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Soba Expedition
The preliminary report on the season of fieldwork conducted in 2021–2022

At the end of 2018 the Polish Centre of Mediterranean Archaeology, University of Warsaw, applied for a research concession in Soba East. The request was accepted and the boundaries of the area have been set (Fig. 1). At the same time the National Science Centre in Poland accepted a project proposal based on agreement no UMO-2018/29/B/HS3/02533. The project was entitled *Soba – the heart of Alwa. Spatial organisation of the capital city on the Blue Nile*. The project introduced a new approach to study the urban plan of the city (Drzewiecki, Ryndziewicz 2019).

The idea for the research included extensive fieldwork utilising various methods and techniques. The area of the site which is still available for study will be surveyed using geophysical methods. Test trenches will be made in locations where the geophysical data is difficult to interpret or that indicate various kinds of archaeological remains, such as kilns, diverse architectural remains, streets, cemeteries etc. Small finds from excavations will be analysed to understand the character of the places and chronology of the features. The already overbuilt parts of the site will be the area of investigation for the cultural anthropologist.

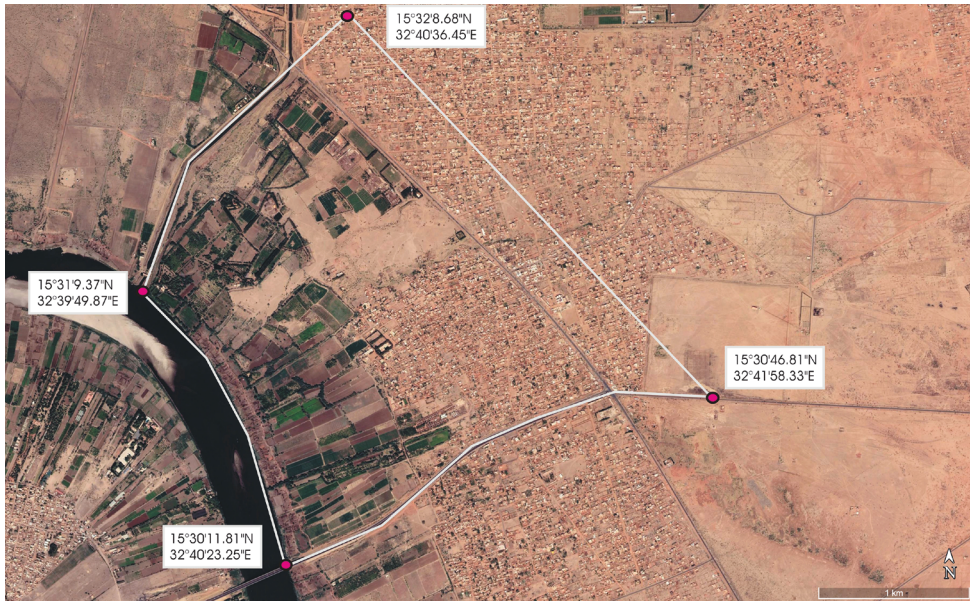

Fig. 1. Research concession
Background image Google Earth.

His aim is to understand the residents approach to archaeological materials by asking about local oral histories and legends connected with the archaeological remains. He will also undertake the subject of the material artefacts with which the residents may have contact on an everyday basis. An additional task for the cultural anthropologists, as well as the other members of the team, will be to approach the community and create opportunities to involve the residents in the study and protection of the site. The first season of fieldwork had been conducted in 2019–2020 (Drzewiecki et al. 2020a). Over the following pages the results of the second fieldwork season will be presented. The second season of fieldwork started on the 21st of November 2021 and finished on the 24th of February 2022 (with a break from the 14th of December to the 10th of January).

In the second season the geophysical survey was conducted in the southern and eastern parts of the available area of the city. Two archaeological excavations have been conducted (Trench 1/GN and 2/GN). One additional dig was opened (Trench 2/SH), next to the police station. The place had been selected for the construction of a toilet for police guarding the antiquities and visitors to the site. Since Trench 2/SH was located on the bank of a seasonal stream (behind the store building), it did not contain archaeological features. Only small finds (pottery and animal bones) were recorded. The concentration of the materials is the result of accumulation happening on the bank of the seasonal stream, indicating

that the small finds were not in situ but have been eroded away elsewhere and brought by the rain waters.

