A young child, an older child and an infant were accompanied by jewellery: beads with the first two and an anklet of iron with the infant. Amongst the human bones in (KE5)17 were those from a bovine and a sheep.

The 'blocking wall'

A rudimentary cover of mud bricks had been placed over the body in grave (GD3)7.

Graves of Type 1b

(HA1)1052	(HA1)1058	(GD3)63?
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The burial chamber

Graves of this type were aligned east-west with the niche opening off the north side of the pit along almost its full length, and in grave (HA1)1052 extending a little further to the west.

The oval niche in grave (GD3)63 was cut into the side of, and slightly below, the level of, the descendary of grave (GD3)20. How the niche was accessed is unclear. If a pit or descendary had been cut into the fill of grave (GD3)20's

descendary it was not noted in excavation. It is possible that the grave was inserted before the descendary was back-filled. It is either an opportunistic use of a easily accessible vertical earth face in which to hollow out a chamber or is a conscious decision to associate the internment with that in the original grave, though whether it is contemporary or later is uncertain.

The internments

A young child, an older child and a young adult male were buried in these three graves all in a supine extended position aligned west-east. That in grave (GD3)63 was in a rectangular coffin.

The grave goods

A very large number of beads in a wide range of materials forming necklaces and a glass vessel accompanied the burial in grave (GD3)63.

The blocking wall

All employed mud bricks. In grave (HA1)1052 the blocking wall appears to have been constructed of a row of stretchers on which sat bricks on their ends resting against the north side of the pit. In grave (HA1)1058 the arrangement was similar but the stretchers were dispensed with. The blocking wall in grave (GD3)63 was roughly constructed of both headers and stretchers. The unusual form of the burial, which may have been unknown to the robbers, may account for its undisturbed state.

Parallels

Graves of this type have been noted in other Kushite cemeteries. Griffith did not make a distinction between types 1b and 2b but pits with side niches were common at Faras (Griffith 1925, 61). At Sedeinga an immature individual, accompanied by a Napatan-period amulet, strings of beads and two copper-alloy anklets, was interred in grave II T 262 with a deep shaft. It was marked on the surface by a tumulus(?) made of sandy soil delimited by mud bricks (Rilly and Francigny 2013, 63-4, pl. 3).

Graves of Type 2a

(GD3)112	(HA2)161	(HA2)204
(HA2)282?	(JG2)33	(KE5)7
(KE5)21		

At Missiminia Vila designated Type 2a graves as his Napatan Type N I and his Meroitic Type M I. These graves represented 10.7% of the total number of Napatan graves in the cemetery and 5.1% of the Meroitic graves (Vila 1980, 22, fig. 6; 1982, 8-10).

The burial chamber

All were aligned with their long axis east-west.

The internments

All but one of the graves contained a single individual – there were some elements of a second skeleton in grave (KE5)7. Of the four articulated skeletons three were aligned west-east, one was east-west. One was in an extended supine

position, the other three were crouched, two on their left sides, the other on its right side; two faced south, one north. The age range spanned from early childhood to an old adult. Of the three individuals which could be sexed all were female. One body was in a painted plaster-coated coffin.

The grave goods

Only two individuals were accompanied by grave goods, an adolescent with two faience amulets and an adult male with one pottery vessel and a large sherd.

The 'blocking wall'

The coffin in grave (HA2)161 was covered by a line of mud-brick headers along its centre line, bricks on edge along the sides and more randomly-placed bricks at the western end. A single layer of mud bricks, which may originally have covered the whole grave, lay immediately above the skeletons and grave goods in grave (KE5)7.

Graves of Type 2b

(GD3)3	(GD3)11	(GD3)16
(GD3)38	(GD3)55	(GD3)98
(GD3)138	(GD3)143	(KE5)5

At Missiminia Vila designated Type 2b graves as his Napatan Type N II and Meroitic Type M II. These represented 35% of the total number of Napatan graves in the cemetery, and 16.1% of the Meroitic graves (Vila 1980, 22, fig. 6; 1982, 8-10).

The burial chamber

In all these graves the long axis of the shaft was aligned east-west. The northern part of the bases had been excavated to a slightly lower level (except in grave (GD3)55) and the north side of the pit was undercut to produce what was in most cases a shallow side niche. In (KE5)5 rather than a niche there appears to have been a totally subterranean chamber but as the roof of this had collapsed prior to excavation the exact arrangement was unclear.

Thirty three of the Napatan graves of this type at Missiminia had the niche on the north side (67%), 16 on the south side (33%) (Vila 1980, 22). Of the 37 similar graves in the Meroitic period 68% have the chamber on the north side of the pit, 32% on the south side (Vila 1982, 10).

The internments

Of the bodies remaining *in situ* at least in part four or perhaps five were aligned west-east and two or perhaps three were laid east-west. Four were in a crouched position, three on their left sides, one on its right and one was extended. The age range was from infant to middle adult. Two individuals were female and three or four male.

The grave goods

The deceased in each of these nine graves was accompanied by other material: in five cases beads. Of these only a single bead was found in two graves, two individuals were accompanied by four and six, while another, an infant, had 123 beads forming a bracelet on each wrist, around each ankle and three beads came from by the neck. Three had

ceramic grave goods, two cups/beakers and a flask in one, two cups/beakers, an amphora and a jar in another and a beaker with an amphora in the third (see Welsby Sjöström 2023, tab. 7.2, pl. 7.2). The provision of two cups/beakers in graves (GD3)11 and (GD3)98 are the only cases where more than one was placed in a single grave. A stone vessel was the only artefact recovered from grave (GD3)138. Grave (KE5)5 was accompanied by a vertebra from an elephant or hippopotamus and many bones from a juvenile sheep.

The monument

Remains of only two monuments were found associated with graves of type 2b. Marking the position of grave (GD3)98 was a mud-brick structure only a part of the north wall and the north-west corner of which survived over a length of 2.56m. This may have been part of a pyramid of the type found elsewhere on the site but could also have been a *mastaba* or even a pavement – it only survived to a height of one course. The other monument, over grave (KE5)5, was a pebble-covered tumulus.

Graves of Type 2c

(GD3)51 (GD3)118 (HA2)96

The burial chamber

As with graves of Type 2b the northern part of the flat-bottomed grave pit was excavated to a little below the rest of the pit. The deceased was placed in this slot-shaped depression. In grave (GD3)51 to stabilise part of the side of the chamber a brick had been set on edge.

The internments

Individuals ranged in age from a young child to a young adult with one probable male. One body of a young child remained *in situ*, in an extended position but on its left side.

The grave goods

The young child had a bead bracelet on the left wrist, and a single bead by the right wrist and the neck.

Graves of Type 2d

(HA2)112 (JG4)8?

The burial chamber

Both these graves were shallow and it is possible that the upper parts of sloping or stepped descendaries had been removed by erosion. As they survived both were entered by a vertical or sloping-sided pit the bottom of which towards the west had been cut to a lower level and undercut the west end to form a shallow end niche. The body would have partly extended out from the niche.

Parallels

This type of grave was called ‘grave with foot-niche’ by Griffith at Faras. In that cemetery they were not common (Griffith 1925, 62).

The internments

The infant in (HA2)112 was aligned west-east on its back

but with the legs a little flexed. No human bone was found in the other grave.

The grave goods

The infant in (HA2)112 wore a cat amulet at the neck.

The blocking wall

Mud bricks rested against the west end of the grave in (HA2) closing off the end niche.

Graves with descendaries

Seventy two graves with descendaries were fully excavated, 63% of the total investigated. They fall into a variety of sub-types:-

- 3a – stepped descendary with axial burial chamber
- 3b – sloping descendary with axial burial chamber
- 4 – sloping descendary with transverse burial chamber
- 5 – sloping descendary with side niche
- 6 – circular descendary

Graves of Type 3

The following graves were provided with descendaries although whether of types 3a or 3b is uncertain owing to extensive erosion.

(JG4)2 (JH3)39 (JH3)114
(JH4)35 (JH4)36 (JH4)47

Apart from the provision of a slope or steps there does not appear to be any other features of these graves which would allow them to be subdivided. In the discussion below, therefore, only the descendaries will be described according to their sub-type. All other aspects of Type 3 graves will be discussed as one.

Grave (HA1)1066 had its upper eastern half stepped and its western half was sloped (Figure 11.42), both at the same angle. In grave (JH4)8 the western sloped end of the descendary was at an angle of 8°, the eastern stepped part at an angle of 27° (Figure 11.156). A number of sloped descendaries stepped down part way along their lengths e.g. (HA2)71 (Figure 11.60).

The descendaries of graves (JG2)2 and (JG2)150 were similar in that they were extended to form the outline of the burial chambers, one being trapezoidal, the other rectangular in plan.

Descendaries of Type 3a ranged in their angle of descent from 20°-40° with an average of 28°. In Type 3b descendaries the range was 10°-44° with an average of 23°. In grave (JE3)115 the primary steps were at an angle of 20°, the secondary steps at 39°.

A small number of descendaries had pits or post-holes which appeared to be associated. Some were on the long axis of the descendary. In grave (JG2)150 there was a pit towards the centre of the descendary near its top which contained ash and charcoal. It can be assumed to be connected in some way with the funerary rituals. (533) had a post-hole at the east end of the first step. (561) had two post-holes, one immediately adjacent to the top step, the other on the mid-line of the shallow extension of the descendary to the east.

In three graves there appeared to be post-holes carefully positioned against the side of the descendary. In graves (HA1)1083 and (JE3)115, they were cut through the flight of steps right up against the south face, in grave (HA1)1075 the small post-hole was cut into the third step down towards the north wall of the descendary. Apart from the pit in grave (JG2)150 the function of the post-holes is unclear but they do seem to be carefully placed. Possibly those on the centre line were associated with marking out of the elements of the graves prior to their excavation.²

Parallels

Graves of this type were called cave graves by Griffith when he encountered them during his excavations at Faras (1925, 57). He described two sub-types, the earlier entered from the east with the extended inhumation placed with its head to the west. Many of these only had 'bronze' anklets with the body. The later sub-type had a chamber generally entered from the west and the head of the deceased was always by the entrance (Griffith 1925, 60). At Missiminia Vila designated Type 3 graves as his Napatan Type N IV and Meroitic Types M III-A and M III-B. The Napatan graves represented 31.4% of the total graves of that period in the cemetery. Of these 44 graves three were comparable to Type 3b, all the other were comparable to Type 3a except for three where the descendary had been destroyed (Vila 1980, 25). The Meroitic graves represented 72.7% of the total number of graves of that period in the cemetery (Vila 1982, 10). Of these 213 tombs 46 had descendaries of Type 3a (Type M III-A2) and 167 of Type 3b (Type M III-A1).

The descendaries of Type 3a

(533)	(561)	(HA1)1059
(HA1)1066	(HA1)1075	(HA1)1083
(HA1)1084	(HA1)1098	(HA2)39
(HA2)58	(HA2)62	(HA2)79
(HA2)90	(HA2)94	(HA2)100
(HA2)116	(HA2)119	(HA2)207
(HA2)213	(HA2)215	(JE3)115
(JF2)20	(JF2)26	(JF2)27
(JF2)55	(JF2)79	(JG1)12
(JG2)150	(JG2)171	(JG2)175
(JG2)231	(JH3)9	(JH3)21
(JH3)36	(JH3)43	(JH3)110
(JH4)8	(JH4)12	(JH4)106

The stepped descendary leading to an axial burial chamber is the most common burial type noted through excavation in the Kushite cemetery. In detail these graves vary considerably much of it relating to the quality and care of construction no doubt influenced on occasion by the nature of the subsoil which varies across the cemetery. Most descendaries are trapezoidal at the surface, a product of the steps being about the same width throughout the length of the descendary and the angle of slope of the sides remaining the same. Of those descendaries which appeared to survive to their original depth below the Kushite ground surface there was a wide variation (Table 12.1). The deepest may have been

² For posts considered to be grave markers at Karanog see Woolley and MacIver 1910a, 17.

TABLE 12.1. DEPTH OF THE DESCENDARIES IN TYPE 3A GRAVES.

Grave	Depth (m)	Grave	Depth (m)
(533)	2.63	(561)	2.2
(HA1)1059	1.17+	(HA1)1066	1.54
(HA1)1075	2.51	(HA1)1083	1.32
(HA1)1084	0.64+	(HA1)1098	1.97
(HA2)39	2.8	(HA2)58	2.76
(HA2)79	1.4	(HA2)90	2.7
(HA2)94	1.82	(HA2)100	?
(HA2)116	?	(HA2)119	1.62
(HA2)207	1.7	(HA2)213	2.15
(HA2)215	1.8	(JE3)115	3.5
(JF2)20	2.33	(JF2)26	2
(JF2)27	1.7	(JF2)55	2
(JF2)79	1.9	(JG1)12	3.21
(JG2)150	2.25	(JG2)171	1.55
(JG2)175	2.6	(JG2)231	1.1
(JH3)9	1.2+	(JH3)21	1.15+
(JH3)36	1.72+?	(JH3)43	1.38+
(JH3)110	0.74+	(JH4)8	0.98+
(JH4)12	1.19+	(JH4)106	0.48+

that in grave (JE3)115, at 3.5m, but it is possible that the descendary was overcut by the robbers as they removed all traces of the burial chamber. The descendary of grave (HA2)90 penetrated right through the alluvium, its base being formed by the upper surface of the quartzite-pebble layer which has been observed elsewhere in the SARS Northern Dongola Reach concession as lying immediately above the bedrock. In many graves erosion of the Kushite ground surface has resulted in them surviving as much shallower features than originally excavated and some have vanished altogether.

That of grave (HA2)90 is a good example of the narrow type of descendary where the steps are about 512-612mm wide, the treads and risers being of similar dimensions. Here the steps are continuous and of similar size from the surface to the level of the landing in front of the doorway into the chamber. In some graves steps and sloping sections of the descendary floor were found together. Others had an initial or a final much higher step while frequently the steps varied in size along the descendaries length (e.g. grave (533). Some steps were very irregular as in grave (JG2)175 (Figure 11.132). The landing was on occasion at the same level as the floor of the burial chamber, or there was a step down from it in the doorway.

The descendaries of graves (HA1)1083, (JF2)20 and (JE3)115 although very different in scale were very similar in form being rectangular in plan with almost vertical sides and the provision of carefully cut, but very shallow, steps cut into the alluvium. For the shape of the descendary that of grave (JG1)12 is comparable but its sides slope in markedly giving a pronounced trapezoidal shape in plan at the level of the steps and its bottom.

In graves (HA2)94 and 119, and probably in grave

(HA2)62, the lowermost step extended along the north and south sides of the landing (Plates 11.98 & 11.99). Not only was the arrangement in these graves unusual at Kawa but the standard of construction was extremely good. These form a closely linked group and it might be suggested that they were created by the same grave-digging team. These graves can be very closely paralleled in other regional Kushite cemeteries where they were equally rare, at Missiminia (Tombe 2-V-6/387 and 2-V-6/398, Napatan – Vila 1980, figs 6 & 161), Sedeinga, Berber and el-Fereikha.³ One example at Sedeinga, in the descendary of Tomb II T.238, was of Napatan date (Rilly and Francigny 2012, 65 & pl. 7, Francigny 2016, fig. 61). As in the Kawa examples the excavators noted the fine workmanship employed. The Sedeinga descendary had seven steps as did grave (HA2)119. It is probable that the upper steps in grave (HA2)94 had been later removed perhaps during one of the two phases of reuse of the tomb.

In royal cemeteries descendaries of this type have been more widely noted, at Nuri, Meroe and Jebel Barkal. At Meroe⁴ grave Beg.S.29 is identical to the above, grave Beg.S.27 has the same arrangement at the level of the second step and in Beg.S.21 and Beg.S.24 at the level of the third step while in Beg.S.84 there is a similar arrangement but of the wide landing (Dunham 1963, figs 223 C & A, 221 I, 209 A, 230 A). This ‘sunk landing’ is Dunham’s Entrance Doorway Type II. Only one tomb of a king had this feature but it was common in queen’s’ tombs and in private burials at Meroe (Dunham 1950, 127).

The descendaries of Type 3b

(GD3)20	(GD3)41	(GD3)60
(GD3)95	(HA1)1055	(HA1)1096
(HA2)71	(HA2)83	(JC3)12
(JD2)40	(JE2)14	(JE3)69
(JE3)132	(JF1)23	(JF2)2
(JG1)31	(JG2)2	(JG3)23
(JH3)5	(JH3)11	(JH3)69
(JH3)116	(JH4)24	

Sloping descendaries were a common grave type at Kawa. They would have been much easier to construct than those provided with steps although to achieve an angle that could easily give access to the burial chamber they may have been longer than was necessary with a stepped descendary. Often they had what appeared to be vestigial steps but this is simply a product of them slicing through the thin horizontal beds of alluvium which will have in places broken off to give a stepped profile.

In many graves the angle of slope of the descendary is similar throughout its length; others had one or more vertical steps interrupting the slope as in grave (GD3)20 where the step is 828mm high (Figure 11.14). Grave (GD3)41 had a step 944mm high down from the surface, the sloping descendary and then another step 524mm down to the landing which very unusually was dug to a depth 374mm below the level of the burial chamber’s floor (Figure 11.17). Grave (GD3)60 had a very steeply-sloping and roughly-cut

³ Information on Berber and el-Fereikha kindly provided by Dr Mahmoud Suliman Bashir.

⁴ These observations are based on a study of the published plans and elevations. A few other examples are possible.

TABLE 12.2. DEPTH OF THE DESCENDARIES IN TYPE 3B GRAVES.

Grave	Depth (m)	Grave	Depth (m)
(GD3)20	2.36	(GD3)41	2.36
(GD3)60	2.07	(GD3)95	?
(HA1)1055	?	(HA1)1096	?
(HA2)71	2.42	(HA2)83	2.05
(JC3)12	2.86	(JD2)12	2.86
(JD2)40	?	(JE2)14	2.39
(JE3)69	1.2	(JE3)132	3.22
(JF1)23	2.23	(JF2)2	1.84
(JG1)31	2.61	(JG2)2	2.31
(JG3)23	0.3+	(JH3)5	0.51+
(JH3)11	0.8+	(JH3)69	0.15+
(JH3)116	1.38+	(JH4)24	0.53+

descendary at an approximate angle of 52° (Figure 11.23).

As with graves of Type 3A there was a wide variation in depth (Table 12.2). The deepest was in grave (JE3)132, at 3.22m. Several were between 2.05m and 2.86m deep while many others had suffered much from erosion of the ground surface.

Orientation

The preferred orientation was east to west allowing the body to be laid west-east along the long axis of the burial chamber. Many graves were angled a little to the south west and in Area (J) a little to the north east. Very rarely graves had a markedly different orientation. In grid square (HA2) grave 116 is aligned north east to south west. As it extended beyond the limit of excavation what factors in its vicinity may have been the cause of this divergence from the norm are uncertain. In grave (JF2)79 the descendary was aligned as usual but the chamber was angled further to the north west to bring it close to (JF2)20. Both graves were then marked by the same monument. A similar situation may explain the south east to north west orientations of graves (JH3)39 and (JH4)36 which brought their tomb chambers close to those of graves (JH3)110 and (JH4)8 respectively. They may well have shared the same monuments.

A similar arrangement has been noted at Sai. In one case two graves appeared to be contemporary, one centrally placed beneath the pyramid, the other offset but certainly predating the construction of the offering chapel (Francigny 2009, 94). Graves T 9 and T 10 in Cemetery 8-B-5.SN were parallel to each other, located on either side of the centre line of a single monument (Geus 1998-2002, 68; 2002, pl. XII b).⁵

Only three graves had descendaries sloping down from west to east. That associated with Pyramid S5 is highly unusual being the only grave known at Kawa where a single monument was shared by an east-west and a west-east descendary although the basic premise of two graves sharing the same monument was noted elsewhere. A similar situation may have occurred at Missiminia where graves

⁵ See also the graves under rectangular monuments noted below, page 372.

2-V-20/284 and 2-V-20/298 meet head-to-head as do graves 2-V-20/283 and 2-V-20/274. Both pairs of graves may have been under the same tomb monuments which did not survive at the time of excavation (Vila 1982, plan facing pg. 164). The reason for the west-east alignment of the descendency of grave (JG1)31 is unclear as the area to the east appeared to have been unoccupied. Grave (GD3)60 was amongst a dense agglomeration of graves. Whether or not it was the presence of adjacent graves that led the burial detail to slope the descendency from west to east is uncertain.

Although burials with chambers at the west end of the descendency was the norm for this type of grave in the Kushite world at a number of cemeteries, for no obvious reason, the layout was reversed. At Missiminia Vila designated Meroitic graves with sloping or stepped descendaries from the west as his Type M III-B and recorded 14 examples (Vila 1982, 10).⁶

The burial chamber

These were in all of the small graves cut into the alluvium and ranged in shape from roughly rectangular with a rounded west end through oval and rarely to circular (e.g. grave (JH3)5). The chambers in graves (HA2)94 and (JG2)175 were the exceptions; the chamber was a regular rectangle in plan. Little care seems to have been expended in forming the chambers and none were lined.

The chamber of grave (JG2)171 had been dug for an individual of small stature so that when an adult male was placed in it his lower legs and feet stuck out well into the descendency. To protect those a mud-brick ‘box’ was built against the west face of the descendency around the lower limbs.⁷ A similar situation occurred in grave (HA2)83 but there the blocking wall was simply placed over the feet.

Grave (HA2)119 was the only one excavated which had two chambers, an axial chamber and another of similar size at an angle of about 41°, opening off from it immediately inside the doorway from the descendency.⁸ Unfortunately the robbing had removed everything associated with the burial so it was not possible to assign a function to each chamber. They could have been provided to take separate internments or one may have been dug to house grave goods. This was the case in the royal burials which were provided with up to three chambers and at a later date in the Post-Meroitic period additional chambers were provided solely to house grave goods (Mahmoud El-Tayeb 2012, 61ff). One grave excavated at Kerma (Tomb 10 C) has a not dissimilar arrangement although there was no physical separation of the two ‘chambers’. Each contained an extended inhumation (Bonnet 1978, fig. 12).

For a discussion of the built burial chambers in graves (JC3)12, (JE3)115, (JE3)132, (JG2)2, (JG2)150 and (JG2)175 see below.

The internments

Most graves were designed to accommodate one internment

⁶ Although Type M III-B are described by Vila as entered by pits as opposed to Type III-B1 entered via a descendency from the plan both appear to be very similar.

⁷ An identical situation was observed, and the same solution was adopted, in Tomb BMC 44 at Berber (Mahmoud Suliman Bashir, 2016, 59).

⁸ For a Napatan example at Sedeinga see Rilly *et al.* 2020, 80-81.

almost always laid in a supine extended position aligned west-east – the young male adult in grave (HA2)39 was in a prone position. There was a small number of Type 3 burials where the deceased was laid east-west. This must have been a conscious decision and presumably had some ritual significance as there was no apparent practical reason for reversing the usual alignment. It is noteworthy that in graves (GD3)60 and (JG1)31, where the burial chambers are at the east end of the descendency, the deceased was placed west-east. The same situation was observed at Missiminia

TABLE 12.3. MULTIPLE CONTEMPORARY BURIALS.

Grave	No. of individuals	Age & sex	Extended	Flexed	Other	Orientation
(HA2)90	2	middle adult M middle adult F	✓ ✓			W-E
(HA2)94 ph 1	3	adult middle adult F adolescent	✓ ✓	✓		W-E
(HA2)94 ph 2	2	middle adult F? pubescent	✓ ✓			W-E
(HA2)94 ph 3	2	older child adolescent		✓ ✓		W-E
(JE3)69	3	infants		✓		W-E
(JE3)132	7	late child young adult F? adult M adolescent M? infant late child early child	✓ ✓ ✓ ✓ ✓	✓	✓	S-N S-N S-N N-S N-S S-N S-N
(JG2)244	3	middle adult M young adult M young adult	✓ ✓ ✓			W-E

in graves 2-V-20/196 and 234 (Vila 1982, 84 fig. 84; 107). Grave 2-V-20/284 contained five burials. Of the two partly *in situ* one was aligned west-east, the other east-west (Vila 1982, fig. 127).

A few graves contained multiple burials apparently from their inception (Table 12.3). In the first phase of grave (HA2)94 three bodies, of an adolescent and two adults, one a middle aged female, were placed in the rectangular chamber all aligned west-east, the northern one in a slightly flexed position on its left side, the other two extended on their backs. Each appeared to have been laid in a plaster-coated coffin. Grave (JG2)244 also contained three extended inhumations side by side, of a middle adult male and two young adults, one certainly also a male. Another grave with three contemporary burials was (JE3)69, three infants in a slightly flexed position. Grave (HA2)90 appeared to contain two contemporary burials of a middle adult male and female. Both were in an extended supine position but with the upper body of the southern individual, the female, rotated onto her left side to face her husband(?) (Figure

11.65). The most extreme example of multiple burials was in the stone burial chamber of grave (JE3)132 where there were seven individuals. Although the long axis of the chamber was east-west as usual in the graves at Kawa, the bodies were placed at 90° to that axis, two north-south and five south-north. Two were in a crouched position, one on its right side, the other on her(?) left side. Four were in an extended supine position and the final one had its legs flexed at the knees and splayed out and its arms extended at right angles to the body on either side. There was no evidence to indicate why the individuals in these multiple burials, presumably from a close-knit family units came to be available for internment at the same time.

Secondary burials were not uncommon. Where the primary burial was still visible within the chamber the bones were pushed to one side as in grave (561), or to one side and out into the descendency in grave (HA2)58, and the new body put in its place. Frequently however, at the time of the secondary burial silt had entered the chamber or there had been some roof collapse covering the body and in those cases the secondary burial was placed on the new surface, no attempt being made to disturb the earlier body. In grave (HA2)94 during the second phase two extended burials both in plaster-coated coffins and aligned west-east were placed in the tomb. In phase 3 an older child was laid in a slightly flexed position on its left side against the south wall of the chamber with an adolescent who may also have been placed in a flexed position on its right side.

The secondary burial [(HA2)282] in grave (HA2)119 was inserted into the descendency resting on the fill at a depth of 700mm below the surface. Did this post-date the destruction of the burial chamber of this grave by the diggers of grave (HA2)71 thus making a secondary burial in the chamber impossible?

The grave goods

Many graves have been robbed which will have resulted in the loss of any intrinsically valuable objects. That being said it is clear that many burials were not accompanied by any objects. Of the 38 fully excavated graves 16 did not contain any artefacts. Whether the grinding base in grave (HA2)39 should be classed as a grave good is uncertain.⁹ Certainly the tip of a stone arrowhead embedded between two of the vertebrae of the deceased in this grave was not! The odd beads in several graves, (HA2)119, 207, 213 and (JH3)9, may be intrusive. Beads are often found in profusion; grave (HA2)58 had 2144 associated with one or both of the primary burials (adults). As Table 12.4 makes clear there was no standard provision either in quantity or type of artefact that would be included in a grave.

Only five Type 3 graves contained multiple pots.¹⁰ Of these (GD3)20, (HA1)1075 and (JH3)116 were similar. The first grave had two identical large jars on the south side of the burial and (HA1)1075 had three identical large jars set in a row along the north side of the body. The other grave had four very similar vessels in a row on the south side of

the burial. The graves in (HA1) and (JH3) also contained a copper-alloy bowl, in the latter *in situ* inverted over the neck of one of the jars. The association of pottery jars and cups/beakers/bowls represents the only recognisable funerary 'set' in the cemetery.¹¹ As well as the two graves noted above a single jar and a copper-alloy cup set upright in its neck was found in grave (JH3)21 along with a copper-alloy *clepsydra*, a refinement on the drinking set. In grave (JH3)39 the cup was of ceramic rather than copper alloy and was over the mouth of a decorated flagon rather than being directly associated with the adjacent large jar. This grave also contained a decorated bowl (Plates 11.279 & 11.279). Grave (JG2)2 had been much robbed. It was presumably richly appointed as is suggested by the imported Roman amphora from Campania (type 4338x) and the highly decorated copper-alloy beaker (cat. no. F-76) which survived. Grave (JG1)12 had the copper-alloy beaker with a jar together with an elegant pot stand. The copper-alloy beaker in grave (JF2)27 had been placed by the feet of the deceased within the coffin.

Several graves only contained a single vessel, a large jar in (JF2)2, a bowl in (JF2)79, a cup in (HA2)116 and an *unguentarium* in (JH3)43.

In grave (HA2)207 set on a surface in the descendency fill in its centre, was a discrete deposit of sherds from a ring-handled pottery jar and date stones (Plate 12.2).



Plate 12.2. Deposit of date stones and pottery sherds set on a surface within the descendency fill of grave (HA2)207.

A small number of burials had associated offering tables. One of these, of ceramic, was found in the burial chamber of grave (HA2)213 (cat. no. F-528), the others were on the surface where they will have been used in post-burial rituals although none were found *in situ*. A stone offering table was found by grave (JE3)69 (cat. no. F-2443) and two others, one of copper alloy, were found by grave (JE3)115 (cat. nos F-93 & F-2445). A fragment of another stone example (cat. no. F-2444) was found in the vicinity of these two graves.

The blocking wall

All graves of this type had a blocking wall which, with only one exception ((HA2)94 – 3rd phase),¹² was constructed of

⁹ For a grinding base found in a Meroitic grave at Missiminia see Vila 1982, fig. 91.

¹⁰ For further discussion of the pottery vessels associated with the graves see Welsby Sjöström 2023, Chapter 7.

¹¹ For a discussion of the 'drinking sets' at Karanog see Woolley and MacIver 1910a, 29; at Gabati see Edwards 1998, 200.

¹² For another example in a Type 3b grave see (JE3)69.

TABLE 12.4. OBJECTS ASSOCIATED WITH BURIALS IN TYPE 3A AND TYPE 3B (*) GRAVES.

Grave	Age & sex	Ceramic		Jewellery		C/a vessel	Misc.
		Objects	Vessels	Beads			
(533)	adult	2					flake
*(GD3)20	adult F		2 jars			1	
*(GD3)60	adult M?				finger ring		
(HA1)1059	puberty			295			
(HA1)1075	adult F?		3 jars, sherd	299	6 toe rings	1	c/a handle
(HA1)1083	adult F	ball		106			
*(HA1)1096	infant			88	earring		
(HA2)58	2 adults F? ?			2144			
(HA2)79	3 adults F, full-term baby			25			
(HA2)94	late child, puberty			sk 154 - 1 sk 165 - 80 ? - 9			alabaster vessel
(HA2)116	adult M		cup				
(HA2)119				2			
(HA2)207	2 adults M, M?			1			
(HA2)213	adult	offering table		1			stone basin
(HA2)215	adult M?						stone stopper?
*(JC3)12				3			
*(JE3)69	3 infants			321			
*(JE3)132	2 late child, adult F?, infant,			1	8 anklets		
*(JF2)2	late child		jar			1	
(JF2)27	infant			79		1	
(JF2)79	infant		bowl				
(JG1)12	adult		jar, pot-stand			1	
*(JG2)2	2 adults M? F?		amphora			1	
(JG2)231	early child				pendant		scarab
(JH3)9	2 early child, late child			1			
*(JH3)11	adolescent			111			
(JH3)21	adult M?		jar			1	<i>clepsydra</i> , Osiris figurine
(JH3)36	adult F?			119			
(JH3)39	adult		jar, bottle, bowl				
(JH3)43	adult, late child/puberty		<i>unguentarium</i>	7	finger ring		amulet, scarab
(JH3)110	late child					1	
(JH3)114	adult F?			484			
*(JH3)116	adult F?		4 jars	269	finger ring, earring	1	scarab
(JH4)35	adult F?			4	finger ring		

mud bricks. Presumably in all cases the wall had entirely blocked the doorway into the burial chamber but surprisingly in graves (JF2)2 and (JH3)36 the wall was set some distance to the east of the doorway so how these could have sealed the entrance remains unclear.

In a very few cases the wall still sealed the burial chamber

at the time of the recent excavations. Much more commonly however, the blocking walls had been partly destroyed by one of two agencies. Many graves had been used on more than one occasion, secondary and sometimes tertiary use necessitated the partial removal of the blocking wall, usually down to the level of the fill that had accumulated within the

chamber since the last burial. Thus the lowest courses of the earlier blocking walls often survived *in situ*. The other agency was destruction by the robbers. It is clear that at the time of robbing of the graves the location of the western end of the descandary was known – probably given away by the position of the tomb monument. The preferred method of robbing was to dig out the fill from the western end of the descandary and enter the burial chamber via a hole punched through the upper part of the blocking wall.

Where a blocking wall survived intact special reasons can be advanced. The burial chamber of grave (HA2)207 was robbed from the side via the descandary of grave (HA2)31. That of grave (HA2)119 was robbed presumably when the diggers of the descandary for grave (HA2)71 cut away the top of its burial chamber.

The method of construction of blocking walls varied considerable. Some were carefully built and substantial structures. The thickest wall appears to have been in grave (JF2)27, the lowest course of which was of two rows of headers although the courses above of rowlocks and headers were stepped in. Only rarely were all, or even most, of the bricks in a wall arranged in the same way. Bricks were very frequently laid as headers, stretchers, rowlocks or as saw-tooth headers angled at up to 45° or 315° from the vertical. Other walls were a jumble of bricks and brick fragments.

The wall in grave (HA2)119 was an example where, apart from its first course of headers and stretchers, the other very roughly-coursed bricks were of saw-tooth headers angled at about 45°. As always, to finish off the blocking, bricks were set as necessary to fill the gaps between the wall and the irregular outline of the doorway. In grave (HA2)71 only two courses survived, the lower of saw-tooth headers angled to the south, the one above angled to the north forming a herringbone pattern. The wall in grave (HA2)58 used only headers and stretchers and had a very regular appearance. The wall in grave (JG2)175 used only headers but these were widely spaced with broad mortar beds between.

The wall of grave (JH4)12 was at the other extreme with the lowest course of headers followed by three of saw tooth headers, three more of headers and one of headers and stretchers. Of the 29 blocking walls surviving at least in part, eight contained markedly angled saw-tooth headers.

Grave (HA2)94 was sealed on three occasions. The primary blocking wall survived as a course of rowlocks against the outer face of which were sailors. The second phase was a course of rowlocks while the final phase blocking was a mixture of sandstone slabs and mud bricks.

The second-phase wall sealing grave (HA2)79 was made of rubble as was the primary-phase wall in (HA2)100. The wall in grave (HA2)207 was a jumble of bricks on its outer face but much more regular on the side facing into the burial chamber.

The monument

For a detailed discussion of pyramidal tomb monuments associated with graves (JC3)12, (JD2)40, (JE2)14, (JE3)69, (JE3)132 (JE3)115, (JF2)20 and (JF2)55, see below.

Graves of Type 4

(GD3)45 (GD3)84 (GD3)130?
(JG3)6

It is noteworthy in light of the very usual layout of these graves that the two phases of burial represented by graves (GD3)130 and 84 were both set in the descandary of grave (GD3)45.

The descandary

Of the two descandaries preserved, both were sloping. The other graves were dug into the descandary of an earlier grave. Whether they had descandaries is uncertain but the presence and nature of the blocking wall of grave (GD3)84 suggests that it did. Any trace of a descandary for grave (GD3)130 will have been removed by the creators of grave (GD3)84.

The burial chamber

In these graves the burial chamber had its long axis aligned approximately north-south. In graves (GD3)45 and (JG3)6 the chamber's long axis was at 90° to that of the descandary. The chamber was sub-rectangular to trapezoidal. At Missiminia, four graves¹³ with transverse chambers were recorded. Of these grave 2-V-20/93 was entered via a shaft and, therefore, has much in common with Type 2 graves (Villa 1982, plan facing pg. 164). It was a common grave type at Berber (Mahmoud Suliman Bashir 2013, figs 1 & 2) and the bulk of the graves at Gabati was of this type with only three of Type 3b as opposed to 60 of Type 4 (Edwards 1998, 195).

The internments

Each grave contained a single extended burial aligned south-north¹⁴ although in grave (JG3)6 there were skeletal elements of two individuals. The age range probably spanned from late childhood to middle adult. The middle adult in grave (GD3)130 may not have been the intended occupant of the grave as he was too tall to fit in an extended position so his knees were tightly flexed, the feet being tucked under the body.

The grave goods

A single bead was found in grave (GD3)130 and several in (JG3)6. The individual in grave (GD3)45 was accompanied by two ceramic jars, one with a decorated cup upturned over its rim, the typical drinking set as found commonly in graves of Type 3.

The blocking wall

Substantial blocking walls survived in three of the graves sealing off the opening into the chamber.

Graves of Type 5

(HA2)31 (HA2)67/229

The descandary

The two graves of this type in grid square (HA2) had sloping descandaries, that of grave (HA2)67 was much shorter

¹³ From the published plan this appears to be a Type 3 grave.

¹⁴ Based on the shape of the coffin in grave (JG3)6.

than usual but as it was dug to a similar depth to that of other graves with descendaries in the cemetery, it was much steeper than the norm. Its burial chamber was hollowed out from the south side of the descendary and dug a little deeper than the descendary's base. In the other grave the chamber had a similar relationship to the descendary but was in its north wall.

Although similar in form the two graves in (HA2) had a very different *raison d'être*. In grave (HA2)31 it is clear that during the excavation of the descendary the grave diggers, presumably inadvertently, sheared away the south wall of the burial chamber relating to grave (HA2)207 which up till that time survived as a void. This, perhaps coupled with the fact that the descendary had also clipped the eastern end of that for grave (HA2)31, led to the burial team deciding to reuse the earlier chamber. The burial was, therefore, inserted on the layer overlying the burial in grave (HA2)207 and the entrance to the 'side chamber' blocked off.

With the other (HA2) grave there is no obvious reason when an axial burial chamber was not excavated, although there may have been a worry that the chamber would cut in to the descendary of grave (HA2)90 if that was already in existence.

The burial chamber

The two purpose-built chambers were oval in plan.

The internments

The body in (HA2)31 was laid west-east in an extended position but the other two in the purpose-built side chambers were both aligned east-west, of a young child and a pubescent individual.

The grave goods

In grave (HA2)67/229 a single ceramic jar had been built into the blocking wall outside the chamber at the east end.

The blocking wall

Both chambers were sealed by mud-brick blocking walls built on the base of the descendaries. In grave (HA2)31 the blocking was a narrow wall, the upper part of which had been destroyed by the robbers. The other two had more substantial walls. That of (HA2)67/229 was a mass of mud bricks projecting well out into the descendary and with a stepped external face (Plate 11.74). Grave (HA2)67/229 avoided robbing; the unusual form of the burial may have been unknown to the robbers. However, certainly in this grave, there was nothing to rob from the chamber.

