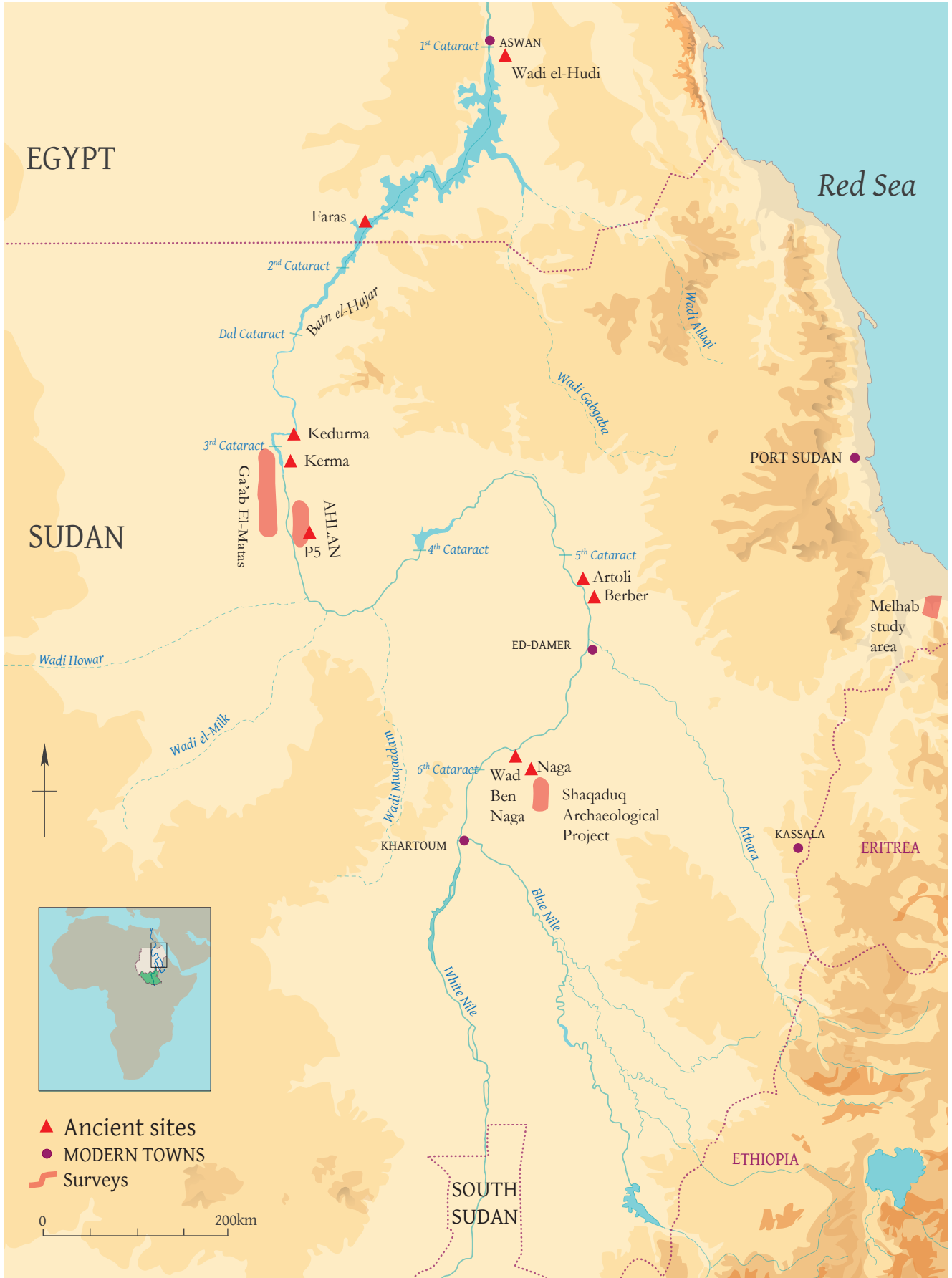


SUDAN & NUBIA 27





SUDAN & NUBIA

The Sudan Archaeological Research Society



Volume 27

2023

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Front cover. Block 1000.0049 from Naga (photograph courtesy Karla Kroper).

Above. Pottery jar with decoration of sorghum heads from BMC 60, Berber (photograph courtesy Mahmoud Suliman Bashir).

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Kerma settlement Site P5, Northern Dongola Reach: report on the 2023 season

Steve Mills, Stephen Porter, Paul T. Nicholson, Loretta Kilroe and David Buchs

Introduction

The site known as P5 was identified by Dr Derek Welsby during his survey of the area in the 1990s (Welsby 2001) and is located immediately east of the village of Hillat al-Farida in the Wadi el-Khowi district of the Dongola Reach, Sudan (Co-ordinates N 19° 02.52' E 30° 36.32'; Ancient Monuments site number: NE-36-A/21-W-7) (Figures 1 and 2). The villagers of Hillat al-Farida know the site as 'Al-Qanesa' ('the Church') though there is no trace of any occupation later than the *Kerma Classique*. Recognition of the antiquity of the site by the residents of Hillat al-Farida has so far helped to protect it, though there has been some recent expansion of agriculture in the area (below).

In 1997, Welsby excavated a nearby structure numbered P4 which appears to be some sort of storage building probably associated with the Kerma settlement site at P5 (Welsby 2001, 121-122) and he believes that P5 may be one of the most significant Kerma sites in the area (Welsby pers. comm.) and may offer clues to changes in the settlement regime around 1500BC when the Alfredda Nile was drying up (Macklin and Woodward 2001; Macklin and Lewin 2015) and around the time that the Egyptians began their domination of Nubia.

An exploratory visit to the site was made by Mills, Nicholson and Morkot¹, in the company of Dr Welsby, in 2018 in advance of applying to the National Corporation for Antiquities and Museums (NCAM) for permission to work at the site. Our intention was to begin the work in March-April 2019, however, political conditions meant that the work had to be delayed. There then followed two years of covid restrictions while in early 2022 the political situation again made work unfeasible. Fortunately, by November 2022 the UK Foreign, Commonwealth and Development Office advice on travel to Sudan was amended and work became possible in 2023.²

It was evident from our arrival in 2023 that the irrigation of land around the site had continued since our initial visit and now extended on both the east and west of the mound in a northerly direction toward P4. It is hoped that our interest in the site and our contribution to the local village economy may help to preserve the site for future years, the same is true of the nearby site of R4 (Minor *et al.* 2020) which has also been subject to agricultural pressures.

The objectives for work in the 2023 season were:

- Make a detailed topographic survey of the site including mapping to examine agricultural encroachment.
- Record the location of surface finds over the settlement.
- Carry out limited test excavation of significant feature(s).
- Examine the artefacts recovered with particular reference to changes in food processing/storage vessels and agricultural tools over time.

This final aim might help to determine whether the occupants of P5 were subject to environmental pressures as the Nile changed its course.

¹ Dr. Robert Morkot is a co-director of the project but was unable to take part in the work in 2023.

²The team left Sudan on April 12th, before the conflict broke out on 15th April 2023.

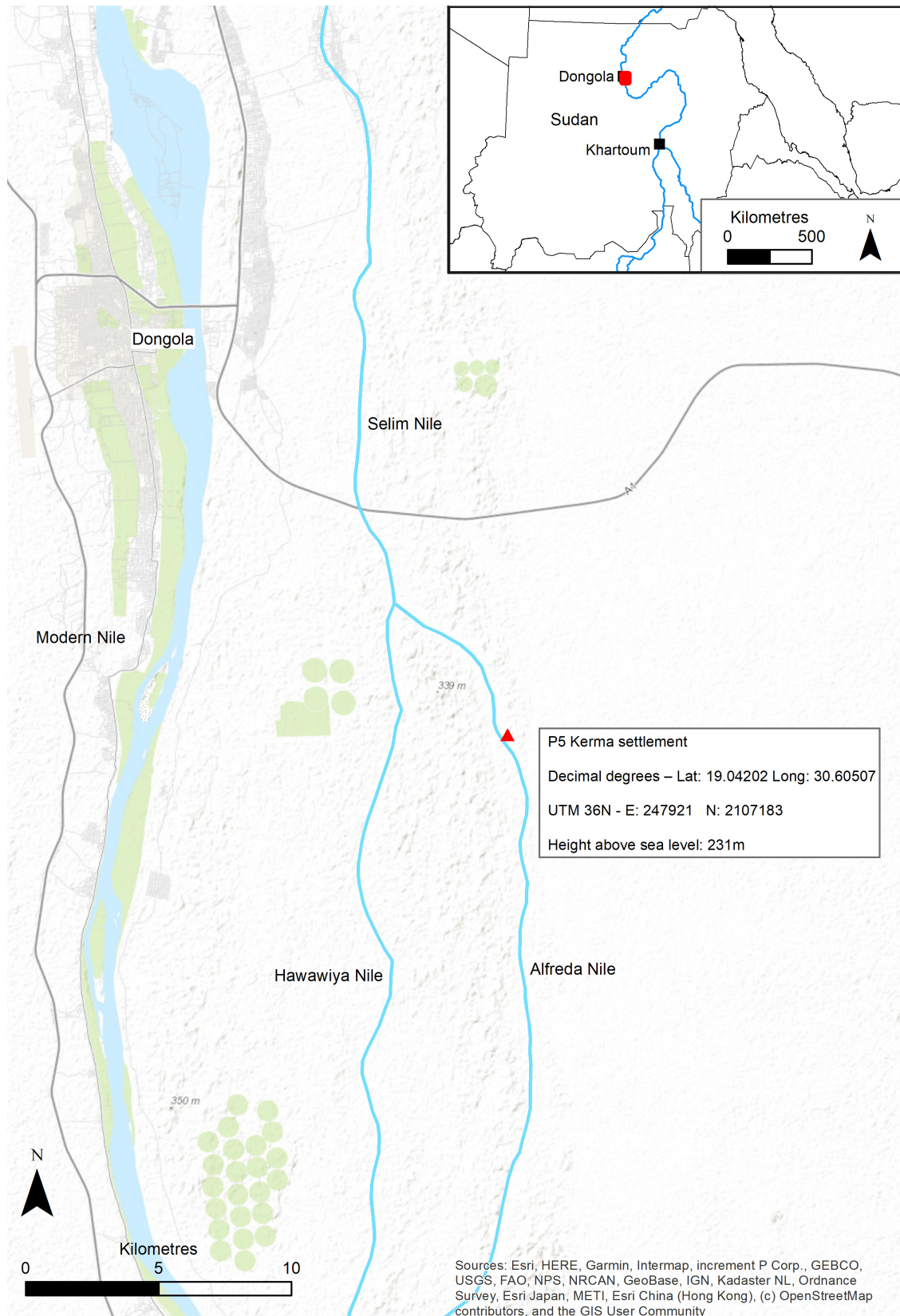


Figure 1. Location of P5 on the Alfreda Nile palaeochannel. Location of paleochannels based on Macklin and Woodward 2001. (Base mapping ESRI's World Topographic Map – showing cultivation areas in green. Sources: ESRI, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community) (graphic by Steve Mills).