During the season, finishing touches have been made to the storeroom. The building has been plastered, painted white and lightly decorated (motives from Soba pottery ornaments). Door and windows, made by a local blacksmith, were installed (decorated in the same style). The water drainage system covered the roof. The floor inside has been laid with concrete tiles (Arab. *blad habashi*). Iron shelves have been prepared by the same blacksmith to store the archaeological materials. Additionally two iron showcases with glass displays were bought to house the exhibition type objects. In February 2022, all the materials obtained during the two seasons of fieldwork have been deposited inside the storeroom. A copy of all the keys have been given to the Director General of NCAM.

During the fieldwork, we continued to use the names of the mounds and areas which were introduced during previous research in Soba (Welsby and Daniels 1991: 12–15). Thus we made our research in the following areas: GN, HN, H, I, J, K, KE, A, AE, B, BW, and BE (Fig. 2).

Before the geophysical survey and excavation, the surface of each area was documented by means of aerial photography. In combination with ground control points the photographs were used to build a 3D model

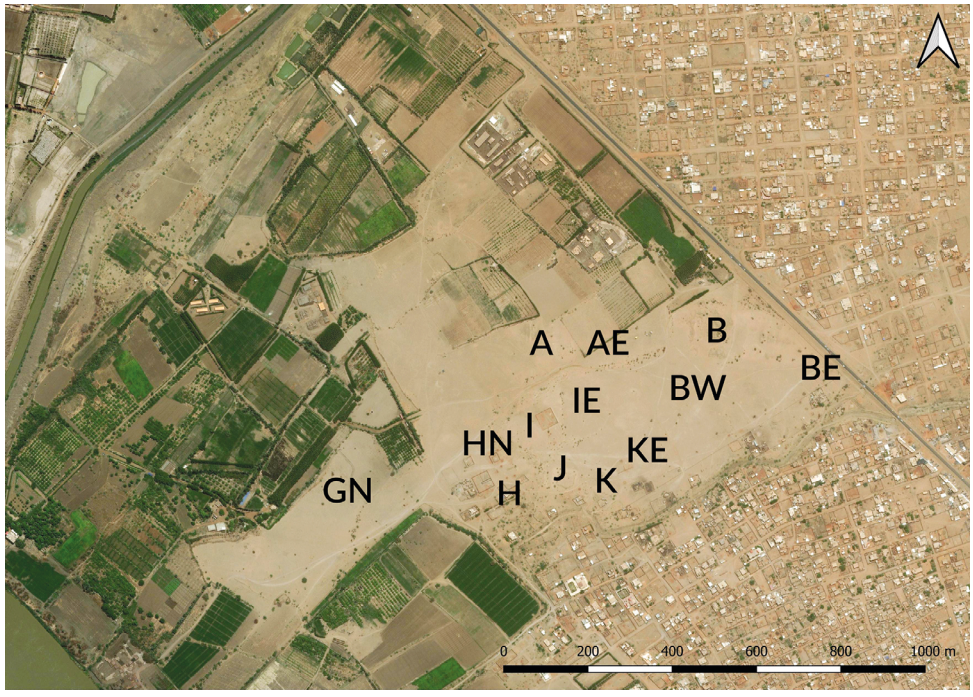

Fig. 2. Location of the areas under investigation
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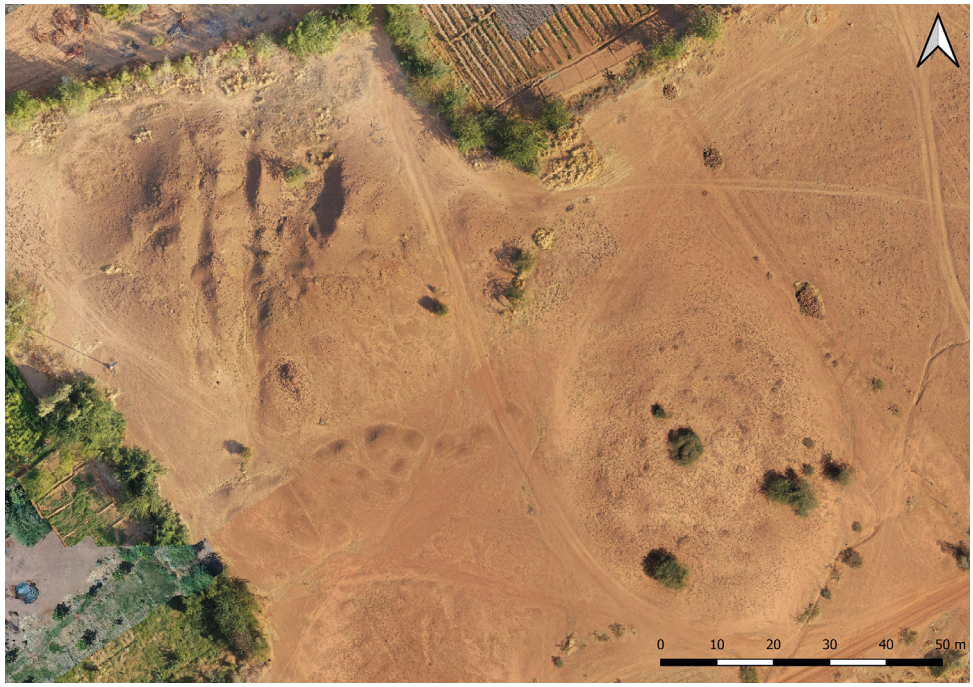