Graves of Type 6

(JG2)244

The descendary

In grid squares (HA2) and (JG2) there was a single large oval pit with steeply sloping sides and a flat bottom *c.* 3.07 x 3.56m and 4.45 x 4.75m in size at the surface and *c.* 2.31-3.21m and *c.* 2.62 x 3.36m at the base respectively. The latter was a minimum of 1.35m deep. These were visible during excavation when each area was cleared down to the surface of the alluvium and each was filled with wind-blown

sand. At first sight this would indicate that they were robber pits which abound in the cemetery. However this identification is called into question by the regularity of the shape of the pits, by the relatively careful way they were cut with a similar angle of slope around their whole circumference and, in particular, by their flat bases. Towards the western side of the pit in (JG2) was the bottom of the descendary of grave 244. The arrangement of the pit and the descendary suggests that they were intimately associated and that the pit was an integral part of the construction of the grave.

The lower part of the descendary and other aspects of this grave are directly comparable to those of graves of Type 3 and the features of grave (JG2)244 have been considered above in the discussion of grave Type 3 where appropriate.

In (HA2) there were two graves with a relationship to the pit. The descendary of grave (HA2)83 started on the surface to the east of the pit and extended into its centre where the burial chamber is entered. It appeared to be earlier than the pit.

On the other hand the descendary of grave (HA2)119 appears to lead off from the western side of the pit from the level of its floor. However the relationship was unclear as the pit could equally well have truncated the upper part of grave (HA2)119's descendary.

The monument

For a discussion of that associated with grave (JG2)244, and other tumuli marking the location of Kushite graves, see below.

Coffins

Traces of coffins were found in most types of graves (Table 12.5). All were in poor condition and it is possible that originally other bodies were placed in them but that no remains survived. They were rectangular, trapezoidal – tapering from the head to the feet – or anthropomorphic. Some were coated in a lime plaster and elaborate polychromatic decoration was found on fragments of the latter type. The fragments of gold leaf from graves (JG2)150 and (JG2)175 may have come from gilded decoration on the coffins. The best preserved anthropomorphic coffin, in grave (HA2)282, had traces of the lappets of the wig surviving. For details of the painted fragments from these coffins see Taylor *forth. c.*

Built tombs and tomb monuments

Built tombs

In several of the excavated graves rather than the burial chamber being hollowed out of the alluvium a chamber was constructed from mud brick and stone. In most cases this would seem to have been a structural solution to the problems posed by creating a chamber with a wider span than the norm (Table 12.6). The alluvium at Kawa is bedded in horizontal layers which are very friable and, therefore, unstable. Additionally in some places the alluvium is interleaved with very fine silver sand. Observing the excavation data it appears that the grave diggers felt confident to excavate chambers in the alluvium with a width of up to 1.83m in the oval chamber of grave (JG2)244 and 1.43m in the

TABLE 12.5. GRAVES CONTAINING COFFINS.

Grave	Type	Shape			
		?	Rectangular	Trapezoidal	Anthropomorphic
(JH4)53	?	✓ *			
(HA2)161	2a				✓ *
(HA2)282	2a?				✓ *
(GD3)11	2b		✓		
(GD3)55	2b			✓	
(GD3)143	2b		✓		
(JH3)39	3	✓ *			
(JH4)35	3			✓ *	
(HA1)1059	3a	✓ * +			
(HA1)1066	3a	✓ *			
(HA1)1075	3a				✓ ?
(HA2)58	3a		✓ ? *		
(HA2)79	3a			✓ *	
(HA2)90	3a				✓ *
(HA2)94	3a		✓ *	✓ *	✓ * 2 x ✓ * +
(HA2)100	3a				✓ * +
(HA2)207	3a	2 x ✓ *			
(HA2)213	3a	✓ *			
(HA2)215	3a				✓ *
(JF2)27	3a			✓ *	
(JG1)12	3a	✓ * +			
(JG2)150	3a	✓ ~			
(JG2)175	3a	✓ * + ~			
(JH3)21	3a			✓	
(JH3)110	3a	✓			
(JH4)8	3a	✓ *			
(GD3)20	3b		✓		
(GD3)60	3b			✓	
(GD3)45	4			✓	
(JG3)6	4			✓	
(GD3)63	5		✓		
(HA2)31	5				✓
(JG2)244	6	3 x ✓ * +			

* = lime plastered + = painted ~ = gold leaf

rectangular chamber of grave (HA2)94. They presumably will have assessed the potential width possible as they were digging each grave and able to assess the local nature of the alluvium. In graves (GD3)20 and (GD3)51, after completion of the chamber, additional support was deemed necessary. The chamber of the former grave cut through a natural sand

TABLE 12.6. BUILT TOMB CHAMBERS – INTERNAL DIMENSIONS.

Grave	Material	Dimensions (m)	
		Length	Width
(JC3)12	mud brick	1.15+	1.1
(JE3)115	stone	?	?
(JE3)132	stone	2.6	2.1
(JG2)2	mud brick	1.52	1.12
(JG2)150 - phase 1	mud brick	2.51	c. 0.84
(JG2)150 - phase 2	mud brick	2.12	c. 0.84
(JG2)175	mud brick	2.16	0.98

layer and stones had been set along its sides to hold back the sand. In grave (GD3)51 to stabilise part of the side of the chamber a brick had been set on edge.

Mud-brick tombs

The chamber of grave (JG2)175 is so far unique. It is hollowed out from the alluvium from the west end of the descenary and then low walls of mud-brick were constructed against the north, south and west sides which supported a barrel-vault. The eastern end of the chamber was then constructed as a vertical mud-brick wall with a mud-brick arch spanning the doorway. The whole is well built. The building process must have been rather difficult, the whole chamber having been constructed without any access to the external face of its walls and vault except for the east wall.

In the other graves with built chambers a simpler solution was adopted to allow their construction. The western end of the descenary was extended to include the area of the chamber allowing access to it from above. This will have been necessitated by the width of these chamber in any event but will also have had the benefit of making the construction of the chambers much easier.¹⁵ In grave (JG2)2 the trapezoidal descenary was extended seamlessly into the burial chamber's location (Figure 11.123) and the rectangular descenary of grave ((JG2)150 is similarly extended (Figure 11.125). The arrangement in grave (JC3)12, and in graves (JF2)20 and 55 if they had built chambers, cannot be ascertained owing to later disturbance.

Graves (JC3)12, (JG2)2 and (JG2)150 had chambers constructed of mud brick and in the latter two traces of the barrel-vaulted roof remained: a Nubian vault (Plate 11.235). The east wall of these chambers must have been carried up to the ground surface, that of phase 2 in grave (JG2)150 survived, torevet the fill of the construction pit which will have been dumped onto the extrados of the vaults on completion of the construction. From the point of view of the burial process, therefore, the chamber in grave (JC3)12 will have been identical functionally to the graves hollowed out of the alluvium, it being possible to insert the internment through the doorway into the chamber via the descenary. In grave (JG2)150 in both phases 1 and 2, however, the sequence must have been different as the east wall of the chamber was not pierced by a doorway (Figure 11.125). The body must have been placed into the grave before the east wall was built and the construction pit infilled.

¹⁵ For a similar arrangement at Sedeinga see Rilly *et al.* 2020, 73.

The chamber in grave (JC3)12 had a centrally-placed doorway, not less than 510mm wide, in its east wall.

No attempt appears to have been made in any of these chambers to decorate the walls with painted decoration on plaster: this was a common feature of royal tombs excavated into the bedrock where the plaster was applied directly to the rock. The best known examples of this type of decoration are in the tombs of King Tanwetamani (Ku.16) and Queen Qalhata (Ku.5) at el-Kurru (Dunham 1950, pls XVIIID-XX; IX & X) but there are many more. Rather surprisingly the outer eastern face of the tomb chambers' east walls in graves (JG2)2 and (JG2)150, which also revetted the fill above the vaults, were covered in a mud plaster and whitewashed.

Parallels

Mud-brick barrel-vaulted tombs are not uncommon in Kushite burials which are dug into alluvium but were, of course, superfluous when the tomb chamber was hollowed out of the bedrock as at Meroe and Jebel Barkal for example. At Faras they were abundant and occupied rectangular pits frequently dug into the descendaries of Type 3 graves. One end was usually left open until the deceased was inserted and then closed by a brick wall, a similar arrangement to that observed in graves (JG2)2 and (JG2)150. Unlike most of the graves at Kawa the body was almost invariably placed with its head towards the entrance (Griffith 1025, 62-3). They ranged in width from narrow pits which could be roofed by single bricks placed flat to those with a vault. Some were only roofed in brick, other were entirely built structures. These latter structures were designed for multiple burials and had an arched entrance at their eastern end. Six substantial tombs of this type, dating from the Napatan period, were excavated at Missiminia. They were inserted into a rectangular pit and were entered by a narrow and very steep descender, three from the west and three from the east (Vila 1980, 26). In Tombs 2-V-6/67 were 97 bodies (Vila 1980, 50ff).

Stone tombs

In grave (JE3)132 the construction pit for the chamber is distinct from the descender and is roughly square in shape as observed at the ground surface. The burial chambers of graves (JE3)115 and 132 may have been very similar. Unfortunately the chamber in the former grave was totally removed by the robbers with the only traces of it being a small number of large stone blocks lying on the bottom of the robber pit which included two voussoirs (Plate 11.167). By contrast the chamber of grave (JE3)132 was very well-preserved with only the central part of the upper lintel having been broken and pushed into the chamber by the robbers.

The chamber was built throughout of finely-dressed sandstone blocks which were carefully laid. It was roofed by a barrel vault in its lower parts made of substantial voussoirs. Although the construction in general appears competent the inexperience of the builders in constructing true vaults is clear along the crown of the vault where no dressed keystones were used but the narrow gap between the final rows of voussoirs were plugged with small pieces of stone (Plate 11.187). It would appear that the issue of how to finally complete the vault had not been carefully

considered and an *ad hoc*, and not very elegant, solution to the problem was used as it became necessary.

The east wall was constructed of stone blocks up to the level of the top of the vault and from there up to the surface the wall was of mud brick bonded in a lime mortar (Plates 11.183, 188 & 189). The doorway was provided with very finely dressed jambs, two lintels and a rebated threshold. The lower lintel had a semicircular torus moulding, the upper a cavetto cornice.¹⁶ A raised rectangular boss in the centre was presumably designed to be carved probably into a sundisc flanked by *uraei* as seen on funerary chapel doorways at Meroe, for example that of Beg.S.7 (Plate 12.13). Similar raised bosses on the 'lintel', actually carved into the bedrock above the curved top of the doorway leading into rock-cut burial chambers, can be seen at Nuri (e.g. Nu.30 and Nu.46 where it is carved – Dunham 1955, pls LXVII D and LII A) and Jebel Barkal (Bar.7, Bar.18 and Bar.14 – Dunham 1957, pls VI D, IV C and V E). The Kawa tomb doorway approximates to Dunham's Entrance Doorway Type III (1950, 129).

The interior face of the chamber provided an ideal surface which could have been incised, plastered and/or painted. No trace of such a treatment was found although a few crudely incised motifs of uncertain form were noted.

These two dressed stone and vaulted tombs at Kawa are so far the only ones known from the Kushite period. The only tombs comparable in some aspects, are those of kings Piankhi and Shebitqo and of the queens in Ku.22 and Ku.51-55 all at el-Kurru and all broadly contemporary.¹⁷ The lower part of Piankhi's tomb, for example, has the chamber and the doorway hollowed out of the bedrock but the upper part, being above the level of the bedrock, was constructed of dressed-stone blocks forming a corbelled vault (Dunham 1950, fig. 22 a).

Tomb monuments

A number of different types of monument were observed during the survey of the cemetery in 1993 and during subsequent excavations. How common tomb monuments were is uncertain. At Kawa the extensive erosion has in many areas of the cemetery, clearly visible in areas (HA1) and in the north-eastern part of (J), removed the Kushite ground surface. In those areas only the most robust monuments will have survived, those of mud brick, tumuli of earth, or timber posts may have vanished without trace.

Tumuli

As noted elsewhere during the surface survey of the site many pebble-covered mounds were interpreted as tumuli and were planned. Excavation subsequently demonstrated that this was illusory, most clearly demonstrated during the excavations of grid square (HA2). Many of the 'tumuli'

¹⁶ Two similar lintels (cat. nos F-2496 & F-2497), decorated with a cavetto cornice and raised central boss, were found in the rubble associated with Pyramid S5. These being of very different spans must have been associated with different doorways. It is doubtful that the mud-brick walls of the burial chamber in grave (JC3)12 could have supported the weight of either of these blocks so from whence they originally came is uncertain. A finely decorated lintel fragment (cat. no. F-2495) presumably is a part of the lintel over the offering chapel doorway.

¹⁷ Dunham's Burial Chamber Type IV (1950, 128).

appear to be upcast mounds created by the robbers as they dug into earlier graves. These mounds were subsequently sculpted by the wind forming the shallow domed mounds, the heavier pebbles concentrating on the wind-eroded surface.

The monument associated with grave (JG2)244 was very different to all the others excavated in Area (J). The surface feature visible before excavation of grave (JG2)244 appeared to be a ‘tumulus’ of the type noted above (Plates 11.257 & 11.258). It was covered in brown pebbles. On excavation it was apparent that this tumulus was again upcast from a robber pit which had been dug into the tomb monument which was actually a much smaller tumulus sealed beneath it.

The other positively identified tumulus is that over grave (KE5)5 (Plate 12.3). This was later dug into to insert three secondary burials during the Kushite period.¹⁸

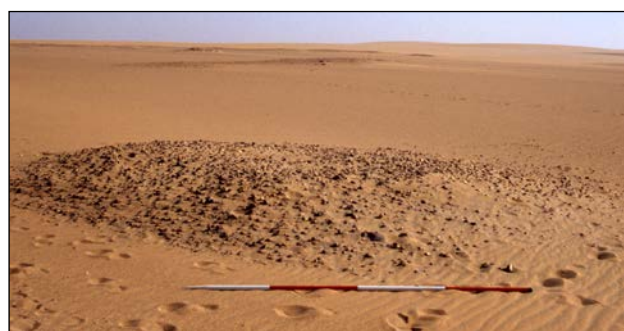


Plate 12.3. The tumulus over grave (KE5)5.

Clearly it is impossible from surface observations to ascertain whether a pebble-covered mound is actually a tumulus or not. Tumuli may have been a common monument type in the cemetery but only much additional excavation will confirm this. In the discussion below, and throughout the grave inventory, these structures are referred to as tumuli for convenience.

Parallels

Tumuli have been noted in a number of Kushite cemeteries. The earliest are at el-Kurru marking the graves of the first rulers of Kush. Those of Generation A were simple mounds of gravel covered in a layer of rubble or pebbles but soon thereafter a kerb of dressed stone was introduced. This development rapidly evolved leading to the transformation of the circular tumulus to the square *mastaba* and on to the pyramid (Dunham 1950, 121ff). In a non-royal context however, tumuli may have continued to be used, albeit very rarely, in cemeteries which also had pyramidal monuments. There is no indication as to why the tumulus was on occasion chosen. A single example of what is most likely a tumulus was found in the West Cemetery at Meroe, Beg.W.126 with a stone kerb (Dunham 1963, 164, fig. 119). Another perhaps of similar form was set amongst the mud-brick pyramids at Sedeinga (Rilly and Francigny 2013, 64, fig. 2). The Sedeinga tumulus, II T 262, was delimited by mud bricks. The excavators initially considered this to be the base of a mud-brick cupola which they see as a precursor to the provision of a mud-brick cupola in the centre of a num-

ber of mud-brick pyramids in that cemetery. Subsequently a further tumulus delimited by mud bricks and of oval plan was located close by (Rilly and Francigny 2018, 69, pl. 6).

In the Fourth Cataract region a range of tumuli types has been recorded marking graves of the Meroitic period (Mahmoud el-Tayeb and Kołosowska 2007, col. pl. 3). No pyramids of the Meroitic period have been found although there is one dating to the Napatan period at site NE-36-F/4-F-71 (Welsby 2003, 30, col. pl. XVI & XVII; 2004a; forth. d).

Tumuli are also known further upstream at el-Kadada (Geus and Lenoble 1984) and in the cemetery immediately to the east of the Kushite town at Meroe, tombs 500-599 (Garstang *et al.* 1911, 32; Török 1997, figs 151 & 152 – tombs M.505 & M.522).¹⁹ The date of the many tumuli visible at Naqa remains uncertain in the absence of excavation although all occupation on the site appears to be of Kushite date.²⁰ A *ba*-statue was found amongst them (Wildung and Kroeper 2006, 18; Wildung and Riedel 2011, 132-133, Abb. 171 & 172). At Gabati it was suggested by the excavator that the positions of many graves which lacked a built monument may have been visible on the surface as shallow mounds. This would have been the material derived from the excavation of the tombs which was used to backfill the entrance to the grave (Edwards 1998, 194). There is no evidence to suggest that these were enhanced to form tumuli.

Towards the end of the Kushite period, and for a few centuries thereafter, the tumulus becomes the ubiquitous tomb monument for most levels of society. The rarity of tumuli during the heyday of the Kushite kingdom rather suggests that this is not a development of Kushite funerary practice but is perhaps a reflection of a resurgence of indigenous traditions or an external influence. These factors may explain the ‘Late Meroitic’ tumuli in the Khartoum region (Caneva 1994), at the Fourth Cataract (Nowotnick 2007) and elsewhere.²¹

Mastaba

Distinguishing the heavily-denuded remains of a *mastaba* from a pyramid was often impossible. A few monuments noted in the survey and excavations are here designated *mastabas* but could equally well have been pyramids.

Grave (533) with its long descendary is typical of those marked by pyramids. Its monument survives as a roughly square single ‘course’ of irregular stones (Figure 11.2 & 11.3, Plate 11.1). This was presumably the socle for a mud-brick structure of which no trace remained.

(632) was a rectangular structure 2.92 x 2.14m in size, of which up to four rough courses of stone slabs survived to a maximum height of 390mm. Only parts of two adjacent faces were exposed during the survey (Plate 12.4).

¹⁹ A number of tumuli discovered at the Second Cataract were dated ‘to Meroitic or Early X-Group times’ (Säve-Söderbergh 1982, 8) which is not particularly helpful in the context of the present discussion. For general comments on Kushite tumuli see Francigny 2012, 54-5.

²⁰ The one grave excavated was thought by the excavator to be “Possibly post Meroitic ‘Noba’ grave.” Hintze 1959, 186-7).

²¹ For a discussion of Kushite tumuli see Francigny 2016, 57-69. Note that it should not be assumed that ‘tumuli’ like those at el-Meragh illustrated on fig. 50 are actually funerary monuments. They may be compared with the innumerable similar mounds in the Northern Dongola Reach which are associated with well fields (see Welsby 2001a, 605-607).

¹⁸ For the excavation report see Fathi Salih Khider 2001.

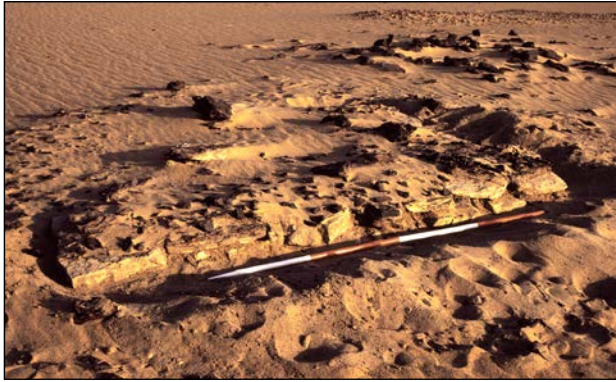


Plate 12.4. (632) – the stone monument.

(536) has dressed-stone masonry forming a wall 1m thick with a thin lime-plaster render on its faces (Welsby 2001a, 149, fig. 3.98). It is not clear what it forms a part of. Unfortunately it was extensively damaged by robbing activities in 2009-10 before it was examined further.

Mastabas have been noted in a number of Kushite cemeteries and one distinction that can be made between them and pyramids is their very steeply-sloping faces. An early example, in stone, can be seen at el-Kurru in Ku.13 (Plate 12.5). Another of mud brick is illustrated by Griffith at Faras (Griffith 1924, pl. XXXIX top). For a suggested reconstruction of such a monument complete with an offering chapel at Nag'Sawesra North see Almagro *et al.* 1964, fig. 61.



Plate 12.5. El-Kurru – the mastaba over grave Ku.13.

Pyramids

None of these monuments was preserved to a height greater than 1.4m. In some cases it is certain the the lower part of a given monument had each course stepped in from the one beneath, the characteristic feature of one of the common Kushite pyramid types. Of course it is impossible to be certain that this style of construction was carried up to the top of the monument where one would expect a small flat area on, or into, which a finial would have been set. Severe erosion at Kawa will explain the absence of copious

amounts of mud-brick rubble resulting from the collapse of the structure; with the stone pyramids more of this material does remain. Given the ubiquity of pyramidal monuments at the royal cemeteries of Kush and the many better preserved monuments, assumed to be pyramids at such sites as Sedeinga, where a number of finials have been recovered (Berger 1994; Rilly and Francigny 2010, 63, pl. 1; 2018, pl. 14;),²² it is likely that pyramids were common at Kawa. Whether all tomb monuments with a square footprint at Kawa were pyramids however, cannot be proven.

Mud brick

A total of nine structures built of mud brick, placed on the Kushite ground surface and directly above graves with which they can be assumed to be associated, were excavated in the cemetery. A further three examples were planned but not investigated further (Table 12.7). All but one of the excavated examples was associated with a grave of Type 3. The exception was grave (GD3)98, of Type 2b. Only a short section of the north wall of that monument surviving to a height of one course and one angle remained.

Every monument was aligned with its sides towards the

TABLE 12.7. MUD-BRICK PYRAMIDS AT KAWA.

Grave	Monument	Dimensions (m)	Chapel
(GD3)98	M12	2.56+ x ?	?
(JD2)40	M9	4.05 x 4.06	✓
(JE2)14	M8	5.23-5.49 x 5.29-5.53	✓
(JG1)12	M6	5.6 x 5.74	no?
(JG1)31	M7	2.31 x 2.35	no?
(JG2)2	M1	6.47-6.57 x 6.54-6.77	no?
(JG2)150	M2	6.5-6.63 x 6.68-6.74	no?
(JG2)171/231	M4	2.22 x 1.79+	no
(JG2)175	M3	5.93 x 3.93+	?
(JG1)?	M5	3.31 x 0.92+	✓
(JH2)?	M10	2.38 x 2.24-2.45	no
(JH2)?	M11	1.96 x 0.69+	?

cardinal points. They were made of mud bricks usually carefully laid usually as headers and stretchers, frequently one of each to the course. The larger monuments, M1 and M2 had much thicker walls. Parts of the west and south walls of M2 were of three rows of headers. The central part of the west wall was reduced in width on the inside down to two rows of headers and one of stretchers while the central part of the south wall was of three rows of rowlocks. The north wall was two rows of headers with one of stretchers while the east wall was, towards the angles, built of a row of headers and stretchers but towards the centre it was reduced in width to two rows of stretchers. M1 generally had walls two headers thick with a space between then filled with mud mortar and occasional bits of brick set as rowlocks. The east wall was narrower, one row of headers and one of stretchers.

²² See also finials from Faras (Griffith 1924, pl. LXVII 5-8) and Sai (Geus 2002, pl. XIV a and probably pl. XI b & c). For a detailed discussion of the use of pyramids in Kush see Francigny 2016, 15ff.

M6 had a north wall of a row of headers and a single row of stretchers on both sides. Its other walls are the equivalent of 1½-bricks thick but made extensive use of fragmentary bricks set both as headers and stretchers to achieve that. M7 had slightly bowed-out walls of a single row of headers apart from the west wall which had a protruding foundation over the descendary fill. M4 has been much destroyed. It employed both headers and stretchers but the exact arrangement was unclear. M3 like M6 employed many fragmentary bricks arranged in the south and west walls as two rows of headers. The north wall employed stretchers, at least one header and brick fragments.

Pyramid M2 was set in a foundation trench up to 210mm in depth (Plate 11.243).

The two best preserved monuments were pyramids M8 and M9. M8 survives to a maximum height of three courses each set back from the one below giving an angle of slope of about 60°. M9 appears to be different from the others in that it enclosed a mound of alluvium, bricks at about 45° revetting the slopes (Plate 11.142) of what may have been a natural mound through perhaps sculpted by the pyramid builders to form the base of their monument. On this platform two stepped courses of the pyramids south face remained: not sufficient to estimate the angle of slope.

It is to be assumed that as each course of the sloping faces stepped back their inner ends would rest on the fill of the pyramid's core. However the situation in M9 is rather different. The inner faces of the walls, set into a trench in the natural mound, were carried vertically to a height of three courses, that above oversailed the face a little while the course above that was then set back to the building line (Plate 11.144). As no further courses survived the arrangement above this level can only be conjectured. If this monument was indeed a pyramid then the faces must have stepped back onto the core at intervals rather than course by course although, above the level preserved, each course may have done this in the usual manner.

The angle of slope of Pyramid M8 suggests that it may have attained a height of approximately 4.7m. No finials were found associated with the mud-brick pyramids but three, similar to examples associated with mud-brick pyramids at Sedeinga, were found amongst the rubble from the core of Pyramid S1 (cat. nos F-2491 to F-2493). These may have been scavenged from dilapidated mud-brick pyramids in the vicinity for use in the core although one may have come from Pyramid S5 itself.

Offering chapels were attached to the east face of Pyramids M5, M8 and M9.²³ Their presence does suggest that they backed onto a monument which attained a height at least equal to that of their roofs. Whether all of these pyramids had chapels was difficult to determine. Chapels were invariably set over the fill of, or immediately adjacent to, the descendary. As the descendary was the preferred route of entry during any reuse of the graves and subsequently for the robbers, the chapels were vulnerable and on occasion may have been removed leaving no trace. As will be

²³ Note the presence of stone elements in the mud-brick chapels at Faras, thresholds, jambs and lintels and even of a few chapels built entirely of stone (Griffith 1925, 66). They are also common at Sedeinga (Rilly and Francigny 2018).

noted below however, Pyramid S1 does not appear to have had a chapel so clearly they were not always provided. No evidence was found at Kawa for timber chapels as seen at Sai (Francigny 2012, 54).

The thinner facing on the east side of Pyramid M2 may have been deemed sufficient to support the core of the monument if it were buttressed by a chapel.

Monuments of mud brick that have or may be identified as pyramids are frequently found in Kushite cemeteries and have been noted at many sites among them Berber, el-Fareikha (Dangeil), Faras, Gabati,²⁴ Gadu, Gemai, at the Dal Cataract (site 21-V-6), Sai and Sedeinga. They range in size from extremely small, at Sedeinga Pyramid No. 180 is 800mm square (Rilly and Francigny 2011, 73), to a maximum of 12m square at Faras grave 2800 (Griffith 1925, 64). Almost invariably at the base they were approximately square, but at least one monument at Sedeinga (II 85) which was set amongst, and had the same constructural features as, the adjacent pyramids, was markedly rectangular (Rilly and Francigny 2011, fig. 1).²⁵ This was a double-width monument designed to mark two adjacent tombs. Mud-brick pyramids may also have been present in other Kushite cemeteries but where there has been extensive erosion all trace of them may have been removed. They are to be expected at Sanam Abu Dom and et-Tameer amongst other sites. At Missiminia only one survived (Vila 1980, 26; 1982, 24, fig. 20). Griffith considered that there were about 80 square monuments at Faras in what he called the north-east *mastaba* field although elsewhere he had argued that these were probably the bases of pyramids (Griffith 1925, 63-4).²⁶

The Kawa mud-brick pyramids are directly comparable with those elsewhere and are what one would expect to find in all but the poorest of Kushite cemeteries throughout the realm.

Stone

Six stone pyramids have been discovered and excavated so far at Kawa (Table 12.8). Apart from immediately south of Pyramid S5 where there is another mound covered in stone fragments, there are no obvious surface indications of additional monuments of this type visible. However, the preferred location along the crest of the ridge on the eastern side of the cemetery is masked for much of its

TABLE 12.8. STONE PYRAMIDS AT KAWA.

Grave	Monument	Dimensions (m)	Chapel
(JC3)12	S5	10.36 x 10.53	✓
(JE3)69	S1	2.6 x 2.8	no
(JE3)115	S2	10.6+ x 11.19(?)	✓
(JE3)132	S3	2.67+ x 2.81+	?
(JF2)20/79	S6	3.72 x 3.73	✓?
(JF2)55	S4	5 x 5.1	?

²⁴ The excavator considered these to be *mastabas* (Edwards 1998, 195).

²⁵ A few rectangular monuments were found at Karanog; *mastaba* or pyramids. One over grave 141 was 6,6 x 3.9m in size with the long axis north-south. As with the monument at Sedeinga it marked two graves (Woolley and MacIver 1910a, 13, 35).

²⁶ For an image of two well-preserved examples see Griffith 1924, pl. XXXIX. bottom

length by a large sand dune which may cover any number of monuments.

The pyramids varied widely in size and in quality of construction. Three were carefully built from freshly-quarried stone (S4-S6), one appeared to reuse stone from an earlier pyramid (S1) while another (S2) appears to reuse stone from possibly a wide range of sources. The sixth (S3) has been totally stripped of its dressed stone revetment and its original form and size could not be ascertained.

The pyramids were arranged in two rows, one along the top of a ridge which is a prominent feature when approaching Kawa from the east, the others were set approximately 20m behind this line. The first three pyramids were very well built. Each had its lowermost blocks set in a foundation trench closely hugging the external wall lines in S5 and S6 while S4 appears to be set in a large shallow pit. The foundation of the north and east faces of S6 was set into a vertically-sided trench 1.07-1.06m wide and 240mm deep (Plate 12.6). That of S5 was similar on the exterior; its form



Plate 12.6. The foundation trench for the north face of Pyramid S6.

on the interior was masked by the *in situ* core. Each pyramid was set on a socle two courses high with a vertical outer face on which rested the stepped courses, three of which remained in S5. This type of construction was noted by Dunham amongst the royal pyramids and designated Type IX (Dunham 1950, chart 1) and by Hinkel as Type IX b (1984a, Abb. 1). Although the other monuments were not so well preserved one corner block from S6 had the setting-out lines carved into its upper surface indicating that the next course was to be stepped back. Setting-out lines, to both align the front face of each course but also the ends of blocks were found in S1, S5 and S6 (Plates 11.159, 12.7 & 12.8). Pyramid S5 had a core or stone rubble faced by a row of headers, each a quarry-faced large block. The outer facing was of similar-sized blocks which were dressed on site. Presumably the lower surface and the ends of each block were dressed then the blocks placed in position. The upper surface would then be dressed to allow the placing of the next course. With the construction of S5, as the building work progressed, a thick layer of stone chippings built up around the monument so that, by the time of the dressing of the vertical face of each block, the blocks forming the two courses of the socle were already buried and hence their external face was never finely dressed. Occasional blocks of the outer facing were set as headers serving to bond the face into the core. Similar spreads of stone chippings were found adjacent to Pyramids S4 and S6 and also on the south side of the descandary of grave (JE3)132. With Pyramids S4 and S6 all the facing stones were finely dressed. In some



Plate 12.7. Setting-out lines on the south face of Pyramid S5.



Plate 12.8. Setting-out lines on a corner block from Pyramid S6.

places there were large irregularly-shaped stones immediately adjacent to the facing stones but elsewhere the rubble abutted the facing stones.

The rubble core of Pyramid S5 appears to have been solid; that of Pyramid S4 had a circular area in the centre 2.12m in diameter delimited by stones set radially within which was alluvium. Whether there was a similar feature in the centre of Pyramid S6 is uncertain. There were certainly no large stones remaining in that area at the time of excavation but neither was there any clear edge to such a feature.

A number of pyramids elsewhere had a circular feature in the centre of the core. In the West Cemetery at Meroe Beg.W.2 had a red-brick dome in this position. The several other examples known are at Sedeinga, often with the circular feature delimited by mud bricks, frequently set radially, at the intersection of mud-brick walls on the diagonals of the superstructure (Rilly and Francigny 2013, fig. 2, graves II T 188, 216 and 232). At Sedeinga the circular feature may have been purely structural, if they were roofed with a dome, perhaps designed to reduce the load bearing down

on the ground surface immediately over the subterranean burial chamber.²⁷ Their intimate connection in some monuments with the cross-bracing walls suggests that a structural role is much to be preferred to those hypotheses suggested by the recent excavators of these monuments – that they had a symbolic function, connected with the solar cult or were the result of combining the architectural forms of the tumulus and the pyramid (Rilly and Francigny 2011, 74; see also Francigny 2018, 342).²⁸ The situation at Meroe is more complex and the chamber there appears to have had a function connected to the use of the monument.

Pyramid S2 was very different to those just described. Although the largest of all the pyramids known at Kawa it was very poorly constructed. It was built without foundations and this caused serious collapse of the south east corner, as well as the pylon of the chapel. It was also constructed of stone blocks of a wide range of sizes which is highly unusual in stone pyramid construction. Stone pyramids invariably had a single row of stones per course of equal height and when the pyramid was stepped each step was formed of one course. Pyramid S2 was a stepped pyramid but where observable on the south wall the steps, although of the same height, were constructed from between two and four courses, the number of courses varying from step to step and even within the same step (Plate 12.9). Many of the facing stones were of small size and thus did not bond well with the core (Plate 12.10). There was no attempt to provide an inner facing of large stones to help support the core so the monument must always have been inherently unstable.



Plate 12.9 The central part of the south face of Pyramid S2 with the rubble of its collapse on the left.

Pyramid S1 was different again. It was a very small monument yet was faced with large stone blocks around its stone rubble core. The blocks appear out of scale for this monument. Amongst the blocks used on the south

²⁷ The concept of reducing the downward force of a tomb monument to avoid collapse of the underlying tomb chambers was known to the Kushites as can be seen in the false arch employed in Beg.W.2 at Meroe and in grave 182 at Karanog (Dunham 1963, 82, fig. 62a; Woolley and MacIver 1910a, 19).

²⁸ Note however, the presence of a 'cemented floor' in the chamber in Pyramid No. 216 on which lay a *ba*-bird. The excavators interpreted this as a foundation deposit (Rilly and Francigny 2011, 73). For another chamber in the body of a pyramid containing jewellery see Ferlini 1838. Hinkel was of the opinion that the findspot recorded by Ferlini was a fabrication (2000, 14-15).



Plate 12.10. The central part of the south face of Pyramid S2 and the rubble core.

face many show extensive damage from aeolian erosion which is surprising as the prevailing wind comes from the north for most of the year. The size of the blocks, the erosion just mentioned and the use of similar blocks for the enclosure suggests that these were reused from an earlier monument. Immediately to the south of this pyramid, and stratigraphically earlier, was the rubble core of the pyramid (S3) associated with grave (JE3)132. It seems likely that this was the source of the facing stones for Pyramid S1. Pyramid S3 was certainly stripped of all its facing blocks before Pyramid S1 was constructed.

Nothing can be said about the form of Pyramid S3. The size of the associated descendary and the very fine stone tomb chamber, both of which were probably very similar to those associated with Pyramid S2, indicate that Pyramid S3 was a substantial monument. If the blocks used in Pyramid S1 were really from it then it was of much better-quality construction than Pyramid S2. The small size of the remaining core, which has retained a roughly square shape as though it had been stripped of its facing blocks but otherwise left intact, however, suggests that it may have been much smaller.

Dressed-stone pyramids were the monument of choice for all Kushite royal burials probably from that of Kashta in the 8th century BC until the 3rd century AD when financial considerations, and perhaps a skills shortage, forced the rulers to use rough stone or red brick instead. Dressed stone pyramids are thus very common in the cemeteries at el-Kurru, Nuri, Meroe – South, North and West Cemeteries – and at Jebel Barkal. Outside of those cemeteries they are extremely rare being so far confined to Kawa and possible to Site 4-F-71 above the Fourth Cataract.²⁹ The latter monument utilises carefully selected granite blocks

²⁹ Note the use of dressed stone in the monument of grave 2989 at Faras to face the east side of the monument along with a stone footing to the west face (Griffith 1925, 66). Dressed stone was also used in the lower courses of tomb monuments at Karanog (see Woolley and MacIver 1910b, pls 112 & 113). The monument of grave 259 was presumably a pyramid; it has the diagonal cross ribs and the two courses of stone have the angled faces appropriate to a pyramidal monument. The excavators however, considered this monument, and a number of others at Karanog, to have had a rounded top covered in mud bricks (Woolley and MacIver 1910a, 12-13), a type of superstructure unknown elsewhere.

to provide an even coursing although they are not strictly speaking dressed, the intractable nature of the granite probably accounting for this.³⁰

While the stone pyramids S1, S4 and S6 fit into the size range of non-royal pyramids in Kush, S2 and S5 do not. Both, at more than 10m square at the base, can be directly compared with royal pyramids at Jebel Barkal and Meroe and are, in fact, larger than some of those of ruling king and queens of the mid 1st century AD onwards.³¹ These were clearly exceptional monuments but apart from suggesting that their scale indicates that the individuals interred in them were of high status we have no evidence to suggest who they were or what rank these people may have had. It is not possible to know whether these two large stone pyramids at Kawa represent the sum total of such monuments in the cemetery. One might suggest that the very differing standards of construction of these pyramids indicates that they were not broadly contemporary and that others might have been constructed in the time interval between them.

As noted above, Pyramids S4, S5 and S6 conformed to a common type designated by Dunham as Type IX. Table 12.9 lists all those of that type investigated by Reisner in the royal cemeteries measuring 11.5m or smaller at the base. Almost all were of queens but there were four of kings. The smallest of these was 4.7m square.

As a postscript to the discussion of tomb monuments at Kawa there is one additional location in the cemetery that deserves a brief discussion. Towards the north-western edge of the cemetery lie mounds that were designated during the surface survey as tumulus 803 (Welsby 2001a, 149). These are unlike any other of the mounds at Kawa in that their surfaces are covered in pieces of white sandstone and fragments of red brick. The stone suggests the possibility that there was one or more dressed stone pyramids here. The contexts from which the red bricks come is uncertain. They may have come from the blocking walls as in the cemetery at Berber for example (Mahmoud Suliman Bashir and Anderson 2014, 12) or might be from the offering chapel walls as at Jebel Barkal (Dunham 1957, 162 – Bar.16) and Meroe (Dunham 1957, 173 – Beg.N.30: 179 – Beg.N.32: 192 – Beg.N.51: 194 – Beg.N.27: 196 – Beg.N.26: 198 – Beg.N.25) or even the facing of pyramids as was the case in the very late royal pyramids at Meroe (Dunham 1957, 171 – Beg.N.30: 179 – Beg.N.32: 180 – Beg.N.37: 184 – Beg.N.36: 192 – Beg.N.51: 194 – Beg.N.24 and Beg.N.27: 198 – Beg.N.25). Nowhere else in the Kawa cemetery were red bricks found.