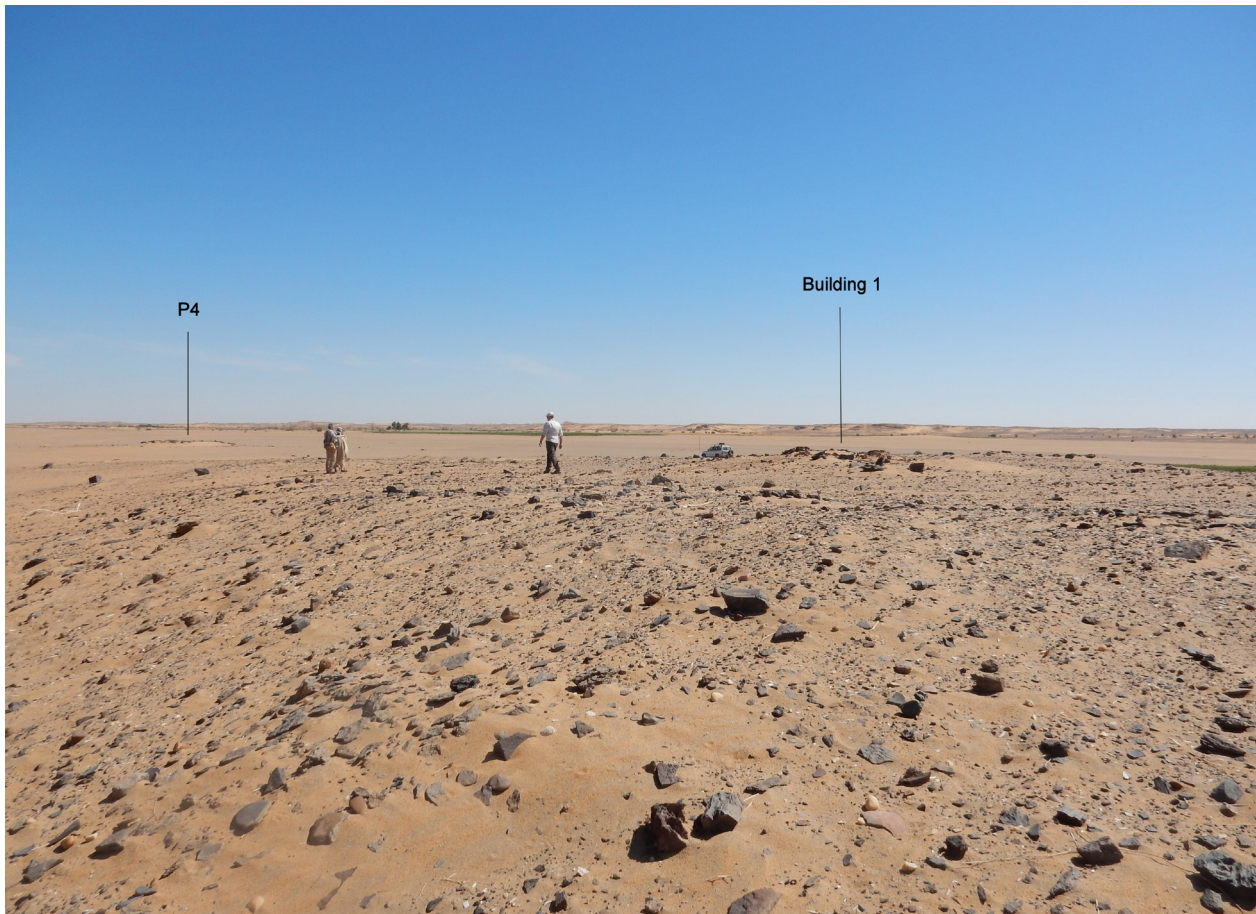


Figure 2. The low mound of P5 looking north-east with P4 seen left of the two figures. Building 1 is at centre. Rock outcrops can be seen on the horizon at the right (photo by Steve Mills).

Background

For approximately a millennium (2500-1500BC) the indigenous Kerma people of Sudan's Dongola Reach settled along the banks of the Nile's channels and farmed there. However, around 1500BC these settlements seem to come to an abrupt end.

It is clear that whilst the Kerma societies were independent of Egypt there were trading and cultural links between the two regions, evidenced through material remains at sites in Egypt and Nubia. However, the nature of these links and exchanges is unclear, and most archaeologists have concentrated on the period after 1500BC when pharaonic Egypt ruled much of the Nile Valley in what is now northern Sudan. Little effort has been focussed on the nature of the Kerma settlements, beyond the centre of Kerma itself (Bonnet 2014), their organisation or agricultural practices. A recent project begun at the nearby site of R4 (Minor *et al.* 2020) has similar aims to that described here and the combination of these two projects offers a wider perspective on Kerma rural settlement, particularly at a time of environmental change. Site R4 is only some 6km distant from P5 and so may form part of a wider Kerma community in this part of the Dongola Reach.

Work by Macklin and Woodward (2001) on the hydrology of this area has raised the intriguing possibility that shifts in the river pattern led to increased aridity in the area and that these put sites such as P5 beyond agricultural use *before* the Egyptian invasion. It is hoped that excavation at P5 might answer some of the questions around aridity versus invasion for the abandonment of rural sites such as P5.

The project therefore aimed to determine whether the material record suggests increasing attempts by the inhabitants to improve agriculture or to construct larger grain storage facilities over time, perhaps

in response to more frequent drought episodes. The examination of material culture and any surviving botanical and faunal data will also provide evidence of changing social practices through time that might relate to environmental stress.

Survey

Aims

The 2023 survey at Site P5 had the following aims:

1. To establish survey control points and a 10m² grid on site.
2. To provide survey points for the excavation of Building 1 as required.
3. To survey the current limit of the site and to begin a topographic survey of the P5 mound.
4. To survey areas of agricultural use (crops, irrigation channels) and agricultural clearance immediately surrounding the site.
5. To survey surface finds of axes and diagnostic pottery.
6. To survey key archaeological features visible on the surface of the site and in the immediately surrounding area (raised areas, collections of stones indicating structures). This included P4 80m NE of P5.
7. To establish a project GIS³ using the survey data.

Method and outputs

A mark on a prominent stone on the highest point of the P5 mound was selected as the principal survey control point. Using a handheld *Garmin Oregon 550t* GPS unit, a waypoint was created of the location of the mark on the stone. Waypoint averaging of this location was done on four separate occasions over a 24-hour period providing coordinates with absolute positional quality of 1m. The coordinate system used is Universal Transverse Mercator (UTM) 36N (EPSG 32636, using WGS84 ellipsoid). This procedure provided UTM 36N easting, northing and height (metres above sea level) coordinates for the control point which is called P5CP1 (CP for Control Point): E:247921, N:2107183, H:231 metres above sea level (m asl)⁴.

For all 2023 surveys the total station was set up on P5CP1 and the orientation (0 degrees horizontal angle) was set to UTM grid north. The total station used is a *Leica TS06 Plus*. A new job file was created for each day of survey and the data downloaded at the end of each day's survey for import to GIS. There were 10 job files in total. The survey team consisted of Mills, Nicholson, Porter and NCAM Inspector Alsamani Ezeldin Abdelrahman Kara.

A 10m² grid was created that covered the full extent of the surviving mound based on archaeological material visible on the surface. Using the total station, metal stakes were positioned to demarcate and reference the grid on the surface. Stakes were positioned along the full length of column C to provide a base line and then at select points east and west of the base line to enable the grid to be referenced on site.

The existing perimeter of the site was surveyed (Figures 3 and 4). As far as possible, and mostly on the north edge of the mound, this was based on the distribution of archaeological material visible on the surface. Elsewhere, the perimeter is based on the limit of areas of agriculture that immediately surround the site on the west, south and east sides of the mound. The extent of the areas used for agriculture immediately surrounding the site on the west, south and east sides were surveyed. These areas of agriculture border the edge of the mound on the west and south sides and on the eastern edge now partially encroach on to the mound and the archaeology. The current two irrigation channels immediately to the south of

³ Geographical Information System.

⁴ The mark on the stone is 260mm above the P5 surface, making the surface height at this location 230.74masl. The decimal degree latitude and longitude coordinates for the centre of the P5 mound are provided in the introduction above.



Figure 3. P5 mound perimeter and immediate surrounding area showing location of P4 feature, the village of Hillat al-Farida, the well and irrigation channels (background imagery source Google Earth dated 14/11/2022) (graphic by Steve Mills).

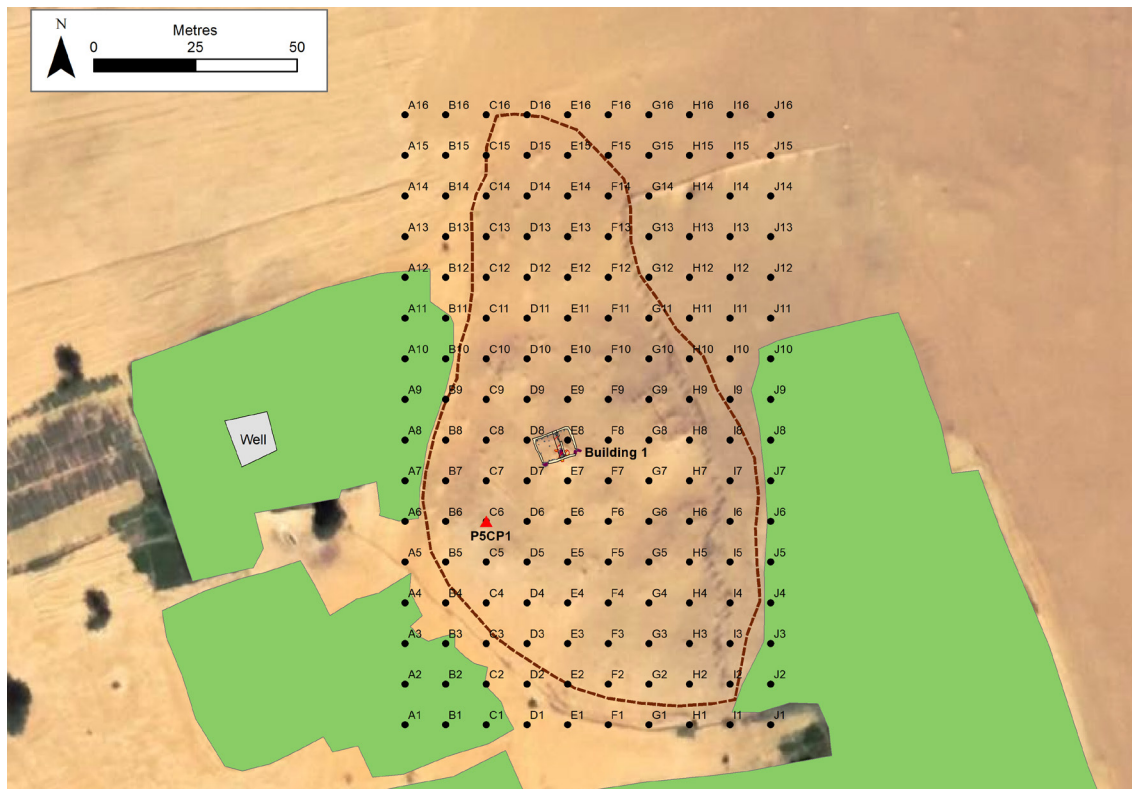


Figure 4. P5 mound with site grid (labels at southwest corner of each grid square), showing location of P5CP1 control point, Building 1 and agricultural areas (in green) immediately surrounding the site (background imagery source Google Earth dated 14/11/2022) (graphic by Steve Mills).