Fig. 3. Orthomosaic of Area A with the highest mound on the site in the top left corner
Prepared by Mariusz Drzewiecki.

of each area. Subsequently, digital elevation models (DEMs) and orthomosaics were created (Fig. 3).

The project is hosted by the Polish Centre of Mediterranean Archaeology, University of Warsaw and the Institute of Archaeology and Ethnology, Polish Academy of Sciences. Institutions supporting the project are the National Corporation for Antiquities and Museums of Sudan (NCAM), the University of Neelain, Historic Environment Scotland, the University of Silesia and the Adam Mickiewicz University in Poznań.

The team included:

Agata Bebel-Nowak – specialist in macroorganic remains,

Agnieszka Ryś – specialist in stone tools,

Ania Weźranowska – pottery specialist,

Elmontaser Dafaalla Mohamed Elamin Elmoubark – translations and logistics,

Ewa Czyżewska-Zalewska – pottery specialist,

Hisham Khidir Ahmed Karrar – Khartoum State Ministry of Culture, Information and Tourism, Administration of Tourism, Antiquities Inspector,

Joanna A. Ciesielska – archaeologist and physical anthropologist,

Lidia Żuk – remote sensing specialist,

Maciej Kurcz – cultural anthropologist,
Maksym Mackiewicz – geophysicist,
Mariusz Drzewiecki – archaeologist and director of the project,
Melania Ostaszewska – topographer,
Mokhtar Maali Alden Mokhtar Hassan – archaeologist,
Musa Al-Fadl – Khartoum State Ministry of Culture, Information and Tourism, Administration of Tourism, Antiquities Inspector,
Nagla Abdeen Mohammed – NCAM inspector,
Robert Ryndziewicz – geophysicist and deputy director of the project,
Tomasz Michalik – archaeologist,
Włodzimierz Rączkowski – remote sensing specialist.

During the fieldwork, a training program was implemented for graduates from the University of Neelain and trainees from the National Corporation for Antiquities and Museums of Sudan. The trainees were working in the field with each of the specialists, learning methods and techniques of geophysical survey, archaeological excavations, ethnographic interviews, topographic measurements, aerial photography, inventory of small finds and GIS application in archaeology.

The trainees were (in alphabetical order):
Ahmed Hamdan Farah
Eslam Ali Ahmed Mohamed
Fatima Hamad Ebrahim
Ibrahim Bushara Mamoon Omer
Mohammed Abd Elfadeel Eltayeb Mohammed
Nahid Adam Hdob Suliman
Rajaa Alamein Adam
Safaa Musa Eisa Abbakr

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Anna Brzozowska
Anna Bubrzyk
Beata Madaj
Agnieszka Szymczak
Sébastien Poudroux
Dr Fawzi Hassan Bakhiet

Jarosław Majewski
Isabella Welsby Sjöström

Our work would be impossible without the welcoming community of Soba, for which we are truly grateful.

The large-scale geophysical prospection of Soba

The large-scale geophysical surveys started in the 2019/2022 season and was continued from January 10 to February 24, 2022. The description of the goals and assumptions of the proposed non-invasive approach was described in the previous Report (Drzewiecki et al. 2020a: 8–16). The methodology of data acquisition and processing was the same as in the previous season (ibid). Magnetometry (fluxgate gradiometer) was used as a leading method, and in specific cases, ground-penetrating radar (450 MHz central freq. HDR antenna) was used to obtain detailed information about the underground structures.