Elevation

As only a maximum of four steps of any of the Kawa stone pyramids survived it is difficult to be precise about the angle

³⁰ One pyramid at Sedeinga WT1 (9.8m square) was faced with rough stone (Schiff Giorgini 1965, 116-7). It is considered to mark the grave of a Meroitic governor of the town/district (Rilly and Francigny 2018, 67). Another of rough stone has been noted at Soleb, M90 at 3.1m square. Pyramidal monuments of rough stone have also been found at Dal by Mills (site 21-V-6).

³¹ Between the mid 1st and mid 2nd centuries AD at Meroe – Beg.N.1 (Amanitore), Beg.N.14 (king?), Beg.N.15 (?), Beg.N.16 (Amanakhareqerem), Beg.N.17 (Amanitenmomide) and Beg.N.19 (Tarekeniwal).

TABLE 12.9. DRESSED STONE PYRAMIDS AT NURI, JEBEL BARKAL AND MEROE, OF TYPE IX MEASURING LESS THAN 11.5M AT THE BASE (ALL DATA FROM DUNHAM 1955; 1957; 1963).

Pyramid	Occupant	Generation	M
Nu.54	Queen Pihatis??	11	4.7
Nu.42	Queen Asata	10	5.9
Nu.55	Queen Atmataka	11	6.1
Bar.14	(?)	28	7.5
Bar.15	Male(?)	29	7.8
Bar.13	Female(?)	27	8
Beg.W.2	(?)	c. 40	8
Nu.52	Female(?)	?	8.1
Nu.49	Female(?)	?	8.2
Nu.50	Female(?)	?	8.3
Beg.N.17	King Amanitenmomide	54	8.6
Beg.N.22	King Natakamani	49	9
Beg.N.3	Queen(?)	31	9.1
Nu.19	King Nasakhma	18?	9.73
Nu.25	Queen(?) Maletaral	14?	9.75
Nu.56	Queen Sakhmakh or Pelkha	26	9.8
Nu.26	Queen Amanitakaye	11	10.1
Beg.S.503	Queen Khenuwa	29	10.25
Nu.40	Queen Makmale	10	10.4
Nu.18	King Analamoye	12	10.48
Nu.39	Queen Maletasen	11	10.5
Nu.28	Queen Henuttakhebi(t)	10	10.55
Nu.27	Queen Madiken	9	10.6
Nu.47	Female(?)	?	10.7
Nu.46	Female(?)	?	10.8
Nu.24	Queen Nasalsa	9/10	10.9
Beg.W.14	(?)	40-50	11
Nu.29	Queen Pi'ankhqew-qa	17?	11.2

of slope of these monuments and hence to estimate their original height (Figures 12.1). With Pyramids S2 and S5, whose dimensions at the base are directly comparable to the pyramids at Jebel Barkal preserved to their full heights, it can be assumed that the tops were a flat platform between 1m and 865mm square. Taking that into account it may be suggested that Pyramid S5, with angled faces perhaps at about 60°,³² the total height above the socle will have been approximately 8.3m. Less confidence can be advanced for the angle of slope of Pyramid S2 and as its dimensions at ground level are uncertain the height estimate must be very approximate. Of the three steps for which dimensions are available it would appear that the lowest was about 419mm tall, the second 280mm and the third 330mm. They step back 127mm, 122mm and 110mm – one facing stone had the settling out line for the next course set back 131mm. This suggests an angle of slope above the socle of c. 68°

³² Comparison with other Kushite stone pyramids suggests that the actual angle would have been much steeper and the height consequently considerable greater than the estimate given here.

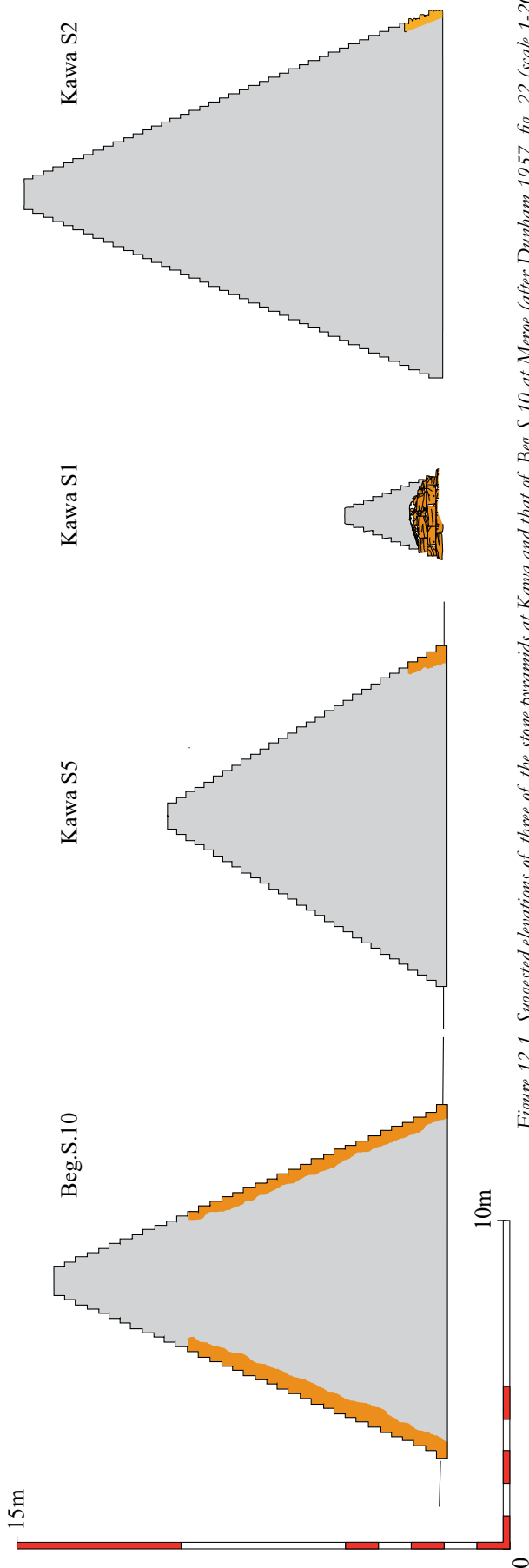


Figure 12.1. Suggested elevations of three of the stone pyramids at Kawa and that of Beg.S.10 at Meroe (after Dunham 1957, fig. 22 (scale 1-200)).

which, along with probable dimensions at the base of 11.19m square, gives a total height of 13.97m. A capstone, which will have been set on top of the platform at the apex of the pyramid, was found associated with Pyramid S2 (cat. no. F-2480). It measured 347 x 335mm and had a square recess in the top presumably to hold the finial, possibly of steep-sided truncated pyramidal form as found adjacent to Pyramid S5 (cat. nos F-2489 & F-2490).³³ Pyramid S1 had an angle of slope of *c.* 67°. Given its small size the platform on its top may have been smaller than in the pyramids at Jebel Barkal. If it were in the order of 500mm square the total height of the monument will have been *c.* 2.8m above its single-course plinth.

Kushite dressed-stone pyramids elsewhere have angles of slope between 68° and 73°; those of Type IX b have an angle of 70° (Hinkel 1984a, Abb. 1; 2000, 11). Observing the architect's scale elevation of a pyramid incised onto the north wall of the chapel of Pyramid Beg.N.8, and the proportions of other Meroitic buildings, Hinkel suggested that they conformed to proportions of 8:5 (Hinkel 2000, 19). Applying this to Pyramids S2 and S5 at Kawa would give a total height to the flat platform on the top of the monuments of approximately 17.9m and 16.7m respectively. With angles of slope of 70° the total heights will have been about 15.1m and 14.23m.

One dressed stone block (cat. no. F-2511) from the face of Pyramid S2, found amongst its rubble, is of particular interest in suggesting the original appearance of the monument. Most of its upper surface, which was not masked by the stepped-back course above, was covered in red paint and the paint had dribbled down the jointing face on one side (Plate 12.11). No traces of paint remained on the vertically-dressed face. Another block (cat. no. F-2510), associated with Pyramid S5, had cream plaster on its vertical face on the surface of which were several darker cream and one red drip mark. At Meroe Hinkel found evidence for the painting of pyramids and published a reconstruction of what the decorative scheme may have been (Hinkel 2000, col. pl. XII). At Sai the presence of drips of paint on the mud-brick



Plate 12.11. Facing stone from Pyramid S2 with red paint (cat. no. F-2511).

³³ For a combined capstone and finial from the stone pyramid at Site NE-36-F/4-F-71 in the Fourth Cataract region see Welsby 2003, pl. 9.

lower courses of Pyramid T 012 were taken to indicate that with that particular monument only the upper part was painted (Francigny 2009, 94). Red-painted pyramids are also known at Gebel Adda (Millet 1964, 8) and Sedeinga (Schiff-Giorgini 1965, 116).

Chapels

No trace of a funerary chapel was found associated with Pyramids S3 and S4; both may have been removed by robbing activity. In the case of Pyramid S1 it would appear that a chapel was never provided. On the south side of the descandary associated with Pyramid S6 was a linear depression at 90° to the east face of the monument (Figure 11.109, Plate 11.207). This may have been the foundation trench for the south wall of a chapel of which no elements of the superstructure remained.

In Pyramids S2 and S5 one wall of the chapel survived in part, the other overlying the descandary fill. In Pyramid S5 this will have been destroyed when the robbers cleared out the descandary to access the tomb. The north wall of the chapel of Pyramid S2 will have been destroyed much earlier in the life of the monument when it was removed on the clearing of the descandary for the insertion of a secondary burial. The slope of this new descandary, formed in the fill of the primary one, was provided with a flight of stone steps (Plate 11.178), almost certainly constructed from stones taken from the partially-destroyed chapel. It may be that the chapel was already ruinous at the time of the secondary burial. Built without foundations its east wall collapsed *en masse* to the east where the partially articulated blocks of courses 3 to 13 along with part of the doorjamb, remained as they had fallen until uncovered during the recent excavations. Unlike the pyramid the blocks used in the construction of the chapel appear to have been newly quarried for this building project and the contrast between the pyramid face and the chapel's south wall was striking (Plate 11.174).

The chapels projected 4.22m (S2) and 3.03m (S5) from the east face of the pyramid at ground level: their exact width could not be ascertained. They had east-west walls 666-741mm (S2) and 615-651mm (S5) thick, the two faces of dressed blocks having a narrow rubble-filled core. The east walls 728mm (S2) and 581mm (S5) thick extended a little beyond the building line presumably of both the north and south walls and will have provided a pylon-like entrance probably looking similar to that still preserved at Beg.N.19 in the North Cemetery at Meroe (Plate 12.12). A fragment of lintel with the tips of a vulture's wing found amongst the rubble will have come from over the doorway again as at Meroe and elsewhere (Plate 12.13).

The fallen east facade of the chapel of Pyramid S2 indicates that it was a minimum of 2.5m in height. Although no details of the height of the chapel of Pyramid S5 can be given there is abundant evidence for its roof and the treatment of its internal walls. In amongst the rubble in the vicinity of the chapel was a number of large dressed blocks including at least 76 voussoirs (Plate 11.137). Many of both types of blocks were covered in a fine white plaster and decorated in polychromatic paint with details enhanced with gilding. Details of the decorative program are discussed by Taylor forth. b. Clearly these are equivalent to the decoration carved

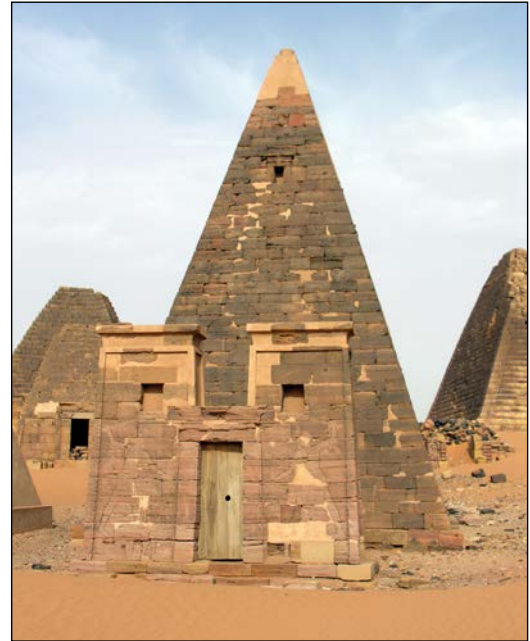


Plate 12.12. *Facade of the offering chapel of Pyramid Beg.N.19 in the North Cemetery at Meroe.*



Plate 12.13. *The lintels over the doorway into the offering chapel of Pyramid Beg.S.7 in the South Cemetery at Meroe.*

onto the inner faces of the offering chapels in the Kushite Royal cemeteries which will also have been covered with a fine plaster layer and painted (Dunham and Chapman 1952).

Evidence for stone barrel-vaulted offering chapels is elsewhere only available from the North Cemetery at Meroe.³⁴ While very few chapels or their adjacent pyramids are preserved to a sufficient height for remains of the roofing to survive, had such roofs been present in chapels elsewhere the voussoirs would have been recognised amongst the rubble if they were of stone. Remains of fallen vaulting if constructed of mud or red brick would be much more difficult to recognise. Some vaulting bricks, particularly from the medieval period, do have deeply-scored grooves made by the finger in their jointing surfaces but this was not ubiquitous.³⁵ Without such grooves bricks used in vaults are indistinguishable to those used in walls and floors.³⁶

The voussoirs of Pyramid S5's offering chapel were on

³⁴ Chapels built of mud brick with vaults of the same material were observed at Karanog (Woolley and MacIver 1910a, 9).

³⁵ For Meroitic vaulting bricks with the grooves see Williams 1991 II, pl. 12b at Ballana.

³⁶ At Karanog however, the excavators noted that bricks used in vaulting were larger than the norm (Woolley and MacIver 1910a, 18),

average 448mm in length with a range of from 360mm to 550mm and varied in thickness from 110mm to 200mm with 56% lying between 140mm and 160mm thick. As the chapel was approximately 1.78m in width internally³⁷ each vaulting rib will have consisted probably of four voussoirs. This can be compared with the vaulted chapels at Meroe associated with pyramids Beg.N.6 and Beg.N.12. In the former each rib consisted of between four and five voussoirs (Plates 12.14 & 12.15), five being much more common, spanning approximately 1.84m (Dunham 1957, 106). From the elevation published by Dunham (1957, fig. 45) the vault of the chapel of Beg.N.12 was of three voussoirs spanning approximately 1.86m and attaining a height of only about 200mm above the impost level. The only other vaulted chapels known, apparently with a corbel vault, are the chapels of Beg.N.8, Beg.N.11 and the highly unusual chapel reconstructed within the body of the pyramid in



Plate 12.14. The segmental vault roofing the offering chapel of Pyramid Beg.N.6. in the North Cemetery at Meroe.



Plate 12.15. Detail of the vault roofing the offering chapel of Pyramid Beg.N.6. in the North Cemetery at Meroe.

³⁷ This was calculated on the assumption that the chapel was centered on the east face of the pyramid and thus that the missing south wall was offset from the centre line an identical distance to that of the north wall.

Beg.N.16 (Dunham 1957, 69, 72, 137).³⁸

At Kawa the painted scenes appear to extend seamlessly from the walls onto the intrados of the vault whereas in Beg.N.6 the relief decoration ceases at the top of the vertical walls where a register of stars and a stuccoed band marked the transition to the intrados (Plate 12.16).

In amongst the rubble from Pyramid S5 were four frag-



Plate 12.16. Stuccoed band at the base of the vault roofing the offering chapel of Pyramid Beg.N.6. in the North Cemetery at Meroe.

ments from columns each of a different diameter (cat. nos F-2483 to F-2486). If any of them were associated with the monument rather than being *spolia* used in the pyramid's core, one may be from a colonnaded porch in front of that chapel as observed at Meroe (Hinkel 1984a, 325).

Enclosure walls

Only grave (JE3)69 had an associated enclosure wall. This was crudely made, a single row of dressed blocks laid end to end delimiting a trapezoidal area (Figure 11.97, Plate 11.164). Its south and west sides were parallel to the faces of Pyramid S1 and approximately 1m from it. The east side was also parallel to the pyramid but 2.36m from its east face while the north side was markedly off alignment.

Bonding material

The large blocks employed in the faces of Pyramid S1 were laid without any bonding material. The other stone pyramids all used mortar, generally a distinctive pink lime but in S5 of a lavender colour. Mixing pits associated probably with Pyramid S2, but possibly with Pyramid S3, were later cut by the descendency of grave (JE3)69 (Pyramid S1) (Plate 11.164). A large mortar-mixing pit lay immediately north of Pyramid S5 (Figure 11.89, Plate 11.130).³⁹ A similar mortar was used in the east wall of the burial chamber in grave (JE3)132 to bond the stonework but also amongst the mud bricks in the revetting wall above (Plate 11.183). Lime mortar was employed in the mud-brick blocking wall in grave (JF2)20.⁴⁰

³⁸ The chapels of Nu.27 and Nu.29 were roofed with pairs of blocks led against each other forming a hipped roof rather than a vault. Both were associated with a Type IX pyramid (Dunham 1955, fig. 83, fig. 137).

³⁹ For mortar mixing pit at Sai in Cemetery 8-B-5.A see Francigny 2009, 93, fig. 2.

⁴⁰ Similar mortars were used in the construction of mud-brick pyramids at Sai in Cemetery 8-B-5.A established in the 1st century AD (Francigny 2009, 93, pl. 1).

Building construction

Many elements of building construction have been mentioned above in the discussion. One final thing to consider is how the graves and their monuments were actually constructed. All descendaries and grave pits were cut into the alluvium.

Where mud-brick vaults survived they were typical Nubian vaults with each ring of the vault resting back on the previous one. Such vaults can be constructed without the need for centering. The doorway into the chamber of grave (JG2)175 was spanned by a true arch but made with standard mud bricks. It may have been built by temporarily infilling the doorway with a mud-brick wall with a rounded top on which the arch rested until it was completed and the mud mortar dried as observed by Woolley and MacIver (1910a, 19). Whether wooden centering was used in the construction of the stone-barrel vault in grave (JE3)132, and presumably in grave (JE3)115, is uncertain. If it was it must have been set on the floor of the chamber as no features were preserved in the walls, either sockets or impost blocks, which could have supported the centering at the level of the springing of the vault.

Building the tomb monuments will have required some skill. No special technology may have been needed to construct the mud-brick pyramids. Each brick could easily have been put in place although, as the apex of the pyramid was reached, ladders may have been used resting against the face to allow access to the upper parts. The fragments of finials found, which presumably were at the top of a cylindrical shaft which would have been inserted into the core of the pyramid, could have been positioned by hand.

Of the stone pyramids, Pyramids S4 and S6 were constructed of blocks of no great size and these could have been built using the same techniques as employed in the mud-brick monuments. Pyramids S1, S2 and S5, along presumably with S3, will have presented greater challenges. Pyramid S1 is very small and the blocks, although requiring more than one man to lift them into position, could have been raised using a wooden scaffolding. S2 and S5 were of much greater size and particularly with S5 the blocks of the inner and outer revetments were of considerable size and weight.

No evidence was found associated with Pyramid S2 to shed light on how it was constructed. At the construction level of Pyramid S5 was a pair of deep pits mid-way and close to the base of its south face. Another pit survived in a similar position by the west face, probably one of the original pair, the other having been subsequently removed by the digging of the descenary for grave (JD2)12 (Figure 11.86 & 11.87, Plates 11.131 & 11.132). These pits contained substantial timbers and were sealed by the stone-chippings layer from the final dressing of the facing stones. It is likely that each of these two pairs of pits supported a crane, probably of a *shaduf* type which could have been used to lift inner and outer facing stones into place.⁴¹ A similar system has been proposed for the construction of pyramids at Meroe where the crane was supported on a single pole set in the centre of each pyramid (Hinkel 1984b; 2000, 19-20).

Only one mason's mark was noted, on a block from Pyramid S6, a double triangle (cat. no. F-2454).

⁴¹ See discussion in Welsby forth. c.

Other features observed in the cemetery

Unfortunately no dating material was found associated with the post-holes, gully and pit discovered cutting the subsoil in grid square (JG2). It is possible that they were contemporary with an earlier phase of use in this area of the cemetery and that they represent workmen's installations of some sort. At Sedeinga post-holes and a small mud-brick wall, according to the excavators, were parts of shelters built by workers employed in building the pyramids (Rilly and Francigny 2013, 64).

The features at Kawa were sealed by a thick layer of stone chippings. There was no doubt that this is connected with the dressing of facing stones but for what structure/s is less certain. Extensive deposits of similar layers were found adjacent to Pyramids S4, S5 and S6 and by the descenary of S3. There is also a small amount of similar material on the south side of Pyramid S1. These deposits came from the dressing of the facing stones *in situ*. Where the stones first roughly dressed in grid square (JG2) before being moved to the pyramid in which they were to form a part? The underside and ends of each block would need to be dressed smooth before they were put in place. The upper jointing face and the outer face could be dressed *in situ*.

Of particular interest is the source of the facing stones used in Pyramid S2. As suggested above these were very likely reused from one or more earlier monument but no clue was found neither to where that/those monuments may have been nor what form they may have had. Earlier pyramids, chapels and funerary temples are possible sources in the context of the cemetery or they may have been brought from the town.

Layout of the cemetery

The cemetery was set on a broad, low ridge aligned north-south. Along its eastern side it drops off quite steeply and more gently to the south and west. To the north the ridge broadens out and merges with the plain. A large dune is currently masking much of the eastern side of the cemetery and can be expected to cover many graves.

In 1993 a detailed survey of the features visible on the surface within the cemetery was conducted (Figure 11.1). Excavations subsequently demonstrated that the location and number of graves in the cemetery diverged markedly from the conclusions drawn from the survey. Many of the mounds assumed to be tumuli overlying individual graves were actually robber pit upcast mounds and thus lay to one side, usually to the south of a grave. A very large number of graves were not, at the time of excavation, marked on the surface at all. This was particularly clear in grid square (HA2) where there appeared to be three tumuli. On excavation none of these marked a grave while at least 18 graves were found cut into the subsoil. In Area (HA1) many grave cuts were visible on the flat surface of the alluvium partly covered by a very thin layer of wind-blown sand if by anything at all. The most dramatic evidence for the divergence of the observed surface features from the Kushite burial activity in the cemetery came in 2018 when a fluxgate gradiometer survey of the north-eastern part of the cemetery (Plate 12.17) revealed many hundreds of

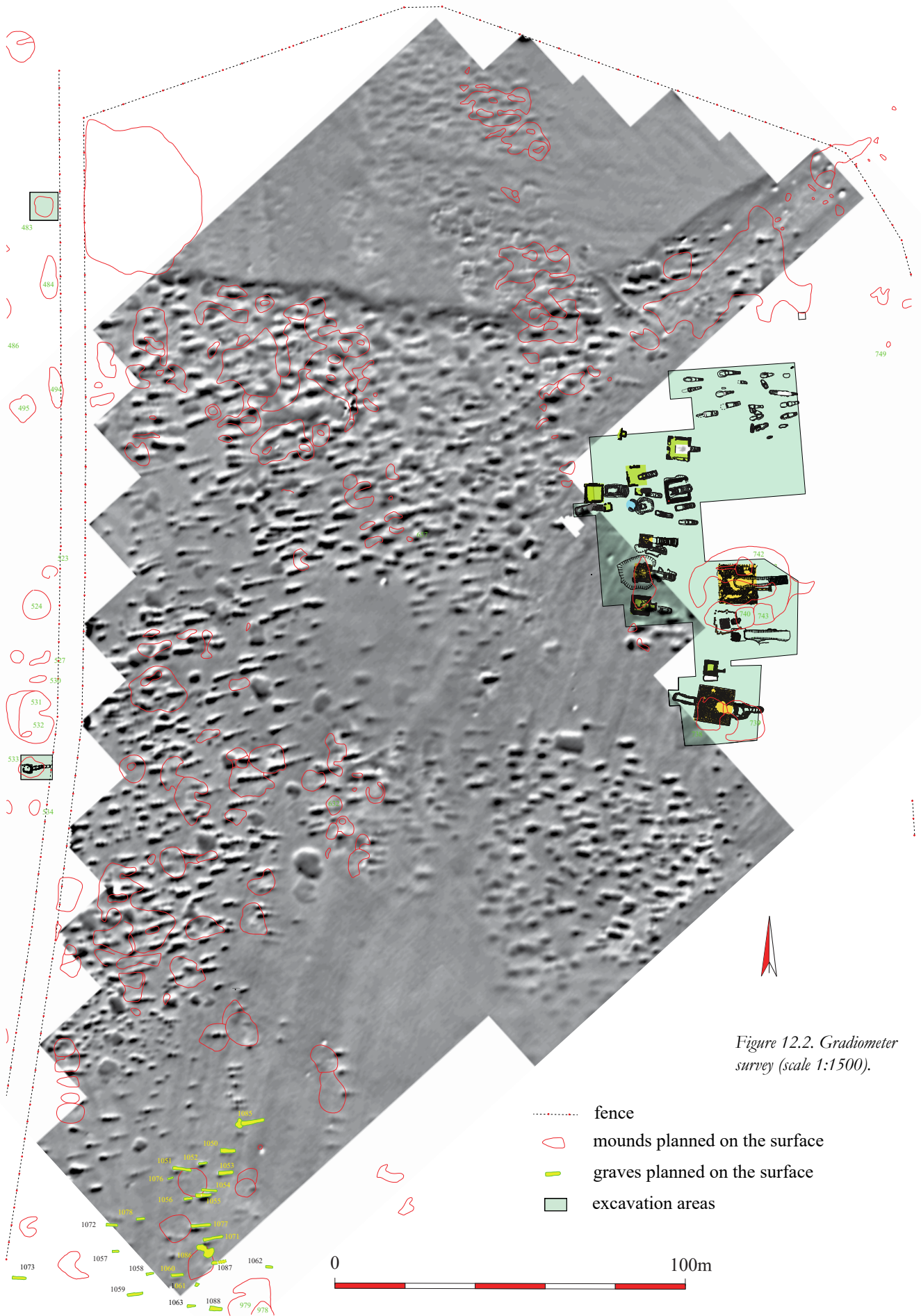


Figure 12.2. Gradiometer survey (scale 1:1500).

- fence
- mounds planned on the surface
- graves planned on the surface
- excavation areas



Plate 12.17. General view across the north-east quadrant of the cemetery, the area surveyed using the fluxgate gradiometer, looking north.

hitherto unsuspected graves (Figures 12.2-12.5) (see also Herbich, this vol.).

The prevalent alignment of graves and descendaries east-west, provided some regularity in the layout of the graves in the cemetery. Even when grave chambers were aligned north-south associated descendaries were still east-west.

In grid square (GD3) the graves were densely packed, many cutting into earlier graves. The different grave types were mixed together. This was the only part of the cemetery investigated where both Napatan and Meroitic graves were found. It may have been within the core of the cemetery and hence was a much sought after location for burial resulting in the overcrowding. Remains of only one tomb monument was found in this area. If each grave had a monument their juxtaposition will have resulted in the earlier ones being significantly damaged and obscured by later monuments.

In Area (HA1), where the location of graves was visible over a considerable area, they were generally well spaced with some sizeable areas without any graves at all. This

however, may be the result of erosion. Some of the graves found were extremely shallow and in other places human bones lay on the surface, the graves in which they had lain having been totally removed.

A possible groupings of graves was discernible in grid square (HA2). Graves 90, 58 and 39 were equally spaced in a row north to south and were not dissimilar being of Type 3a with narrow and deep descendaries. The close association of graves 58 and 94 may suggest that they were related. The unusual alignment of grave 116 suggests that it was being positioned to make use of a pre-existing monument but it is not clear to which grave that monument might have belonged.

Two rows of graves are discernible in Area (J). The largest stone pyramids are on the crest of the slope which falls off steeply to the east. Almost 20m behind them is a second row of two stone and one mud-brick pyramids. Each row comprises three monuments, the eastern row modified when Pyramid S3 was demolished and replaced by Pyramid S1.

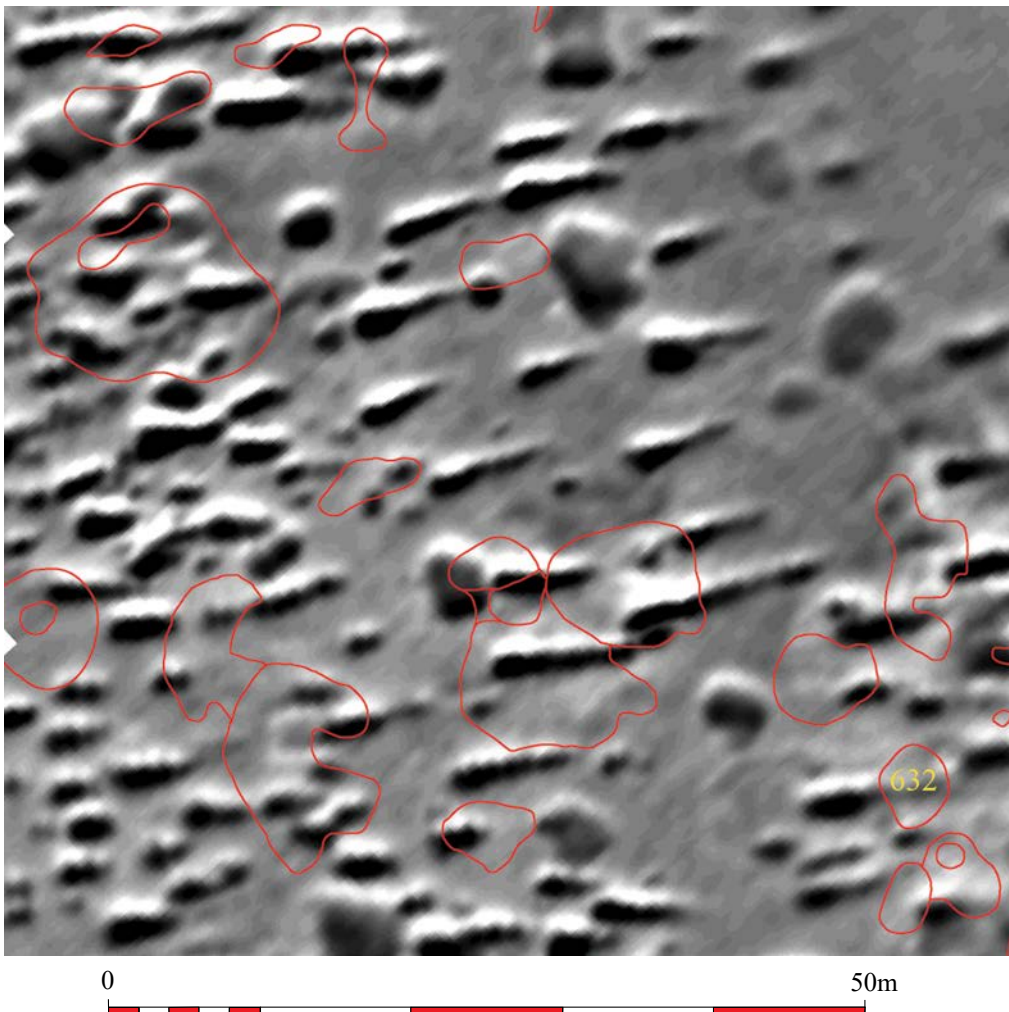


Figure 12.3. Gradiometer survey, detail. The red features were mounds on the surface recorded in the survey of 1993 (scale 1:500).

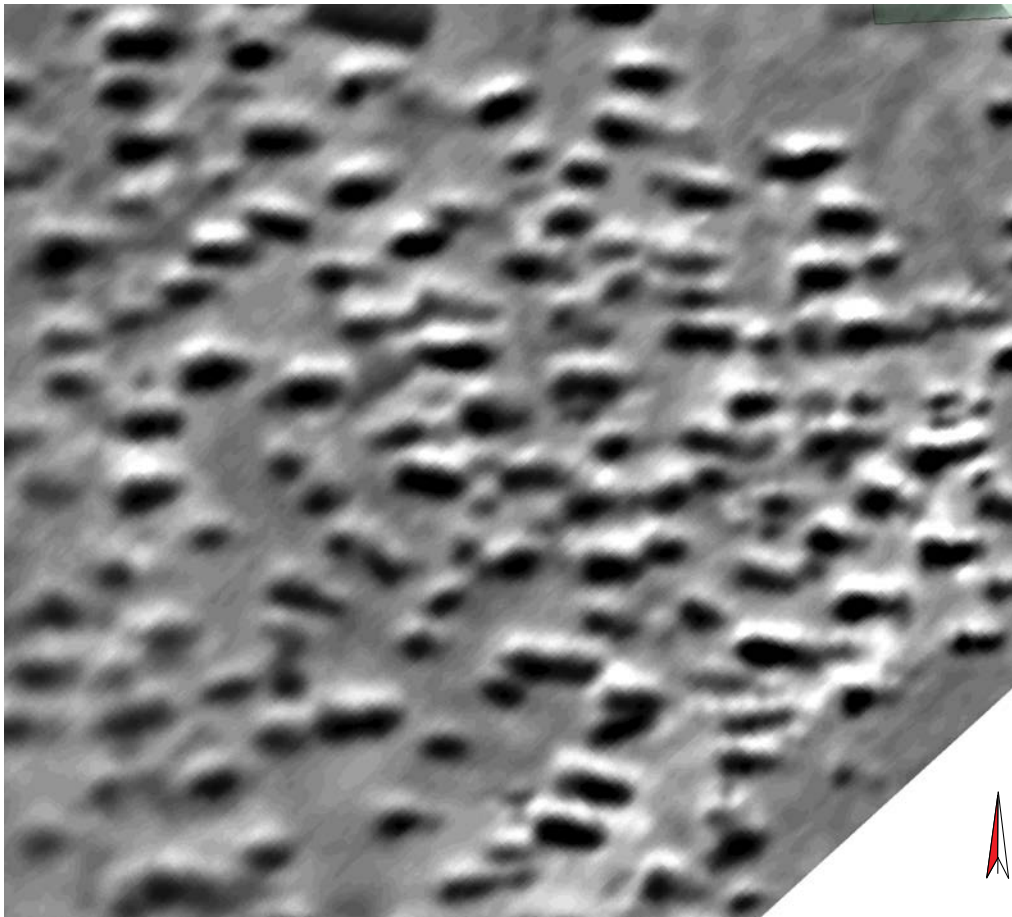


Figure 12.4. Gradiometer survey, detail (scale 1:500).

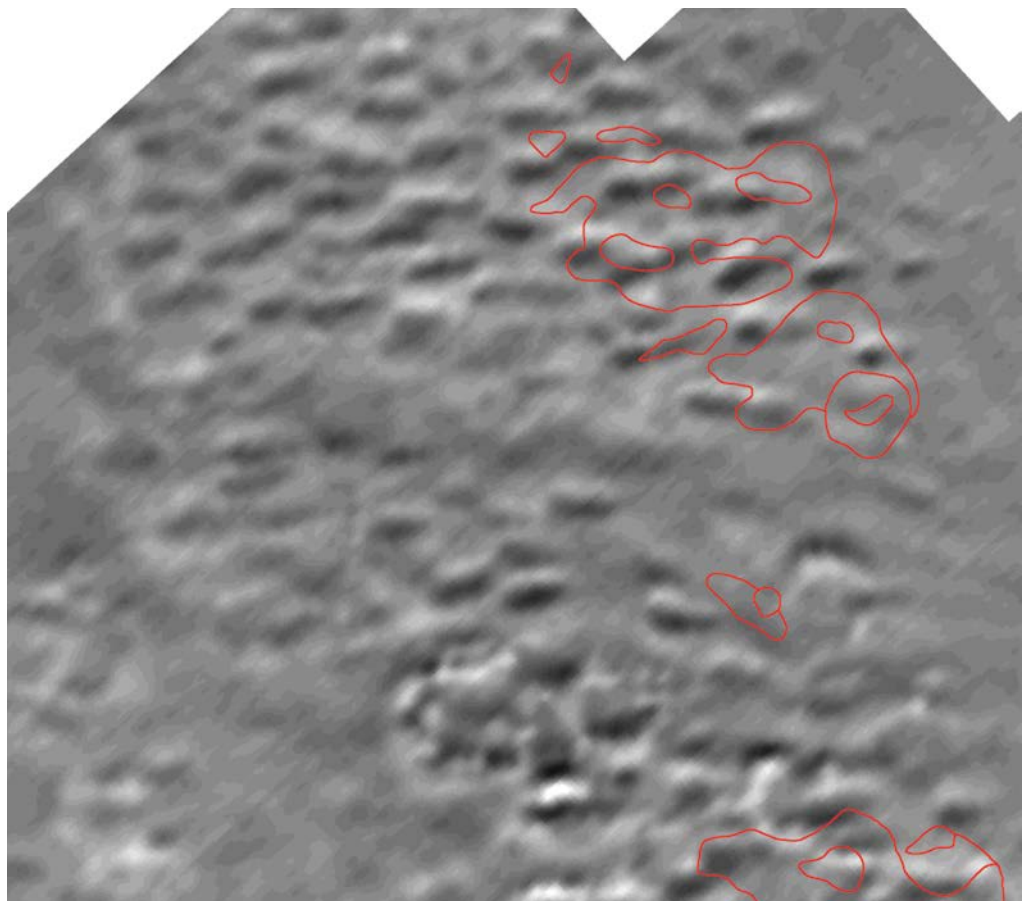


Figure 12.5. Gradiometer survey, detail (scale 1:500).

Pyramid M9 was probably a secondary insertion. Elsewhere in the area there may be two more rows of three:

(JG3)13	(JH3)114	(JH3)110
(JH4)6	(JH4)12	(JH4)24

Graves (JG2)2 and (JG2)150 with their barrel-vaulted mud-brick chambers and large square mud-brick monuments were clearly a pair and were set in a line north-south but there did not appear to be others extending the row.

As already noted the gradiometer survey revealed a vast number of graves in the area investigated, the north-eastern part of the cemetery. No clear spatial organisation is apparent although there was a distinct cluster of graves a little south of Area (J) where the graves were aligned slightly north of east-west. Many to the north west were aligned slightly south of east-west.⁴² Graves as those in Figure 12.3 clearly had long sloping or stepped descendaries. Those visible in Figures 12.4 and 12.5 look more like slot graves.

In the areas excavated there was no clear evidence to suggest the clustering of graves around one or two burials

of particularly important or significant individuals as is recorded at Sedeinga, Sai and other sites (Rilly and Francigny 2018, 65; Francigny 2014, 799). It should be noted, however, that the graves arranged in these ‘clusters’ at Sedeinga have been dated to the 5th and early 3rd centuries BC and are thus rather earlier than most of those known at Kawa.⁴³ Broadly contemporary burials in widely separated areas of the cemetery indicate that more than one area was being

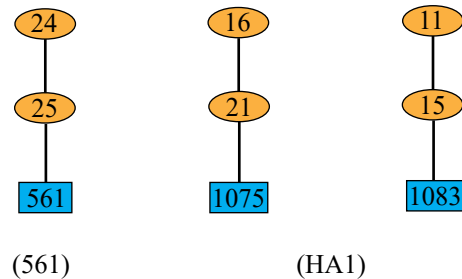


Figure 12.6. Areas (561) and (HA1) – stratigraphical relationship of burials.