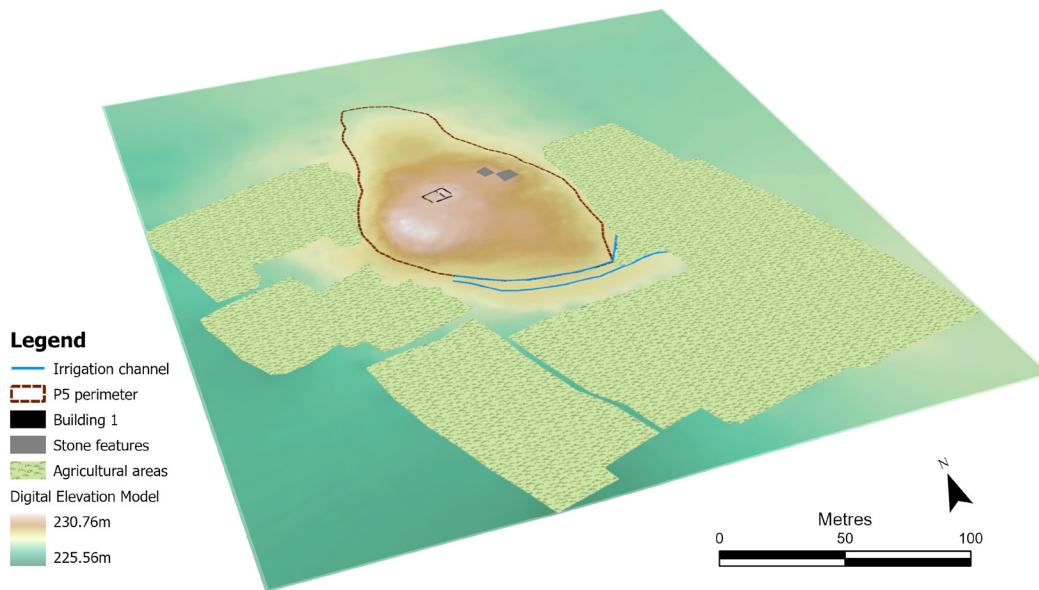


Figure 5. Digital Elevation Model of P5 mound, including location of Building 1 and stone features (scale computed at centre of view) (graphic by Steve Mills).

the mound were surveyed. These are supplied with water by a pipe that runs from a well (see Figure 3), which is located 40m west of the mound. A linear strip of sand spoil following more recent clearance on the east side of the mound was surveyed. This area of clearance is probably for the expansion of land for agricultural use up to and on the eastern edge of the mound.

Based on the 2023 survey, the dimensions of the P5 mound are:

- Maximum length north-south axis: 155m.
- Maximum width east-west axis: 83m.
- Area: 8222m².
- Maximum height above immediate surrounding land within 100m: 4m (based on land west and south towards the village being slightly lower (~226m asl) than land to the east and north (~227m asl)).

The current dimensions of the P5 mound indicate a reduction in size compared to those measured in 1997 (reported in Welsby 2001, 121. Main mound length 203m, width 100m, maximum extent of site length 229m, width 170m – with length assumed here to be the north-south axis). This reduction is a consequence of expansion in the use of land for agriculture in the area immediately surrounding the mound. Comments and a site plan following the 1997 assessment (Welsby 2001, 122-123 and fig 3.77) indicate areas with archaeological material at surface associated with P5 to the east and south of the main mound which are now within agricultural fields and no longer accessible for archaeological investigation.

Returning to the 2023 survey, a topographic survey of the mound was started. This used the site grid as a guide with transects running west to east across the mound and spaced 10m apart from south to north. Points were surveyed at 5m intervals along each transect. Combined with other survey points made on the surface of the mound (e.g., points for establishing the site grid, the location of surface finds, the location of features on the surface of the mound), 748 survey points were used after the fieldwork season

to generate a 3D representation Digital Elevation Model (DEM) of the mound generated at 2m spatial resolution (Figure 5).

Using one of the 10m² grid squares as a guide at the southern end of the P5 mound, a test systematic surface count of material (pottery, axes) was trialled. The aim was to gain a better sense of variation in the density and kind of material at surface across the site using the grid squares as standard units of area. With two people working (one observing material and calling out counts, the other recording detail in a notebook) it took over one hour to complete one square. The site grid has 100 10m² grid squares entirely within or that intersect with the P5 mound. Given the time taken to complete one grid square, it was decided that there was not sufficient time within the 2023 season to complete this task and no further systematic counts by grid squares were attempted. Therefore, only diagnostic material encountered on the surface while engaged in other tasks on site (surveying, photography and the excavation of Building 1) were counted and collected. A consequence of the time constraints of the 2023 fieldwork is that the southeast area of the P5 mound was less intensively investigated for surface finds than would otherwise have been possible.

The location of these surface finds of diagnostic pottery and axes (mostly lugged axes and one polished stone axe, see P5 Finds section below) were surveyed (Figure 6). The spatial distribution of this material will aid in the study of pottery across the site and for establishing chronology. Even though the approach for collection was on an *ad hoc* basis rather than systematic, the data will nonetheless aid in visualising the distribution of axes across the site found to date. The location of one small piece of copper was also recorded.

On the surface of the mound are a series of raised features and concentrations of blocks of stone. These

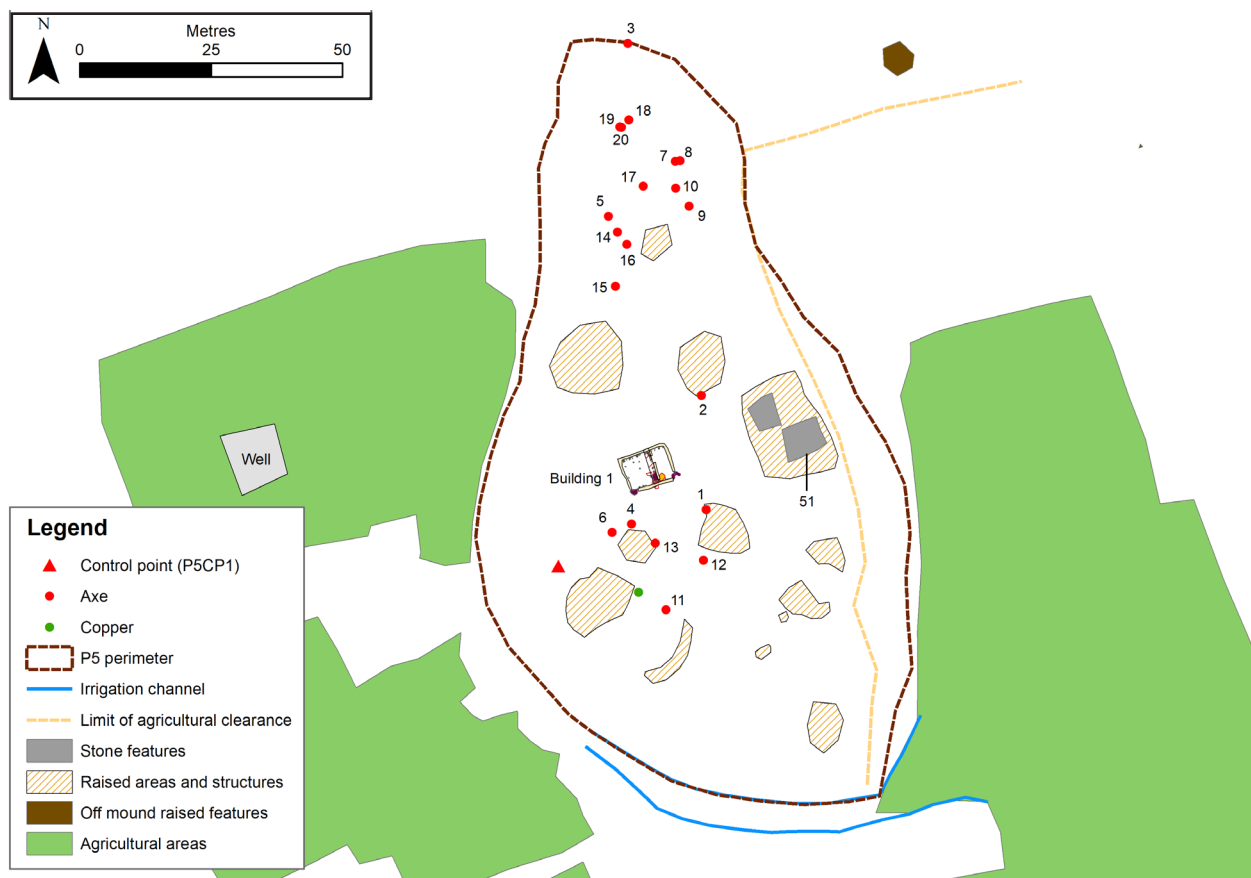


Figure 6. Distribution of axe and copper surface finds on P5 mound surveyed and collected in 2023 (axes numbered 1-20 as per figure 22) (graphic by Steve Mills).

probably represent the locations of structures (reported in Welsby 2001, 122-122). The outline of each of these raised features was surveyed. This included two features demarcated by stones on the eastern side of the mound, one of which is a clearly rectangular arrangement of stones, and which was noted as the best preserved stone structure in 1997 (Figure 7. Labelled as feature 51 in Welsby 2001, 121, fig 3.77 and fig 3.78). The other feature immediately northwest of 51 has a less clearly defined arrangement of stones.