A significant part of the archaeological site of Soba is not available for geophysical surveys due to the presence of agricultural fields, modern houses, the tarmac road, and other infrastructure elements, as well as scrub vegetation (bushes or small trees) and concentrations of modern trash constantly deposited in several places at the site. For this reason, the studied areas has an irregular shape, dictated by the accessibility of the terrain. The research was focused mainly on the central and eastern areas of the site. The GPR surveys, apart from the above-mentioned area, were additionally carried out within Area CW in the south-western part of the site and in the whole Area OS and its surroundings (areas where trenches were set in the previous season). About 3.1 ha were covered with GPR survey, which together with the research from the 2019/2020 season, gives a total of about 7.5 ha. In 2022, the area investigated by the magnetic method was about 26 ha, which gives a total area of 46.5 ha (Fig. 4), making Soba one of the most widely geophysically investigated archaeological sites in the entire Nile Valley.

Geophysical surveys provided a tremendous dataset about the spatial organisation of Soba, as well as its particular parts (Fig. 5). It turned out to be possible to distinguish individual districts, and also building ground plans in many cases. In several places, damaged red brick structures (visible on the surface as clusters of bricks) were recorded as high-intensity magnetic noise. This was the case of Mound A and its surroundings, where it proved impossible to distinguish between archaeological structures and the magnetic noise. In Area AE, the remains of a monumental structure made of both red brick and mud brick have been identified. Measurement results in Area HN showed the continuation of the vast, densely built-up

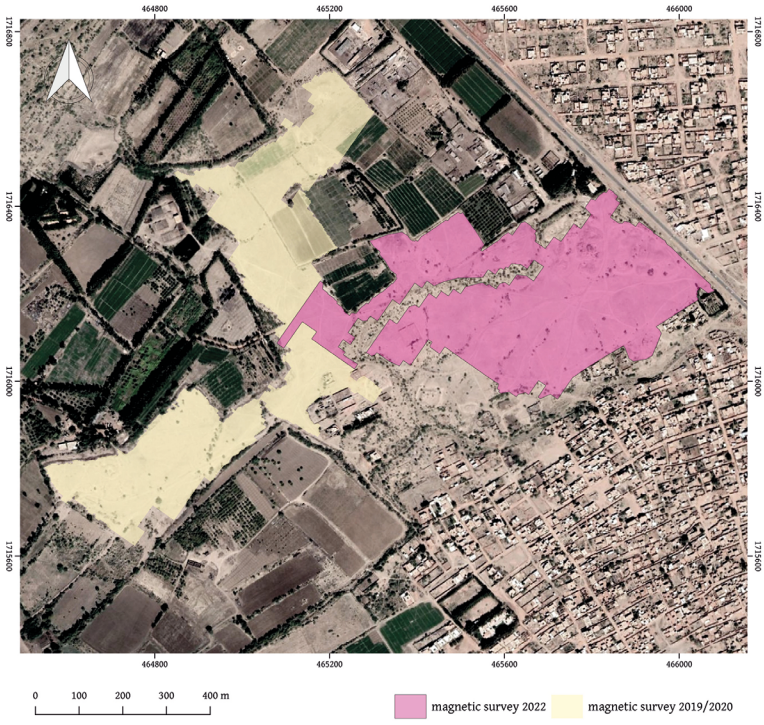

Fig. 4. Magnetic survey in 2019/2020 (approximately 20.5 ha) and 2022 (approximately 26 ha)

Prepared by Robert Ryndziewicz, background image Google Earth.