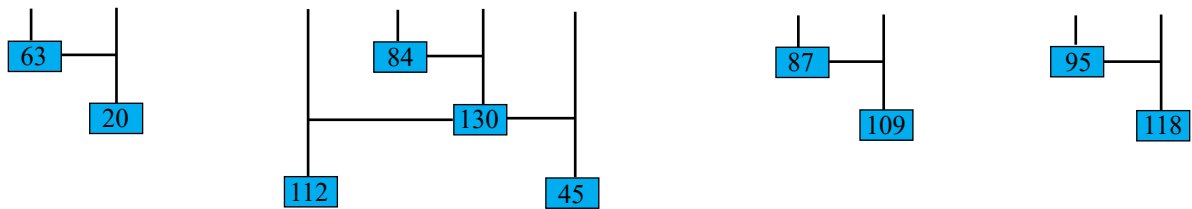


Figure 12.7. Area (GD3) – stratigraphical relationship of graves.

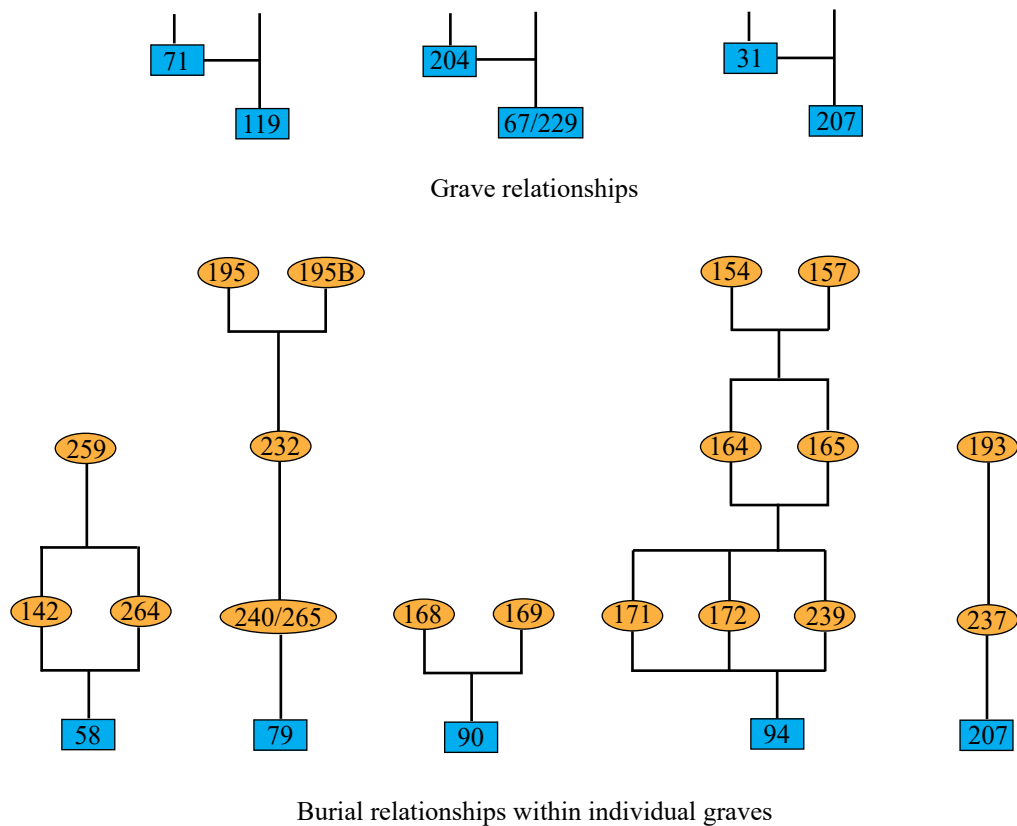


Figure 12.8. Area (HA2) – stratigraphical relationship of graves and burials.

⁴² Cf. discussion of the layout at Gabati with cited parallels in Edwards 1998, 200-1.

⁴³ Almost all of these graves were systematically reused centuries later during the Meroitic period (Rilly and Francigny 2018, 66).

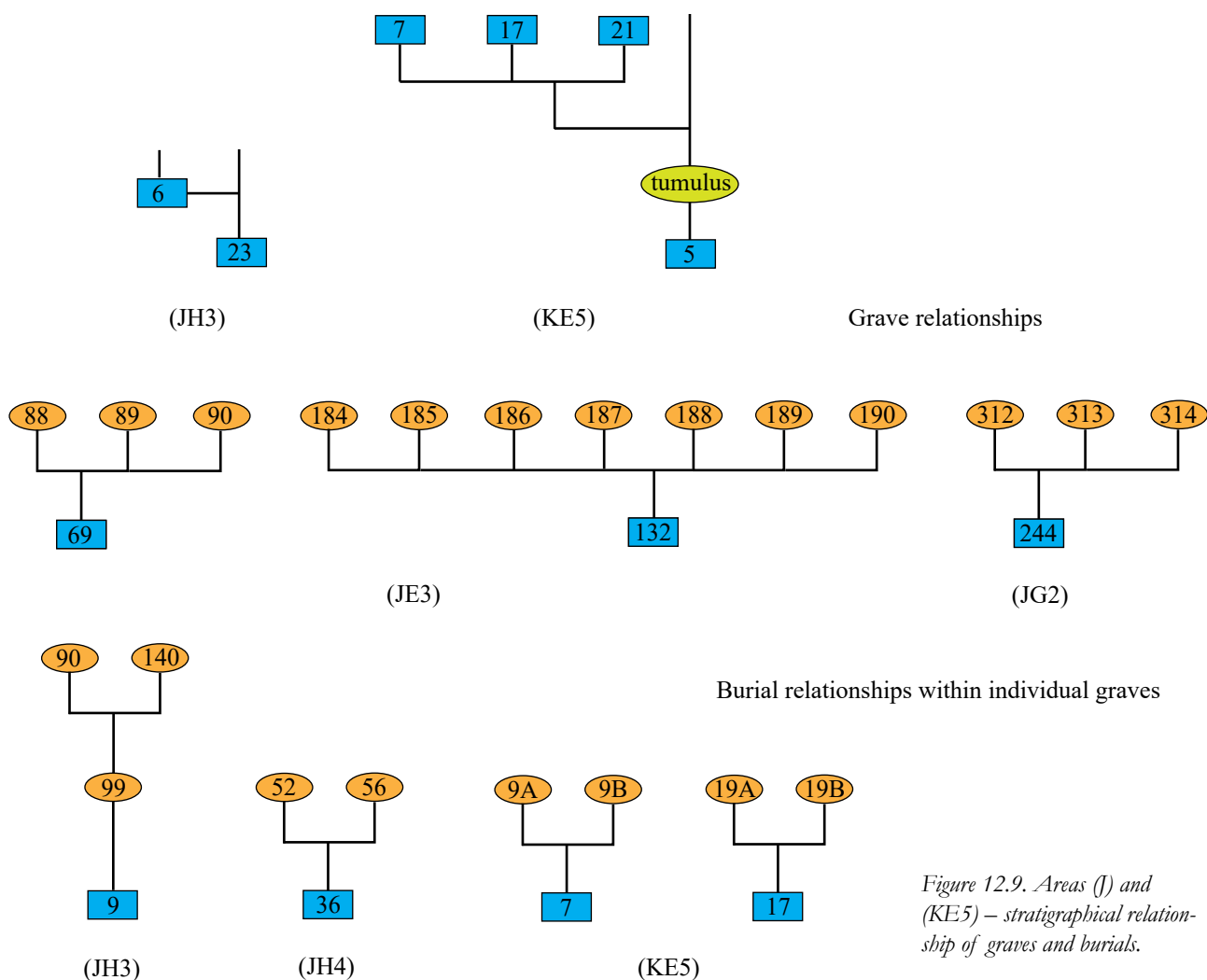


Figure 12.9. Areas (J) and (KE5) – stratigraphical relationship of graves and burials.

used at the same time. The reason for the contemporary use of multiple parts of the cemetery at present eludes us.

Chronology of the funerary remains

Stratigraphic relationships

Most of the graves and monuments were located directly under the wind-blown sand and cut into or sat on the alluvium. Many had no direct relationship with any other feature making the establishment of a relative chronology difficult. What follows are those instances where a relationship between a grave and one or more others could be ascertained (Figures 12.6-12.9).

(GD3)63 / (GD3)20 – the former grave is cut into the wall of grave (GD3)20's descendency. It is unclear whether this happened before the descendency was backfilled or at a later date.

(GD3)84 / (GD3)130 / (GD3)45 – the former grave overlies grave (GD3)130 which itself was cut into the descendency of grave (GD3)45.

(GD3)130 / (GD2)112 – the former grave cut the latter removing the upper part of the skeleton.

(GD3)87 / (GD3)109 – the former graves overlay the latter.

(GD3)95 / (GD3)118 – the former grave had removed much of the north side of grave (GD3)118 disturbing the skeleton within it.

(HA2)71 / (HA2)119 – the descendency of grave (HA2)71 cut through the roof of the burial chamber of grave (HA2)119 (HA2)204 / (HA2)67/229 – the former grave was cut into the descendency fill of the later.

(HA2)282 / (HA2)119 – this grave cut into the fill of grave (HA2)119's descendency.

(HA2)31 / (HA2)207 – the descendency of the former grave sliced through the side of the burial chamber of grave (HA2)207 which had already been reused once.

(JE3)69 / (JE3)132 – Pyramid S1 and its enclosure wall were stratigraphically later than the core of Pyramid S3 and both were probably constructed from its re-purposed facing stones.

(JF2)20 & (JF2) 79 – contemporary burials both sealed by Pyramid S4.

(JH3)6 / (JH3)23 – the descendency of the former grave removed part of the descendency and part of the chamber of grave (JH3)23 removing the torso and head of the earlier burial.

(KE5)7, 17 and 21 / (KE5)5 – the three secondary burials cut into the tumulus built over grave (KE5)5.

Structural parallels

The stone pyramids S4, S5 and S6 are, as noted above, comparable to Dunham's type IX. He recorded that this was the universal pyramid type from generations (9)-(27)

for kings (c. 600-300 BC), almost universal for queens of generations (10)-(27) and occasionally to generations (36) or perhaps (43). In private tombs pyramids of this type were employed up to generation (27) or (28) (Dunham 1950, 122-124). Type IX pyramids of comparable size to those at Kawa are listed in Table 12.9. Although they are found most commonly at Nuri where the latest burials were dated to the 4th century BC, one was constructed as late as the end of the 1st or the first half of the 2nd century AD.⁴⁴

The vaulted chapels at Meroe were associated with Queen Amanishakheto – Beg.N.6 (end of the 1st century BC - beginning of the 1st century AD) and King Taneyidamani – Beg.N.12 (second half of the 2nd century AD).

The sunk landings in graves (HA2)94, 119 and 62 are paralleled at Sedeinga in a grave dated to early in the Meroitic period. In royal tombs they were common in queen's tombs from generations 6 to 12 and in private tombs from generations 18 to 27 (Dunham 1950, 127).⁴⁵

At Faras Griffith considered graves of Type 3 to be the earliest, followed by those of Type 1b/2b and finally of Type 1a/2a with a roof of mud bricks laid, flat, at an angle or forming a vault. Some of these had entirely built mud-brick chambers (Griffith 1925, 58-63).

Associated material

Some objects can be paralleled on other sites where an approximated date range has been suggested. The most useful category of this material is the pottery but some other finds can also be approximately dated.

Pottery

For a detailed discussion of the pottery types associated with the cemetery see Welsby Sjöström 2023, Chapter 7. She noted that burials spanning the whole of the Kushite period were excavated although, of the dateable examples, many more were of the Meroitic period.

Other artefacts

Cat. no. F-86. Copper-alloy *clepsydra* from grave (JH3)21 – Identical examples are known from Beg.W.5 at Meroe (Dunham 1963, fig. 91 c) and from Tomb 911/2 at Faras (Griffith 1925, 82, pl. XXII.4). Reisner considered the Meroe example dated to the last quarter of the 1st century BC (Dunham 1963, 118).

Cat. no. F-30. Gold or electrum finger ring from grave (GD3)60 – Not dissimilar examples from Beg.W.5 at Meroe (Dunham 1963, fig. 92 h, j & k). Dating as above.

Cat. no. F-77. Copper-alloy vessel from grave (JF2)27 – This is similar but a little more attenuated than Faras Type IV, particularly IVc from T 365 (Griffith 1924, pl. XXXII; 1925, 96). No further artefacts which could suggest a date for this grave were found.

Cat. no. F-75. Copper-alloy vessel from grave (JG1)12 – This is a similar form to Faras Type IIIc from T 2588 which however, is made in one piece (Griffith 1924, pl. XXXII;

1925, 156). No further artefacts which could suggest a date for this grave were found.

Cat. no. F-76. Copper-alloy beaker from grave (JG2)2 – This, apart from being assigned to the Kushite period, is unfortunately not more closely dateable.

Cat. no. F-93. Copper-alloy offering table from grave (JE3)115 – Possible 1st century AD or later.

Cat. no. F-53. Copper-alloy earrings from grave (JH3)116 – These are very similar to examples in gold found in Beg.N.21, Beg.W.18 and Beg.W.24 (Reisner 1923, pl. X). Beg.N.21 is considered by Rilly to be associated with King Teriteqas and dated to the later 1st century BC (2017, 121). They are also comparable to a pair of electrum earrings from Beg.N.6, the tomb of Queen Amanishakheto (Helmbold-Doyé 2014, 132, cat. no. 39).

Scarabs

Scarabs are notoriously difficult to date and, as small attractive objects, are susceptible to being collected and thereafter deposited in contexts which may be of much later date than their period of production. This would appear to be the case with that from grave (HA1)1075. The style of the scarab and its decoration would suggest a date in the Second Intermediate Period or the New Kingdom (see Taylor forth. a, cat. no. Sc-1). The others from the cemetery can be paralleled in Kushite contexts but are not closely dateable.

Glass vessels

Remains of glass vessels were extremely rare in the cemetery as they also were in the town.

The wall paintings in the chapel associated with grave (JC3)12

From what little remains it appears that the whole of the interior of the stone offering chapel associated with Pyramid S5 was plastered and painted, the painted scenes extending onto the intrados of the vault. For a detailed description of these paintings and a discussion of the iconography employed see Taylor forth. b.

Summary of the chronological data for the periods of use of those areas of the cemetery excavated so far

No evidence was found in the cemetery for its use either in the New Kingdom or in the Post-Meroitic periods. It was used exclusively in the Kushite period both in the Napatan and Meroitic phases. The form of the grave sub-structures is not a reliable criterion for dating the burial. Therefore, in the absence of grave goods which is a common feature of the graves excavated, it is almost impossible to hazard a guess as to their date. The same goes for the layout and orientation of the bodies. Although the west-east supine layout is the most common variations can occur at any time during the Kushite period. The same can be said for the tomb monuments. There is no reason to suggest that those marked by tumuli are necessarily of earlier or indeed of later date than those marked by pyramids and *mastabas*. Taking all the chronological indicators available (relying almost exclusively on the pottery which is itself very imprecisely dateable) the following date ranges, citing the earliest

⁴⁴ Dating from Rilly 2017, 120-122.

⁴⁵ Dated by Dunham 664-538 BC and c. 458-315 BC respectively 1955, 2-3; 1957, 6).

and latest possible dates, for the burials in the various areas excavated may be suggested:

(GD3)

8th century BC to 3rd century AD.

(HA1)

Napatan?

early 4th century BC? to 1st century BC

(HA2)

7th century BC to Meroitic

(J)

Napatan?

3rd century BC to 2nd century AD

In the areas excavated it would appear that the bulk of the dateable graves were of the Meroitic period. The other graves cannot be directly dated but it is assumed that most, if not all, date to the later rather than the earlier period.

The robbing and post-Kushite history of the cemetery

A number of graves were probably opportunistically robbed when they were inadvertently cut into while digging later graves. This appears to have been the case in graves (HA2)119 and (HA2)207. Another opportunity to remove grave goods may have presented itself when graves were re-opened for the insertion of additional burials. This happened in grave (HA2)94 on at least three occasions.

The robbing of graves was done with the minimum of effort. Clearly the robbers understood the layout of the graves and they were able to target the entrance to the grave chambers particularly in graves of Type 3. The few graves that escaped robbing frequently contained nothing of value and this may explain their intact status. All this suggests that the robbing happened at a time not too far removed from the date of burial, i.e. within the Kushite period or at least when the tomb monuments were still clearly visible.⁴⁶ Following this initial phase of robbing the cemetery was largely left alone until the archeologists arrived in 1929 and again in the 1990s. A renewed, and one hopes brief, resurgence of interest came in 2009-10 probably stimulated both by the common perception that as archaeologists are looking for gold their presence implies that it must be there to find. Robbing activities may also have been prompted by the arrival of metal detectors in the area for the first time, a consequence of Sudan's 21st century gold rush.

A few graves have been more aggressively targeted as a result of their once fine and large tomb monuments which were, at least initially, to be correlated with the presence of valuable grave goods. The stone tomb of grave (JE3)132 was 'surgically' robbed in the standard way and presumably the same occurred with the tombs under the large pyramids S2 and S5 (graves (JC3)12 and (JE3)115). With the removal of most of Pyramid S3, certainly before the construction of Pyramid S1, the location and indeed existence of its tomb will have been obscured. This will not have been the case with the other two tombs resulting in subsequent robbing

episodes undertaken by people who had no understanding of the original tomb layout. Their approach was simply to dig a massive hole and remove everything. In grave (JE3)115 they did just that, removing the whole of the tomb chamber and digging through its floor and beyond its walls into the alluvium. A similar event befell grave (JC3)12 where the tomb chamber was extensively damaged and a tunnel was dug horizontally beyond it for about 2m. Between the first and last robbing events there may have been others in this tomb. The latest event in grave (JC3)12 was in the relatively recent past – a plastic bag was found deep within the robber pit.

At some point during or after the use of the cemetery and before the recent past a number of substantial trees became established thriving in the descendary fills which will have served to trap seasonal rainwater (Plate 11.110). The current desert-like aspect of the cemetery may well reflect human pressure on the resources of the region as population has increased.

Final comments

The Kushite cemetery at Kawa may be one of the largest known. The recent excavations have investigated a very small part of it and, although the approach of undertaking detailed excavations in widely separated areas has sought to encompass the range of diversity in the cemetery, much remains to explore. Only a very few Napatan-period graves have been found – clearly the core of the Napatan-period cemetery has yet to be located, as incidentally does that of the New Kingdom. What is very obvious is that surface remains give an entirely false perception both of the nature of the surface monuments and the number of the graves in the cemetery. Using the data from the geophysical survey, if one were to assume a similar density across the whole site, the cemetery may have contained approximately 12,000 graves. Of these, taking the average occupancy rate of 1.19 bodies per grave based on the excavation data, either the result of multiple contemporary burials or the reuse of graves on one or more occasions, the total number of individuals buried in the cemetery may have been in the order of 14,230.

The closely packed nature of the graves is a feature of other Kushite cemeteries as, for example, at Faras (Griffith 1924, pl. XIV), Sanam Abu Dom (Lohwasser 2010, figs 22-27) and Sedeinga (Rilly and Francigny 2011, fig. 1).

Most of the observations regarding the graves at Kawa can be readily paralleled in other Kushite cemeteries, the limited range of grave types perhaps being more a result of the limited amount of excavation rather than reflecting a greater homogeneity of grave types at Kawa. A number of the grave types noted, for example, by Griffith at Sanam Abu Dom and Faras,⁴⁷ and by Vila at Missiminia, which have not so far been found at Kawa, may lie elsewhere in the cemetery.

The outstanding feature of the Kawa cemetery is the presence of large dressed-stone pyramids. These must reflect the very high status of albeit a very small number of individuals and suggests that, at least for two brief moments in time

⁴⁶ For a similar situation suggested at Gabati, see Edwards 1998, 197.

⁴⁷ For a discussion of the grave types at Faras see Griffith 1925, 5ff.

during the Meroitic period, Kawa was amongst the highest ranking settlements in the realm, perhaps only surpassed by the royal centres at Napata and Meroe. The fragment of an inscription in hieroglyphs (cat. no. F-2453) associated with Pyramid S5 and the royal censuring scene on the copper-alloy offering table (cat. no. F-93) found close to Pyramid S2 also reflects the very high status of the individuals buried there.

There are a few categories of objects which one would expect to be associated with the Kawa graves that have not been found. No inscriptions in Meroitic have been recovered although graffiti found on the walls of stone monuments in the town indicate that there was a literate component in the local population.⁴⁸ Also missing from the finds inventory are *ba*-birds and ceramic and stone basins.⁴⁹ Generally the graves at Kawa contain little in the way of grave goods in stark contrast to Sedeinga and Berber amongst other sites. Do these observations reflect local funerary practices or are they nothing more than a reflection of the vagaries of excavation? A similar lack of grave goods has been noted in the Napatan graves at Tabo (Bonnet 1999, 3) and at Sanam Abu Dom where 56% of the unrobbed graves were devoid of grave goods (Lohwasser 2020, 70). This was also the case in the early Meroitic graves on the right bank of the Nile above the Fourth Cataract (Mahmoud el-Tayeb and Kołosowska 2007, 24).

The eastern cemetery, Site R18, at Kawa will certainly repay further investigation as would the cemetery, site R22 a little to the north and the mounds of unknown date and function in the plain between Site R18 and the town (Figure 2.1).

⁴⁸ Also note the Meroitic graffiti on the pottery vessels from grave (JH3)116 (Welsby Sjöström 2023, fig. 5.4, 134g & 135g).

⁴⁹ A ceramic basin very similar to an example found at Sedeinga in a funerary context was recovered at Kawa associated with the shrine built by Taharqo, Building A1, at the southern edge of the town (Rilly and Francigny 2018, 68, pl. 5; Welsby Sjöström, cat. entry no. 139 in Welsby 2004b, 155; Welsby Sjöström 2023, 228, fig. 3.9.7 (type 3084x)).

13. Magnetic survey at Kawa

Tomasz Herbich

Introduction

Investigations of a site the size of the Kushite town of Kawa (nearly 30ha; see Welsby this vol., 8) call for methods other than broad-scale excavations. The same is true of the cemeteries covering tens of thousands of square metres. In light of successful applications of geophysical methods for prospection on sites in Sudan where the most common architecture is built of mud brick, there was no doubt that the ground in Kawa should be surveyed with a magnetic method. The method was also expected to be effective in the cemetery because of the anticipated contrast between the magnetic values of Nile alluvium and the less homogenous fill of the grave pits or of their descendaries.

The magnetic survey was undertaken first in 2008/9, covering the lower town and the southern part of the upper one (9.67ha), and the area north of the temple complex (0.88ha, Figure 13.1). The upper town was prospected in the 2017/18 season (2.68ha), along with the Kushite-period cemetery, Site R18 (4.9 ha). The author was assisted in the survey by Dawid Świąch in 2008/9 and Robert Ryndziewicz in 2017/18.

Magnetic research in Sudan

Archaeological magnetic prospection in Sudan commenced in the mid-1960s with research at the fortress of Mirgissa, which lay in an area endangered by flooding as a result of the construction of the Aswan High Dam. This salvage work was at the same time the first geophysical investigation of an archaeological site in the Nile Valley (Hesse 1967; 1970). Observing the higher magnetic susceptibility of Nile silt, which was the principal building material in the Nile Valley and on its fringes – dried mud brick is made of the silt – researchers settled on the magnetic method for geophysical survey projects conducted in both Sudan and Egypt (Herbich 2003; 2019; forth. a). Nonetheless, the next prospection in Sudan did not take place until 30 years later when surveys were undertaken at three different sites explored by teams from the Polish Centre of Mediterranean Archaeology, University of Warsaw: the residential district at the foot of the citadel in Old Dongola, the area around the church in Banganarti and the ground next to the Kushite temple at Soniyat (Misiewicz 2003). The proton magnetometer chosen for this work, with its low resolution and longer measuring time compared to the fluxgate and cesium instruments already in common use at the time, proved useful only for locating pottery kilns (Misiewicz 1992). The effect of thermoremanence was responsible for this because clay after firing becomes more susceptible magnetically (Aspinal *et al.* 2008). Changes in the intensity of the magnetic field at the Earth's surface that are caused by features with the considerable mass of pottery kilns are sufficiently strong to be measured even by instruments with lower measurement parameters. Tracing structures

invisible on the ground surface was the goal of prospection undertaken in 1998 in Musawwarat es-Sufra. Testing a proton magnetometer for this work in the first season provided encouraging results (Wenig and Wolf 2000) that covered in effect all of the Great Enclosure as well as areas around it (Wenig 2002; 2003). The results of prospection with a cesium instrument served to reconstruct the rainwater collection and management system (Scheibner 2017). In the early 2000s, investigations with magnetic prospection at Meroe (Grzymski 2005) helped to trace a detailed plan of the layout of buildings constructed of limestone blocks (characterised by a magnetic susceptibility meaningfully lower compared to the surrounding earth and sand fill).

A change in the approach to magnetic research occurred at the beginning of the 21st century. The goal was no longer to identify individual features, like kilns, or trace the layout of individual buildings or even architectural complexes with their immediate surroundings. Instead, the coverage of archaeological sites increased substantially, going now into hectares, the purpose being to reconstruct whole settlements, trace their extent and provide data for palaeolandscape research. Beside the work at Musawwarat es-Sufra, one should mention the research in the urban area north of the citadel in Old Dongola (Godlewski 2013), and the sites of el-Hassa where a palace adjacent to the Temple of Amun was discovered among other things (Bièrè 2008) and at Muweis (Baud 2008). In the 2010s and early 2020s, such prospections were conducted in Amara West (reconstruction of the urban plan, Spencer and Hay 2013), Usli (remains of an extensive agglomeration of buildings with a centrally located palace, Herbich 2019), Sedeinga and Soleb (plans of Kushite and Islamic cemeteries, Herbich 2022a), as well as Old Dongola again (this time in the citadel and on the Christian cemeteries, Obłuski *et al.* 2021) and at Jebel Barkal, Sanam Abu Dom and el-Kurru (in the settlements and cemetery, Mohamed-Ali 2013; Blinkhorn 2013; Tucker and Emberling 2016; Tucker *et al.* 2019). The survey results from Kawa presented in this chapter are yet another example of prospections covering relatively large areas of settlement.

The significance of the results was conditioned by the ancient building material in use at particular sites. The magnetic method worked well for tracking mud-brick architecture, in many cases providing the essential data for precise layout reconstruction of individual buildings as well as whole settlements, e.g. the settlement at Amara West (Spencer and Hay 2013), the palace at Soniyat (Żurawski 2018; Herbich 2019), the architecture at Selib (Herbich and Ryndziewicz 2022). The results for fired (red)-brick architecture were much less clear, due to the high susceptibility of fired clay which caused substantial changes of the intensity of the Earth's magnetic field on the surface. In effect, it was possible to trace the extent of urban architecture rather than to observe the layout of individual buildings or the city as such. Results of this kind are exemplified by the research

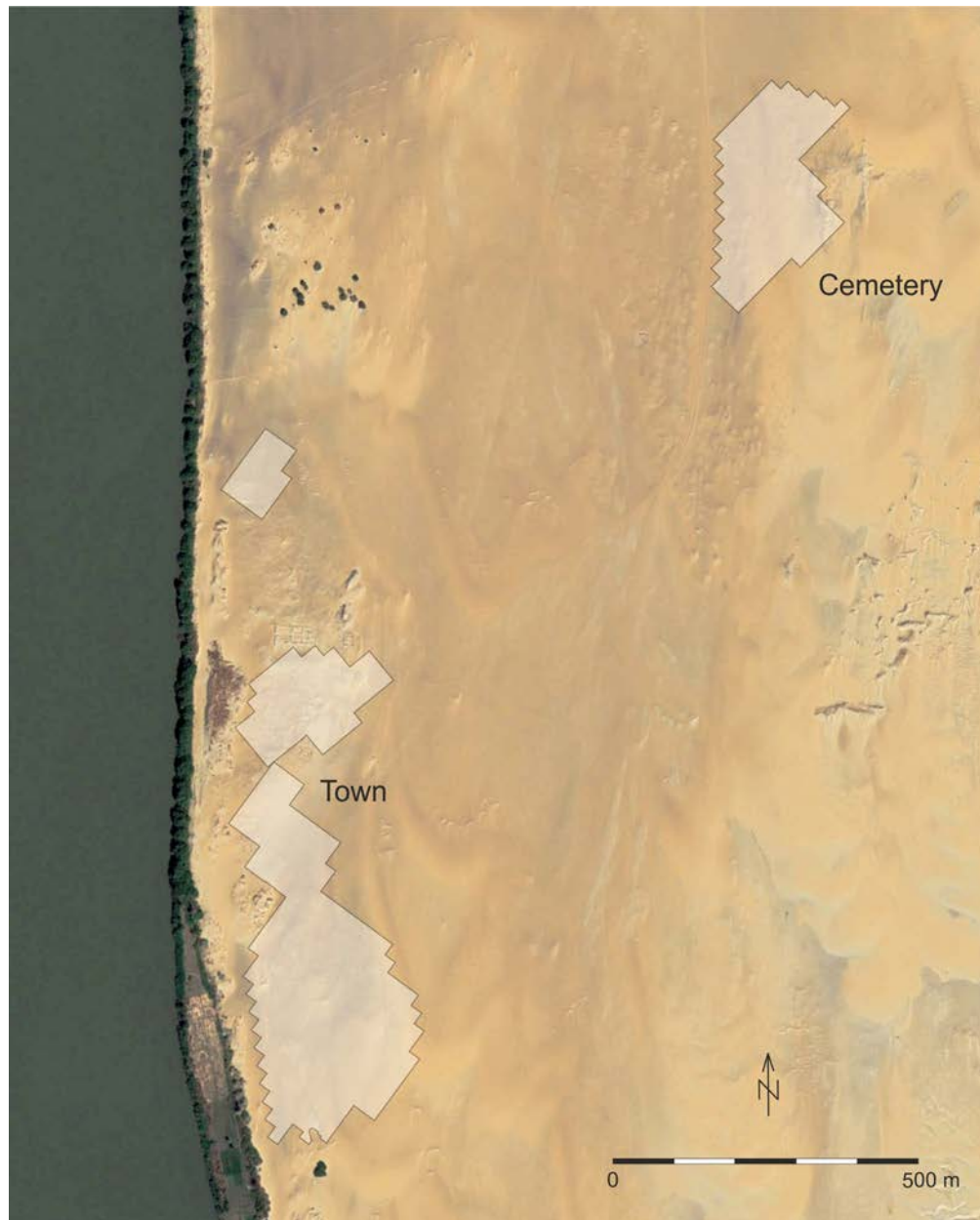


Figure 13.1. Location of the magnetic surveys on a Google Earth image (Map data © 2017 Google).

at el-Hassa (Bière 2008), Hamadab (Goldman *et al.* 2007) and the Royal City in Meroe (Mohamed Ali *et al.* 2012).

Wherever different kinds of building material had been used in antiquity, the integration of the georadar method with magnetic prospection has proved highly effective. This approach was applied for the first time at Hamadab, and subsequently at Old Dongola and Soba East. In the case of Hamadab, measurements by the georadar method revealed a very clear plan of the architecture in areas where large concentrations of fired brick had made the results of the magnetic method unreadable (Ullrich and Wolf 2015). The same can be said of the citadel in Old Dongola (even though there the magnetic method provided a clear image of the settlement layout over large areas, Obłuski *et al.* 2021). At Soba East, which lies on Nile alluvium, the radar method provided results where the magnetic method proved useless, namely, tracing the layout of mud-brick architecture that offered little difference of magnetic susceptibility from

the surrounding Nile-silt matrix (Ryndziewicz *et al.* 2021, Herbich and Ryndziewicz 2022).

Measurement and data processing methods

The measurements at Kawa were taken with a Geoscan Research FM256 gradiometer recording gradient of the vertical component of the Earth's magnetic field intensity with a resolution of 0.1 nT. The sampling grid assumed eight measurements per square metre (every 250mm along traverses set 500mm apart). The basic survey grid square was 20 x 20m. The instrument sensors were adjusted at the reference point after every square. Measurements were taken in parallel mode, the instrument being carried in one direction (to the north west) in the area of the lower town and the sector north of the temple complex (prospection in 2008/ 2009). A zigzag mode (instrument carried in both directions along traverses) was used for taking measure-

ments in the area of the upper town (Area D) and in the cemetery. The traverses in the city area were oriented north west–south east in order to be set at an oblique angle to the known alignment of the urban architecture which generally followed the cardinal directions. This orientation allows for the recording of walls much thinner than the spacing of the traverses (which could be lost if traverses run parallel to the architecture, e.g. see Herbich forth. b). The same is true of the cemetery, where the traverses were aligned at an oblique angle to the long axis of the graves (perceived as the line of symmetry of the *dromos* and chamber taken together) in order to obtain more precise outlines of individual grave.

The measurement data were processed using Geoplot software. The way the measurements were taken determined the choice of algorithms for the processing. Measurement data obtained in parallel mode during the first survey in 2008/9 were processed for publication (Welsby 2009) with an edge matching algorithm designed to equalize differences of mean values between the squares of the grid, sporadically a deslope algorithm correcting the gradual mean change of values within the grid, and interpolation to a 250 x 250mm grid. The data from the upper town obtained in 2017/18 in zigzag mode were processed implementing the edge matching algorithm and correction of average value differences between even and odd traverses. With regard to the cemetery, a zero mean traverse algorithm was implemented, eliminating the mean value differences between traverses; destagger was applied to counter shift in values on adjacent traverses due to the instrument moving in two directions. The lower town and the southern part of the upper town, published in this study, were processed with a zero mean traverse algorithm.

The results are presented as a mapping of the vertical gradient of magnetic field intensity (henceforth: magnetic maps). For the town area, a positive convention was adopted for the maps (black for extreme positive values, white for extreme negative ones); for the cemetery, negative (opposite correlation, that is, white for extreme positive values and black for extreme negative ones) maps were prepared.

The maps of the town area are presented in full scale, covering the entire site (Figure 13.4) and as detailed representations of particular districts (Figures 13.5, 13.7, 13.9, 13.11, 13.13 & 13.15). Districts had to be distinguished in order to improve the readability of the published results and the reconstructions based on these results (Figures 13.6, 13.8, 13.10, 13.12, 13.14 & 13.16). A 20m grid was applied to the maps of given districts, described by letters and number coordinates on the x and y axes, providing the author with a tool to localize with greater precision, if he deemed necessary, particular features discussed in the commentary.

Survey results from the town area

Three areas of the site were surveyed: the lower town, the upper town and the area north of the temple complex (Figures 13.1 & 13.2). The lower town is currently a flat alluvial plain, reaching to a series of plant-covered dunes on the west, beyond which the ground slopes down toward the eastern bank of the Nile. The upper town occupies the highest eminence of the mound, touching the temple complex



Figure 13.2. Location of the magnetic surveys in the town area superimposed on a Google Earth image (Map data © 2017 Google).

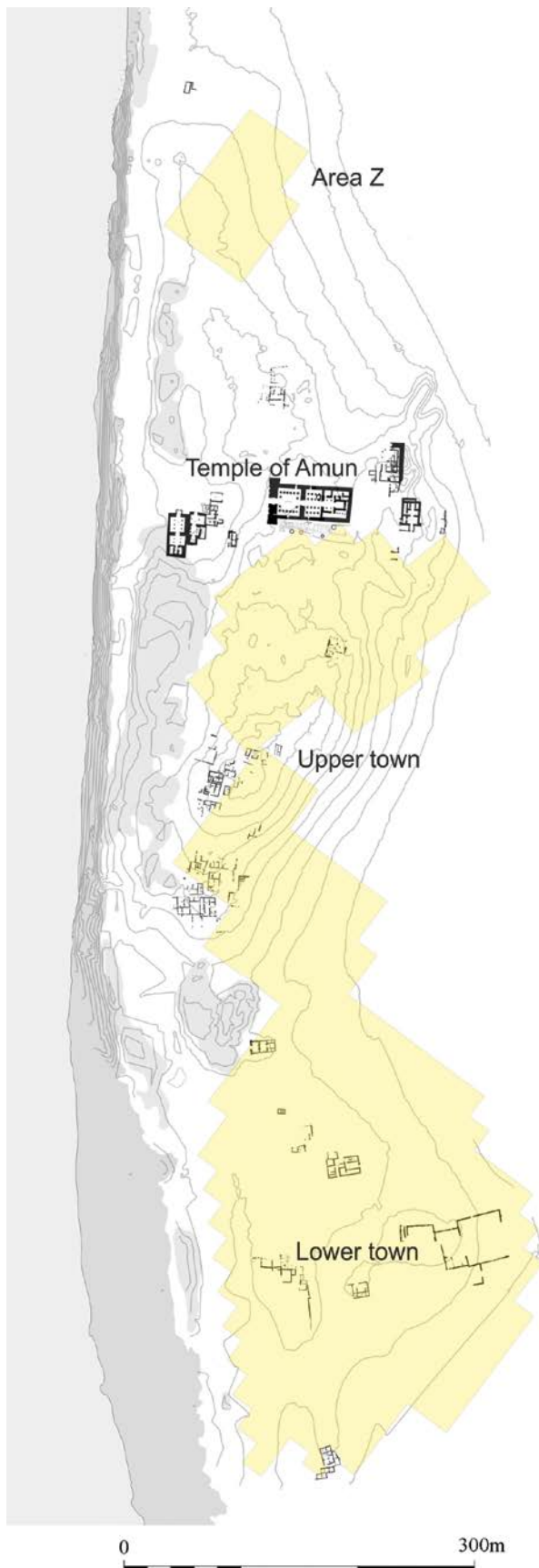


Figure 13.3. Location of the magnetic surveys in the town area superimposed on a site map.