In addition, two raised features just beyond the perimeter of the mound to the north were surveyed (Welsby 2001, 122, notes 8 small burnt mounds in the plain to the NNE of the settlement but these were not identified in 2023). The perimeter of the stone structure at P4, 80m to the northeast of the northern limit of P5, was also surveyed (this feature was excavated in 1997, reported in Welsby 2001, 121).

Survey points of features and levels were made as required as the excavation of Building 1 progressed (see Excavation section below). This included: the outline of previous disturbances and associated spoil; the area of the 2023 sondage; the position of post stones; the position of mud brick walls; the location of nails used for drawings; levels for drawings.

Following each day's survey, the job files were downloaded from the total station in compatible formats and transferred to the project GIS. Polygon and line Shapefiles were created to display the shape, size and orientation of some of the features surveyed (agriculture/crops, irrigation channels, perimeter of P5, perimeter of P4, linear spoil following recent clearance for agriculture, archaeological features on P5, features associated with building 1) (Figure 8).

Alongside the survey files and shapefiles created as part of the project survey, other layers in the

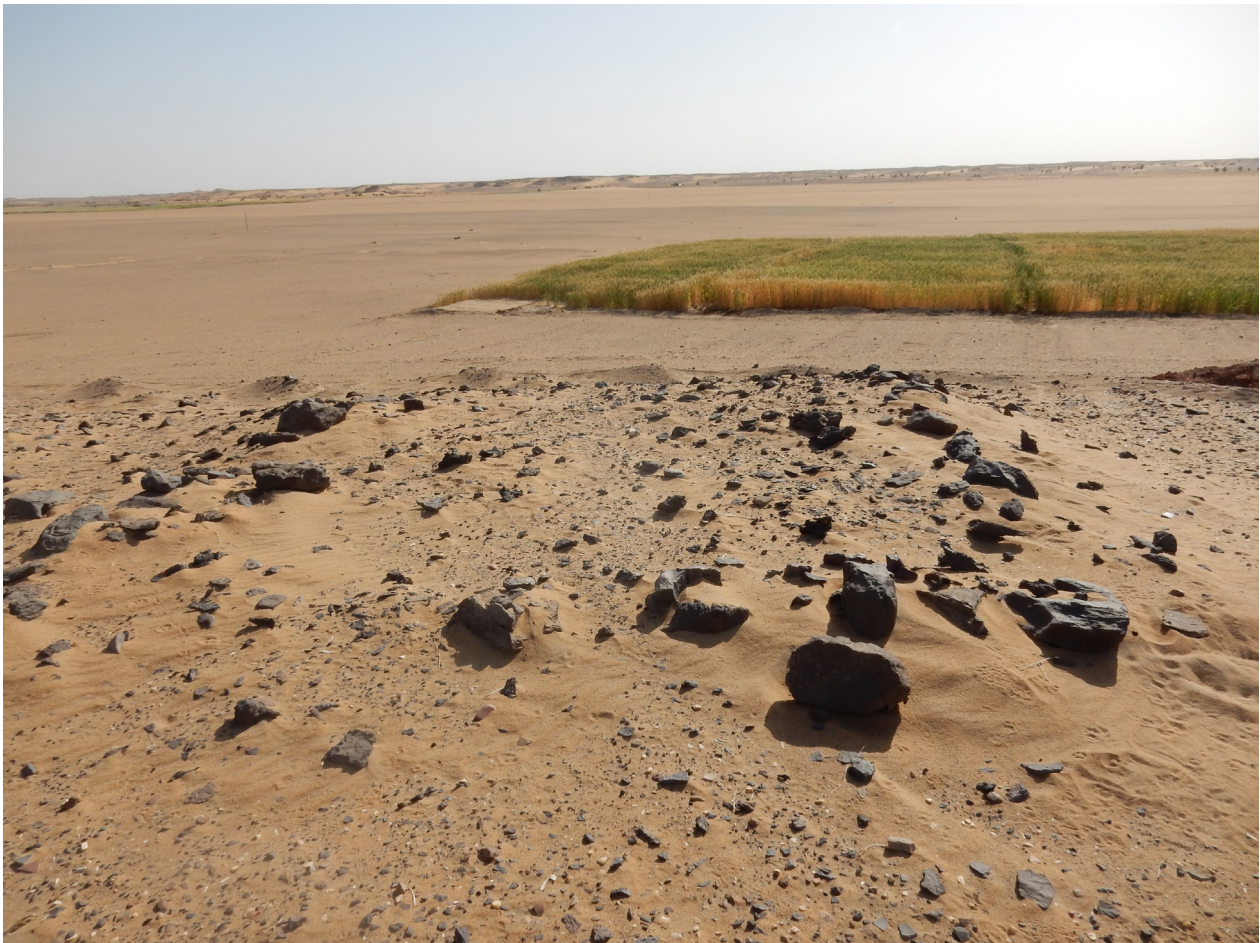


Figure 7. View of the rectangular arrangement of stones on the eastern edge of the P5 mound, looking east (feature labelled as 51 in Welsby 2001, 121) (photo by Steve Mills).

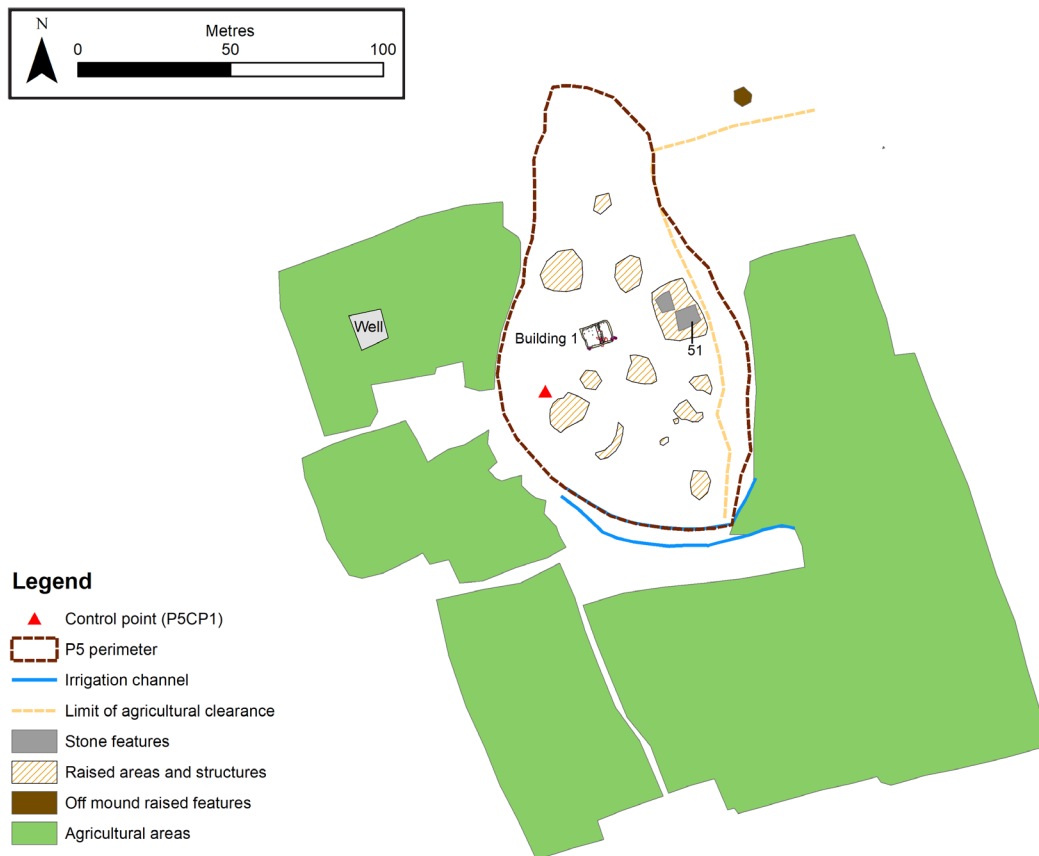


Figure 8. P5 mound site plan showing main features surveyed in 2023 (graphic by Steve Mills).

project GIS include: *Environmental Systems Research Institute (ESRI) World Topographic Map* for base mapping at low scales; *ESRI World Imagery* layer for base mapping up to 1:5000 (satellite and aerial imagery, source of imagery covering the study area *Maxar*); exported *Google Earth* imagery of the site and its immediate surroundings georeferenced in the GIS for higher scale base mapping up to 1:1500; shapefiles of the Nile and Dongola reach palaeochannels, and the location of Kerma sites in the Dongola reach based on figures in Welsby 2001 georeferenced in the GIS.

On the final day on site three concrete permanent benchmarks were created on the P5 mound. Constructed by our NCAM Inspector, these are aligned on the site grid and their horizontal coordinates and height were recorded. If further fieldwork is possible in the future any one of these can be used to re-establish and continue the site survey as required. It was deemed sensible to add concrete benchmarks as a safeguard if the prominent stone with the mark used in 2023 for the principal control point P5CP1 is moved or damaged and not available for use in future seasons. It is hoped that at least one of these benchmarks will survive.

Excavation

Building 1 is located centrally at P5 (Figures 9, 10 and 11). Rectangular in plan, it measured 9.3x7.15m and was divided into two rooms, A and B, which measured 6.15x5.55m and 6.15x2.15m respectively. After the removal of surface sand from the area, which produced two stone quern fragments and a ceramic bead, a cut made by modern disturbance was widened to create a sondage in the east part of Room A, which measured 6.5x1m with a total depth of 0.45m (Figure 12).