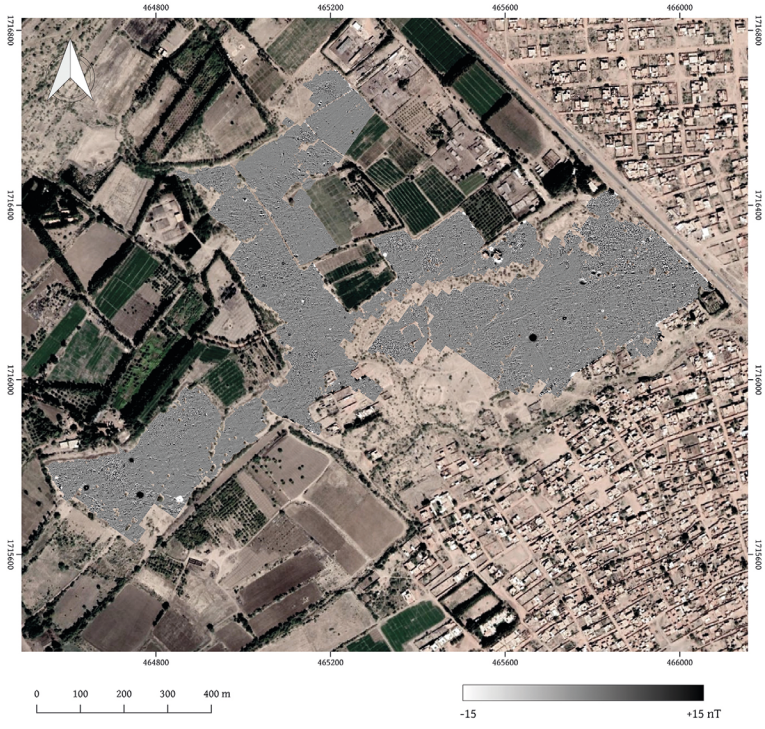

Fig 5. Magnetic map of Soba

Prepared by Robert Ryndziewicz, background image Google Earth.

district identified in the 2019/2022 season in Area F. It means that both of these areas should be treated as a single unit. In the light of magnetic research, Areas I and IE should be considered as badly damaged districts, with buildings made of red brick. Due to the high-intensity noise caused by a large amount of red brick, it is not possible to identify the structures of Mound I. In the course of the magnetic measurements, the vast area of Mound B the Area BW, covering a large part of the site south of the tarmac road, was found to be covered by large-scale structures. They occupy both Mound B and flat areas around, creating a vast district with monumental buildings. The GPR research, covering a fragment of the Area BW allowed for precise mapping of several buildings (Fig. 6a, 6b).

Numerous dumps of modern rubbish made the investigations of areas K and J not possible.

In the light of the geophysical research undertaken in 2019/2020 and 2022, it is clear that the archaeological site of Soba is an unique mediaeval urban complex. On the part covered by non-invasive surveys, it was possible to identify complex urban planning patterns, as well as numerous remains of well-preserved buildings. Unfortunately, heavy trucks traffic is increasing the risk of damage for the subsurface archaeological structures. In Figure 7 the correlation of modern tracks and archaeological remains identified by the geophysical surveys is shown.

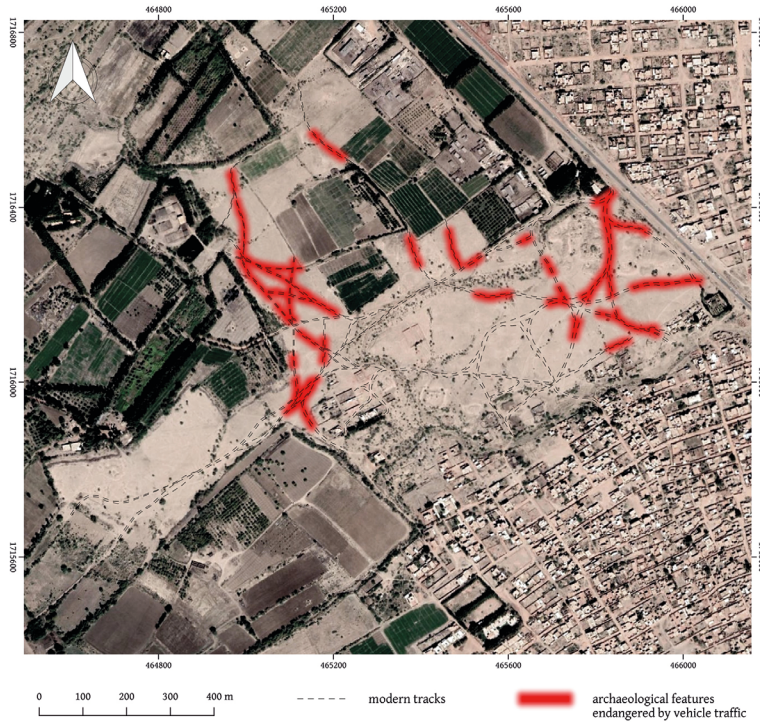

Fig 7. Red zones indicate modern tracks used for vehicle traffic which are endangering the underground archaeological remains identified with the geophysical surveys

Prepared by Robert Ryndziewicz, background image Google Earth.