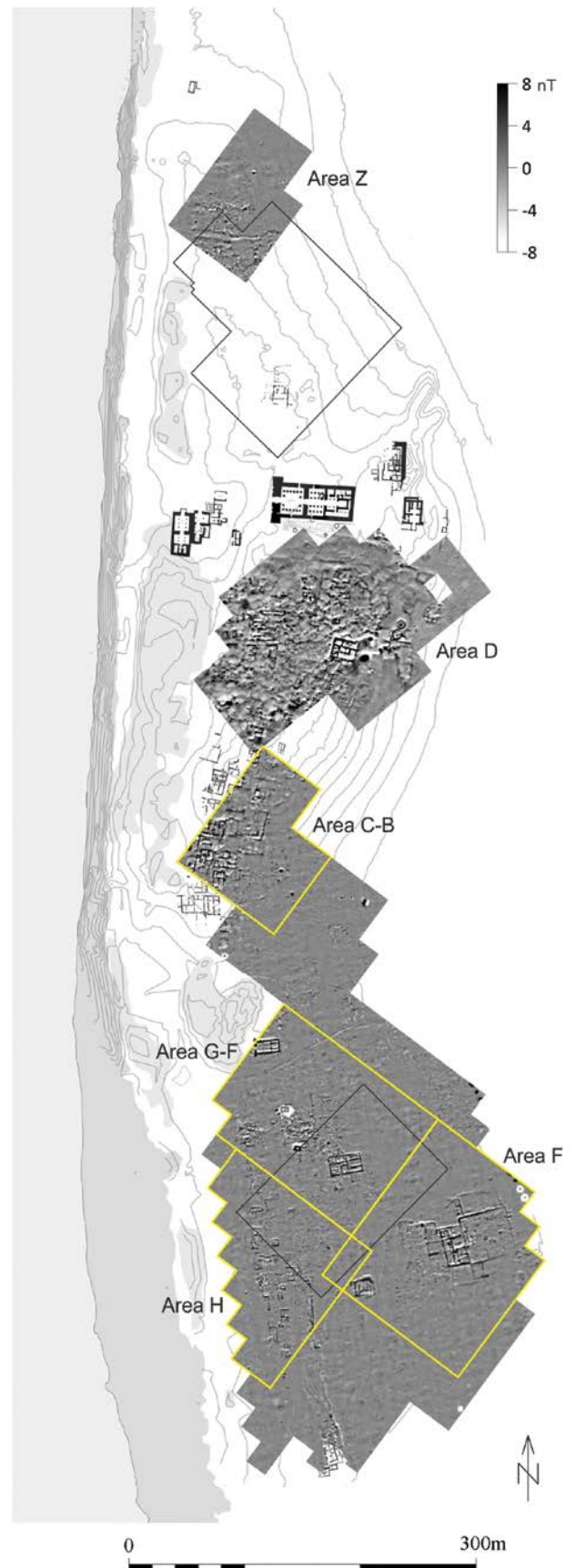


Figure 13.4. Magnetic maps of the town area with location of areas shown in Figures 13.5-13.16. Solid line marks the area surveyed with the GPR method.

on the north (Figure 13.3). The surface here is covered with low dumps and shallow depressions being the result of both archaeological explorations and digging for *sebakh* in the past. The zone extending farthest to the north, marked as Area Z (Figures 13.2-13.4), reflects the northernmost extent of surface archaeological material construed as evidence of settlement occupation.

The architectural remains indicated on the site plan (Figure 13.3) have been explored archaeologically, either as a broad-scale cleaning of wall tops without digging to trace the urban layout or in-depth excavation of selected features. As a result of this work, the following buildings or fragments of buildings were identified within the survey area: in the lower town, F1, F2, F11, the F4/F5/F10 complex, G1, a series of fragmentary structures H2–H11, and in the upper town, buildings B1–B4, B7, B9 and B11, C1, C4, C5, C12, C13, C16, D1 and T8 (Figures 13.6, 13.8, 13.10, 13.12, 13.14 & 13.16).

The lower town

The measurements in the lower town revealed an uneven density of architectural remains (Figure 13.4). A dense

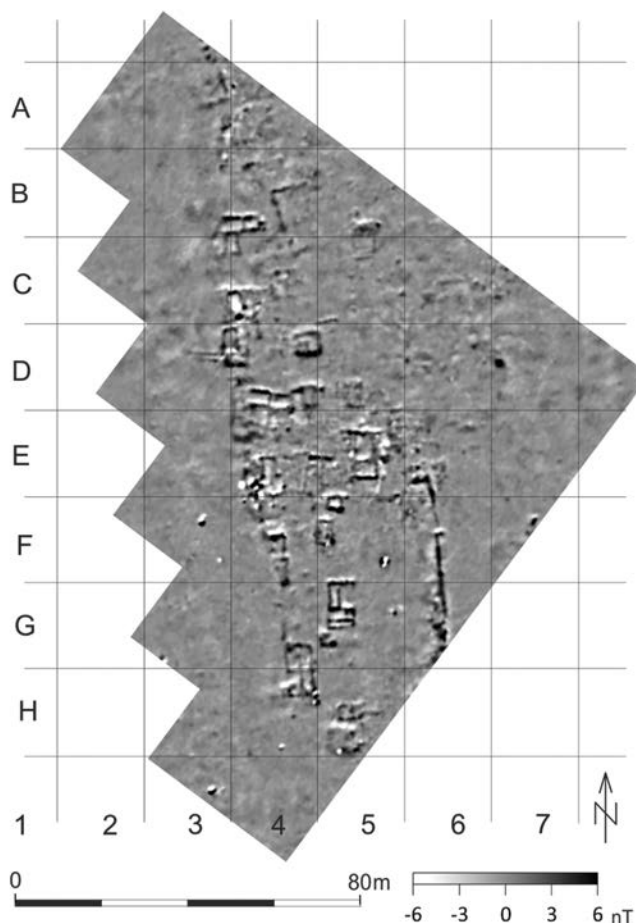


Figure 13.5. Area H. Magnetic map.

layout can be observed only along the western edge of the surveyed area, in a zone with a distinct western edge, measuring about 200m from north to south and from 20m to 50m across (Figure 13.5). The uniform magnetic field intensity values west of this zone indicates an empty zone that was not settled at any time. In the southern part of the surveyed

area, the architectural remains are located 40–50m from the edge of a low alluvial terrace now under cultivation. The distance of roughly 140m to the present river bank suggests that in the Kushite period the river must have been much closer to the inhabited areas. Data from the measurements enabled an improved mapping of buildings known from earlier archaeological surface cleaning (between Buildings H2 and H3, Figure 13.6), and revealed that the architecture observed alongside the riverbank was similarly aligned (deviations of no more than 5°). There is no evidence in the data of any kind of dense building in the area between the F4/F5/F10 complex, Building F2 and the temple, Building G1 (Figures 13.8 & 13.10). The only clustering of architecture, partly tested archaeologically (Buildings F8 and F9), is noted in the area to the east of the kilns, Buildings F3 and F7 with ephemeral traces of others (Buildings F12 and F13 – see Welsby this vol., fig. 7.1) lying between the kilns (Figure 13.10).

The measurements contributed new data on features that were traced provisionally when the wall tops were cleared. The biggest difference was noted in the F4/F5/F10 complex, where the magnetic survey in courtyard F4 revealed the presence of oval anomalies approximately 1.5m on

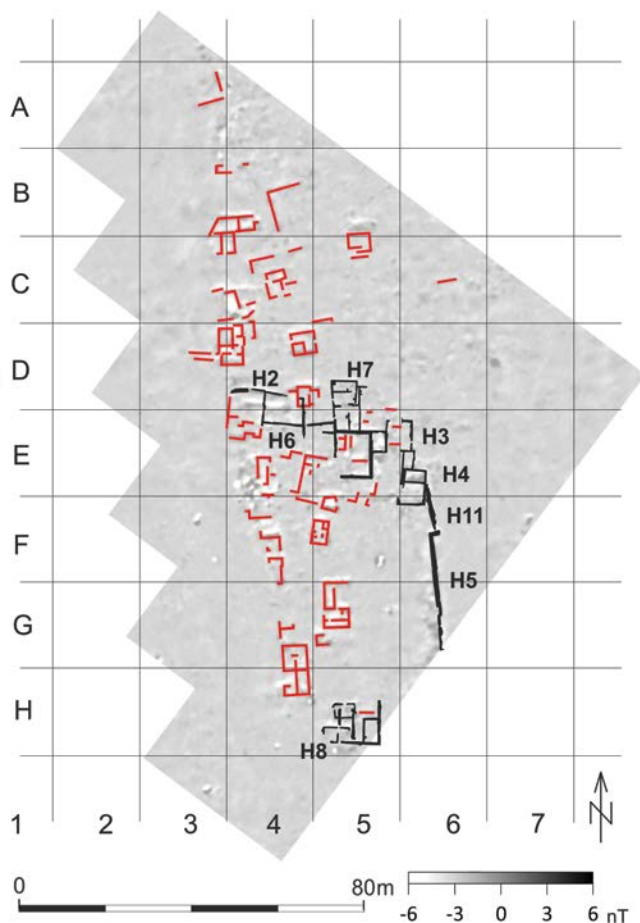


Figure 13.6. Area H. Interpretation map. Structures planed on the surface in black; structures reconstructed based on the magnetic map in red.

average (Figures 13.7 & 13.8). These anomalies were mostly positive (values reaching from 2 to 5 nT), aligned parallel to the courtyard walls, starting at a distance of about 3m

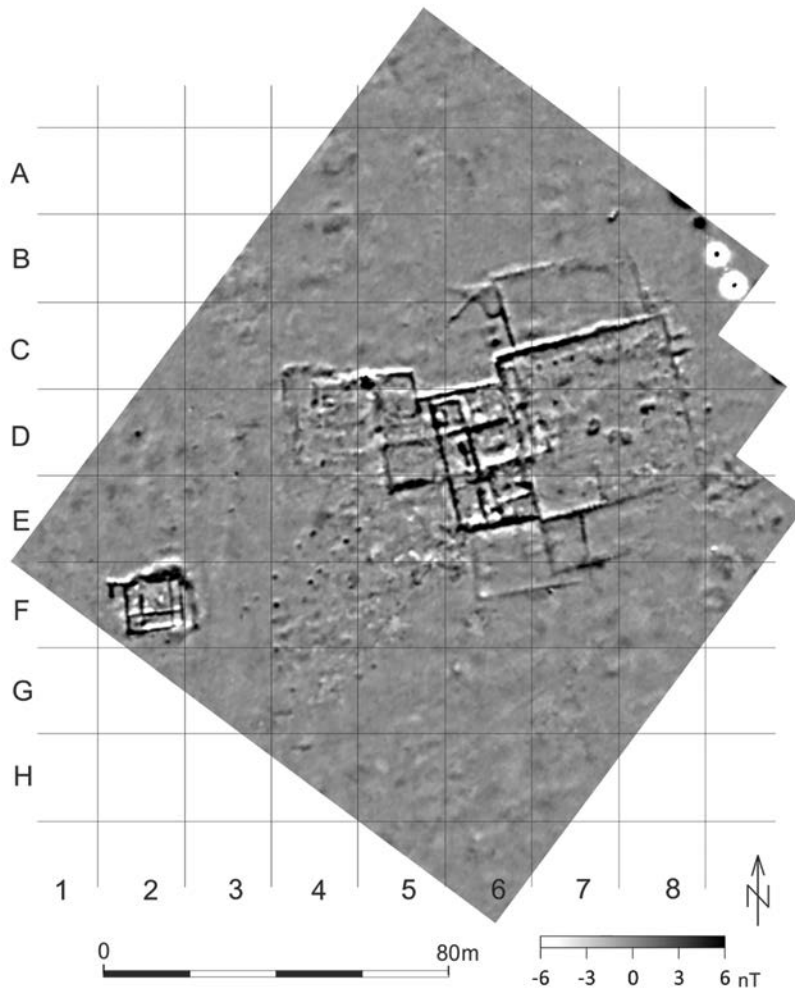
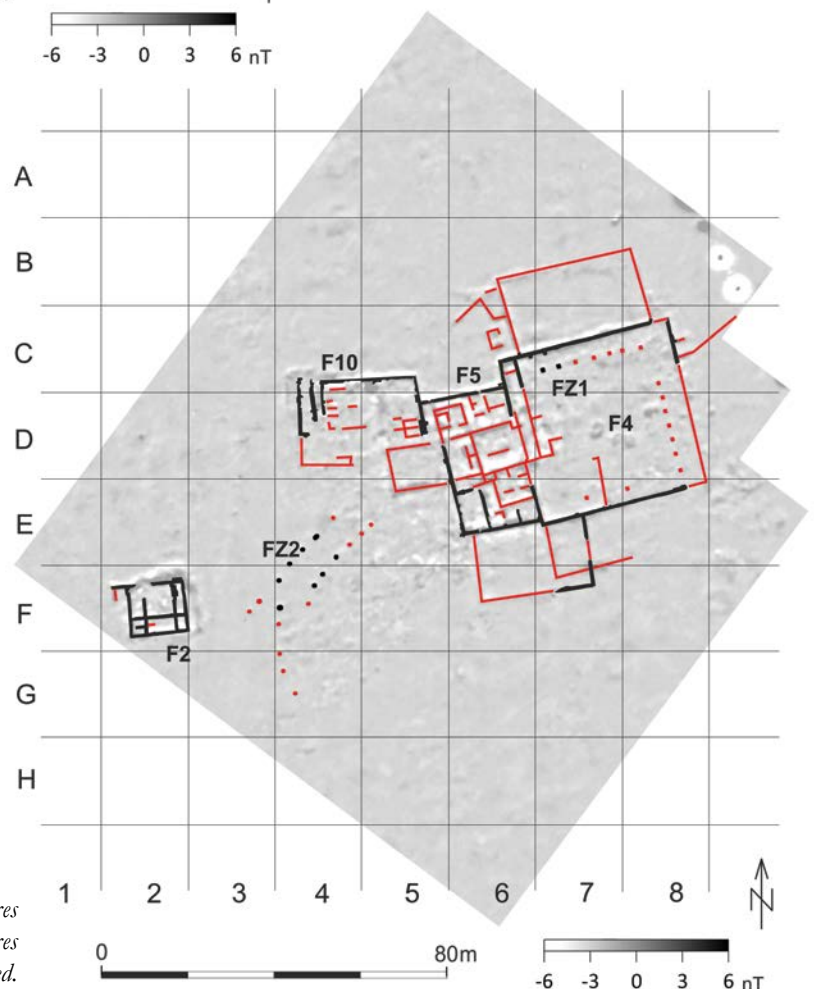


Figure 13.7. Area F. Magnetic map.

from the walls and repeated at fixed intervals of about 4m. They have been interpreted as pier bases forming a portico. The best visible anomalies by the north wall were tested archaeologically (FZ1) confirming the presence of a portico (see Welsby this vol., 170). Less distinct anomalies of a similar kind were observed by the east wall and two more anomalies by the south wall give grounds to reconstruct a portico there as well. The plan of the courtyard was supplemented with architecture by the west wall of the courtyard and a structure adjoining the northern section of the east wall on the outside. The latter could be the remains of a gate giving access to the courtyard from the east (in square C8, Figures 13.7 & 13.8). Remnants of partition walls were also revealed in the data from Buildings F5 and F10. The image seen in the magnetic data can be interpreted as a complex covering a much larger area than previously thought, among others, a large rectangular structure (31 x 17 m) north of courtyard F4, without

Figure 13.8. Area F. Interpretation map. Structures planned on the surface or excavated in black; structures reconstructed based on the magnetic map in red.



any evidence of architecture inside it but with annexes present west of it. Fragments of an analogous structure, without any architectural remains inside it, but with annexes on the eastern side, were also observed south of courtyard F4. The western part of this structure was captured in the magnetic image, establishing the width of the building at 12m. Another rectangular structure, again without any architectural remains inside it, is noted south of Building F5; its eastern end, traced during a ground survey, is superposed on the structure adjoining F4 on the south (on the border of squares E7 and F7, Figure 13.8), which – along with an orientation deviating 7° – indicates that it belongs to a different phase. The measurement data also illustrate yet another structure void of architecture on the inside, measuring 13 x 10m, located west of F5 in the southern part of square D5.

Point anomalies averaging about 1.5m in diameter were located in the area south west of the F4/F5/F10 complex. Positive values predominated here (ranging from 1.5 to 6 nT). The anomalies followed arching parallel lines. Comparison with anomalies of similar type known from other sites in the Nile Valley, dated from the Old Kingdom (e.g., Dahshur – Arnold 2018; Herbich 2019) to the

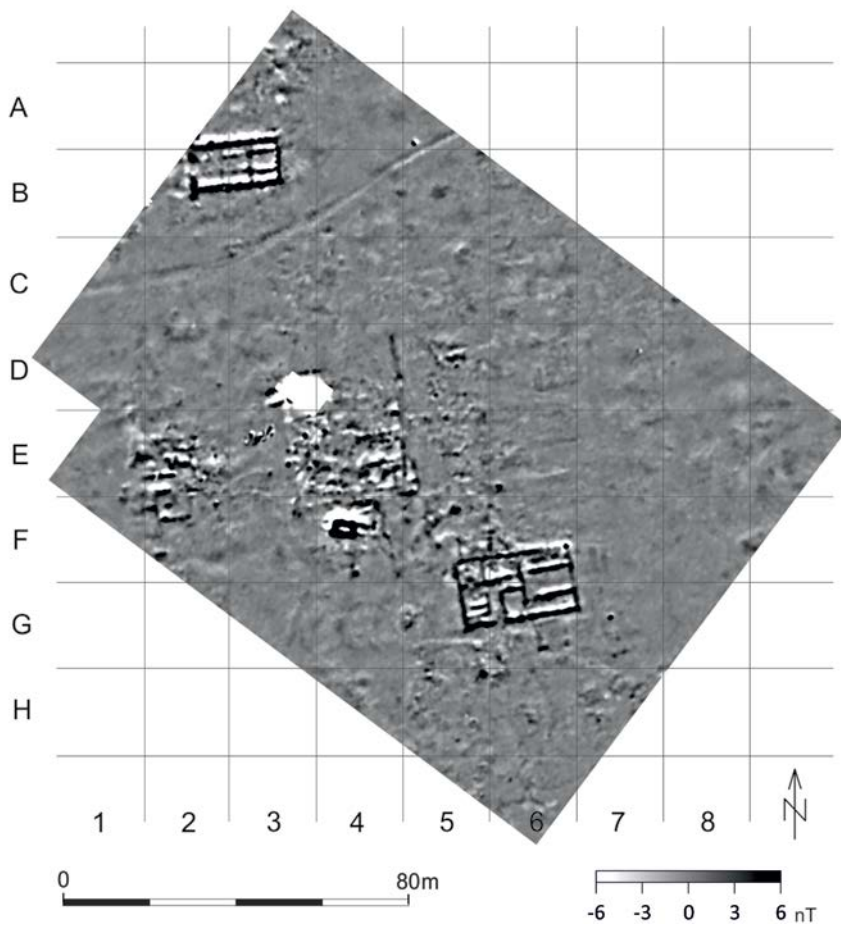
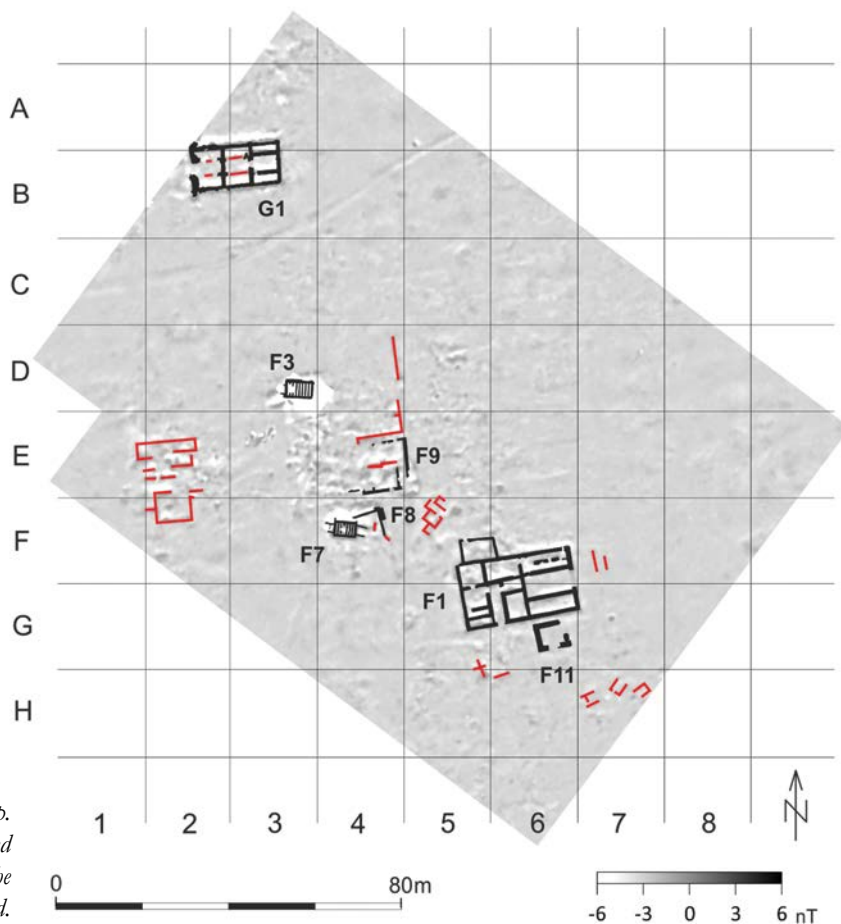


Figure 13.9. Area G-F. Magnetic map.

Christian period (e.g. Selib – Żurawski 2008), led to the interpretation of these data as pits filled with Nile silt intended for planting trees or bushes. The plants, placed in two rows, would have decorated the access path to the complex from the south east. Excavations on the spot (grid square (FZ2), Figure 13.8) did not confirm the presence of pits; the anomalies corresponded to rectangular or oval structures constructed of mud-brick, between 350mm and 500mm high. No convincing explanation of the function of these structures was put forward (see Welsby, this vol., 171).

The magnetic survey data helped to fill out the plan of the temple, Building G1, traced after the wall tops had been cleaned (Figures 13.9 & 13.10). Two rooms the width of the temple were set back of the pylon, leading to three parallel chambers, the central one of which, serving as the *cella*, was twice as wide as the lateral rooms. The walls between these three rooms were shown to be

Figure 13.10. Area G-F. Interpretation map. Structures planned on the surface or excavated in black; structures reconstructed based on the magnetic map in red.



extended through the two cross rooms, reaching the pylon.

Measurements revealed a series of irregular anomalies throughout the surveyed area. They were roughly oval in shape, from 2m to 10m in diameter, and demonstrated slightly higher values of magnetic field intensity compared to the surroundings (about 1–2 nT). They were interpreted as levelled pits (left from *sebakh* digging, for example). Irregular anomalies with amplitudes up to -3/+3 nT could correspond to areas strewn with mud-brick debris (e.g. in squares E5, F4 and F5, Figure 13.7). That anomalies of this kind are caused by brick debris was confirmed by the results of excavations in grid square (FZ2) (anomalies on the border between E4 and E5, see Welsby this vol., 171ff).

Anomalies of large amplitudes, observed by the eastern edge of the surveyed area in A8, B8 and B9 (Figure 13.7), were caused by metal fencing posts.

The upper town

The measurements in the upper town, which covered sectors designated as sector CB (southern part, Figure 13.4)

and D (northern part), contributed data that not only confirmed the dense urban layout on the highest parts of the site, identified already in earlier investigations, but also added new details to the layout of buildings that had been partly excavated before and provided the background for a tentative reconstruction of the network of streets and public open areas (squares).

In the southern part of the upper town, additions were

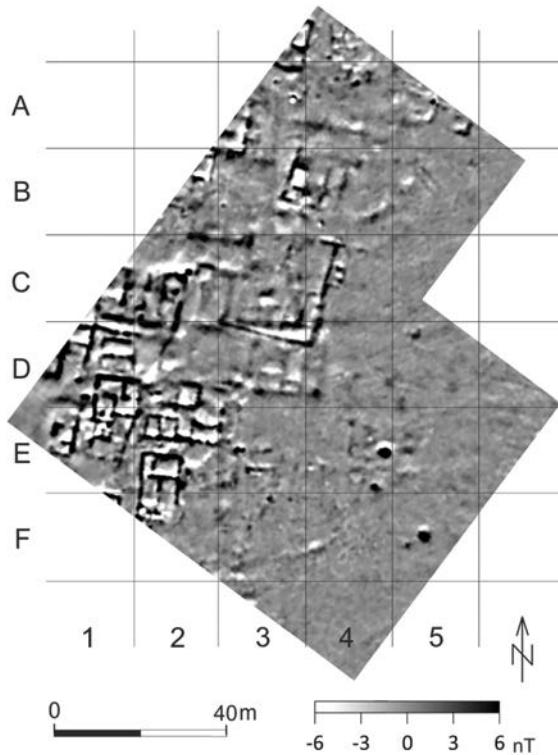


Figure 13.11. Area C-B. Magnetic map.

made to the known plans of buildings in the Building B3–B4 complex, and Buildings B11, C5 and C16 (Figure 13.12). The anomalies also reflected evidently superimposed buildings presumably from different time phases. For example, on the eastern side of the built-up area, in squares C3–C4, D3 and D4, one observes distinct anomalies corresponding to the south and east walls of a set of rooms (centered in square C3, Figure 13.11). The south wall clearly overlies a much less distinct complex of architecture which appears to form a square measuring 17m to the side, its orientation deviating about 7° from the alignment of the overlying structures with walls more distinctly imaged on the magnetic map.

The clarity of anomalies corresponding to house walls, especially in the southern part of the upper town, allowed for a reconstruction of passages between buildings, streets and open squares (Figures 13.12 & 13.14). The latter existed most probably north of Building B3, north and west of Building B7, and in squares C4 and A4 (Figure 13.12). The edge of the inhabited area is clearly traced on the magnetic map between squares F3 and A5.

Three oval anomalies can be seen in the area on the lower slopes of the mound, outside the densely built-up part of the town. The diameter of these anomalies is between 1.5m and 3m (in squares E4 and F5, Figure 13.12). The characteristics

of these anomalies, that is, their shape, amplitude of values and prevalence of positive values over negative ones suggests their interpretation as furnaces or kilns. The location of such installations beyond the line of buildings to the south of the town is logical in view of the prevailing northern winds. Any pollution that they would have produced thus been easily carried away from human habitations.

The interpretation of anomalies in the northern part of

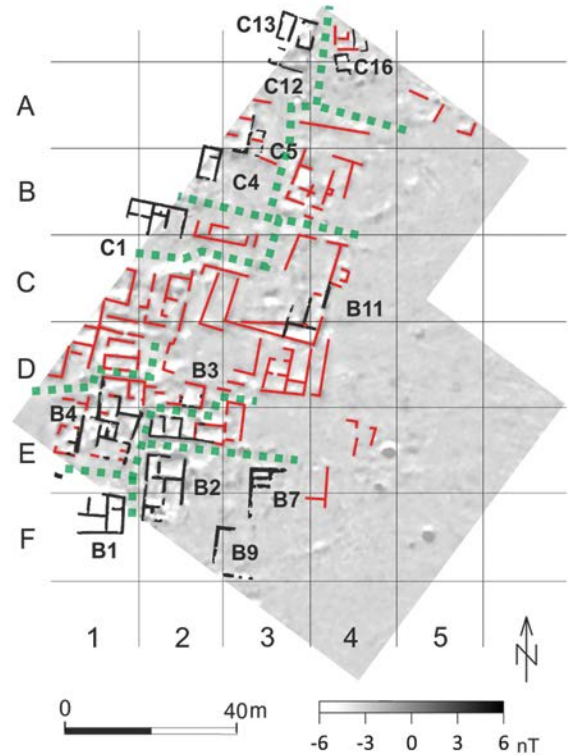


Figure 13.12. Area C-B. Interpretation map. Structures planned on the surface or excavated in black; structures reconstructed based on the magnetic map in red. Streets marked with a dashed green line.

the upper town has to take into account an additional factor, namely, the ground topography which is here uneven due to the archaeological excavations conducted in the area which have left a landscape of dug holes and low mounds. This results in anomalies of amplitudes resembling those corresponding to the presence of walls (Figure 13.13). Linear anomalies in rectilinear form, either parallel or perpendicular to one another, were searched for in the analysis of magnetic measurement data, distinguishing apparent structures of a similar orientation. This led to the identification of several architectural complexes that demonstrated a dense build-up of this part of the town (Figure 13.14). A changing orientation of the buildings is also evident depending on the location on the slope. In the western part of the site buildings are aligned with the Nile riverbank. The orientation changes by approximately 18° in the south-eastern part, apparently having to accommodate building position to the line of the slope.

The magnetic measurement data completed the plans of Buildings D1 and T8 whose walls were recorded on the surface and drawn (Figure 13.14). Considerable rises of magnetic field intensity values within anomalies corresponding to the walls of Building D1 suggest that the bricks

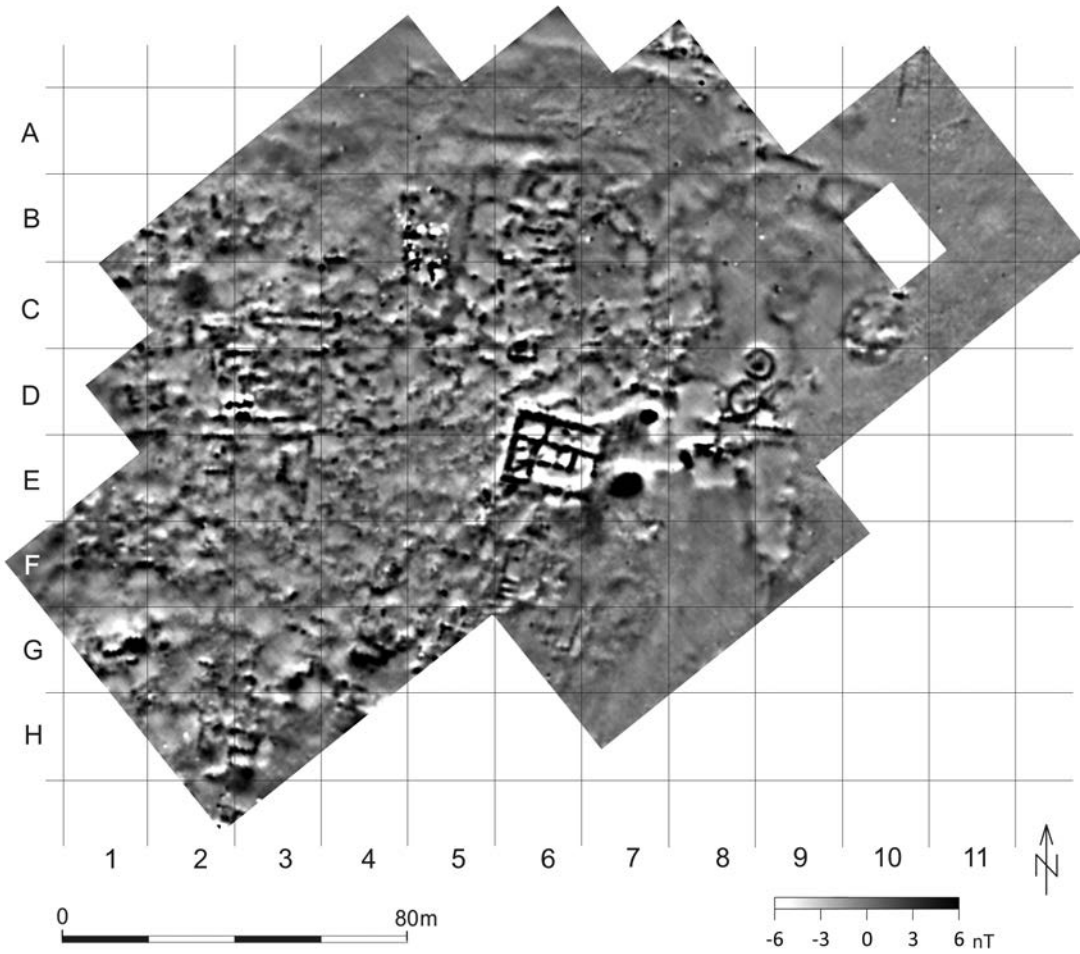


Figure 13.13. Area D. Magnetic map.

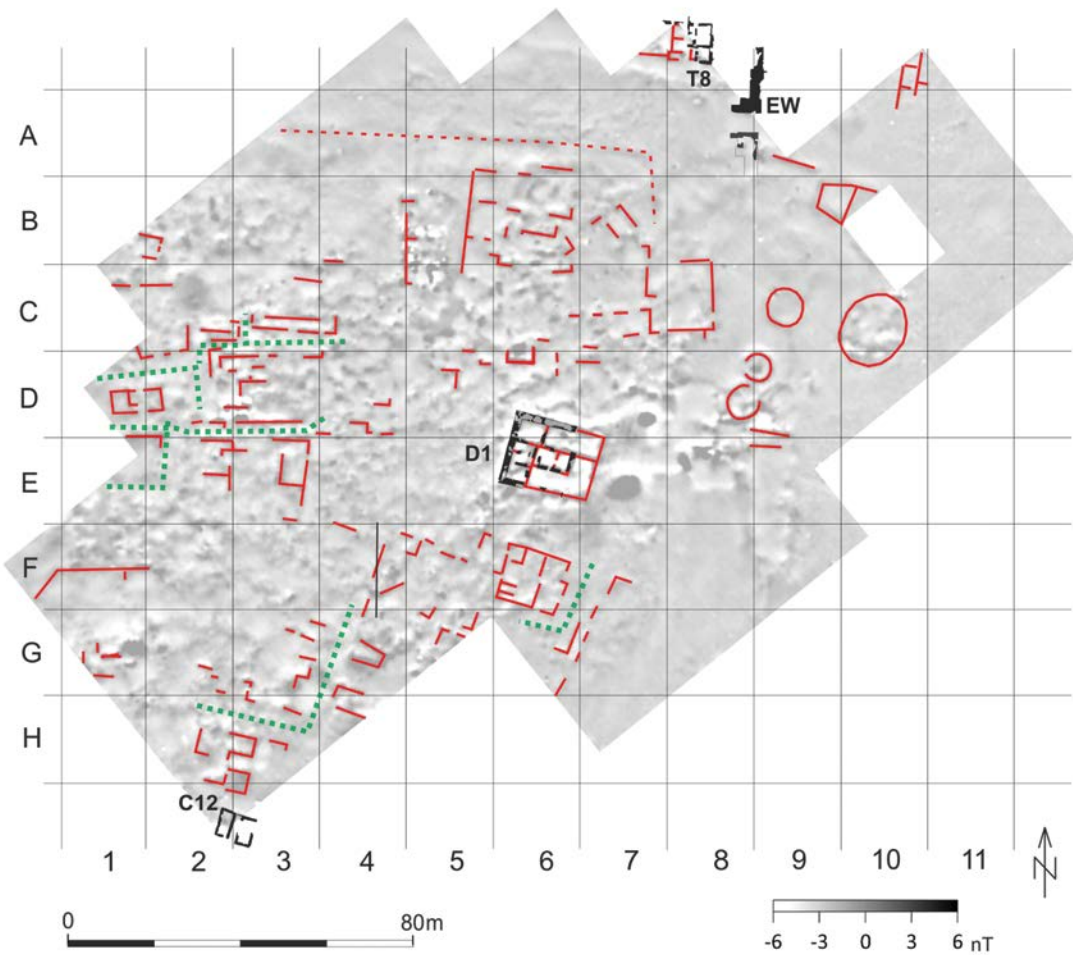


Figure 13.14. Area D. Interpretation map. Structures planned on the surface or excavated in black; structures reconstructed based on the magnetic map in red. Streets marked with a dashed green line.

in some parts of these walls had been burned. Of interest is a structure seen in the eastern part of B5. The arrangement of the anomaly suggests a building oriented north–south, composed of three rooms situated in a line.

At least four circular or ellipsoid anomalies, with diameters from 5m to 17m, were observed in the north-western part of the surveyed area, clearly outside the built-up area (Figures 13.13 & 0.14). The most distinct of these structures (on the border of squares D8 and D9) have gaps in the circumference.

The arrangement of anomalies in the southern and western parts of the upper town enabled the tracing of the line of several streets (Figure 13.14).

Anomalies typical of furnaces/kilns are also clearly visible in the eastern part of the upper town. Three anomalies of this type, with differentiated diameters (about 2m, 3m and 6m), are observed east of Building D1 (in squares E7, D7 and the north-western corner of E8, Figure 13.13). Two adjacent anomalies of a similar nature, roughly 1.5m in diameter, adjoining an anomaly corresponding to a wall, could reflect furnaces/kilns situated by the wall (in the south-western corner of D3).

The survey in the northern end, which was intended to trace the southern section of the Amun temple enclosure wall (the gateway revealed by excavation is designated as EW on Figure 13.14 – see Welsby this vol., 177ff), Surprisingly, given the massive nature of this wall on its eastern side, no evidence was found in this area. Nonetheless, the magnetic mapping captured a linear anomaly running east–west (between the central part of square A3 and the

southern part of A7). This line marks the northern extent of the inhabited built-up zone in the upper town (for this see Welsby this vol., 30ff).

The area north of the temple complex (Area Z)

Measurements in this area revealed elements of the topography visible on the ground, namely hollows left by *sebakh* digging and plunder holes in the southern part compared to the level surface present in the northern part (Plate 13.1) which drops away gradually to the north and east. The anomalies observed on the magnetic map of the southern part of this area are typical of disturbed surface layers. They end along the southern border of squares C2, C3 and C4, which is also where the uneven topography of



Plate 13.1. General view looking north across Area Z (photo: D. A. Welsby).

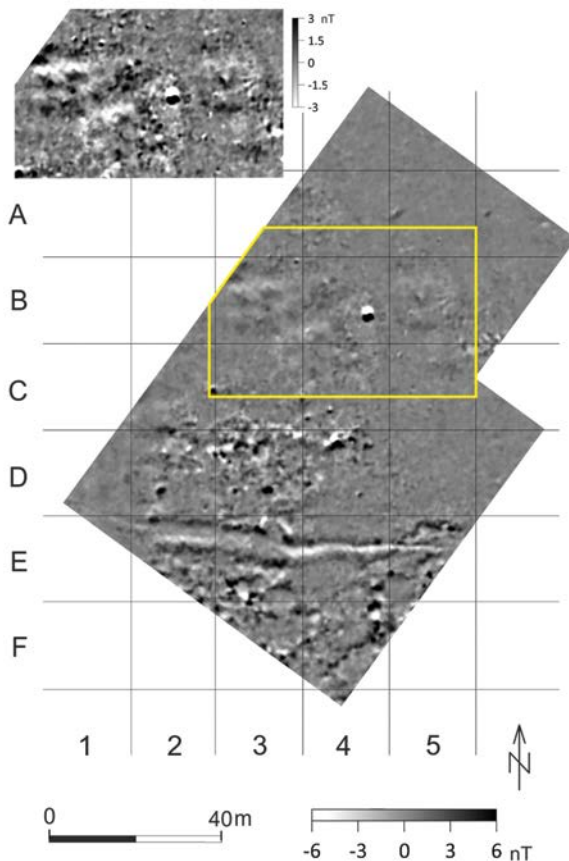


Figure 13.15. Area Z. Magnetic map. Yellow box marks location of the map presenting a narrow range of values (-3/+3 nT).