The earliest deposit identified by the excavation was (D7)12, a layer of fine dark grey silt from which pottery was recovered and upon which the mud-brick walls of Building 1 appeared to have been

P5 2023
Plan of Building 1
1:100
16/05/2023 SP

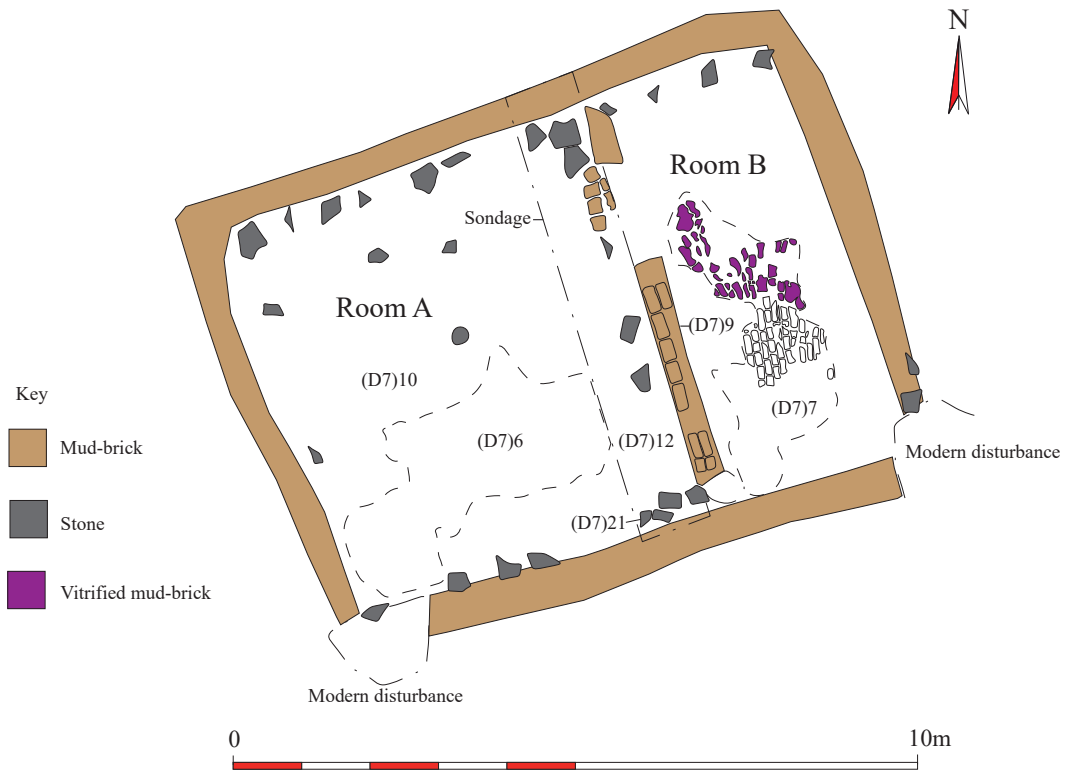


Figure 9. Plan of P5 Building 1 (plan by Stephen Porter).

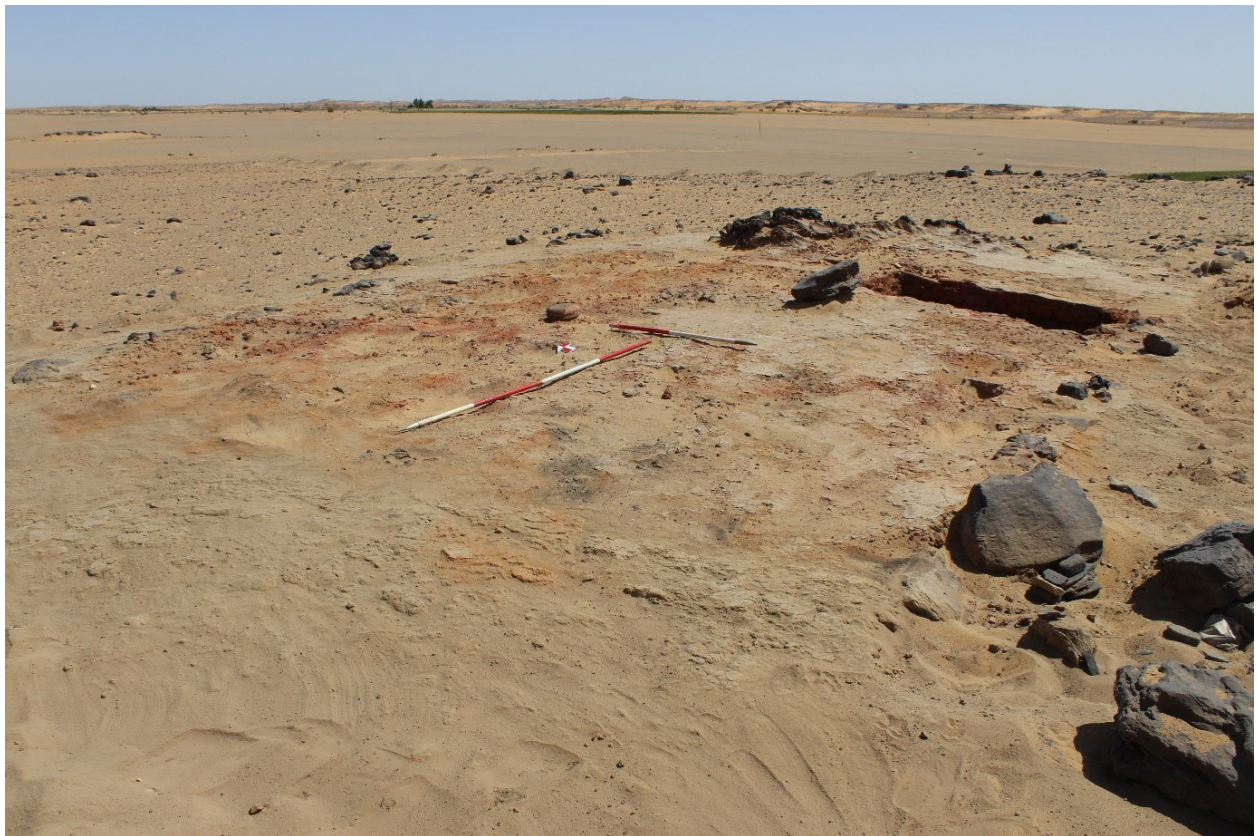


Figure 10. P5 Building 1 looking north-east (photo by Stephen Porter).



Figure 11. P5 Building 1 looking south-west (photo by Stephen Porter).

constructed. These were very poorly preserved and barely visible but measure approximately 0.56–0.62m in width. Their brick type and construction method could not be ascertained. Modern disturbance at the south-west and south-east corners of Building 1 added to the difficulty in identifying the extent of the walls.

A group of *c.*25 stone blocks, (D7)13, ranging in size from 155x125mm to 590x460mm were set into layer (D7)12, following the rectangular plan of the building interior and abutting the walls (Figure 13). Presumably these stones served as post-pads for timbers that supported the ceiling or as some sort of wall support. They were mostly located against the north and south walls, with 10 associated with the former and 12 with the latter, whilst two possible blocks were located inside the west wall and only one at the east. Three blocks were also positioned parallel to the central wall (D7)9 (Figure 12).

One of the blocks, (D7)21, exposed in the sondage against the south mud-brick wall (D7)16, was actually four smaller stones placed on top of each other, the two uppermost of which were quern-stones (Figure 14). A small deposit of loose coarse dark grey silt was also identified in the south part of the sondage. It measured at least 1m in length, 0.28m wide and 0.22m thick and contained large pieces of charcoal.

A layer measuring 0.08–0.38m thick, of coarse yellowish brown silt and mud-brick fragments, (D7)11, had been laid throughout Room A to level it. This was overlain by a deposit of burnt mud-brick fragments and coarse red silt measuring 0.02–0.28m thick, (D7)10. This was in fact the same deposit as (D7)11 but had been burnt more intensely. It contained eight quernstone fragments (four of which were burnt), a pottery disc and ceramic cup. Pottery recovered from this deposit was suggestive of a domestic function, although as (D7)10 was deposited as a levelling layer this is indicative of the building from which this material came, rather than Building 1. (D7)10 was overlain by a pale mud plaster surface 0.02m thick, (D7)6, which survived to an extent of 4.8x2.96m but presumably once covered (D7)10 entirely. Set into (D7)10 were three stone post-pads, located mainly in the north part of Room A. These measured 360x230mm, 210x200mm, and 230mm in diameter.

Mud-brick wall (D7)9, aligned north to south, separated Building 1 into Rooms A and B and was constructed on layer (D7)10. (D7)9 was a 1-brick wall of stretchers laid flat measuring 320x165x70mm in size. It measured 3.75m long and 0.39m wide, and survived to two courses, a height of 0.19m. Later disturbance had demolished a part of this wall (a gap of 1.55m) but a shorter length survived at the north wall of Building 1.

A levelling layer similar to (D7)10/(D7)11 appeared to have been laid in Room B and likewise given

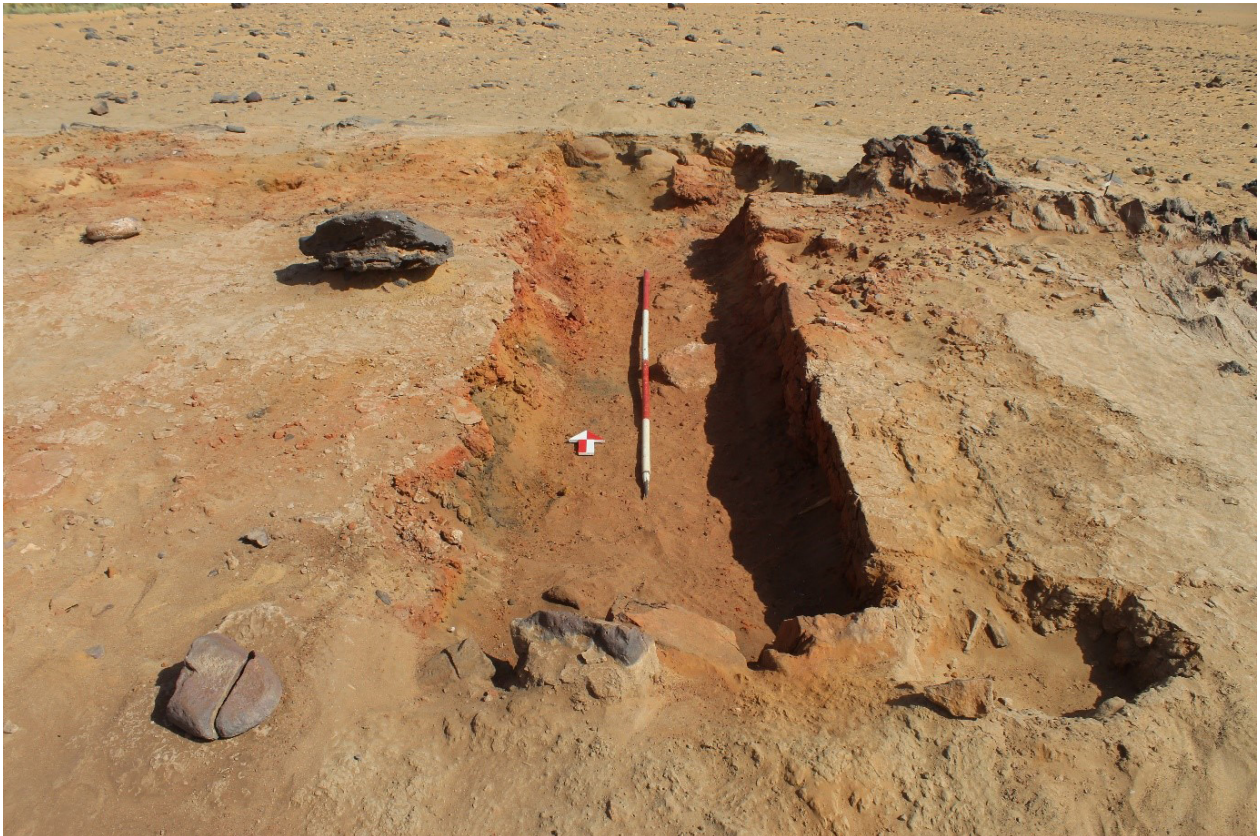


Figure 12. The sondage in Building 1, Room A. Wall (D7)9 is visible to the right. View to north (photo by Stephen Porter).