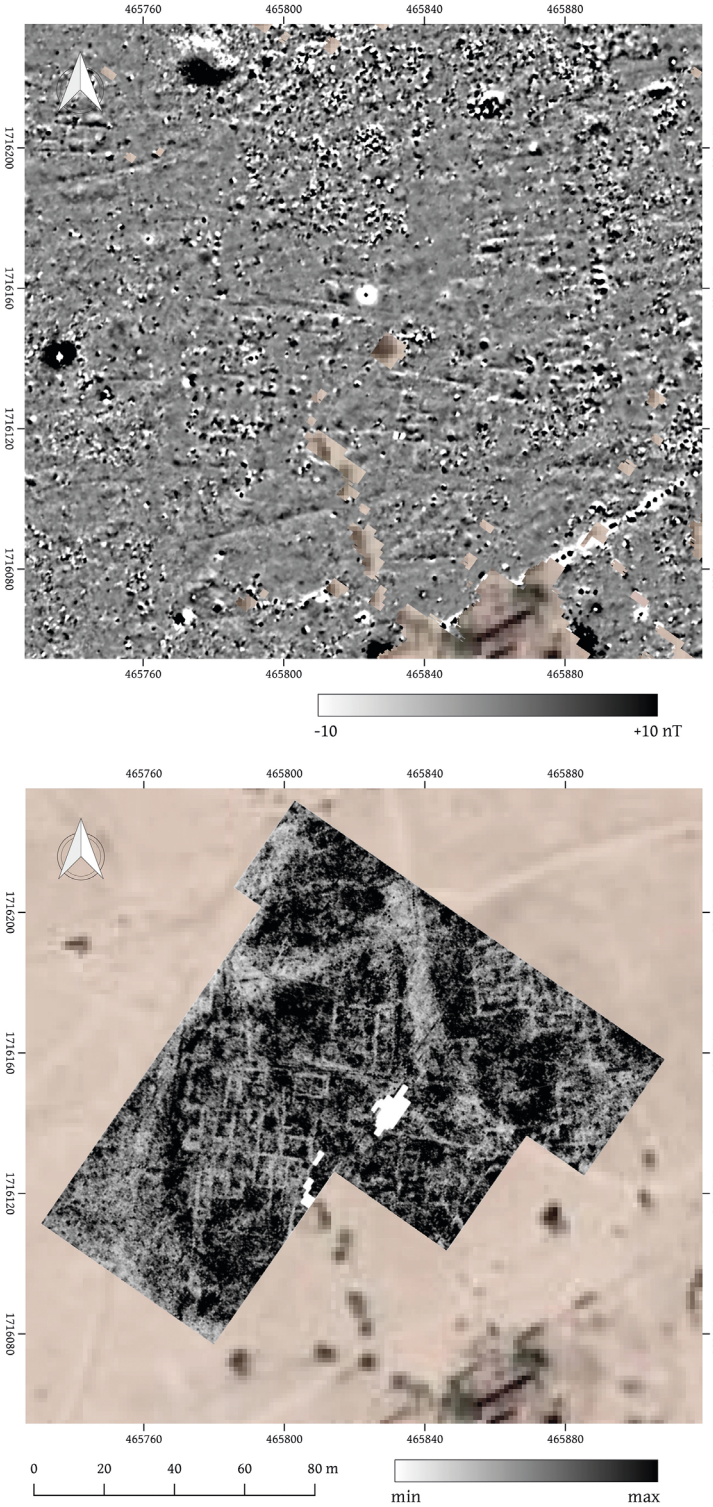

Fig. 6a, 6b. Comparison between magnetic and GPR survey results in the Area BW: a) gradient of the vertical component of the Earth's magnetic field; b) GPR amplitude map at the approximate depth 30–50 cm

Prepared by Robert Ryndziewicz.

Trench 1/GN: short fieldwork report

Trench 1/GN (10×10 m) was established in the western part of the site, in Area GN. The location of the trench has been chosen based on the results of the magnetometry survey conducted by Robert Ryndziewicz in 2020. This research suggested the existence of a mud brick complex of considerable size (ca. 25×9 m) and the possible occurrence of red brick architecture in Area GN. The main research question related to Trench 1/GN concerned recognition of function and chronology of potential urban structures located in the described area.