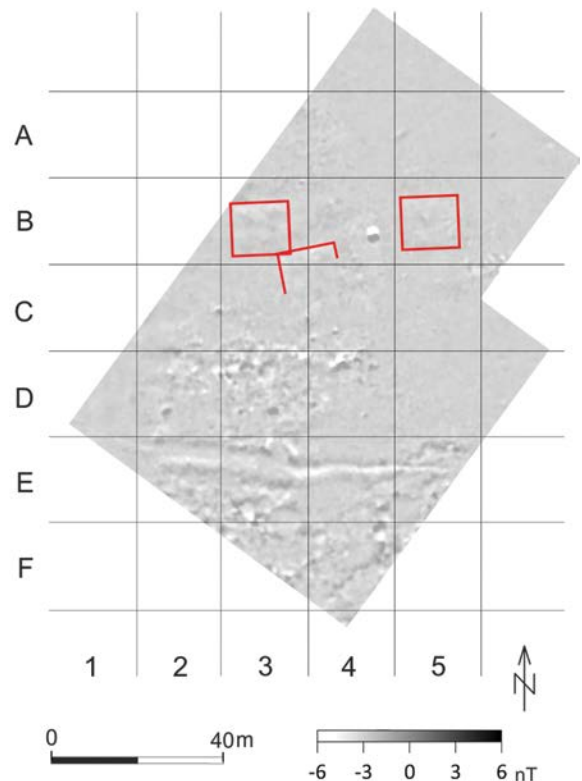


Figure 13.16. Area Z. Interpretation map. Structures reconstructed based on the magnetic map in red.

the southern part of the area ends (Figure 13.15). The shape and arrangement of these anomalies give no grounds for reconstructing any kind of architecture in this spot. The long anomaly, up to 5m wide, cutting across the ground from east to west (between squares E2 and E5) corresponds to a modern irrigation ditch with its upcast mounds.

Data analysis in a narrower value range of the measurements taken in the northern part of the area has revealed two square structures with an identical orientation, measuring 13m to the side (squares B3 and B5, Figure 13.15, box; Figure 13.16). They are about 26m apart. The lowered values indicating the place of these features suggest stone architecture (it could also be brick with a high sand content). The western of the two features is more distinct on the map. The arrangement of the anomalies suggests a division into four units of similar dimensions. The northern part of a third structure of analogous size can be traced on the map directly south east of the western feature; its orientation is different. An oval anomaly measuring roughly 4m on the long axis, characterized by a high amplitude of values (south-eastern part of square B4, Figure 13.15) corresponds to an iron object lying close to the surface.

Survey results from the cemetery – site R18

Site R18, the Kushite cemetery, is located in the alluvial plain north east of the town (Figure 13.1). Severe aeolian erosion has led to the almost total disintegration of the above-ground mud structures in the cemetery (leaving only the remains of stone tomb monuments and a few traces of mud-brick examples).¹ Strong winds have also affected the sand cover in the plain, exceeding 1m thick in places while leaving other spots denuded down to the underlying alluvium. The area in the northern part of the cemetery chosen for geophysical prospection was located between the modern track on the western side and the excavated Area J on the eastern side (Figure 13.17). Only the extreme southern end of this sector was devoid of the sand cover (the dark-coloured surface in the southern corner of the surveyed area, Figure 13.18). At the time that the measurements were taken, the thickest sand cover was noted in the part adjoining the south-eastern edge of the surveyed area.

Earlier archaeological research in the cemetery had identified the different burial types (see Welsby this vol., 360). Taking into consideration how a given type could be reflected in the magnetic data, three categories can be distinguished: oval-shaped pit graves (which may have a niche or chamber cut in the alluvium on the western side); pit graves with a short steep access on the east; chamber tombs with a descandary cut into the alluvium, a maximum of 3m deep, approximately 1-1.5m wide and at least 4-5m long. Measurements with a kappameter of graves that could be traced in the area without sand cover demonstrated a lower magnetic susceptibility of the fill of pits and descandaries compared to the surrounding alluvium. The lower susceptibility results from the lesser coherence of this fill

¹ The rectangular stone-edged tomb monument measuring 2.93 x 2.14m which was partly revealed immediately below the surface in 1993 (see Welsby this vol., 372, Plate 12.4) does not appear on the magnetometer survey. [editor's comment]

with sand mixed in. Therefore, graves of the first category should be represented in the magnetic data by oval-shaped anomalies with lower intensity values, those of the second category by similarly oval-shaped anomalies, which would be slightly elongated in view of the short descandaries. Finally, the tombs with the long descandaries would be reflected by anomalies with a distinctly elongated outline (Figure 13.19).²

Archaeological excavations demonstrated the role of two other factors in producing the ultimate shape of the anomaly, that is, the state of preservation of the burial chamber and the degree of plundering by tomb robbers. In several cases where the ceiling of the chamber was close under the surface, the overlying layers were eroded to the point that the ceilings had collapsed. The resulting depression was filled with sand which presented a distinctly lower magnetic susceptibility than the surroundings. Pits dug by the robbers, usually at the western end of the descandary, created a similar effect in terms of the distribution of magnetic intensity values. The sand fill of these depressions was formed in a process similar to the natural one described above. As a result, the tombs with descandaries and a pit in place of the burial chamber would be imaged on the magnetic map as a long anomaly with a notable drop of values of the magnetic field above the robber's pit. In view of the standard orientation of these tombs with the burial chamber on the west and the descandary on the east, such major drops in magnetic intensity should be expected at the western end of anomalies of this kind.

The results of the measurements demonstrate an uneven distribution of graves within the surveyed part of the cemetery as well as a different density of graves within individual clusters. Observed differences in the geomorphology of the area affect the distinctness of anomalies corresponding to tombs. Graves occupy a zone roughly 50m wide along the western edge of the area (Figure 13.19). A group of graves visible in rows C and D of the map grid adjoins this zone; it has a distinct cut-off boundary by the eastern edge of these rows. The next group of graves can be seen in the central part (diameter of about 50m, centered in square F3) and in the south-eastern part, in squares F4-F5 and G4-G5. A distinct change in the geological ground structure is noted at the northern end of the area, the boundary running more or less along the border between rows B and C, then turning north east in square B5. Magnetic susceptibility north of this boundary shows a much lesser difference between the graves and the surrounding matrix, presumably because of the much higher sand content in these layers. Still, a distinct concentration can be observed stretching from the northern edge of square C4 beyond the northern extent of the surveyed area.

The identification of categories of anomalies corresponding to different types of tombs enables an analysis of the nature of the tombs located in different parts of the cemetery. Tombs with descandaries prevail mostly in the

² Note however that the severe erosion in places, which has removed up to several metres of alluvium below the Kushite ground surface, means that unless parts of a monument can be associated with a grave the level from which the grave was excavated cannot be ascertained. Some of the graves with short descandaries may simply be ones where the upper parts of a longer descandary has been removed by erosion. [editor's comment]

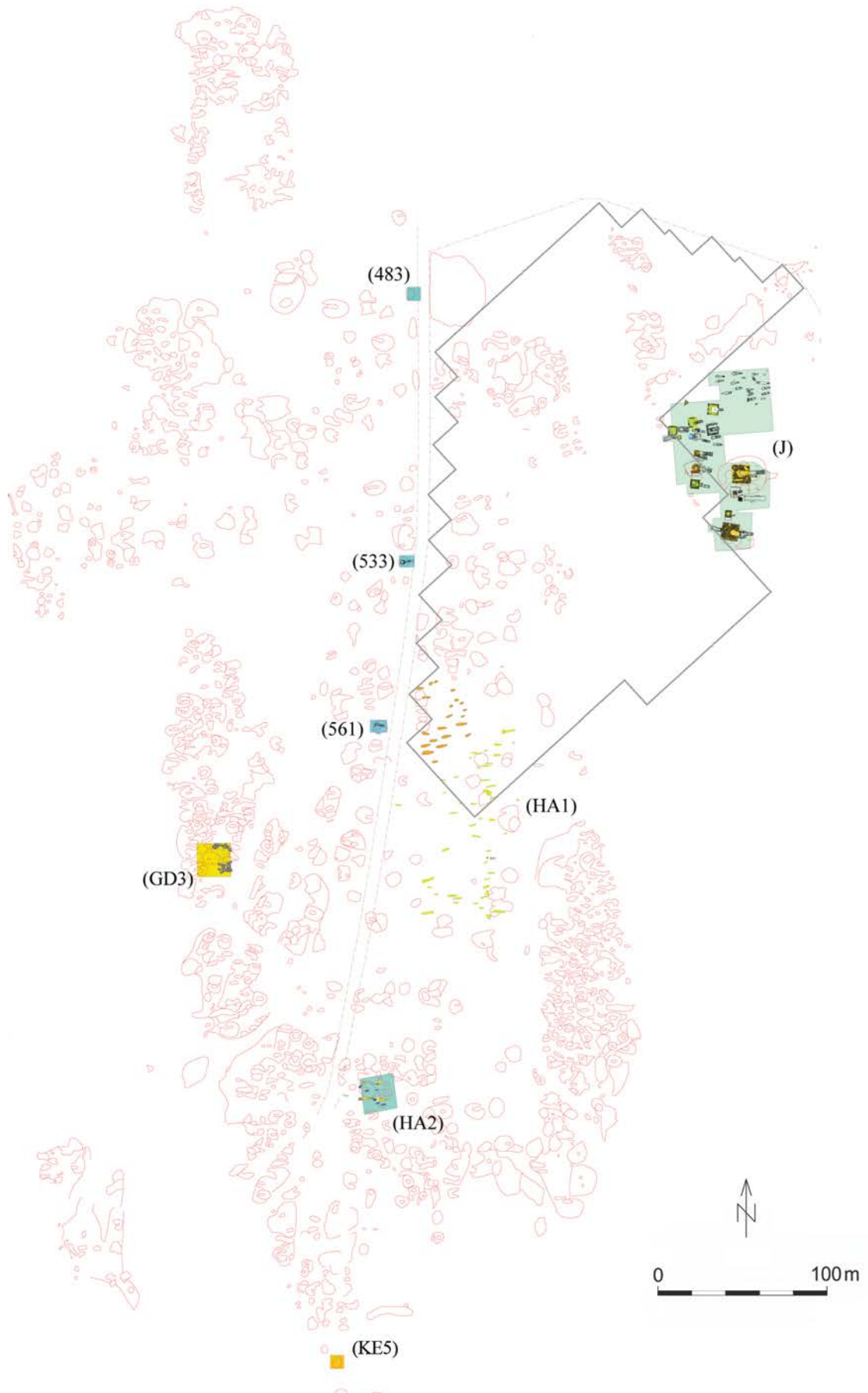


Figure 13.17. Location of the magnetic survey on the map of the cemetery (site R18).

Figure 13.18. Cemetery (site R18).
Location of the magnetic survey
superimposed on a Google Earth image
(Map data © 2017 Google).



western part of the surveyed area, whereas the simplest pit graves are more common in the eastern and northern sectors. The arrangement of the anomalies does not indicate any set plan for the location of individual tombs. Exceptions to this are the tombs with descendaries in the northern part of D2 and southern of C2, where the burials are evenly spaced and aligned north–south along one line,

and the more widely spaced burials at the eastern border of E2 and F2 (Figure 13.19).

Anomalies of larger size, either oval or irregular in shape, measuring between 5m and 10m in diameter, can be interpreted as large, presumably robbers' trenches. Pits of more regular shape (e.g., the roughly rectangular anomaly in the north-eastern corner of F4) could reflect archaeological

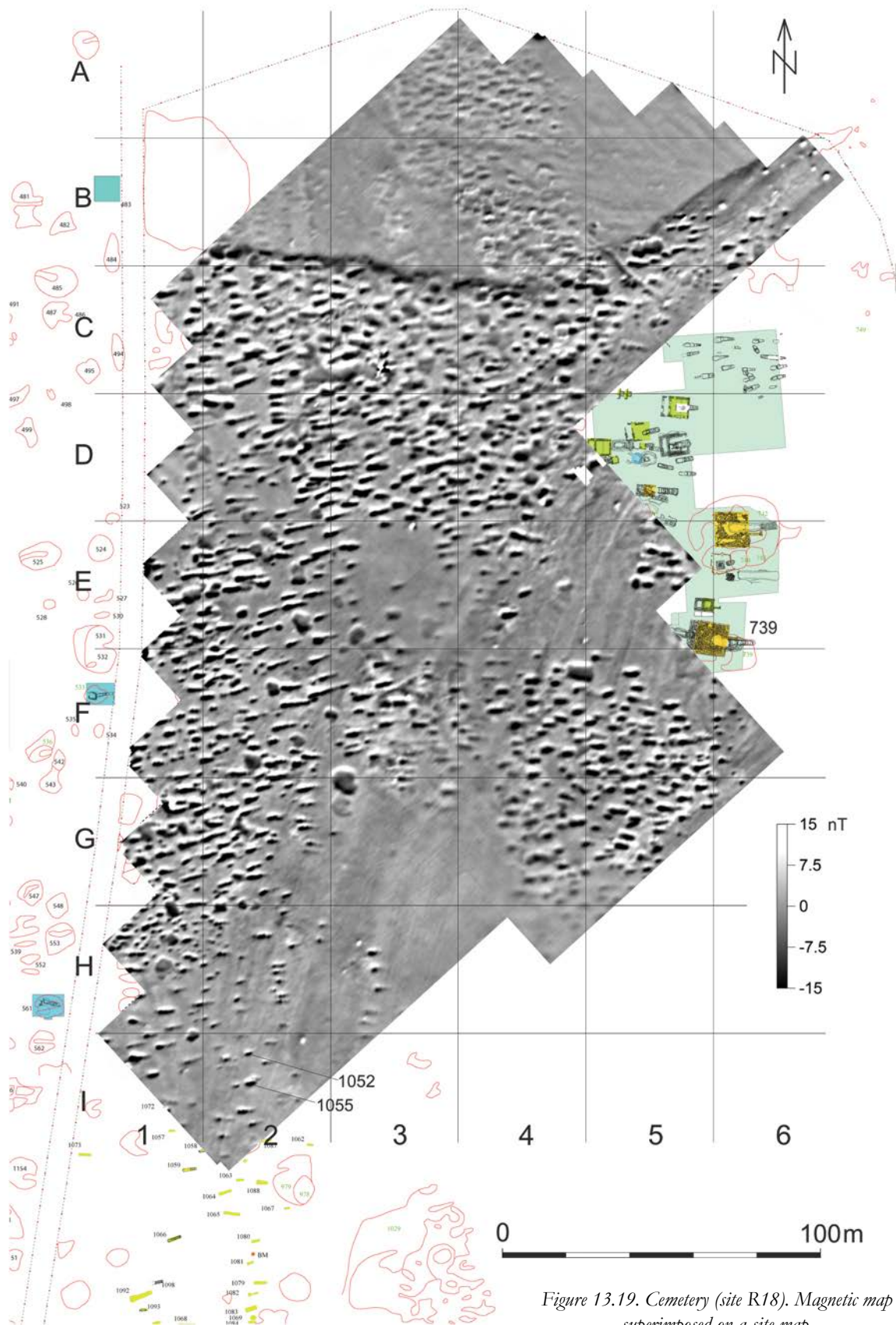


Figure 13.19. Cemetery (site R18). Magnetic map superimposed on a site map.

excavations that have failed to be recorded in published sources.³

³ The location of the three graves excavated by Griffith in the cemetery is unknown. [editor's comment]

Archaeological testing in Area (HA1), at the southern end of the surveyed area where the sand cover is missing, verified the results of the magnetic prospection (Figure 13.20). Based on an analysis of the mapping of magnetic data, it was possible to identify about 20% more graves

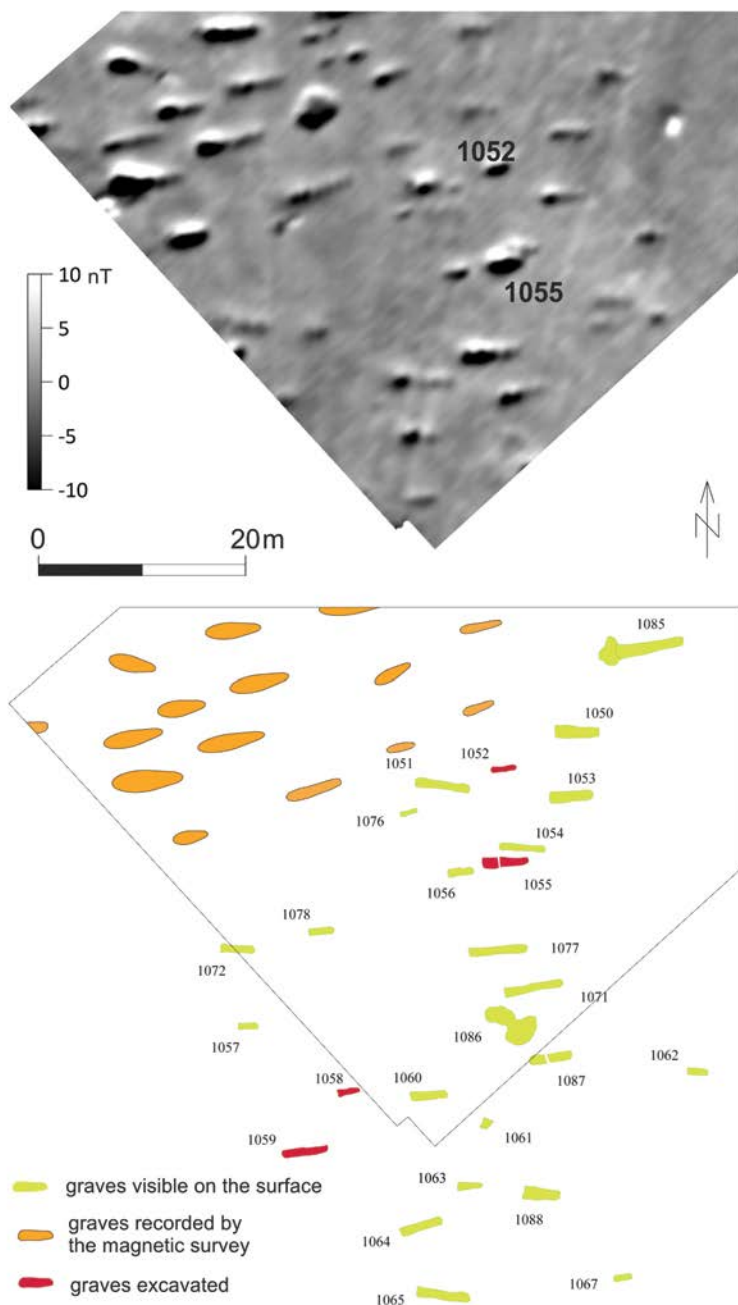


Figure 13.20. Cemetery (site R18), Area (HA1). Above: fragment of the magnetic map. Below: location of burials in the area shown in the magnetic map.

than what the surface survey based on field observations had indicated.

Concluding remarks

The magnetic survey at Kawa has contributed significantly to the understanding of the site, both the town and the cemetery. In the town, the results filled out the plans of buildings that had already been partly excavated or at least cleared on the surface to observe the course of walls. Measurements in the western part of the lower town revealed the presence of architecture extending alongside the Nile bank. The eastern borderline of the architecture as shown on the magnetic map allows the riverbank from the 1st millennium BC to be traced. The results confirm conclusions drawn from a ground survey indicating a lesser architectural density in

the eastern part of the lower town compared to the western part. This is in agreement with the GPR results, which revealed the presence of architecture only in the places suggested by the magnetic data (see Kay and Hay this vol.).⁴

Measurements in the upper town confirmed the dense nature of the architecture in this part of the site, contributing additional data on the plans of already excavated buildings. An analysis of the arrangement of anomalies corresponding to individual buildings supplied enough data for a tentative reconstruction of part of the street network. Evidence of industrial activity in the form of remains of furnaces and/or kilns was noted east of the built-up part of the town.

Measurements in the area north of the Amun temple and a section of dense architecture identified in the GPR research suggested the presence of freestanding structures, possibly built of stone and apparently quite monumental. At some point in the development of the city, these structures could well have marked the northern extent of the site.

In the cemetery the magnetic survey yielded a very clear plan of the burial ground, tracing distinct outlines of individual tombs with sufficient precision to suggest their types. It is also possible, based on these data, to define grave density and trace possible regularities of location, thus contributing to the knowledge of Kushite burial practices.

The results of the magnetic measurements, taken in conjunction with the results of the GPR survey, the surface surveys and the excavations, constitute a solid base for future archaeological investigations at Kawa.

⁴ It must be borne in mind that in some areas the Kushite ground surface may have been totally removed by erosion which would account for apparently unoccupied zones which may have, in the Kushite period, been low mounds. See for example Building F11 surviving to a maximum height of one course of bricks below the present ground surface notwithstanding its walls being over 1m thick (Welsby this vol., 153), and the total removal of the southern end of the walls of Building B14 (Welsby this vol., 92). [editor's comment]

14. Ground-Penetrating Radar (GPR) survey at Kawa

Stephen Kay and Sophie Hay

Summary

In 2014 as part of the research programme at the site of Kawa a Ground-Penetrating Radar (GPR) survey was undertaken at two different locations within the town. This chapter describes the results of a 3.5-hectare non-invasive survey of the ancient Pharaonic and Kushite town. The technique was successful in mapping a significant number of structures in the northern part of the town and supported the results of previous magnetometry survey in the southern part of the town.

Introduction

The results of the GPR prospection help to place the extensive research undertaken at the site into a wider context. Covering an area of approximately 29 hectares along the east bank of the river Nile, large parts have been investigated through topographical survey, excavation and magnetometry, however significant gaps remain where an alternative method of non-invasive investigation was able to provide additional information.

Geophysical prospection in Sudan

The application of non-invasive archaeological prospection techniques in Sudan has been extensive, with an increasing use of geophysical survey. The arid desert conditions offer highly suitable conditions, in particular for the techniques of magnetometry¹ and GPR. The results from the fluxgate gradiometer surveys at Amara West (Spencer and Hay, 2013; Hay, 2014) and to the south east of the Amun Temple at Meroe (Mohamed-Ali *et al.*, 2012) have revealed, in astonishing detail, plans of the settlements whilst Kushite-period cemeteries have also been recorded in high detail at Kawa (Herbich and Ryndziewicz 2019, fig. 3, 187; this vol., fig. 13.19). An increasing number of multi-method surveys have also begun to be undertaken, both for exploring the deeper stratigraphy of known archaeological sites as well as environmental factors that have affected sites. At Hamadab, a few kilometres south of the settlement at Meroe, investigations have used several techniques to explore the town (Ullrich and Wolf 2015). Similarly, at Dangeil the BSR-APSS team used both magnetometry and GPR to investigate the precinct of the 1st century AD Temple of Amun (Anderson *et al.* 2015). Further downstream several magnetic surveys have been undertaken in the area of Jebel Barkal (Tucker *et al.* 2019). The fluxgate gradiometry surveys at Amara West have also been complimented by GPR to investigate a palaeochannel immediately adjacent to the town (Woodward *et al.* 2017). Recent geophysical

prospection at Soba East, approximately 20km upstream of Khartoum on the Blue Nile, made extensive use of gradiometry to cover 20 hectares of the medieval site with some areas targeted with GPR (Ryndziewicz *et al.* 2021). Drawing upon the results of the research at Hamadab, a similar approach was used at the Funj settlement of the 16th-18th centuries at Old Dongola, approximately 100km south of Kawa (Obluski *et al.* 2021). The survey strategy saw the use of both fluxgate gradiometry and GPR to record the city, with a generally better response to the GPR due to the presence of baked brick that distorted some of the magnetic results. This large number of surveys illustrates how geophysical prospection is a fundamental research tool in the Middle Nile, allowing for a better understanding of large sites as well as guiding excavation and conservation strategies.

The arid conditions and lack of any modern infrastructure have provided ideal conditions for geophysical prospection at these sites in the Middle Nile region. The use of sun-dried mud bricks for the majority of structures, which are typically buried in shallow wind-blown sand, has meant that magnetometry has been the most widely-used technique. The increasing use of multichannel systems has meant that in flat desert areas large sites, such as Kawa, can be rapidly investigated. However, with the increasing use of multiple antenna systems, GPR is gradually playing a larger role, in particular, offering the possibility to assess stratification on sites where structures are often rebuilt above earlier structures.

GPR survey areas

The site of Kawa is free of any modern settlement which is of considerable benefit to geophysical prospection, and in the most part is covered in sand dunes of varying depths. The multi-phase settlement has created a prominent mound rising to a maximum height of 11m above the level of the plain to the east. To the north, the mound gradually tails off into the *levee* alongside the riverbank whilst to the east the break of slope is more pronounced. To the south, at a lower level, the site is relatively flat with a few low dunes concentrated alongside the Nile and areas of dense tufts of grass. The steep river bank lies immediately to the west.

The excavations undertaken at Kawa between 1929-31 by Griffith and in 1935/6 by Kirwan and Laming Macadam, as well as those undertaken by the recent SARS project, have highlighted the exceptional preservation of archaeological remains. Excavation has shown that structures were built on top of pre-existing buildings rather than them being demolished and subsequently rebuilt (Welsby 1998b, 15), due in part to the rapidly changing morphology of the site caused by the shifting sands. The application of GPR, therefore, offered the potential to investigate these variations through evaluation of time slices.

Over the course of a number of seasons, a fluxgate gra-

¹ For a more detailed history of the use of magnetometry in Sudan see Herbich, this vol.

diometer survey covered around 18 hectares of the Kawa settlement (Herbich and Ryndziewicz 2019; Herbich this vol.). This extensive survey revealed a large number of clearly defined mud-brick buildings many of which are not visible on the ground surface. Such is the clarity of the gradiometer results in this environment, two rows of small circular parallel anomalies which were initially interpreted as tree pits were identifiable (Welsby 2008, 38; now see this vol., 34). The magnetometry survey has also shown that while some areas of the town were densely settled, others appear to be devoid of structures. These results have been supported by surface survey but whether this is an accurate representation of the archaeological remains in this part of the town, taking into account the potential for deeply-buried structures beyond the depth of detection and possible total removal of archaeological remains by wind erosion, is a question that was posed to the present GPR survey.

The GPR survey focused on two separate areas (Figure 14.1), in the lower town to the south of the main mound and in the northern part of the town, close to the large Amun Temple (Temple T).

The survey to the south (Area A) covered an area of 1.5 hectares where the gradiometry had revealed a series of structures and buildings with some remains also visible on the ground surface. The most prominent was in the central northern part of the survey area where previously excavated buildings (F1 and F11) fell within the study area. Immediately to the south east of the survey area is an extensive building complex (F4, F5 and F10) which contains a large, possibly open, courtyard abutting two multi-roomed buildings (Welsby 2001b, 64-65; this vol., 27, 169). The aim of the GPR survey in this area was, therefore, to focus on the open space where the gradiometry had recorded few features, with the aim of either confirming the area as being unoccupied or to record structures not mapped by the gradiometry.

The second study area, covering 2 hectares in the northern part of the ancient town, was chosen as little was known of the archaeological deposits in this part of the city. At the time of the 2014 GPR survey no other form of geophysical prospection had been undertaken in the area. The topographical survey had recorded traces of structures that were visible on the surface (Buildings M1-M6), but extensive parts remained unexplored.

Site topography

In general, the arid desert conditions of the site of Kawa should be ideal for the application of GPR. The velocity of the radar wave through the subsurface is influenced largely by the level of water saturation which is in turn controlled

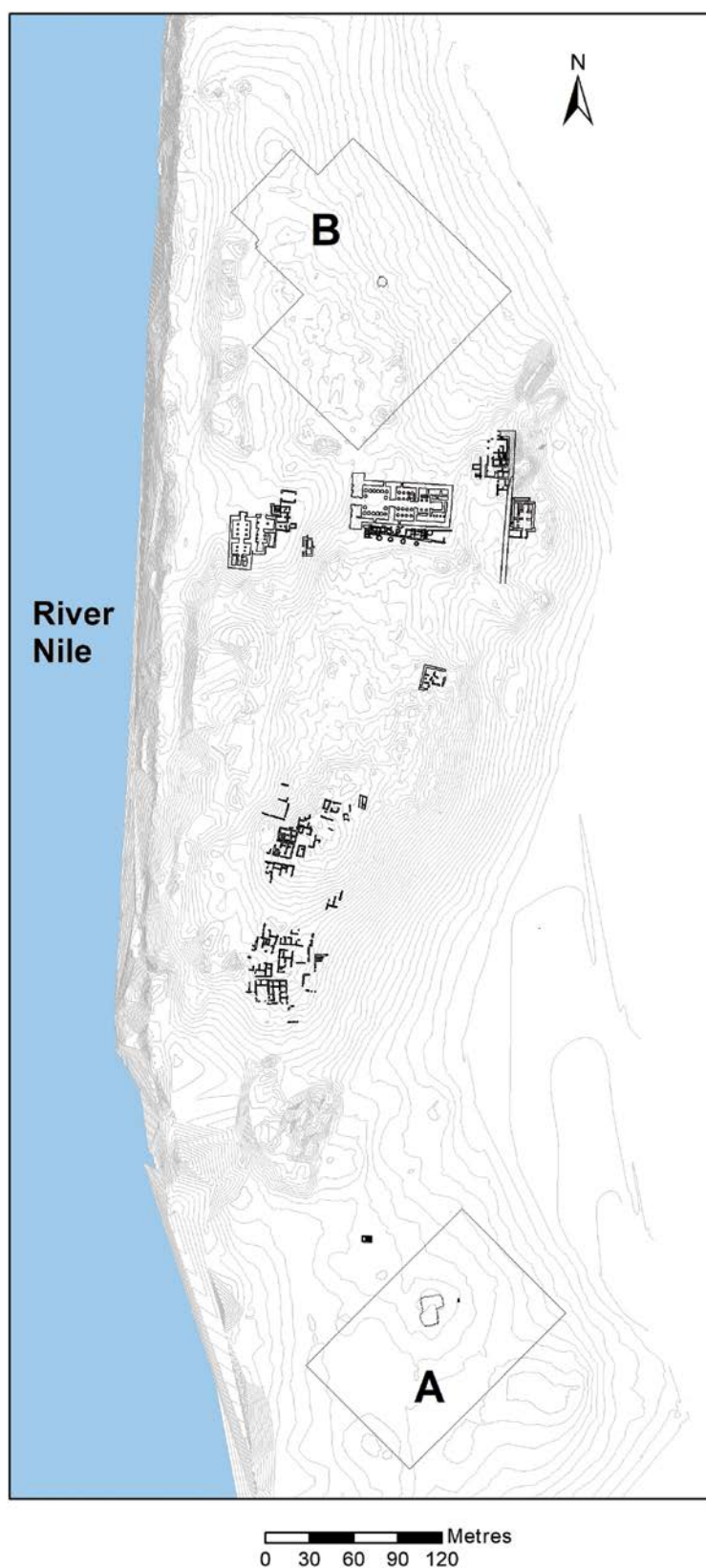


Figure 14.1. Location of the GPR survey areas at Kawa.

by the composition of the overlying sediment and soils (Conyers 2004, 101). However, the proximity of the river Nile a few metres to the west of the survey does appear to have had an effect on the soil for the wave propagation, with an attenuation of the signal after a relatively shallow depth.

The excavations at Kawa have shown that the majority of surviving structures were built of mud brick, with the river

Nile's alluvium a ready source of material. The structures are surrounded by a matrix of wind-blown sand deposits. Gale-force winds and wind-blown sands are a particular feature of the site and have contributed to the eroding of upstanding remains (Welsby 2008, 36). These conditions of a less magnetically enhanced sandy matrix overlying archaeological deposits, primarily mud-brick walls, have already be shown to provide an excellent set of conditions for gradiometry at the site (Welsby 2008, fig. 3; 2009, pl. 11). Relatively few structures at Kawa were built of stone (a construction technique more readily recorded by GPR), the exceptions being the Temple of Amun, constructed in the reign of Taharqo between 684-680 BC and small parts of Temple B and the Eastern Palace (see Chapter 2, Figure 2.2).

Survey technique: GPR

GPR is an electromagnetic technique, where a high frequency radar wave is propagated into the ground. Sub-surface features with contrasting properties are recorded in data as reflections or hyperbole. Through velocity analysis techniques, the time taken for reflected waves to return to the receiver antenna is converted into depth measurements, allowing for depth estimations of identified features (Gaffney and Gater 2003, 48). The technique is particular useful in archaeological prospection for recording structures such as walls, foundations or floor surfaces.

The main advantages of this technique are the ability to estimate the depth of targets (through velocity analysis) and the possibility to display data sets as vertical radargrams or horizontal plans known as 'time-slices' (Conyers and Goodman 1997). Time-slices provide a mechanism for analysing reflections at different depths often making the various stratigraphic levels of features easier to identify (Neubauer *et al.* 2002, 142).

The survey at Kawa used a GSSI SIR 3000 together with a 400 MHz antenna mounted on a cart system with an odometer (Plate 14.1). The orientation of the two surveys was chosen based on pre-existing knowledge of the alignment of archaeological structures in the survey area. The traverses were orientated at an angle to the buried archaeology to ensure a greater probability of detecting sub-surface features. Data was collected in a zigzag traverse pattern with a regular parallel line separation of 0.5m.



Plate 14.1. GPR survey at Kawa (photo: S. Hay).

Survey parameters

The two study areas targeted for the 2014 geophysical survey in the northern and southern parts of the site were established using a total station and the local site co-ordinate system. The survey in the southern area covered an area of 100m by 150m (Area A) whilst that to the north measured 100m by 200m (Area B).

The surveys used the same GPR settings for both areas. The data was subsequently processed in GPR-Slice 7.0 and imported into a GIS environment (ESRI ArcMap) for interpretation and comparison with topographical and excavation data as well as the previous magnetic surveys.

Survey results

The following section discusses the results of the survey: the southern area is discussed below as Area A and the northern area as Area B.

The GPR data of each area is presented in a series of time-slices that have been selected on the basis of the most prominent archaeological anomalies. These features have then been highlighted in the accompanying interpretation in the figure (e.g. A1) and are discussed in the text below.

Area A

The area of no-data (in white) in the central part of the survey represents a partially open excavated Building F1. The survey recorded as low amplitude reflections parts of this excavated building immediately to the east. Immediately to the south a series of linear low amplitude features were recorded (Figure 14.2, A1). These anomalies, up to 15m in length, align with the known walls and indicate a further structure to the south (Building F11). On the northern edge of the survey, a weaker feature orientated east-west was recorded (Figure 14.2, A2). The anomaly extends westwards beyond the surveyed area and lies immediately east of a previously identified structure.

At this shallow depth, estimated between 0.34-0.56m, a clear high amplitude square anomaly approximately 5m in length is visible in the western part of the survey area (Figure 14.2, A3). The anomaly is divided into two clear parts separated by a further high amplitude linear anomaly running north-south. Immediately north of this feature is a series of low and high amplitude linear anomalies approximately 2-5m in length (Figure 14.2, A4). These anomalies occupy the western corner of the survey area and are probably related to the structures previously detected along this section next to the river Nile.

The feature to the south of A3 indicates a square high amplitude anomaly approximately 7m in length (Figure 14.2, A5). The anomaly has a mixed response with a clear southern edge but indistinct northern part. Despite this the spread of high amplitude responses in the northern part of this anomaly are contained to provide an overall square shape to this feature.

The majority of other features recorded at this depth are less well defined (Figure 14.2, A6-A8). Whilst they indicate areas of disturbance their form does not allow a clear archaeological interpretation, however it is probable

that the disturbance recorded on the southern boundary is a continuation of the structures recorded just outside the survey area (Figure 14.2, A7)

At an increased depth of 0.66-0.89m several features recorded at a shallower depth are shown to continue (Figure 14.3, B1). To the west, the feature A3 is less apparent and replaced by a number of short interconnected high amplitude anomalies 2-5m in length (Figure 14.3, B2). All of these anomalies lie on the same orientation as other geophysical responses and known archaeological remains in this area. A final area of archaeological interest lies in a strip along the western edge of the survey area. The area of high amplitude features (Figure 14.3, B3) coincides with where the gradiometry recorded features but similarly there is little clear definition to the features.

The deepest slice presented of the southern area is at an estimated depth between 1.8m and 2m. Few further features were recorded at this depth in the survey area, with only a limited number along the western edge of Area A (Figure 14.4, C1 & C2).

Area B

The second GPR survey area lay a short distance to the north of Temple T (Plate 14.2). The upper data slices close to the surface are disturbed, and it is at an estimated depth of 0.46-0.66m that features are more apparent. In the central southern section of the survey a series of interconnected low amplitude responses were recorded (Figure 14.5, A1). These anomalies follow a slightly irregular pattern but indicate structures with numerous internal divisions. Some of these

responses align with previously identified archaeological remains (Figure 2.19, Buildings M1, M2 & M3) but the majority identify previously unknown structures.

A small number of linear high amplitude responses were also recorded in the south-eastern part of the survey area (Figure 14.5, A2) measuring between 3m to 11m in length, orientated approximately north-south and east-west. These features are of particular interest as the majority of anomalies in the area are low amplitude, probably indicating mud-brick walls or foundations whilst the high amplitude response may relate to stone or fired-brick-built structures.

To the east of the central cluster are a number of other low amplitude linear features (Figure 14.5, A3). These features share a similar orientation as those recorded to the west and follow an alignment that has also been recorded by the preceding surface survey.

In the northern part of the survey fewer features of potential archaeological significance were recorded. Several irregular linear features traverse the area in an east-west direction which may be associated to the underlying geology (Figure 14.5, A4).

At an increased estimated depth of 1.07-1.27m a larger number of low amplitude features were recorded (Figure 14.6). The dataset is characterised by a general background level of higher amplitude in the central to southern part of the survey, whilst to the north few features can be noted, indicating less potential archaeological activity.