Figure 13. Stone blocks (D7)13 against south mud-brick wall (D7)16 (photo by Stephen Porter).



Figure 14. Quern-stones (D7)21 (photo by Stephen Porter).

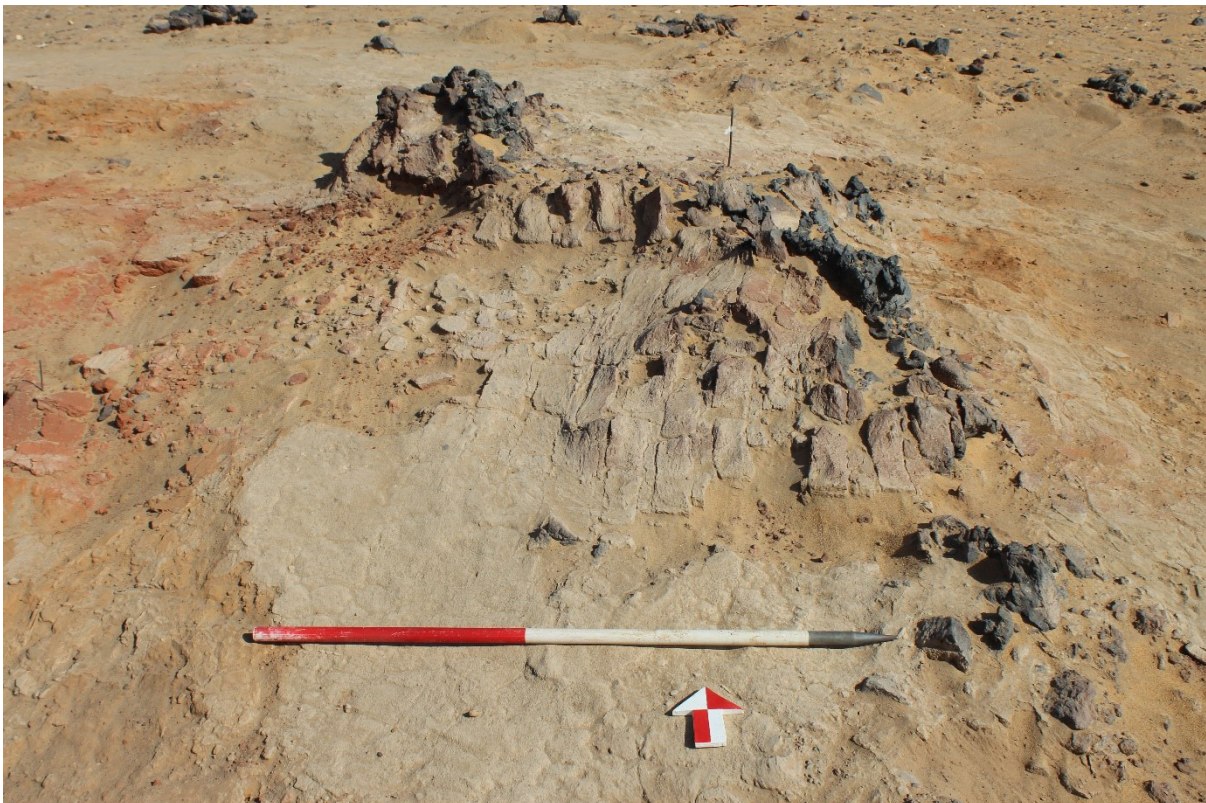


Figure 15. Vitrified mud-brick (D6)7 (photo by Stephen Porter).

a plaster surface. This appeared to have been overlain by a collapsed mud-brick wall, (D7)7, measuring 4.38x2.24m, and was the result of wall (D7)9 falling over. This too was plastered, suggesting that the interior walls of Building 1 (of Room A at least) were all thus coated. Part of (D7)7 (measuring 2.3x1.36m and 0.46m thick) had been burnt at such a high temperature the mud-brick had distorted into a solid dark greyish blue and mid brownish red mass (Figure 15).

The pottery

Pottery from the season was collected from 21 contexts centred in and around Building 1, a burnt mudbrick structure, as well as the surface. The small sample collection consisted of 98 sherds; with 21 diagnostic and 77 body sherds.

The ceramic material is typical of that for a rural Kerma site and fits well within the traditions observed across the Northern Dongola Reach. The pottery is almost exclusively handmade and produced in Nile silt in a relatively coarse fabric with high levels of chaff temper. Most pottery was fired at a relatively low temperature to give red exteriors and black interiors, though some fully reduced and fully oxidised pieces were found. Vessels were generally scraped on the inside and smoothed on the exterior with a variety of decoration. No bases were found. The material is typical of a domestic assemblage with sherds pointing to daily life activities. Coarse sherds probably relate to cooking activity although they do not show evidence of burning, and oven fragments found in the vicinity of (D7)2 (an area of spoil produced following some kind of modern disturbance) attest to food preparation areas, while a number of thick jar fragments indicate storage practices. A small number of finer pieces suggest consumption with some focus on display.

The forms represented are predominantly hemispherical bowls with rounded or folded rims. A small number of jars were represented, showing short necks and wide globular bodies, with rough burnishing or sometimes red slips. Patterning included incised triangular and crosshatched decoration on bowls (Figure 16a), typically below rims, with parallels to material found at Sai (Gratien 2000, 117, fig. 5B) and across the Northern Dongola Reach (e.g., Welsby-Sjöström 2001, fig. 6.3 no. B20.18). Such motifs were common throughout the Kerma period (Gratien 1978, tb.V-VII), but particularly in the *Kerma Moyen* phase (c. 2050-1750BC). One example featured diamond patterning formed from punctate wedge-shaped impressions (Figure 16b), common across the Kerma period (e.g., Gratien 1978, fig. 50 no. 6; Gratien 1985, 297; Privati 2004, fig. 131 12) and made using a stone tool with 'teeth' to form the punctate pattern (e.g., Gratien 1985, fig. 289).

Other styles included potential fingernail impressions (Figure 16c) with parallels at H25 (Kilroe 2019, 82) and diagonal slashes below rims, as well as an example of several sherds from one bowl featuring small slashes all across the body (Figure 16d). Another bowl was red slipped and had a particularly thick folded rim decorated with unusual wedge-shaped impressions (Figure 16e), perhaps similar to examples at Kerma from the *Kerma Moyen* and *Kerma Classique* (Gratien 1978, fig. 66a; Welsby-Sjöström 2001, 350 J35.4; Privati 2004, fig. 128 16, fig. 129 17).

Coarse bowls commonly featured matt impressions that were caused by traditional manufacturing practices, whereby pots were beaten into shape in a matt-lined hole in the ground (Arkell 1939). These were predominantly honeycomb-style matting (Figure 17), which was popular in the *Kerma Classique* period (c. 1750-1450BC) and has good parallels at the nearby site of H25 (Kilroe 2019, 82). However, occasional examples of rectangular matting impressions may suggest occupation at the site continued into the early New Kingdom. One example had evidence of repair, suggesting vessels were valued. The discovery of a ceramic feeding cup in (D7)10 is part of a domestic assemblage but the context is disturbed (Figure 18).

Wheelmade pottery was rare and consisted of two rim fragments of a red slipped necked jar with a



Figure 16a. Incised and cross-hatched decoration on handmade bowls (photo by P. T. Nicholson).



Figure 16b. Punctate impressions on an oxidised fragment (photo by P. T. Nicholson).



Figure 16c. Fingernail impressions on deoxidised pottery (photo by P. T. Nicholson).



Figure 16d. Slashed decoration on deoxidised pottery (photo by P. T. Nicholson).



Figure 16e. Oxidised folded rim with punctate impressions (photo by P. T. Nicholson).



Figure 17. Honeycomb-style matting impressions (photo by P. T. Nicholson).



Figure 18. The feeding cup from P5 (D7)10 (photo by P. T. Nicholson).



Figure 19. Wheelmade fragment (photo by P. T. Nicholson).



Figure 20. The tulip beaker. Surface find from Grid Square B4 (photo by P. T. Nicholson).



Figure 21. Contextualised pottery from Level 10 (photo by P. T. Nicholson).

rolled rim and probable ovoid body that may have been turned on the wheel, and two other sherds with thin walls suggesting a fineware (Figure 19), with one possibly a fragment in marl clay, although this was difficult to confirm from photographs alone. Finally, a body sherd in a dark fabric showed burnishing on the exterior. These pieces probably represent vessels arriving with low-level imports of foodstuffs from Egypt.

Three fragments of black topped red ware beakers were recovered, including a surface find of half of a tulip beaker (Figure 20). These are typically interpreted as drinking beakers. The sherds were in a chaff-heavy fabric with a rounded base, straight walls and slightly flaring blackened rim, of a standard shape as defined by Säve-Söderbergh (1989, Type KIVb). The form was common across the Dongola Reach as far south as the 4th Cataract (Bonnet 2001, 89) and the shape suggests a *Kerma Classique* dating (Gratien 1978, fig. 64). Fine Kerma beakers with an iron oxide ring are typically characteristic of the *Kerma Classique* period, but are generally restricted to elite circles so it is unsurprising that it does not occur on these pieces. In addition, the lack of an iron oxide ring and the coarse fabric may point to their use at the end of the Kerma period.

Although most sherds were surface finds, examples from (D7)10 and (D7)11 represent secure contexts within the building (Figure 21). Unfortunately, the material here is of limited use for dating purposes. It primarily encompasses coarse oxidised body sherds, sometimes with traces of burnishing. A small fragment of a deoxidised ledge rim from a jar was decorated with incised cross hatching, while two pieces from the body of an oxidised globular jar show incised triangular patterning filled with punctate impressions. These are clearly Kerma style, but it is difficult to date them more accurately. A hemispherical bowl rim featured honeycomb matt impressions supporting a *Kerma Moyen* or *Classique* use of the building.

P5 finds

One of the outstanding features of P5, which was noted on an initial visit to the site in 2018, is the large number of stone axes on the surface of the mound. Those observed in 2018 were, of course, left *in situ* but they and others were collected in the 2023 season.