The excavation in Trench 1/GN was conducted between November 22, 2021 and December 9, 2021. Research confirmed the results of the magnetometric prospection – in Trench 1/GN inter alia remains of a relatively well-preserved storage room made of mud brick as well as remains of a furnace made of red brick were discovered.

Before excavation the area of the future trench was photographed and artefacts (mainly pottery) were systematically collected from the surface. After the surface was documented, excavation began. The subsurface deposit of Trench 1/GN (top soil 1_1GN), was ca. 20 cm deep. This deposit contained pottery fragments, animal bones, shells, stone tools, fragments of glass and beads. In the next layer (no 2) two backfill deposits (3_1GN, 4_1GN) as well as traces of a robber pit (2_2GN) were discovered. Moreover remains of two walls were registered (w1, w2). The latest deposits of Trench 1/GN contain the possible remains of occasional past activities, including consumption of food and destruction of architectural structures.

Below Layer 2 the remains of wooden and mud brick architecture were discovered. In the eastern and southern part of the trench silt/mud surface, traces of postholes (some of which formed semi-circular structures) were recorded. In the western part remains of a room formed by mud brick walls (thickness approx. 80 cm) were discovered (Fig. 8). After the discovery of the room (named as Feature 1_2021_3) the decision was made to focus exploration in this area.

The upper deposits of Feature 1_2021_3 contained domestic utensils as well as traces of burning and destruction. From Deposit 7_1GN (filling the object 1_2021_3), a large number of fragmented storage and kitchen vessels was collected (Fig. 9). Among the vessels were also relatively well preserved painted vessels, "Pilgrim" Flasks and oil lamps were found (Fig. 10). The deposit also contained animal bones, shells, stone tools construction debris and remains of wooden beams. The character of Deposit 7_1GN suggest that room was abandoned in a hurry – most of the vessels were located in situ and had traces of destruction by fire.

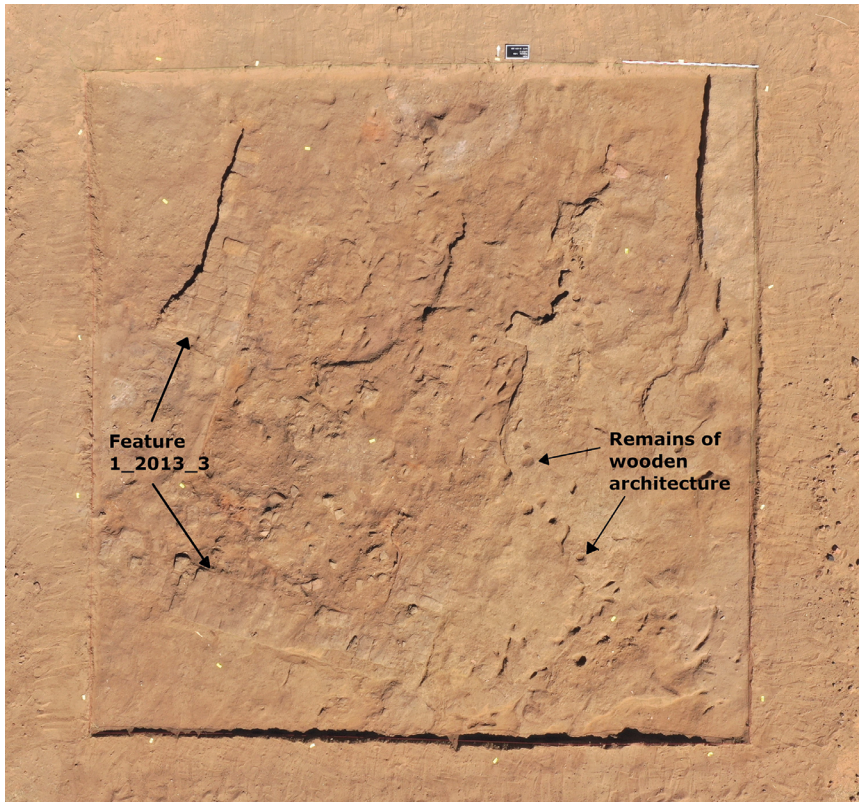

Fig. 8. Trench 1/GN after exploration of Layer 2. In the eastern part remains of wooden architecture are visible. In the western part the outline of Feature 1_2021_3 (storage) is visible

Photo Mariusz Drzewiecki.