The central group of short low amplitude anomalies, recording the presence of mud-brick walls, continues at this depth with an increased number of features (Figure 14.6,

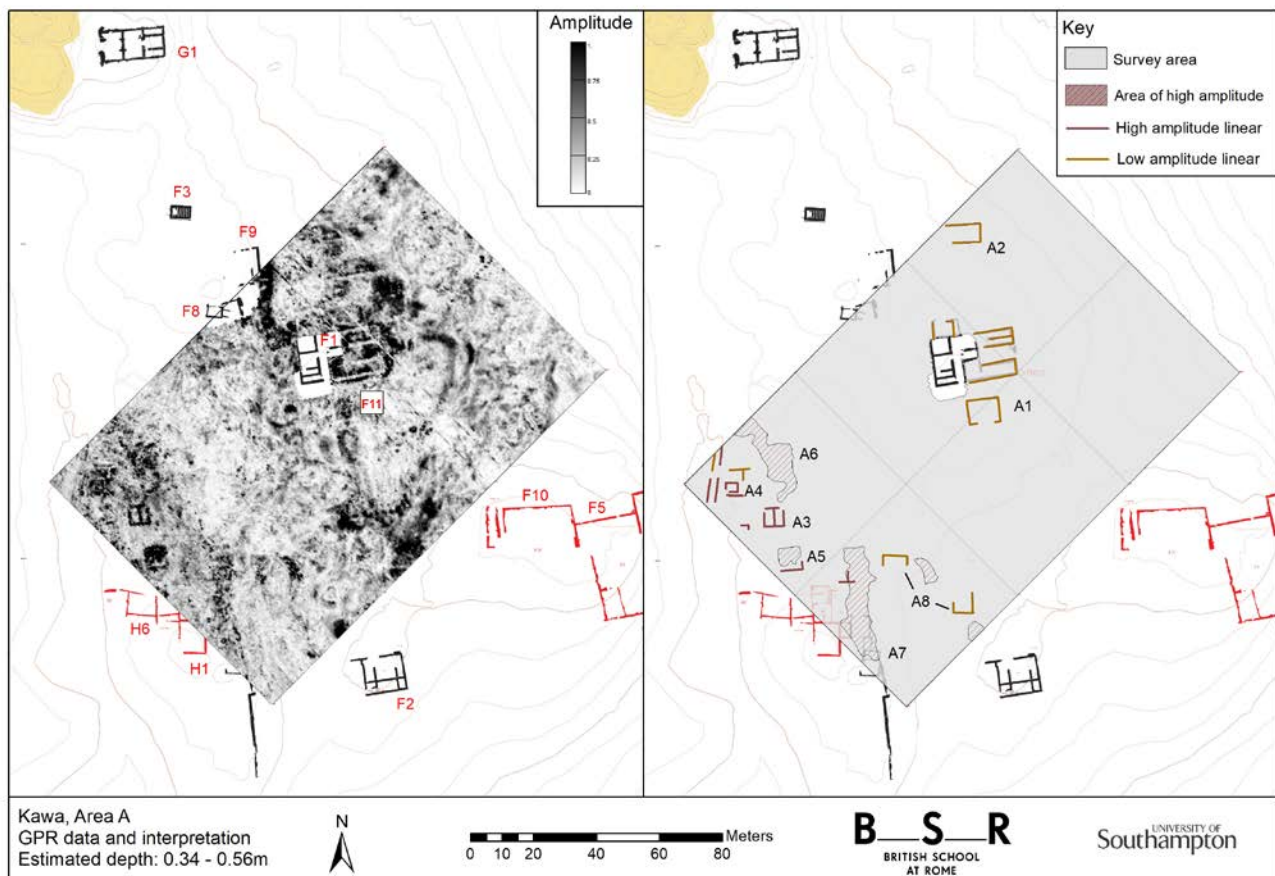


Figure 14.2. Area A. GPR data and interpretation. Estimated depth 0.34-0.56m.

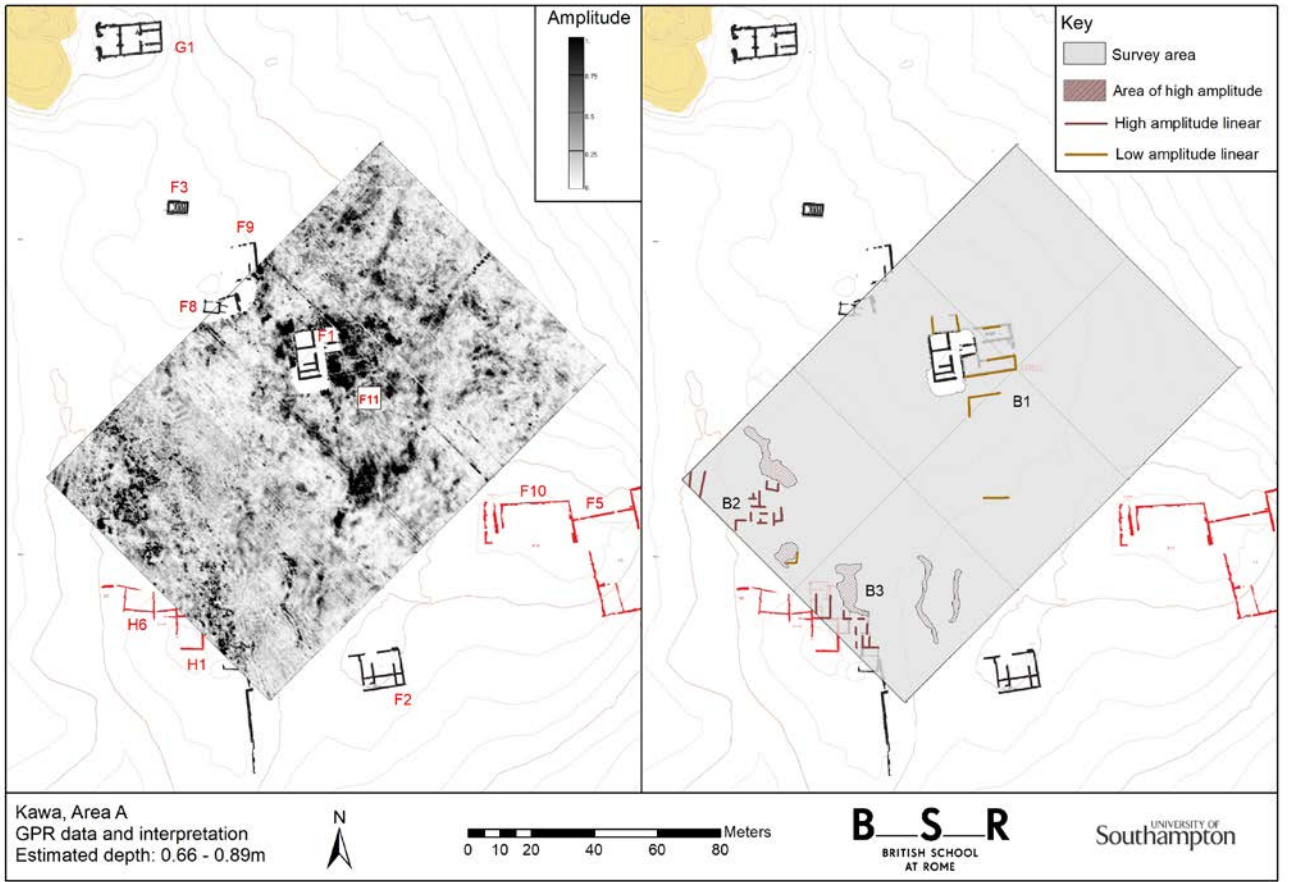


Figure 14.3. Area A. GPR data and interpretation. Estimated depth 0.66-0.89m.

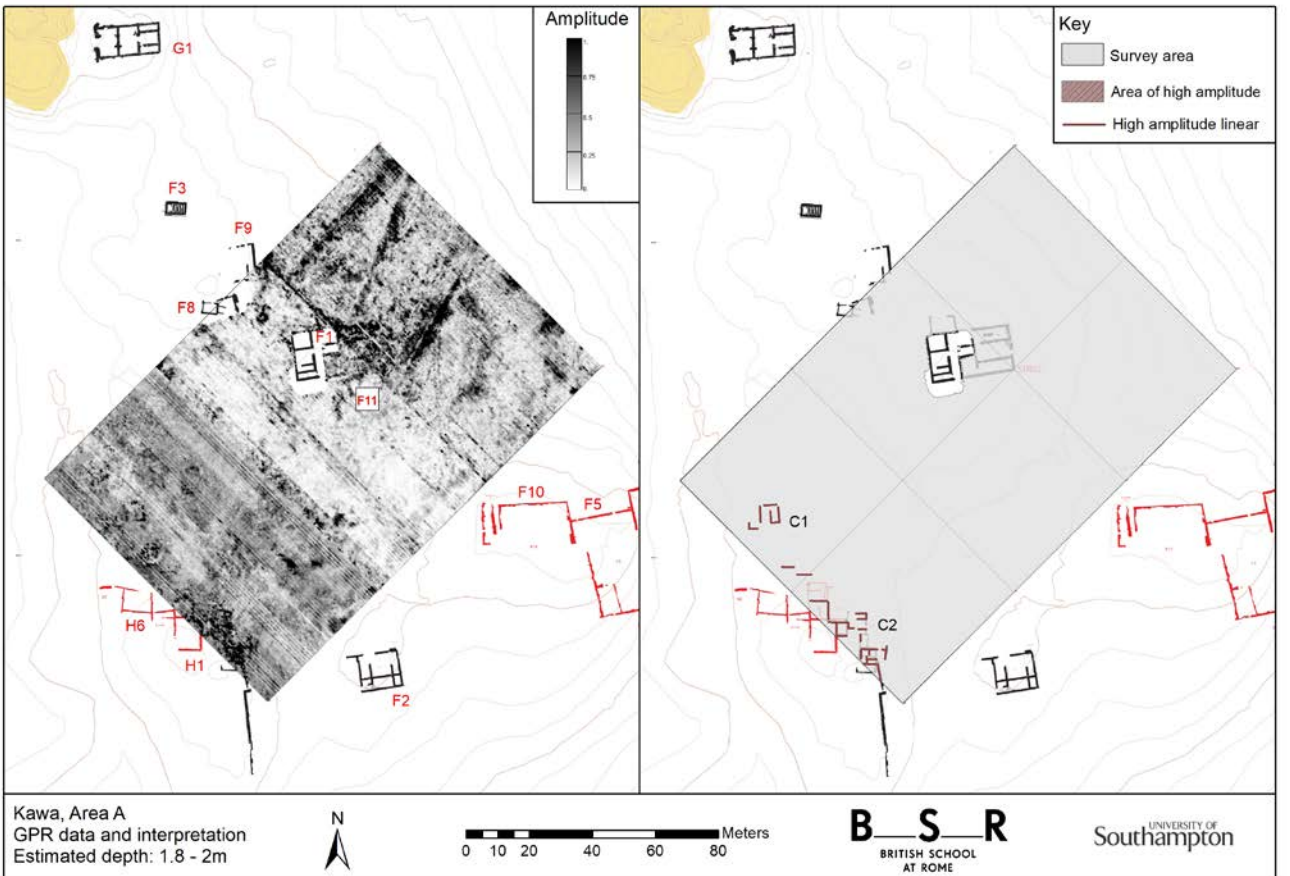


Figure 14.4. Area A. GPR data and interpretation. Estimated depth 1.8-2m.



Plate 14.2. Area B visible to the north of the Temple of Amun, aerial photograph looking north east (photo: D. A. Welsby).

B1). The features correlate with the previously recorded structures (Buildings M1 & M3) and indicate an area of a substantial amount of activity. To the north the building M5 has been recorded but with an additional extension to the south.

The low amplitude features also form the majority of anomalies in the western segment with an occasional high-amplitude feature (Figure 14.6, B2). The short features would appear to be interconnected, forming a series of structures on a regular alignment. Several of the low amplitude features correlate with the structure M4 whilst to the north the anomalies appear to coincide with the structure M6.

The features recorded to the east at a higher level also continue in the deeper data slice (Figure 14.6, B3) with a similar general layout. At the northern limit of the survey several high amplitude features have been highlighted (Figure 0.6, B4). These probably relate to an irrigation channel that was dug some years ago in order to supply water to fields in the plain to the east of Temple T.

Discussion

The aim of the GPR survey in the southern area at Kawa (Area A) was to test the results of the previous topographical and magnetic survey which had recorded few features between Buildings F1 and F11 to the north and F4, F5 and F10 to the south. The GPR data would appear to confirm this absence, as even at the greater depths recorded by the GPR no further significant features were recorded. A possible explanation, alongside that of an open area, is that a large number of shallow structures have been eroded by the wind-blown sands of the high winds that are a characteristic of this exposed site, a phenomenon that was recorded during the excavation of Building F11. In this example, walls that were originally 1.2m thick now survive just beneath the surface to the height of a single course. Furthermore, as noted above, in areas close to the river Nile there was some attenuation of the radar wave, therefore there was some limitation in the depth reached by the GPR.

The upper time-slices of the GPR in Area A recorded several structures that had been previously noted through excavation (e.g. Figure 14.2, A1 = F11). The majority of features recorded in the southern area also coincide with the anomalies noted by the fluxgate gradiometry survey where the two techniques overlapped. The small square feature with an internal division was also recorded in the magnetic data (Figure 14.2, A3). In the south-west corner of the survey grid the GPR overlapped with the magnetometry and topographical survey (e.g. Building H7), however several features in a long north-south stretch lying parallel to the Nile were only recorded by the GPR survey.

The GPR survey in Area B at the northern end of the mound revealed a more complex and densely inhabited area. The mud-brick walls were recorded by the GPR as low amplitude features within a general area of more compact layers formed by ceramic material and alluvial Nile soils. In the central area Building M1 had previously been identified by the topographical survey, however the GPR revealed a more detailed plan with walls continuing in both a northerly and southern direction. The data shows a distinct north-south alignment of anomalies that echoes the orientation of the known buildings in the vicinity. To the west some anomalies of the GPR coincided with walls of Buildings M4 and M6 but also suggested the continuation of some structures not recorded by the surface survey. The data would appear to record buildings constructed of mud brick, a majority of which presumably are domestic architecture, as has been extensively record by the topographical survey across the site. Structures built of stone, such as Temple T and parts of the Eastern Palace would be recorded as a high amplitude features, therefore, it is unlikely that further monumental buildings, at least dating to the Kushite period, were recorded by the survey.

The construction technique, combined with the shallow nature of the deposits and better level of preservation have all combined in this area to provide a clearer picture of the density of buildings in Area B, a short distance to the north of Temples A, B and T. It is interesting to note that more features are revealed at a depth of *c.* 0.45m (Figure 14.6), supporting the hypothesis that structures close to the surface have been heavily eroded by the wind-blown sands. Preservation would, therefore, seem to be improved at depth and thus was not apparent in the earlier topographical recording surveys.

Conclusion

The GPR data, when combined with the results of the magnetic and topographical survey as well as the excavations, provides a detailed picture of the urban landscape of the town. The survey in the lower part of the town (Area A) focused on an area where the magnetic survey had revealed few structures (Welsby 2009, pl. 11) and would appear to support the hypothesis that it was either relatively open or that the mud-brick structures have been eroded away. To the west, alongside the river Nile, structures were recorded that were not present in the magnetic survey or the topographical recording, presumably as a result of depth. It should be noted that several years elapsed between the previous

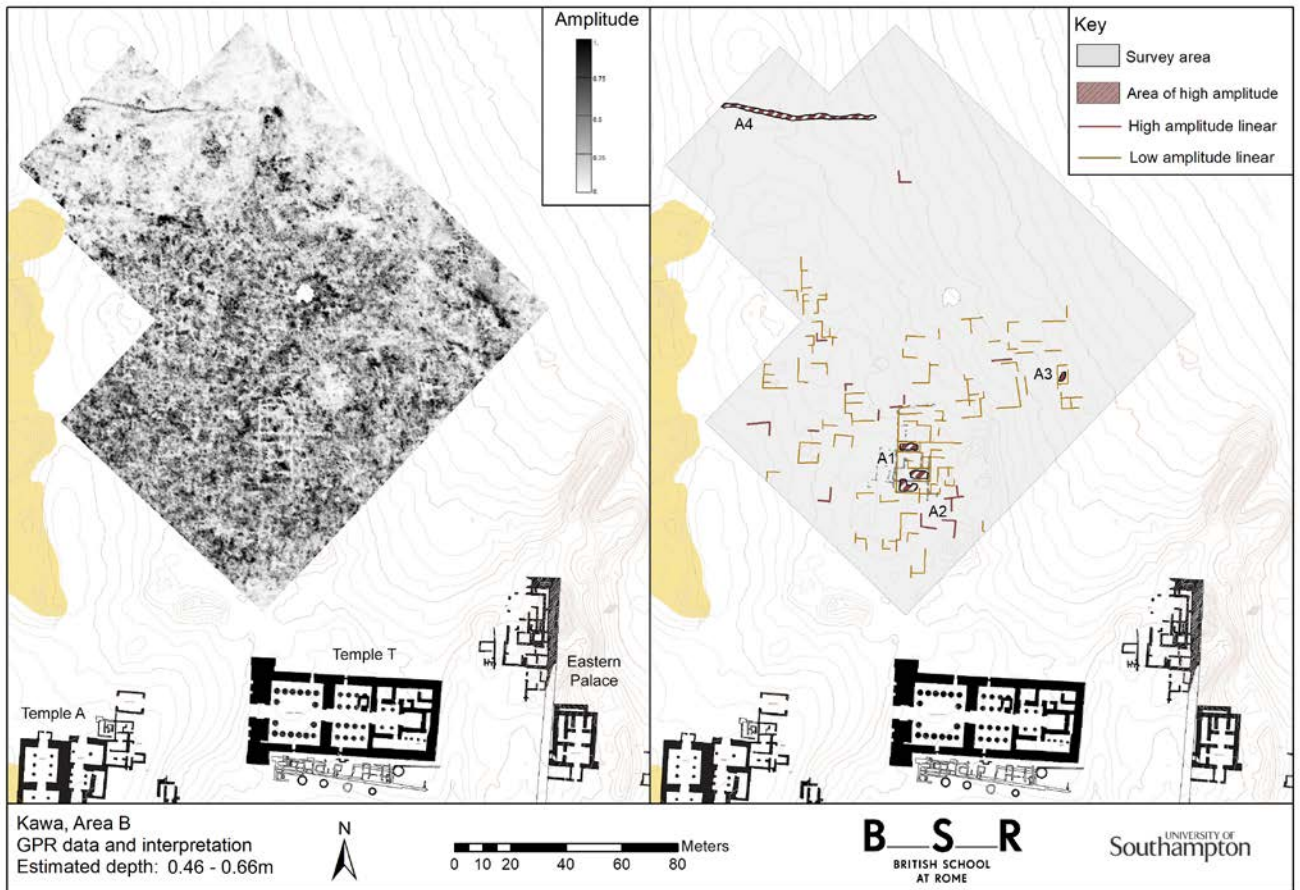


Figure 14.5. Area B. GPR data and interpretation. Estimated depth 0.46-0.66m.

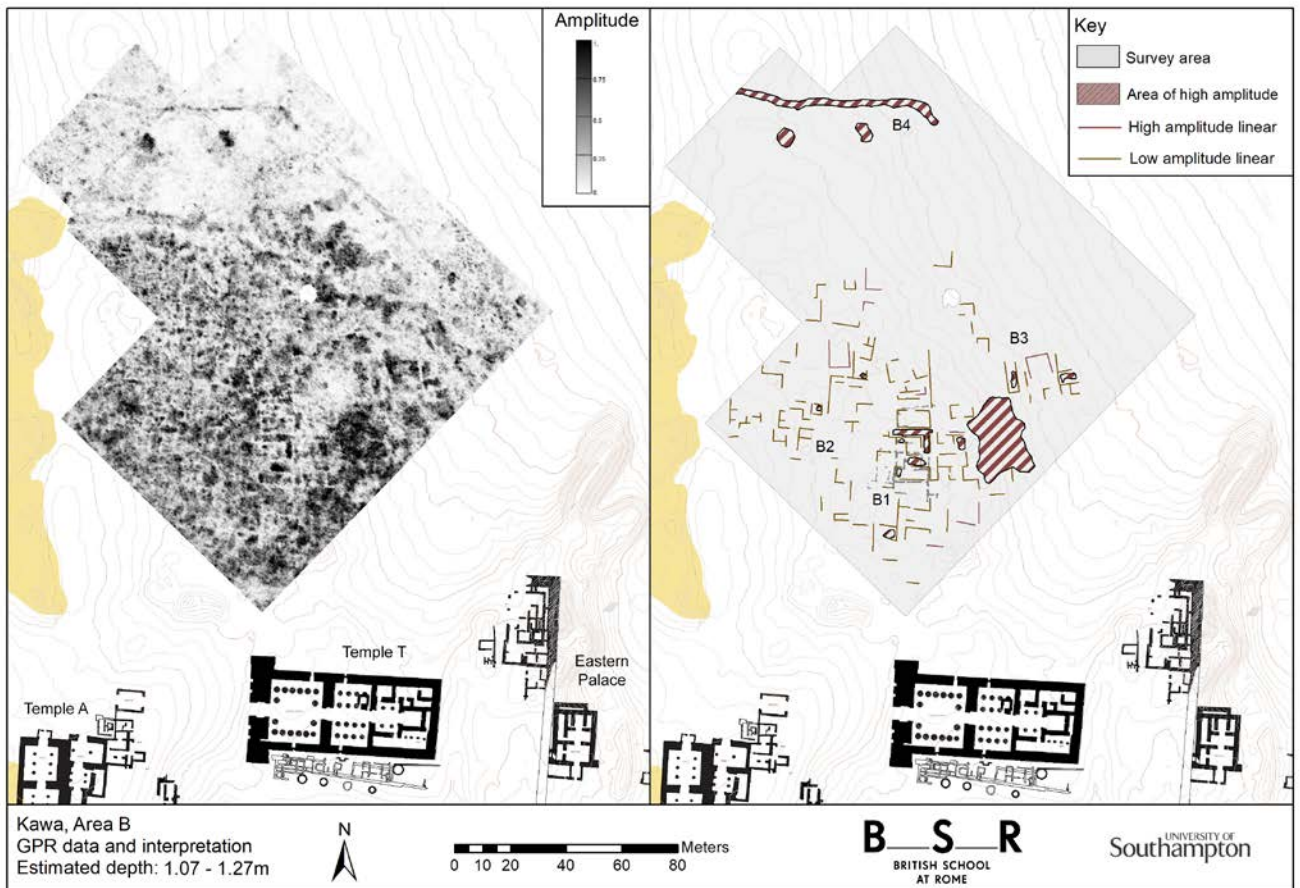


Figure 14.6. Area B. GPR data and interpretation. Estimated depth 1.07-1.27m.

surveys and GPR in which time the sands at Kawa would have shifted significantly.

To the north of Temple T the GPR examined an area that had only previously been assessed through topographic survey and revealed a densely urbanised part of the settlement. Whilst seemingly devoid of stone-built structures, the data reveals numerous mud-brick structures that suggest this part of the settlement continues northwards for at least a further 160m. However, the combination of construction technique and the river Nile a short distance to the west also had an effect on the soil for the radar wave propagation, with an attenuation of the signal after a relatively shallow depth. Therefore, whilst it is probable that some of the structures are preserved for a considerable depth at the top of the mound, these may have continued beyond the depth of penetration reached by the GPR. An analysis of the time-slices shows some features still recorded at a depth of 2m beyond which the radar was unable to record.

The GPR investigation provided useful additional support to the large-scale magnetic and topographical surveys. The extensive site, spread over 29 hectares, has been revealed in further detail through a combination of these techniques. Whilst magnetic survey would appear to be the technique most suited to investigating these types of site characterised by mud-brick architecture, GPR has been able to provide valuable depth information as well as identify additional structural deposits.

Acknowledgements

The 2014 GPR survey at Kawa was undertaken on behalf of the project director Derek Welsby and funded by the Qatar-Sudan Archaeological Project (QSAP) in conjunction with the British Museum and the Sudan Archaeological Research Society. It was fully supported by Sudan's National Corporation for Antiquities and Museums (NCAM). The survey was conducted by Stephen Kay and Matthew Berry from the British School at Rome and Sophie Hay, Archaeological Prospection Services of Southampton University. The team are grateful for assistance in the field from the NCAM inspectors el-Ghazafi Yousif Ishag and Murtada Bushara. This chapter draws upon the original geophysical survey report prepared by Matthew Berry.

15. Radiocarbon dating

Derek A. Welsby

Nine samples of wood and charcoal,¹ were submitted to the ¹⁴CHRONO Centre, Queens University, Belfast for radiocarbon dating.² All were wood/charcoal from twigs and thus were short-lived samples.

primary fill of the cylindrical oven [(AC5)130] which appears to date from the earliest phase of occupation discovered in Area A. However the oven remained in use after the construction of Building A3, the floor surfaces of which

TABLE 15.1. SAMPLES RADIOCARBON DATED.

Sample	Context	Building	Room	Species	¹⁴ C age BP	Calendar years (95.4%) probability
7	(AC5)90	A3	1	<i>Acacia nilotica</i> (acacia); <i>Tamarix articulata</i> (tamarisk); <i>Tamarix aphylla</i> (tamarisk)	3029 ± 26	1394 - 1334 BC 1324 - 1202 BC
26	(AC5)133	pre-A3?		<i>Hyphaene thebaica</i> (dom palm); <i>Acacia nilotica</i> (acacia); <i>Tamarix articulata</i> (tamarisk)	2445 ± 30	752 - 683 BC 668 - 633 BC 623 - 611 BC 592 - 410 BC
48	(AC5)179	pre-A3		<i>Tamarix articulata</i> (tamarisk)	2586 ± 29	810 - 754 BC 681 - 669 BC 629 - 626 BC 609 - 593 BC
4	(AD5)27	A2	VII	<i>Tamarix articulata</i> (tamarisk); <i>Tamarix aphylla</i> (tamarisk); <i>Acacia nilotica</i> (acacia)	2491 ± 28	775 - 515 BC
5	(AD5)29	A2	VI	<i>Tamarix articulata</i> (tamarisk)	2447 ± 29	752 - 682 BC 668 - 632 BC 624 - 610 BC 592 - 411 BC
2	(AD5)36	A2	III	<i>Acacia nilotica</i> (acacia); <i>Tamarix articulata</i> (tamarisk); <i>Tamarix aphylla</i> (tamarisk); <i>Hyphaene thebaica</i> (dom palm)	2464 ± 30	759 - 678 BC 672 - 458 BC 441 - 418 BC
95	(TG5)85	Gateway		<i>Tamarix articulata</i> (tamarisk); <i>Acacia nilotica</i> (acacia)	2514 ± 35	790 - 659 BC 657 - 540 BC 526 - 522 BC
18	(TG5)116	Gateway		<i>Tamarix articulata</i> (tamarisk)	2477 ± 35	771 - 471 BC 435 - 422 BC
23	(TG5)130	Gateway		<i>Tamarix articulata</i> (tamarisk); <i>Acacia nilotica</i> (acacia)	2436 ± 31	750 - 684 BC 667 - 635 BC 620 - 614 BC 590 - 406 BC

Sample 7 (UBA-50782) – This came from a hearth within Building A3 associated with Period 4 in Area A. The use of the hearth certainly postdates the deposition of samples 26 and 48 which come from contexts securely sealed below Building A3. No explanation can be offered to explain the presence of the sample in a context which must be several centuries later than the time when it ceased to grow. In the hyper-arid conditions on the site organic material can survive for long periods but commonly falls prey to termites.

Sample 26 (UBA-50783) – This sample comes from the

lapped around it. As it was open at the top it could have been cleaned out at that time before being reused. Thus, although the sample comes from the primary fill within the oven, it is impossible to ascertain whether it was deposited before the construction of Building A3 or relates to its use contemporary with that building. It certainly predates the construction of Building A4.

Sample 48 (UBA-50784) – Like sample 26 this sample was also from the primary fill of a cylindrical oven [(AC5)180] dating from the first phase of occupation in Area A. However this oven went out of use before the construction of Building A3 so it provides a *terminus post quem* for that building.

In Area A Building A1, and very probably Building A2, were constructed in the reign of Taharqo, at some time

¹ The material was identified by Dr Caroline Cartwright of the Department of Scientific Research at the British Museum.

² The author would like to thank Dr Julie Anderson of the Department of Egypt and Sudan at the British Museum for arranging the dispatch of the samples for analysis.

between 690 and 664 BC. Samples 7, 26 and 48 all come from deposits predating that period. The construction and use of Buildings A3 and A4, and probably Buildings A5 and A6, suggest a long period of occupation in the area and the depth of stratigraphy overlying the earliest oven (AC5)180 would suggest that the period between the first use of the area and the construction of the buildings in Taharqo's reign was of considerable duration. However the radiocarbon dates do not support this, restricting occupation to the period between the late 9th at the earliest, and the late 7th centuries BC. This is supported by the pottery, which as far as can be established, is of Kushite type.

Sample 4 (UBA-50785) – This was a small area of burning on a sandy surface presumably relating to domestic activities within the room. At a similar level in this room, which was in the north-east corner of Building A2, were many large fragments of animal bone including substantial skull fragments.

Sample 5 (UBA-50786) – This came from the fill of a hearth [(AD5)32]. The hearth occupied a shallow depression in the floor which had been lined with pottery sherds (Plate 3.51). It was constructed after Room V/VI had been divided by the construction of a narrow mud-brick wall.

Sample 2 (UBA-50787) – This again comes from a hearth of a similar type to that from which Sample 4 was retrieved.

Samples 2, 4 and 5 are broadly contemporary and come from the later use of Building A2 which was characterised by rich occupation layers often containing much bone and pottery, both in large pieces, sealed by wind-blown sand layers. This is suggestive of repeated and intensive, but relatively infrequent, use.

Sample 95 (UBA-50788) – This material came from sand deposits (Figure 9.9) which had built up within the gateway into the *temenos* around Temple T, presumably during a period of abandonment (between Periods 3 and 4) or at least at a time when the roadway through the gate was not maintained.

Sample 18 (UBA-50789) – The sample was recovered from the sand buildup (Figure 9.9) on the west side of the later stone-paved roadway, presumably equivalent to the material overlying the surface of Period 1 uncovered to the east of the later paving. It predates the construction of the earliest gateway, of timber, in Period 2.

Sample 23 (UBA-50790) – This material came from the earliest surface reached during the excavation, a surface pierced by many post-holes (Plate 9.1). Whether this surface sat on the natural is unknown.

The dates provided by samples 18, 23 and 95 do not in any way conflict with the suggestion that the stone gateway of Period 3 was constructed as part of Taharqo's building program on the site. This was based on the style of architecture and building construction as well as on probability. The two samples predating the earliest, timber, phase of the gateway suggest that the interval between the timber and stone gateways was not more than half a century in duration and could, of course, have been much shorter. The earliest occupation in grid square (TG5) began, on the evidence

of the radiocarbon dates, later than the mid 8th century BC although it must be noted that at no point was the natural reached in this part of the site.

16. Preservation, Conservation and Display

Derek A. Welsby

Threats to the archaeological remains at Kawa

The archaeological remains at Kawa have faced many threats over the millennia and continue to do so. These come both as a result of human activities and from natural causes.

Kawa is frequently exposed to very strong north winds which often carry a large amount of sand. This sand-laden wind is very destructive eroding anything that stands in its way. Mud brick and the soft Nubian sandstone from which the monuments are made at Kawa are particularly susceptible. Over time the erosion has removed any upstanding features which, once level with the general ground surface – sand, silt and rubble from the collapse of the structures themselves – are then in equilibrium. The erosion is helped by the occasional rains which made the construction material more vulnerable. The threat posed by rainfall is dramatically illustrated by the fate of the relief of musicians which was removed from the walls of the hypostyle hall in Temple T and re-erected in Khartoum in the open without adequate protection. The stone was entirely dissolved by the rain (Laming Macadam 1955, 77).

The activities of the archaeologist are the main agency for disturbing this equilibrium uncovering structures and ushering in a new cycle of erosion and potential damage from rainfall and the ponding of water by walls. The speed of this destruction can be very rapid (see the quote below from Laming Macadam).

The best protection after excavation is to backfill the remains but this can prove difficult as the redeposited sand is itself very prone to erosion in a manner which is often unpredictable and difficult to control. Another problem with backfilling is that it reduces the tourist potential of the site if there is nothing to see but sand. The conservation measures taken in Temple T and the Western Kiosk are an attempt to satisfy both needs.

Over the centuries considerable destruction on the site has been caused by the removal of material by farmers who considered that material derived from archaeological sites is particularly beneficial to their activities when spread onto their fields. As a result the site is pitted by a vast number of holes for the extraction of this material with mud-brick wall in particular being targeted (Plates 16.1 & 16.2). The designation of Kawa as an archaeological site protected by the antiquities law, the first iteration of which was enacted in 1905, has halted this practice although Temple T was still damaged by these activities between 1931 and 1935 (Laming Macadam 1955, 105, fn. 1).

Robbing of the site for reusable building materials may also have occurred but this is not immediately obvious from the remains uncovered. Reusing mud brick is difficult while the condition of many of the sandstone blocks which are often very friable and in the temples of very large size, may not have been an attractive proposition. However Griffith noted the removal of stone blocks and architraves in the



Plate 16.1. Pit dug into a mud-brick wall in Building B5.



Plate 16.2. Massive pit dug into the mud-brick wall on the north side of the gateway into the temenos.

early decades of the 20th century for use in house construction and as boundary stones (Griffith 1955a, 2).¹ Red brick is eminently reusable but, up to now, no red-brick buildings have been recorded at Kawa.

Treasure hunting is another threat to the site, particularly to the tombs in the cemetery, and this activity was probably practised during the Kushite period as well as at all periods thereafter. These activities are discussed by Welsby, this vol., 388. A new phase of robbing has been stimulated by the recent introduction of metal detectors into Sudan. Principally used by the gold miners, who are active across the whole of northern Sudan, they have also been used on archaeological sites. Several tombs in the cemetery have been much disturbed by recent robbing probably following the use of metal detectors and similar activities have been noted in the town (Plate 16.3). One devastating result of these activities was the location and removal by the metal detectorists of the 4-inch nails driven into the tops of mud-

¹ For the evidence of the removal of blocks in the medieval period to Old Dongola see Welsby, this vol., 427.



Plate 16.3. Recent robbing activities in Building D1.

brick walls which were extremely difficult to locate with the naked eye. These were the survey stations put in by the archaeologists whilst planning the site. The reinstating of these survey points, using wooden pegs, proved difficult and time consuming.

Kawa sits on the banks of the Nile and thus potentially occupies land which, with the ready access to water, has agricultural potential. A number of attempts have been made to use the site for agriculture. When the whole region was divided up into plots of land which might be used for farming the site at Kawa was included without any regard for the archaeological remains or for its status as a protected archaeological site. One of the boundary markers still stands in Area B. The northern part of the town is crossed by an irrigation channel which fed an area of irrigation immediately to the east of the town near the site of the Eastern Kiosk. In Area A irrigation channels of the type dug to delimit individual plots were found cutting the wall tops of Building A1 (Plate 16.4). Several years ago there was an attempt to create a new farm just to the north of the town while much of the Kushite cemetery at Site R22 has been destroyed by farming since it was planned in 1993.



Plate 16.4. Irrigation channels cutting into the wall tops of Building A1.

The whole of the town is criss-crossed by vehicle tracks (Plate 16.5) which are particularly destructive as the walls of many buildings lie immediately below the surface sand. Some of these tracks have been made by tourists who drove right up to the temples, other are from local vehicles, some of people accessing the temple area to perform folk reli-



Plate 16.5. Vehicle tracks on the upper town.

gious activities. Many tracks are also the result of vehicles crossing the lower town to gain access to fields on the flood plain alongside the Nile beyond the archaeological remains.

Some years ago a very serious, but short lived, threat appeared which was not foreseen by the archaeological community. During the construction of the tarmac road from Seleim to Kareima there was the need for large amounts of gravel. A search for this material was made by bulldozer and several deep scoops were made in the cemetery immediately adjacent to Pyramid S2 during this quest (Plate 16.6).



Plate 16.6. Exploratory trench made by a bulldozer in search of gravel. Human bone and pottery are visible in the upcast mound.

Fortunately in that area the gravel layer which underlies the Nile alluvium is at a depth of several metres so the road builders moved on and ultimately made a vast pit just to the south of the cemetery, the upcast mounds from their activities now forming a prominent and intrusive feature in what had been an area strewn with Neolithic artefacts (Plate 16.7). In the cemetery a few graves were severely



Plate 16.7. The gravel quarry to the south of the cemetery, Site R18, from the town.

disturbed but had gravel been found close to the surface one can only assume that the fine stone pyramids would now be forming the foundations of the tarmac road!

Site protection

A number of measures have been put in place at Kawa to help protect the site. Initially spoil from the excavations was used to form a permeable but visible boundary to the site (Plate 16.8). Later when funding was secured the outlines



Plate 16.8. Excavation spoil used to form a boundary in the cemetery.

of the town and the cemetery, Site R18, were marked by concrete posts set slightly closer together than the width of the vehicle of choice in the region, the Toyota Hillux (Plate 16.9). Funding from QSAP made it possible to put in place



Plate 16.9. The boundary of concrete posts being replaced by a barbed-wire fence.

a more robust boundary, The main archaeological sites – the town, the Kushite cemetery Site R18 and the two Kerma-period settlements Sites R21 and R23 were surrounded by barbed-wire fences with metal fence posts through which a small number of gateways allowed pedestrian access. One of the features of Kawa that makes it so special in Sudan is that the archaeological remains still exist within a relatively speaking pristine desert environment. This can

be contrasted with Kerma where the archaeological remains of the cemetery, the Kerma-period town and Dokki Gel are islands within an intensively farmed environment and their boundaries are always at risk from encroachment.

At Kawa an attempt has been made not only to protect the archaeological remains but also the local environment. To achieve this the core area, delimited by the barbed-wire fences, lies within a buffer zone marked by widely spaced but clearly visible concrete posts (Figure 16.1, Plate 16.10). The boundaries have been logged by the Department of Agriculture in Dongola in agreement with the National Corporation for Antiquities and Museums. The agreement was that no agricultural or other development will take place within the buffer zone.