Although no systematic surface collection, other than a trial of one grid square, was made at P5, the stone axes were picked up as they were discovered during surveying at the site and were surveyed in accordingly (see Figure 6). Some 20 axes were found, 19 of them flanged axes of ‘lugged’ type, the lugs allowing for their attachment to a haft (Figure 22). The top of the axe (i.e., the surface opposite to the cutting edge) is usually flat facilitating its positioning into a groove in the haft, though a few axes such as number 16 have a marked point at the top. Such axes would either have to fit deep into the haft or have been positioned at an angle such that the cutting blade was in-turned toward the user. The axes are made from a hard grey stone and are generally very flat on both sides (See Geology section below). The planes of weakness in the stone have been used to achieve the flat faces of the axes. The cutting edge and the two lugs for attachment to a haft have been carefully made by knapping (or chipping) the stone to give the shape. The size of these lugged axes varies considerably with some being so small that it is hard to see how they could have been of practical value. Axe 18 for example measures only 62x50mm, unsuitable for any large scale cutting task, though some small carpentry may have been possible. It is also possible that axes served as status markers, perhaps prestige goods, rather than being entirely practical.

Lugged axes of this type are well known from Egypt, particularly from the Old and Middle Kingdom periods and have been studied by Kühnert-Eggebrecht (1969) and more recently by Davies (1987) although there is no ‘universally recognised typology for the stone axehead forms used in early Egypt’ (Gilbert 2004, 63). Davies’ catalogue entry no. 28 (1987 no. 28 BM EA67618), which comes from Kahun is similar to axe 11 from P5 though made from quartzite rather than hornblende-gabbro. As can be seen from Figure

22 the shapes and sizes of the axes recovered from P5 vary considerably with numbers 1, 14 and 15 having particularly long elongated blades, perhaps suggesting that they were intended as piercing weapons rather than for woodworking, though this is uncertain.

One axe (number 2) of small size, is polished and made of a different stone (porphyritic igneous rock – see Geology section below) and is of triangular rather than lugged form. These are usually found in graves rather than on settlement sites (Welsby 2001, 374) and its presence on the surface at P5 is therefore unusual.

The site also yielded other stone objects, notably fragments of stone bowls. On first inspection these appear to have been carefully smoothed on the interior while remaining rough on the exterior (Figure 23a and b). However, they may not in fact be man-made. The pieces are in a very hard, dark grey rock and examples of such rock dumped on the site sometimes preserve basin-shaped hollows within them. There is an outcrop believed to be this same stone some distance to the east of the site (though yet to be examined) and the stone may have been deliberately collected and brought to the site for use. The only human workmanship seems to have been its quarrying and breaking it carefully around the natural depression to make a bowl. There are several fragments which may have come from similar ‘eco-facts’ at the site suggesting that the collection of these ‘stone bowls’ may have been a regular part of the lithic material culture at P5.

Apart from the axes, finds other than pottery were relatively scarce. Commonest amongst these were querns, fragments of querns, or the rubbing stones from them (Figure 24). These accounted for 15 of the 40 finds with axes accounting for a further 20. The frequency of food preparation equipment, such as querns and stone bowls is not surprising given that P5 is a rural, agricultural site, with P4 likely to have been a grain/food storage building of some kind linked to it.

One small, amorphous, piece of copper was collected from the surface of the site but is the only evidence for metallurgy thus far discovered (Figure 25).

Geological origin of the lithics

The lugged axes are made of two distinct rock types recognised based on visual inspection. Axe 2 is composed of a coarse porphyritic igneous rock rich in feldspar phenocrysts. This rock could be a trachyte emplaced by effusive volcanism (e.g., lavas) or a subvolcanic intrusion (e.g., at the root of a now eroded volcano). The geological map of the Sudan (scale 1:2,000,000 edition 1981) indicates that the nearest volcanic complex is c. 200 km to the SW of the studied site. A significant fraction of the larger rocks found on the ground of the site are part of alluvial deposits from the Nile, but these do not include trachyte. These observations strongly suggest that axe 2, or the material used to prepare this object, was carried from a distant area. The trachyte is hard isotropic material that could have facilitated carving and polishing.

All the other lugged axes found at the studied site are composed of dark ferruginous quartz sandstone or ‘ferricrete sandstone’. Ferricrete sandstone is used here as a descriptive term to describe sand or sandstone cemented and hardened by iron oxides/hydroxides, irrespective of the mode of formation (Lamplugh 1902). Iron enrichment in this type of sandstone is commonly due to local and/or external enrichment during soil formation (i.e., laterisation), or the percolation of iron-rich water in the sediment/rock (e.g., Schwarz 1994; Loope *et al.* 2011). The ferricrete sandstone used to produce the axes closely resembles some of the larger rocks found in the alluvial deposits of the studied area (Figure 26a). Some of these rocks show evidence for sedimentary bedding as well as ferruginous concretions of various sizes and shapes, including boxwork patterns (Figure 26b-e). Some concretions are being dismembered by the erosion and can form bowl-like structures (Figure 26f). Morphologically similar concretionary features were observed in the Navajo Sandstone, USA, where they are considered to have formed due to underground iron

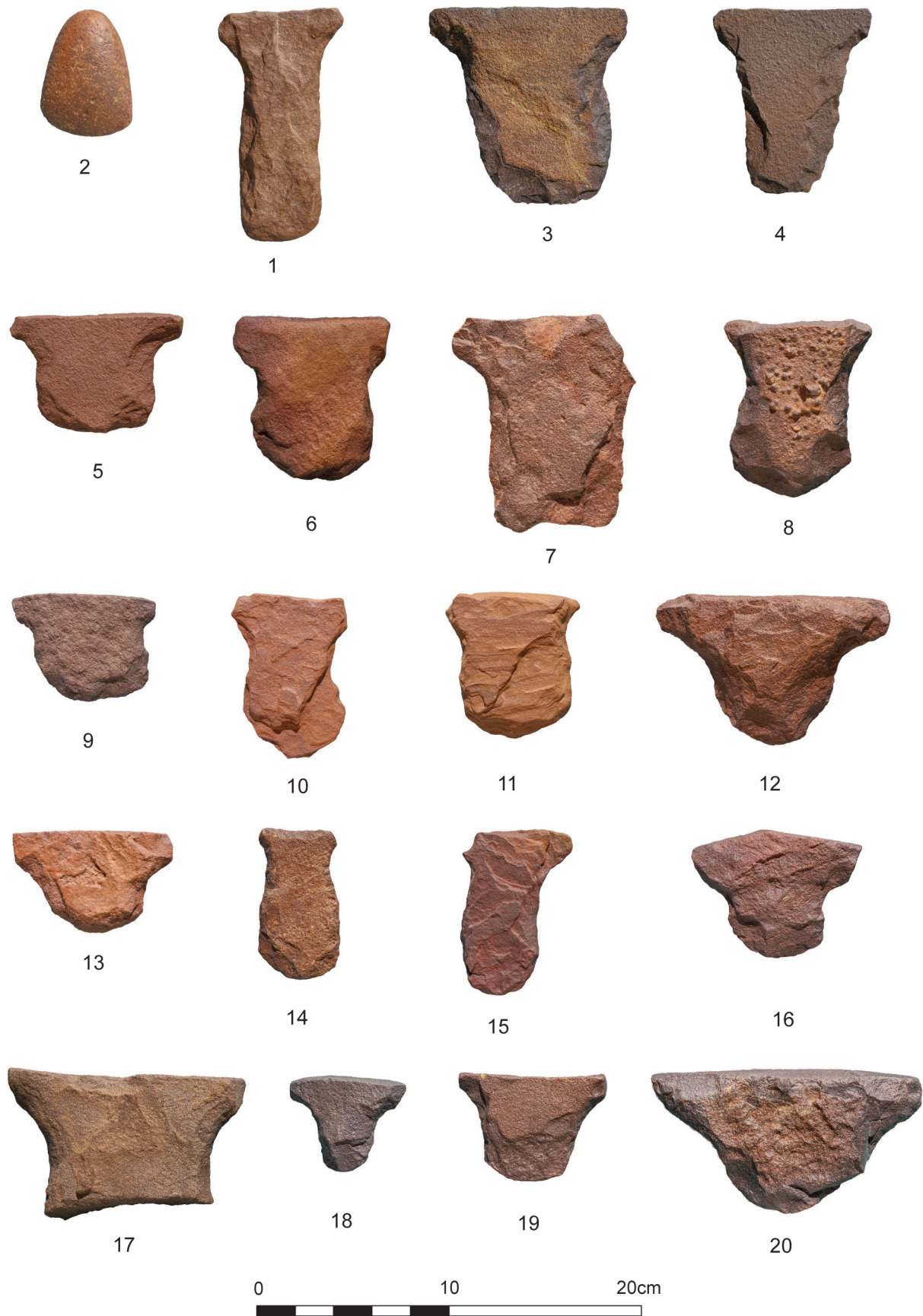


Figure 22. The axes collected from the surface at P5. Only Axe 2 (top left) is polished (photos by Paul Nicholson, composite Mark Lodwick).

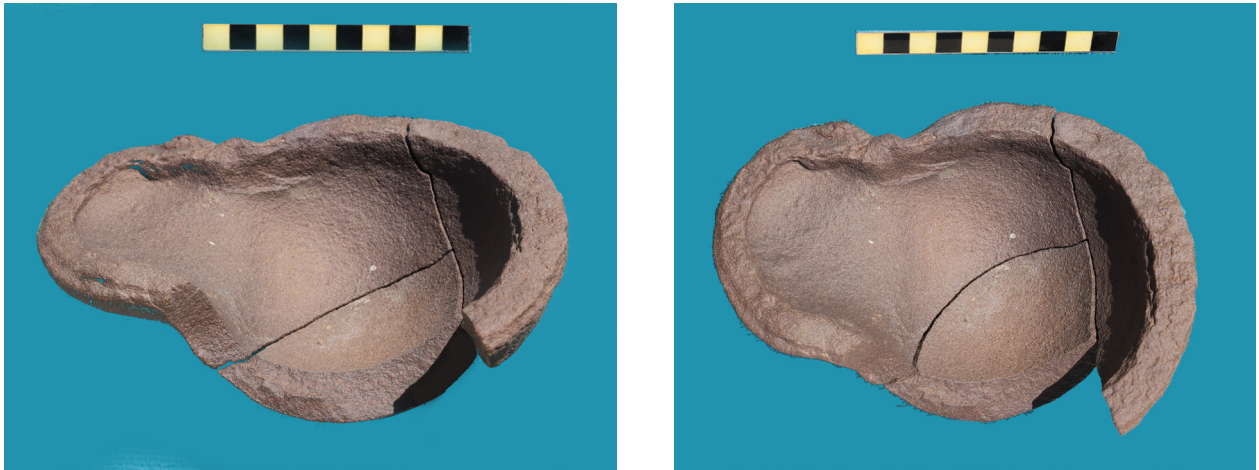


Figure 23a and b. Stone 'bowl', probably a natural hollow with minimal human working (photos by Paul Nicholson).