In order to manage these boundaries QSAP funds were used to construct a police post at the entrance to the buffer

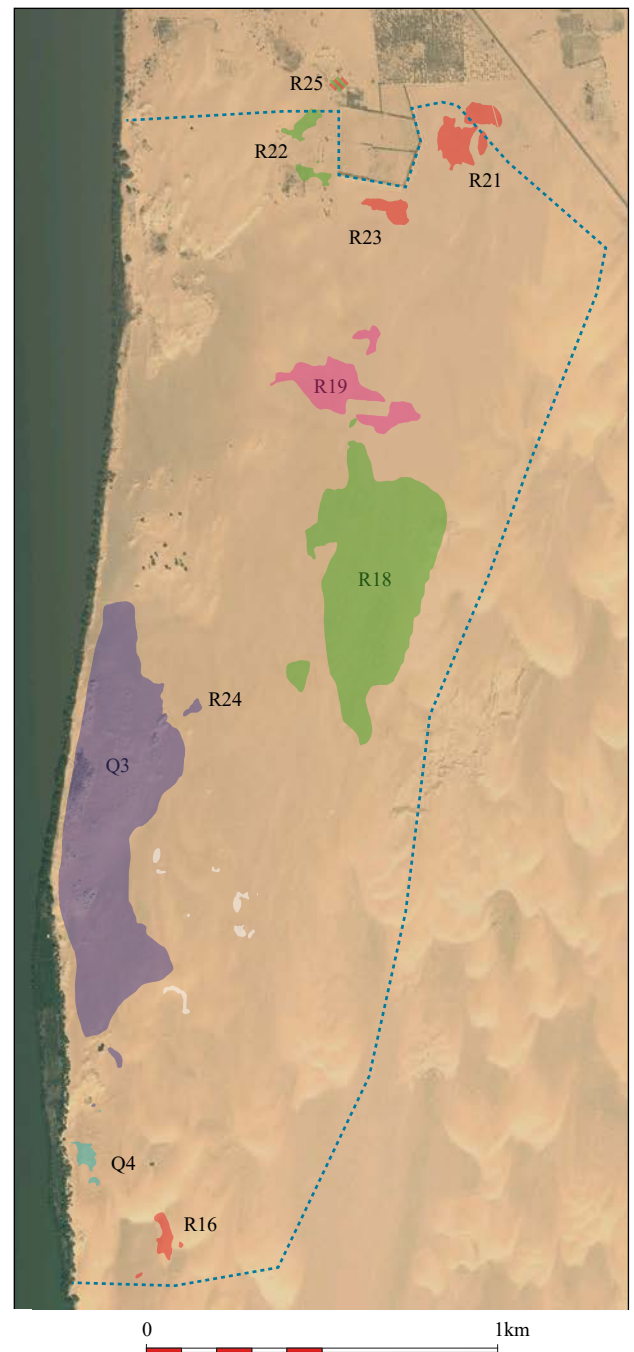


Figure 16.1. The buffer zone (Map data © 2013 Google).



Plate 16.10. Concrete posts marking the northern edge of the buffer zone.



Plate 16.12. The impact of the wind over one 11-month period on the barbed-wire fence.



Plate 16.11. The Police Post and its toilet block with the Visitors' Centre in the foreground.



Plate 16.13. Wind erosion removing the ground surface and exposing the concrete into which the fence posts had been set.

zone from the north and a contribution was made towards fitting out the building (Plate 16.11). Tourist Police are now permanently resident there and have the potential to inspect the boundaries on a regular basis and report to their superiors and NCAM on any issues arising. It must be noted that there was always significant damage to the fencing when the archaeological team arrived on site each season which had neither been observed nor reported. This was both the result of human activities and natural factors; wind erosion in some areas and sand deposition in others (Plates 16.12-16.14). Now following the end of the archaeological campaign on the site it remains to be seen how robust the system put in place, which requires at the minimum annual maintenance, proves to be.²

Conservation of Temple T

Notwithstanding the claim by Taharqo on his building inscription that he built a temple of fine white stone (Eide *et al.* 1994, 171-172) it survives today in a very poor condition. Prior to excavation beginning in the winter of 1929-30 nothing projected above the rubble of its own collapse and the wind-blown sand which had infilled its ruins. Excavation upset the equilibrium established between the structural elements and their local environment with serious results for the integrity of the remains. The earliest agents of its



Plate 16.14. The barbed-wire fence being buried by the dune creeping over the south-eastern corner of the town.

destruction will have dated to the Kushite period particularly at a time when it was no longer maintained but still an upstanding structure. At Kawa the main agent of destruction is the sand-laden wind which impacts most severely in the 500mm or so above the ground surface. Another major but sporadic agent is water, particularly the pooling of water against the walls of the building. Photographs taken during the excavations by the Oxford Excavation Committee in the 1930s show that the lower parts of many walls were in a perilous condition, the stone being much degraded and

² The latest Google Earth imagery consulted, dated 14th November 2022, shows a significant area of new farmland well within the buffer zone and at its southern end right up against the northern boundary of the core zone less than 350m north of Temple T. This was created at some time between October 2020 and January 2021.

heavily fractured (Plate 16.15). At the close of excavations in 1931 the whole of the temple had been exposed with some of its walls surviving to a height of up to 3.8m. No attempt was made to backfill the remains. When the Oxford team returned to Kawa in the winter of 1935-6 they were much surprised to see the level of destruction that had occurred over the intervening four years.

‘The blocks in both cases had been sadly weakened by fire in ancient times. Further, since their exposure in 1930 a heavy fall of rain had not improved the condition of the soft Nubian sandstone.’

(Kirwan 1936, 210.)

It was presumably as a result of this that it was decided to remove the outer relief decorated blocks of the shrines of Taharqo and Aspetla from within the hypostyle hall. These were subsequently transported to the Ashmolean Museum in Oxford where they were re-erected. The facing stones with the frieze of musicians, on the west wall of the hypostyle hall south of the doorway, was also removed from the building and re-erected in Khartoum under a shelter but was subsequently totally destroyed through lack of maintenance of the shelter which was to have protected the soft sandstone from the elements (Laming Macadam 1955, I, 77).

Despite the great amount of destruction caused to the temple between 1931 and 1935 no attempt was made to backfill the building at the end of excavations in 1936. It

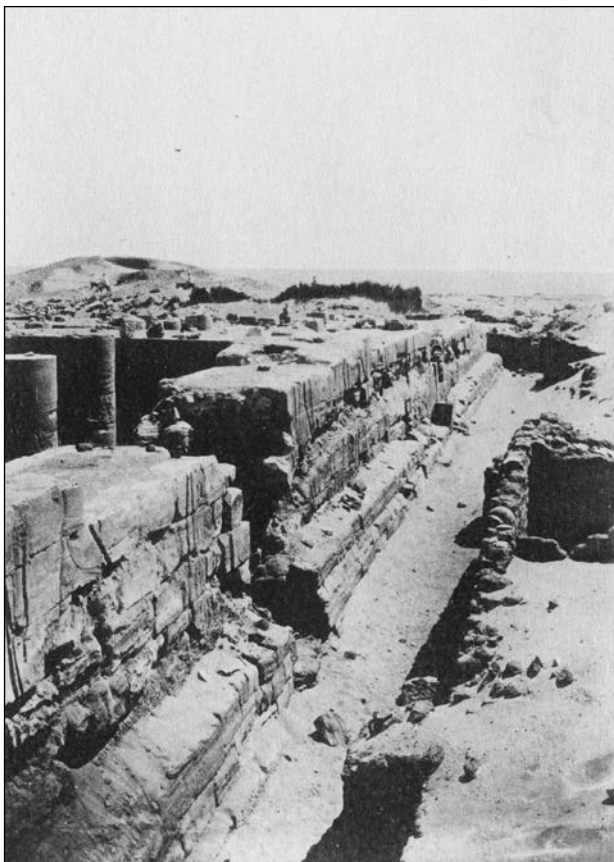


Plate 16.15. The south wall of Temple T during excavation by the Oxford Excavation Committee (Laming Macadam 1955, II, pl. LXVe; reproduced with permission of the Griffith Institute, University of Oxford).

filled naturally with wind-blown sand over the next decade and Shinnie noted in 1948 that it was by that time largely sanded up. During this refilling it will have again suffered severely from erosion from wind and from water damage. Until very recently the temple and the sand had again reached an equilibrium. Parts of the eastern end of the temple were buried under the sand but most of the walls of the building were visible on the surface and some protruded up to a metre above it. Several of the columns of the forecourt, of the hypostyle hall and in the *pronaos* also protruded well above the sand. All this exposed stonework has suffered very badly from erosion (Plate 16.16). Another problem is the result of the visits of tourists to the site. These visitors,



Plate 16.16. Heavily eroded columns in the First Court.

or more likely their irresponsible tour guides, frequently pull the sand away from the tops of the walls to expose the fine relief decoration but do not recover those reliefs (Plate 16.17). When the wind then blows it forms a vortex up against the decorated walls and rapidly erodes the surface.



Plate 16.17. Reliefs uncovered by tourists and left exposed.

With the funding made available by the Qatar-Sudan Archaeological Project it has been possible to take measures to protect the remains. Ideally the whole temple would once again have been buried and this would provide the most secure means of protection. This was the approach taken at Amara West where the temple excavated by the Egypt Exploration Society in 1938 and 1939, which had also been left uncovered at the end of the 1939 season, was completely backfilled in 1948. To provide the necessary material other parts of the sites were excavated at that time

(Fairman 1948, 3). Although an ideal and low-cost means of preserving the structural remains one serious disadvantage is that no trace of the temple is then visible. If antiquities sites in Sudan are to survive they must ultimately be seen to contribute something to the local and wider community. The only feasible way that they can do this is by attracting tourists which in the long term may bring money into the local economy and, if connected with the provision of hotels, perhaps also employment.

In this context it was not desirable to completely bury Taharqo's temple at Kawa so a compromise solution has been adopted. The current project has constructed a capping for the walls with a facing of red bricks to a height of approximately 400mm about the surviving stonework (Plate 16.18). The lowest course of the brickwork is bonded in



Plate 16.18. Red-brick facing capping the temple walls.

mud mortar so as not to damage the stonework and making the whole restoration process easily reversible. Above that for strength the brick walls are lime-mortar bonded and the exterior of the brickwork is then rendered in lime mortar. Within the brick facing the walls are infilled with spoil derived from spoil heaps of the 1930s and from rubble from the temple which is strewn across the surface thus helping to tidy up the site (Plate 16.19). In many places substantial



Plate 16.19. Sand and excavation spoil forming the core of the capping walls.

wall collapse had occurred. Where no *in situ* facing stones could be found after excavating down through the wind-blown sand for 1m the rough edges of the preserved wall core were used to support the brick facing and here bricks

protrude from the face to give an impression that this is a broken edge. These sections are also not lime-mortar rendered (Plate 16.20). By this means an impression is



Plate 16.20. Missing section of wall at the north-east corner of the temple indicated by unplastered and irregular brickwork.

given of the actual state of preservation of the underlying walls as also results from the new brick facing following the contours of the original wall tops but at 400mm above their level.

The new brick-faced walls preserve the wall tops from erosion. However their main function is to act as wind breaks. Where any vertical surface projects above the ground it has the effect of slowing down the sand-laden wind causing sand to be deposited on both the upwind and downwind sides of the obstacle quickly partly burying it (Plate 16.21). This is exactly what is desired as the 'sand



Plate 16.21. Build-up of wind-blown sand in the north-east corner of the First Court.

drifts' bury the uppermost sections of stone walling protecting them from further erosion and making it far more difficult and less attractive for the tourists to dig down to expose the reliefs. Where tourists have been particularly persistent, digging down to expose well-preserved reliefs and marking their position for future reference, large blocks of stone were set deeply into the ground immediately in front of the reliefs (Plates 16.22 & 16.23).

Some of the columns were preserved level with the ground surface and they were capped with 400mm of brickwork as with the walls. Some columns however, are preserved over 1m above the sand. Of these some are very badly eroded and can be encased with brickwork without problem. Others are much better preserved. In these cases



Plate 16.22. Relief on the exterior of the pylon uncovered by tourists who have marked its location with a chalked arrow.



Plate 16.23. Placing a large stone slab, which was subsequently covered with sand level with the ground surface, to protect a fine cartouche of Tabarqa.



Plate 16.24. Protecting columns in the First Court.

where the face of the column is exposed it is covered in a thin layer of mud plaster and then the hard lime-mortar render is applied over that, the whole finished off with a single course of red brick to protect the top of the column (Plate 16.24).

Ultimately the new brickwork should raise the level of the sand throughout the building burying all traces of the original stonework while the upper part of the brick walls should largely remain visible so that the temple plan can be appreciated by visitors to the site. The reversible nature of the work means that at some point in the future, should a more ambitious conservation project be deemed desirable, the recent protection measures can be readily removed.

What has become clear during the current work is that the temple is in a very poor state of preservation. Large sections of some walls have lost their facing at least in their upper parts. On the inner face of the east wall the facing has split off from the core (Plate 16.25) and many of the blocks visible at current ground level rest only on sand. The exterior face of the south wall particularly in its central section is very badly eroded and is unstable (Plate 16.26). The stone is in a very bad condition being extremely soft and friable – sections of stone were breaking away immediately the



Plate 16.25. Facing stones on the inner side of the temple's east wall.



Plate 16.26. The heavily eroded face of the south wall.



Plate 16.27. Shattered column drum in the First Court.

sand was removed from the wall face. In many columns the faces of the drums have spalled off in large fragments. Some of these fragments are led in the sand where they have fallen. Others remain in place but any attempt to excavate the columns would almost certainly result in the immediate collapse of these sections (Plate 16.27).

In the future if the temple could be enclosed in a secure roofed structure and be cleared of sand it would be an extremely impressive monument notwithstanding the removal of some of its columns to the Glyptotek in Copenhagen, the shrines to the Ashmolean Museum in Oxford and the Musicians wall to Khartoum. Many of the walls preserve very fine reliefs. However, the scale of the conservation issues this would raise are currently daunting. Very large scale strengthening of many of the sandstone blocks would be required as the excavation progressed and substantial sections of the walls would probably need to be dismantled, and blocks replaced before being re-erected. It is hoped that the current work has stabilised the monument and will allow it to survive in its current state until new techniques become available to allow the consolidation of this monument of 68.5m in length.

Following the conservation efforts the building is protected, the plan of the building is more readily visible and the site has been tidied up (Plates 16.28-16.30).



Plate 16.28. Temple T before the preservation work began, looking west south west.



Plate 16.29. Temple T after the preservation measures, looking west south west.



Plate 16.30. The First Court and pylon after the preservation measures, looking west north west.

Conservation of the Western Kiosk

Conservation work was undertaken on the western kiosk in 2018 (Plates 16.31 & 16.32). As with the temple the walls have been capped by modern brickwork to a height of 400mm, the lowermost course set in mud mortar to allow for its easy removal in the future should that be deemed desirable. The highest surviving part of the kiosk was above the level of a cavetto cornice moulding on both the inner and outer faces of its walls. To have placed the modern brickwork on the edge of this would have put undue strain on the stonework. To avoid this the modern brickwork has been set on the line of the lower part of the building's walls.



Plate 16.31. The Western Kiosk before the preservation work, looking north west.



Plate 16.32. The Western Kiosk after the preservation work, looking north west.

Conservation of the wall paintings in Building A1

During the excavation of rooms I and II in this building conservation was required to stabilise the painted-wall plaster as the work progressed (Plates 16.33-16.35). This was undertaken by conservators from the British Museum, initially by Philippa Pierce and subsequently by Claire Heywood (Heywood 2002). While in the short term this was



Plate 16.33. Conserving the wall paintings during the excavation of Room I in Building A1, looking west.



Plate 16.34. Conserving the blue-painted legs of Amun on the north wall in Room II of Building A1.



Plate 16.35. Conserving fallen fragments of painted wall plaster in Room I of Building A1.

successful it soon became apparent that an insurmountable problem raised its head. As the building was excavated and the deposits within and outside the rooms removed the slight dampness within the walls rapidly dissipated resulting in the walls shrinking significantly causing damage to the plaster adhering to them. In light of this the excavations were completed as soon as possible and the building carefully backfilled with sand.

The Visitor's Centre

To enhance the appeal of Kawa to visitors, both from Sudan and abroad, and at the urging of the Qatar-Sudan Archaeological Project, a visitors centre was constructed. This is a three-roomed building with a Libyan (jack-arched) roof, entered via a veranda with four supporting columns (Plate 16.36). The main part of the building is of two rooms linked by a wide archway. These contain information panels with text in both English and Arabic designed by Isabella Welsby Sjöström (Plate 16.37). Displayed in the second



Plate 16.36. The Visitors' Centre.



Plate 16.37. The interior of the Visitors' Centre.

room are the two stone lintels found associated with the stone pyramid S5 and two loose blocks found in the wind-blown sand, one inside, the other outside Temple T where they had been placed by the excavators in the 1930s (Plate 16.38). Opening off from the inner room at right angles is a third room (Plate 16.39), designed as a 1:1 scale replica of the central room in the shrine of Taharqo, Building A1,



Plate 16.38. Relief blocks from Temple T and lintels from Pyramid S5 on display in the Visitors' Centre.



Plate 16.39. Replica of the central room in the Shrine of Taharqo, Building A1 within the Visitors' Centre.

excavated in the late 1990s. This is provided with a false ceiling of traditional construction – palm beams, palm fronds, matting – protected by the Libyan roof above. Lifesize facsimiles of the wall paintings found in the shrine have been placed on the walls, the upper parts reconstructed in outline particularly with reference to the contemporary painting of Taharqo and Amun at Qasr Ibrim and to the large number of reliefs within the temple built by Taharqo at Kawa which lies 800m to the north of the shrine.³ The door which would have given access into the sanctuary chamber was stained with very strong tea brewed by the expedition's cook Mohammed Ibrahim Mahmoud.

Electrical wiring has been inserted throughout the building to facilitate its connection to the power grid should that ever arrive in the vicinity. At the time of construction the nearest power line was about 1km away and the cost of extending the line was prohibitive.

³ The form of the reconstructed portions was suggested by John Taylor, the reconstruction drawing was made by Claire Thorne, both at that time, staff members of the Department of Ancient Egypt and Sudan at the British Museum.

17. Concluding remarks

Derek A. Welsby

The recent surveys and excavations at Kawa, by the Sudan Archaeological Research Society, reported upon in this and subsequent volumes, have shed much new light on the town and cemetery. The earlier work undertaken by Griffith, Laming Macadam and Kirwan had focussed almost exclusively on the area within the *temenos* wall surrounding several temples including those built by Tutankhamun and Taharqo. That work revealed much about the architecture of monumental stone buildings in the town. It also found a wealth of relief decoration and many inscriptions on the walls of the buildings and on free-standing monuments. What little we know of the history of the town and its connections with the New Kingdom and Kushite states comes from these finds.

The current work has had a much wider topographical brief but the chronological range of its discoveries was rather more restricted than those recovered in 1929 and in the 1930s. At no point were Pharaonic levels revealed so the SARS activities have added nothing to our knowledge of the town during the New Kingdom, or of the possibility of even earlier occupation on the site.

Early Kushite Kawa

The recent discoveries all fall within the Kushite period as well as documenting the extensive robbing of the site at later, but largely uncertain, periods probably up until the very recent past.

While we can offer no insights allowing a comparison between the Pharaonic and Kushite town much light was shed on occupation during the Kushite period. Very early deposits were glimpsed in small excavations in Areas A and B and in grid square (TG5), lying a maximum of 740m apart. Although not necessarily contemporary, almost certainly in Area A and grid square (TG5) the earliest levels reached predate the reign of Taharqo (690-664 BC) by a considerable, though unquantifiable, period. In Area A the earliest deposits sat on the natural sand; in grid square (TG5) the natural was not reached and this was also the case in the sondage in Area B. In these three locations the pottery associated with the earliest deposits revealed can all be classed as Kushite (Welsby Sjöström 2023, 388-9) – if Pharaonic occupation occurred in Area B and grid square (TG5) it lies at a lower level.

This data suggests that the earliest material which we consider to be Kushite significantly predates the reign of Taharqo as does the urban centre at Kawa. The problem is that it is impossible to be certain by how much. One might suggest that occupation at Kawa that can be recognised as Kushite extends at the very least well back into the 8th century BC if not into the 9th century BC (see also Welsby this vol., 413ff.). If this is correct then the settlement at Kawa may have been occupied at the time of the earliest tombs considered to be Kushite at el-Kurru. It should be borne in

mind that there is no good evidence that the earliest burials at el-Kurru, whatever date they may be, are related to the origins of the Kushite state.

It has been suggested by several scholars that Kawa may have been the centre of a polity, along with others at Kerma and in the Napata/el-Kurru region, which were united at some point perhaps during the 8th century BC to form the Kingdom of Kush (Török 2009, 312).¹

The role of Kawa in the rise and early development of the Kushite state has yet to be ascertained. Of particular importance in this context would be evidence for or against continuity of occupation from the collapse of Pharaonic control in the 11th century BC to the earliest Kushite occupation in the 8th and perhaps even in the 9th century BC.² Hopefully further excavations, perhaps in the area of Temple T which would provide a clearly recognisable stratigraphic datum level of 684 BC, into underlying deposits may provide some hard evidence on this issue.

The extent of the Kushite town

No detailed study was made of the artefacts covering the surface of the town. This material consists of a mass of pottery sherds along with a wide range of other artefacts together with some architectural elements in stone and mud brick. Red brick was almost entirely absent and those fragments found may all be derived from burnt mud bricks. Amongst this material was Kushite pottery including a few pieces of Meroitic finewares, stone arrowheads and stone axeheads, the latter originally manufactured in the Neolithic or Kerma periods.

What appears clear from the excavations is that the town almost certainly attained its greatest extent in the earlier Kushite period. Under Taharqo a temple and a shrine were built 780m apart – it is presumed that these both lay within the same urban complex as is very strongly suggested by the presence of broadly contemporary buildings, in particular Building F1, lying between the two.

The town in the earlier Kushite, Napatan, period

As is well known from a number of Kushite inscriptions Kawa was an important centre in the early Kushite period, one of the several towns visited, at least over a period of three centuries, by the king on his annual reaffirmation of his legitimacy to rule bestowed at the various temples of Amun including that of Amun of Gematon (Török 1992, 113).

It presumably was an administrative centre although it lies

¹ See Török 2009, 312. Török also argues against the suggestions made by Morkot and Kendall for the presence of a 'Neo-Ramesside' state based on Kawa with five kings within the period of the 9th-8th centuries BC (2009, 293). Morkot has suggested that Alara was based at Kawa (2000, 157).

² For further discussion see Welsby 2017.

close to two others; Tabo is 30km to the north and Dokki Gel only 25km further away. To the south the location of the next major early Kushite centre is, at present, unknown. At Soniyat c. 158km upstream is an early Kushite temple, but presumably there were other early Kushite settlements and perhaps an administrative centre in the intervening river valley.³ An obvious place would have been at the point where the Wadi Howar, the route along it guarded by the fortress at Gala Abu Ahmed, meets the Nile in the vicinity of the medieval settlement at Old Dongola.

As an administrative and religious centre it will have housed a significant population of state officials and the priesthood. To this centre will have been attracted a sizeable population to service their needs. This urban wealth may have come direct from the state. Kawa also had another source of wealth, its proximity not only to the agricultural land available along the river, particularly here on the west bank and on several islands, but also from the Seleim Basin. The Seleim Basin is a depression contiguous with the better known Kerma Basin to the north which offered considerable potential for agriculture and animal husbandry.

These two sources of wealth will have made the growth of the town to an area in excess of 30 hectares possible and sustainable over several centuries.

Kawa also lay on the main artery for movement of people and goods through the Kingdom of Kush, the Nile. Especially in this part of the kingdom there was almost certainly no other viable route for the movement of goods and people, whether actually on the river or in its immediate vicinity. In the present state of knowledge it does not appear that the Korosko Road was utilised as a route to move from the southern part of Kush up into Egypt even at the time when the Kushites controlled the lower Nile Valley down to the Mediterranean. Whether the cross-desert route, later known as the Sikkat el-Maheila, running from Napata to Kawa was extensively used in the Kushite period is unknown. In any event it rejoins the Nile at Kawa and would have enhanced its importance as a transport node.

The earliest Kushite buildings at Kawa in Area A reflect the architectural traditions of the kingdom based at Kerma which was conquered by the Egyptians around 1500 BC and was firmly under their control by 1450 BC. The presence of these buildings at Kawa not only demonstrates the survival of indigenous practices throughout the period of New Kingdom domination but might indicate that Kawa was a Kerma-period town within which the Egyptians established their new urban centre at least during the mid 14th century BC if not well before. The presence of small Kerma settlements immediately to the north and south of Kawa and of the *Kerma Classique* cemetery only 1.275km to the north east of the temple built by Tutankhamun, testifies to a strong Kerma-period presence here.

Two of the buildings excavated shed light on adminis-

trative activities at Kawa in the early Kushite period. As noted in Chapter 2, in the immediate environs of the shrine, Building A1 dating from the reign of Taharqo, the presence of very extensive dumps of mud sealings from ceramic containers, bearing amongst other impressions, some with the names Anlamani and Aspelta, possibly relating to the Kushite kings of the 7th and early 6th centuries BC (see Vincentelli forth., cat. nos S-449 to S-452). This presumably indicates that containers full of something were being opened here, the broken sealings then being discarded on the rubbish dump immediately outside the buildings. What is rare in this part of the site are sherds from the transport amphorae which were presumably emptied here and then taken elsewhere for reuse on site, for return to their point of origin for refilling, or for reuse to transport locally produced commodities. The sealings buried in a pit within the building had been used in association with sacks.

If Building A1 was intimately connected with the redistribution of imported produce arriving in ceramic containers and sacks, this activity may well have been under the control of the religious establishment. As far as we can tell Building A1 lies at the southern limit of early Kushite Kawa, perhaps so located as a convenient place to deal with commodities arriving into the town. It will have been very close to the river bank.

At Building F1 the situation appears to have been rather different. Here large numbers of the transport amphorae were found, many largely complete. Although none were found *in situ*, apart from an example presumably being reused for storage and set deeply into the floor in Room IX, they had presumably been stored there. Mud bungs were also found in this building but none were found *in situ* sealing an amphora nor were they found in close association with vessels. Presumably the amphorae had already been opened and, if still containing their contents, were closed by lids or stoppers made from a more perishable material.

Apart from the very early Kerma-style buildings already noted all others excavated to date were rectilinear in plan and were generally well built of mud brick. Most had substantial walls and many may have had an upper storey. Substantial stairways were observed in a number of buildings while Building F1 had two stairways in opposite corners.

As well as domestic structures a number of others may have had a special function. Among these was the complex made up of Buildings F4, F5 and F10 which was of considerable size and has a very substantial courtyard perhaps surrounded by a colonnade at least at one phase of its use. Further north Building D1, with its much thicker mud-brick walls than usual, may have been of two or more storeys in height. Presumably close to Temple T there was at least one palatial structure – no trace of it has so far been noted.

Although well-built there were few signs of opulence within the Kawa buildings. Apart from the wall paintings in the shrine only Building F1 bears traces of painted decoration. In that case this was almost certainly from rooms at first floor level. Only very small and few fragments remain so it is impossible to suggest the nature of the decoration employed nor how extensively it was used throughout the first floor apartments.

³ On the inscription of Irike-Amanote it is recorded that he travelled from Napata to *Krtm* and then to Kawa. If, as has been suggested (Żurawski 1998, 80), *Krtm* lies in the vicinity of Soniyat, this rather suggests that at that time there was no major urban centre between it and Kawa. Note however, that the royal itineraries record the king travelling from Kawa to Kerma – no mention is made of Tabo which boasted a large temple of Amun almost certainly built by Taharqo like that at Kawa and clearly an important place in the Kushite period.

In the domestic buildings no painted decoration has been noted although some walls were rendered and whitewashed.

The town in the later Kushite, Meroitic, period

In the later Kushite period only the central part of the town, perhaps focused around the *temenos*, was occupied intensively. An industrial quarter existed 500m to the south of Temple T and a late mud-brick temple was 450m to the south of Temple T.

In the main Kushite cemetery several hundred metres to the north east of the town the bulk of the graves excavated were of the Meroitic period. Graves were generally spaced out with little intercutting suggesting that their positions were marked by some sort of monument on the surface. Earlier Kushite Napatan graves were found in grid squares (GD3) and (HA2) but they were few in number. It would appear that the Napatan-period cemetery did not extend over the same area as that of the later Kushite period. It may have been smaller with less graves, or the graves may have been more concentrated. Where the nucleus of the Napatan cemetery lies is at present unknown.

By far the most prestigious burials were located on the eastern side of the cemetery where the ground falls off steeply to the east, the break of slope extending north north east to south south west. How far it extended to the south is uncertain as a large sanddune, currently about 450m in extent north to south, covers this part of the cemetery. The most prominent location as viewed from the east, on the crest of the ridge, was occupied by a row of stone pyramids with another row of mud-brick interspersed with stone pyramids set a little further back and with probably many more behind those. The excavations hinted at the presence of similar mud-brick monuments, or perhaps *mastabas* elsewhere in the cemetery although in many areas surface erosion will have removed all traces of above-ground monuments had they existed.

Who was buried in this part of the cemetery is uncertain but the size and style of construction of some of the pyramids indicates that they were members of the very uppermost echelon of the elite, perhaps even members of the royal family.

The broadly-contemporary remains known from the town do not hint at its importance in the Meroitic period. This is particularly clear in the later phases of the *temenos* gateway which were of much poorer quality of construction than the underlying Napatan gateway that they replaced. Notwithstanding this the high status burials in the cemetery would suggest that it was, at least for some time, one of the most important Meroitic urban centres in the Kingdom rivalled only by Napata and Meroe.

While there was certainly considerable urban development in the region around Meroe towards the end of the first millennium BC there is every reason to believe that the much older urban centres to the north remained equally important. The large stone pyramids at Kawa testify to this as do the extremely rich burials at Sedeinga and Sai.

No trace of occupation extending beyond the political collapse of the Kushite kingdom during the 4th century AD

was noted at Kawa. Already by the late Kushite period the battle against the ever encroaching wind-blown sand may have been lost, the population moving to a more hospitable location although where that may have been is unknown.

Its abandonment did not preserve it from the activities of grave robbers and *maroq* diggers although the former activities may have begun during the Kushite period. The *maroq* diggers were certainly active into the 20th century as was the continued removal of stone blocks from the temples (Griffith 1955a, 2). Other objects were probably removed from Kawa in the medieval period, a few of which have been unearthed in Christian contexts at Old Dongola – in the Church of the Granite Columns (Jakobielski and Krzyżaniak 1967-68, 161ff, pls XXXIb & XXXII) and in the Church of Archangel Raphael (Godlewski 2018, 124, figs 10.12 & 10.13).⁴ Clearly the inhabitants of medieval Old Dongola were aware of the ruins at Kawa and they may have been responsible for the removal of building stone from the site which could easily be transported the 120km upstream to their capital.

The wind-blown sand will have rapidly built up against and inside the abandoned buildings while its strongly abrasive action will have rapidly eaten away at upstanding structures of stone and mud brick reducing them to ground level. Thus Kawa appears to have disappeared from history and escaped the attention of all the foreign travellers who passed through the region from the early 19th century until its chance discovery when General Wolesley's boat happened to put into the bank here for repairs in 1884 and some of his soldiers, wandering around the site, noted the ancient objects there.

⁴ For a similar phenomenon in the Kingdom of Alwa, with the movement of Kushite stone elements into the Christian town at Soba East and their reuse there, see Welsby and Daniels 1991, 296-298, pls 22 & 55.

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خلال المراحل المتأخرة من المملكة الكوشية . وخلال الفترة الزمنية الطويلة من عمر المدينة ؛ تأثرت كثيراً بعامل الرمال التي تذررها الرياح وبالهجرجماعى عندما تضاءلت أهميتها الإدارية ، و ربما لرغبة ما تبقى من سكانها فى النزوح لمواقع أكثر حيوية . بالتوافق مع مشروع الآثار القطرى — السودانى إتخذت إجراءات حماية الموقع وتحسين تهيئته للزائر ؛ فتم تسوير الموقع الأثرى بالسلك الشائك ، وكذلك تمت حماية حدود المنطقة الأثرية بأعمدة أسمنتية . المعبد الذى شيده الملك تهارقا تمت تقويته وكذلك الكشك الغربى . وعند مدخل الموقع على حدود المنطقة الأثرية تم تشييد مقر لشرطة السياحة ومركزاً للزوار . الأعمال التى ذكرت فى هذا المجلد والتي ستذكر فى المجلدات المتوقعة لاحقاً ؛ أضافت كثيراً لمعرفتنا عن مدينة الكوة فى الفترة الكوشية . كما إن ثراء الموقع وفهمنا البعيد للكوشيين وإحتلال الدولة المصرية الحديثة للإقليم ، يمثل بلا شك عملاً عاجلاً ومطلوباً على الموقع ، وعلى وجه الخصوص فى الفترة من سقوط الإمبراطورية المصرية فى النيل الأوسط خلال القرن الحادى عشر قبل الميلاد حتى قيام الدولة الكوشية فى القرون اللاحقة بعد ذلك .

ترجمة : دكتور الحسن أحمد محمد الحسن .

ملخص باللغة العربية

هذا هو أول مجلد من أربعة مجلدات متوقعة عن النشاطات الأثرية حول المدينة الكوشية وعن واحدة من جباناتها في مدينة الكوة بشمال السودان . الموسم الأول في ضواحي المدينة تم في عام ١٩٩٣ ، كجزء من مسح جمعية أبحاث الآثار السودانية لإقليم شمال دنقلا ، والذي تم نشره عام ٢٠٠١ .

المشروع الذي نتناوله هنا بدأ عام ١٩٩٧ تحت رعاية جمعية أبحاث الآثار السودانية ؛ ولكنه توقف بين عامي ٢٠٠٢ و ٢٠٠٧ بسبب حاجة الفريق للإنتقال إلى منطقة الشلال الرابع بغرض إنقاذ الآثار المهددة هناك . في ديسمبر ٣١٠٢ أصبح مشروع حفريات الكوة جزءاً من مشروع الآثار القطري — السودانى ، جنباً إلى جنب مع حفريات كرمة ، مواقع إستيطان المملكة المصرية الحديثة وفترة كوش الباكراة في موقع H25 ، كواحد من ثلاث مواقع تم تمويلها بواسطة المشروع القطري — السودانى تحت إدارة المتحف البريطانى . وقد بلغ المشروع القطري — السودانى نهايته موسم ٢٠١٨ .

بين عامي ١٩٢٩ و ١٩٣٦ قام قريفيث ، مكادم وكيروان بحفريات مكثفة مع الدراسة للنقوش والنصوص في المركز الدينى للمدينة الكوشية . بينما يعمل المشروع الحالى على وضع هذا المجمع الدينى في سياقه الحضرى . ولإنجاز هذا الهدف ؛ فقد تم أولاً إجراء مسح طبوغرافى مفصل ، تبعه تخطيط للمظاهر السطحية موضحاً بمسوحات إستخدام فيها أجهزة متقدمة تخترق الأرض في محاولة للحصول على نظرة عامة لطبيعة وتاريخ الموقع ، الذى يغطى ما يزيد عن ٩٢ هكتار ، تم إجراء اعمال الحفر والتنقيب بصورة واسعة على طول الموقع ، بتصميم يتحرى أساليب المباني من مقاصير ، مساكن ، مخازن ، بوابات ، أفران و طرق .

إن من بين النتائج الهامة التى توصلنا إليها ، معرفة أن معظم المباني الباقية إلى إرتفاع مستوى لسطح الأرض الحالى تعود إلى الفترة الكوشية المبكرة عندما كانت المدينة في أوج إتساعها ، هذا الأمر أتاح فرصة مثالية لدراسة تخطيط ومباني المدينة في فترة كوش المبكرة وإنتشارها على مساحة واسعة . ويبدو أن نواة السكن الحضرى كانت في المنطقة الأقرب لجدار المدينة و حول معابد A ، B و T .

في ذات الوقت ؛ كان ضمن الحفريات التى أجريت خلال مسح إقليم شمال دنقلا ؛ حفر واحدة من الجبانات الكوشية بالموقع الموسوم بـ R18 ، وهنا أيضاً تم حفر منطقة واسعة من هذا الموقع . وعلى الرغم من أن معظم المقابر أمكن تأريخها للفترة الكوشية المتأخرة ؛ إلا أن هنالك الكثير من الأدلة لمقابر تعود لفترة كوش الباكراة . بعض المناطق عانت كثيراً من عوامل التآكل المستمر ، وأحياناً نجد أنه حتى معظم غرف الدفن قد تمت إزالتها . وفي أماكن أخرى كانت مباني المقابر باقية إلى إرتفاع متر واحد . المقابر تتدرج من الحفر البسيطة المحفورة في الأرض الطينية ، إلى غرف مقباه في شكل برميل مبنية بالحجر في نهايتها الغربية مدخل طويل منحدر . بينما هنالك الكثير من المقابر ليس لها مبانٍ تميزها بعامل التصحر المستمر على سطح الأرض يجعل من المستحيل إثبات وجودها . بعض المقابر واضحة دون شك بشكلها التلى ، وأخرى على هيئة مسطبة أى هرم مبنى من الطوب اللبن ومكسوة بالحجارة . وبين هذه المقابر الأخيرة هنالك مقبرتين متقاربتين من حيث الحجم ، وإسلوب بناء إحداهما يعاصر المباني الملكية بجبل البركل ومروى . كل مدافن النخب السكانية تمت سرقتها بصورة مكثفة ، وبقي القليل منها ليوضح مدى الثراء الذى أثبتت به هذه المقابر .

هذا المجلد يحتوى على مناقشة عامة حول المباني المخططة داخل الموقع من حيث الدلالة على وظيفتها وعلى طبيعة المدينة بصورة عامة ، ثم معلومات مفصلة لنتائج أعمال الحفر والتنقيب أحرقت على مناطق مختلفة من المدينة و الجبانة ، يتبعها تقييم لنتائج المسوحات التى إستخدام فيها أجهزة قياس المتقدمة وأخرى رادارية تخترق الأرض .

فيما يلي أعمال الحفر والتنقيب فقد كشفت عن تشكيلة واسعة من اللقى الأثرية . التقرير المفصل عن الفخار والذى ألفته إيزابيلا ويلسبى سوجيستروم سوف يظهر في المجلد الثالث من دراسات الكوة . أما بقية اللقى الأثرية المكتشفة سيكتب عنها مجموعة من المتخصصين في المجلد الثانى . المجلد الرابع سيخصص لمواد علم الآثار الأحيائى ، العظام الأدمية تمت دراستها بواسطة أنا ديفيز — باريت و تاتيانا فيلمينج — منديتا ، والعظام الحيوانية بواسطة برنيل بانقسقارد . من المؤمل أن يتبع هذا تقرير آخر عن علم الآثار النباتى في الوقت المناسب .

أبرزت نتائج الحفريات أهمية الكوة في الفترة المبكرة لدولة كوش ، عندما كانت واحدة من أكبر المراكز الحضرية في الدولة ، وهى التى فضلها الملك تهارقا ، الذى نعرفه من بقايا معبده الحجرى ومن خلال النقوش التى كشفتها حفريات بعثة جامعة أوكسفورد التى تمت في الثلاثينات من القرن الماضى . وعلى الرغم من أن المدينة كانت تغطى مساحة تعتبر صغيرة خلال الفترة الكوشية المتأخرة ؛ إلا أن أدلة من الجبانة وبخاصة المقابر ذات الأهرام المكسوة بالأحجار تقف شاهداً على الوضع الإجتماعى الرفيع لبعض سكانها ، مما يعكس مدى أهمية دور المدينة في إدارة كوش في ذلك الزمان . لم يكشف عن مواقع سكنية لفترة ما بعد كوش بالمدينة ؛ ولا ما يمكن أن يوثق لطبيعة تدهورها



Sandstone Pyramid S5 in the cemetery Site R18 at Kawa.

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