Figure 24. Quern stone from P5 (D7)21 (photo by Paul Nicholson).



Figure 25. Lump of copper/copper alloy found on the surface of Grid Square D5 (photo by Paul Nicholson).

impregnation by percolating water (Loope *et al.* 2011). Although lateritic ferricretes have previously been reported in northern and southern Sudan (Schwarz 1994; Schwarz and German 1993), the description of the materials found in these areas do not correspond to our observations. Instead, a dark layer occurs at the top of hills close to the studied site (Figure 26a); these hills are made of Cretaceous sedimentary rocks according to the Geological Map of the Sudan. Therefore, the black layer is the most likely source for the blocks of ferricrete sandstone seen at the site, which could have been used as a local source of material to produce the axes. The sedimentary bedding of the sandstone could have facilitated carving into flat objects. The occurrence of prominent concretions in axe 8 (Figure 27) suggests that some of the sides of the axes were not processed and are natural surfaces.

Discussion and conclusion

This first season at Site P5 has demonstrated its potential for further work. The site can provisionally be dated from the pottery to the *Kerma Moyen* through to the *Kerma Classique*, possibly running into the New Kingdom period. This latter, tentative, dating may suggest that the site was still extant at the time of the Egyptian occupation while the work conducted by Macklin and Woodward (2001) and Macklin and Lewin (2015) suggests that the shift in the Nile at around this same time probably made agriculture at the site unsustainable. It may be suggested that there was more than a single cause for the abandonment of the site at around 1500BC.

The ceramic material is typical of a domestic assemblage with sherds relating to daily life activities including cooking, eating and storage. Future excavation would contextualise Building 1 allowing a better understanding of how the structure fits within the settlement as a whole. The intense firing evident in Building 1 appears to have been the result of the structure burning down. The upper part of the interior levelling layer was burnt red from wall to wall, at least in Room A, and part of the collapsed interior partition had undergone temperatures so high as to vitrify the mud-brick of which it was built.⁵

The excavation yielded little indication of the function of Building 1 prior to its destruction. No evidence of industrial activity was identified and most of the pottery was recovered from the levelling layer of the construction phase of the building. The domestic character of this pottery cannot speak for Building 1 as a whole. Similar buildings of mud-brick walls and stone supports, dating to the *Kerma Classique*, have been identified as storage structures at Gism el-Arba, south-west of Kerma (Gratien *et al.* 2008).

Other structures are present near P5 which utilised large stone blocks, probably to raise their floors in an effort to prevent pests from accessing stored foodstuffs and limit moisture damage (Welsby 2001, 121-124; Welsby 2019, 147). An example of such a building was excavated close to the north of P5 at P4 (Welsby 1997, 8-10). Structures comparable to Building 1 have also been excavated at H25, a site located further south of P5 near Barqat Kalaf, and characterised by storage structures of various types (Thomas 2014; Porter 2019), and although only New Kingdom levels have been excavated earlier phases demonstrably date to the Kerma period (Thomas 2014, 65; Kilroe 2019, 83). These cellular structures are often on the same alignment and of a similar size and construction as Building 1 at P5, and very often feature plastered walls and floors. Further excavation at P5 will undoubtedly shed more light on the character of its buildings and set it within its wider context as a Kerma settlement of the Northern Dongola Reach.

Dr. Buchs' work on the geology of the axes and 'bowls' suggests that axe 2 was not from a local source and so may have been a prestigious import. The other axes and bowls are from a dark ferricrete sandstone which was available locally. There seems to have been a deliberate working of some of the natural hollows in this stone to produce stone bowls with a good deal less effort than might otherwise be expected. It is apparent that there was a thriving lithic industry at the site which made good use of the nearby rock

⁵ Where this was visible at the surface it had originally been thought possible that it indicated a kiln structure.

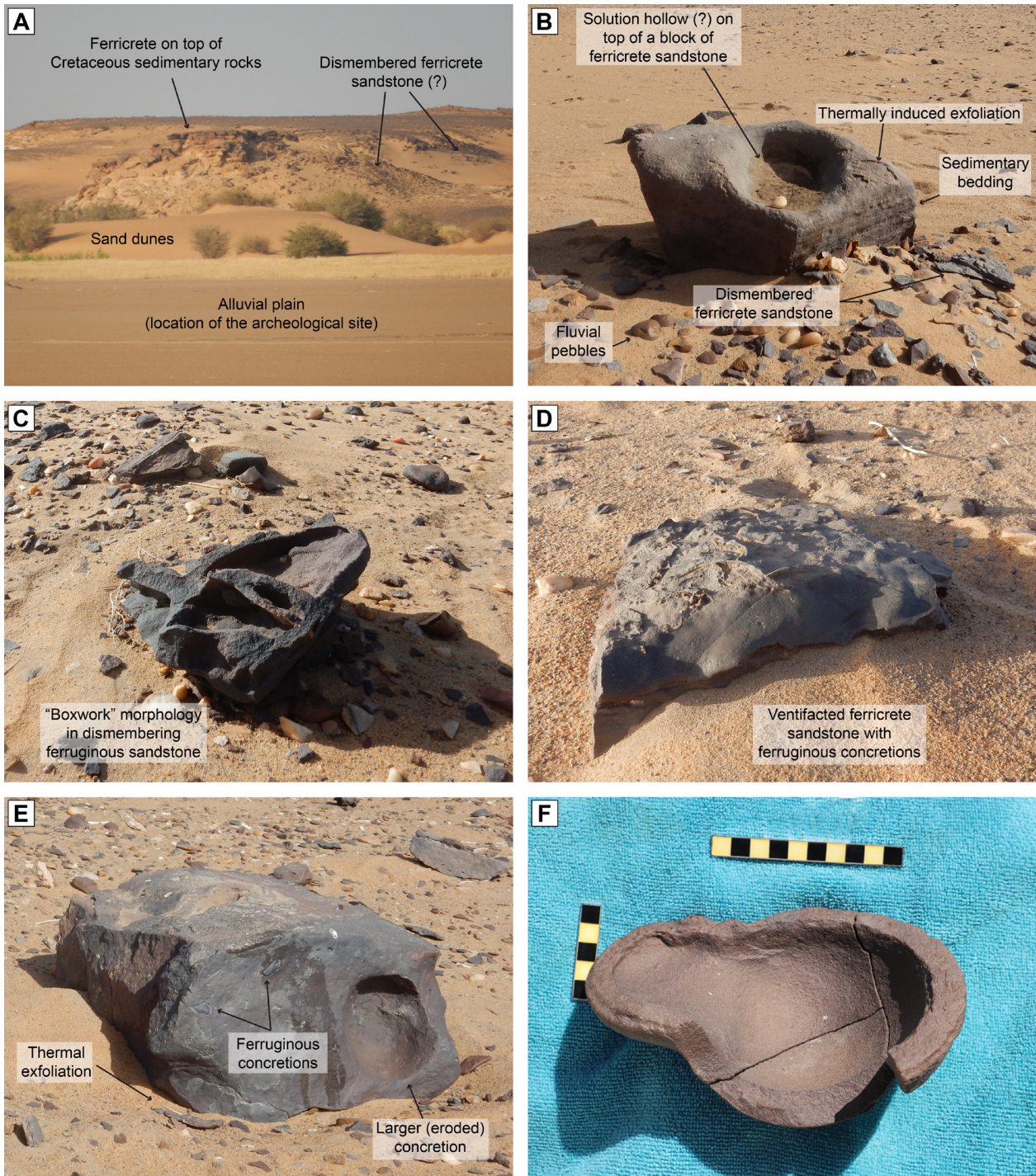


Figure 26. Geomorphological interpretations. (A) Landscape morphology looking to the E. (B-E) Blocks of ferricrete sandstone in alluvial plain deposits (exemplars are approximately 0.5m in diameter). (F) Erosional remnant of a ferruginous concretion in the ferricrete sandstone (photos by Steve Mills and Paul Nicholson, image by David Buchs).



Figure 27. Axe 8 from grid square E13 showing concretions (photo by Paul Nicholson).

outcrops. The functionality of some of the stone axes is questionable and it may be that at least some of them were intended as ‘prestige goods’.

The polished axe and the few possible Egyptian sherds suggest that although the site is relatively remote it still had some long-distance contacts, or at least means of obtaining material that had come from some distance. The mechanism for such contacts must remain uncertain for the moment.

That the settlement had, at least up to the time of the drying of the Alfredda Nile, been a well organised and relatively prosperous community is perhaps indicated by the storage building P4, which is likely to have been the food storage area for the community.

Alsamani Ezeldin Abdelrahman Kara

As this paper was going to press we learned of the tragic death of our inspector Alsamani Ezeldin Abdelrahman Kara. His loss is keenly felt by all of us who worked with him. He was an enthusiastic and skilful archaeologist who had a promising career ahead of him. Our sympathies are with his family and with his colleagues at NCAM.

Acknowledgements

We are indebted to NCAM, in particular to Dr Abdelrahman Ali under whose term of office the project was set up and more recently for the help we have received from Dr Abdelhai Abdelsawy and from Professor Ibrahim Musa.

The inspector for the work, to whom we are also indebted for his patience and expertise, was Mr Alsamani Ezeldin Abdelrahman Kara. Through his good offices we were able to secure two local workmen Mr ‘Awad Aly and Mr Yaqub Mahmoud. Mr Alsamani also helped us to find accommodation for the project in the house of Mr Mahmoud Babikar Mohammed in the village of Hillat al-Farida, Wadi el-Khowy district. This house was only a few minutes’ walk from the site and provided an excellent base for our work. For health and safety reasons we were accompanied by a professional driver Mr Khaled Mahmoud who kindly undertook to shop for supplies for the project and for whose assistance we are grateful.

We must also express our gratitude to SARS not only for the generous support of our project but for their patience in waiting for the work to begin. Particularly Dr Neal Spencer, Dr Julie Anderson and Dr Loretta Kilroe provided invaluable help in setting up the project. Dr Kilroe has produced the pottery report from photographs and drawings made in the field though she was not herself able to take part in the project this season.

The project could not have taken place were it not for the generous support of the Michaela Schiff-Giorgini foundation as well as SARS and Cardiff University.

Figure 22 was provided by Mark Lodwick of Cardiff University and Dr David Buchs from the School of Earth Sciences at Cardiff University kindly produced a report on the geology of the finds based on photographs taken at the site. Professor Ian Shaw kindly provided additional information on axe typology. We thank the anonymous reviewers for their constructive comments.

Last but not least we are indebted to Dr Derek Welsby for suggesting that we work at Site P5.

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Pyramid Beg N. 6 in its present state including restoration of the pylon (photograph by E. Černý).



Detail of the statue of the deified queen at Wad Ben Naga (photograph by Pavel Onderka).