Room 1_2021_3 was relatively well preserved. On the east (w5) and south (w4) walls traces of thick orange plaster were registered (Fig. 11). Outside the west (w3) wall lime plaster was found (Fig. 12). Only the north wall was partially destroyed by a robber pit filled with occupation debris (Deposits 6_1GN, 10_1GN).

The floor of the room was made of silt (12_1GN). In the floor traces of post-holes were discovered. The post-holes may be the remains of wooden structures used for storage. In the north part of the building are the remains of a semi-circular furnace made of red bricks, possibly used for cooking (Fig. 13). Room 1_2021_3 may not only be a store, but also a space for preparing food for larger groups of people.

Under the storage room, traces of earlier activity have been discovered. In the lower deposits of Trench 1/GN postholes as well as a mud brick wall were found. The elements mentioned above suggest that the room was built over earlier wood and mud architecture (Fig. 14).

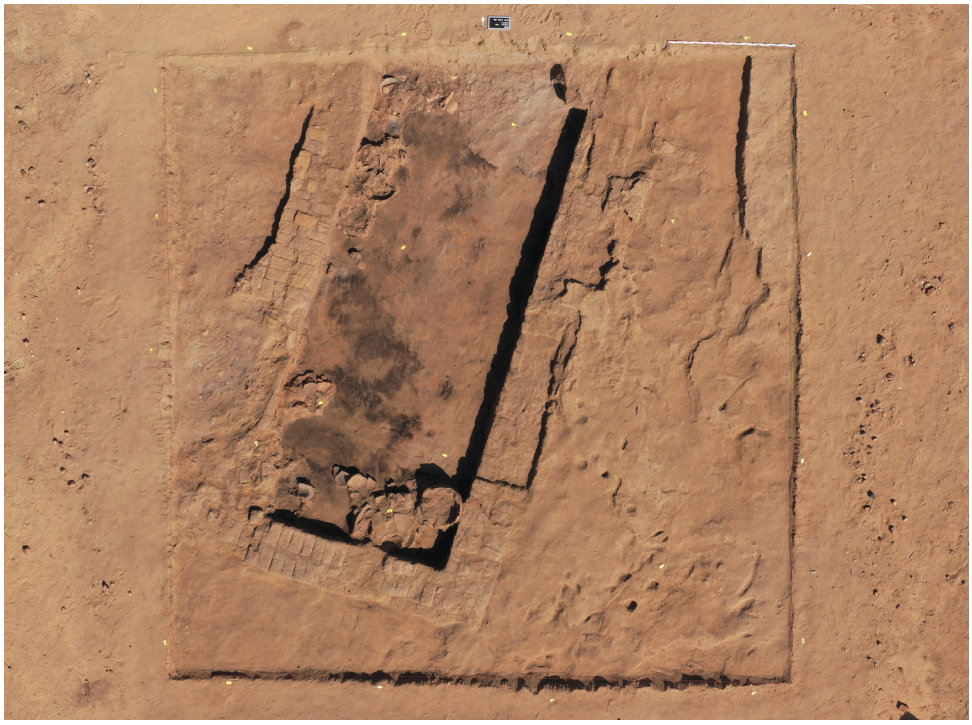

Fig. 9. Trench 1/GN after exploration of Deposit 7_1GN. Along the south and west walls remains of kitchen and storage vessels as well as stone tools are visible
Photo Mariusz Drzewiecki.

Fig. 10. Examples of vessels found in the Feature 1_2021_3
Photo Tomasz Michalik.

Fig. 11. Orange plaster discovered on the upper part of the east wall (w5) of Feature 1_2021_3
Photo Tomasz Michalik.

Fig. 12. Lime plaster discovered on the upper part of the west wall (w3) of Feature 1_2021_3
Photo Tomasz Michalik.

Fig. 13. Remains of furnace made by red brick discovered northeast corner of Feature 1_2021_3 (storage)
Photo Tomasz Michalik.

Fig. 14. Trench 1/GN after the end of excavations. In the centre of Feature 1_2021_3 a dark natural layer with postholes is visible
Photo Mariusz Drzewiecki.

In the northeast corner ca. 85 cm below the modern surface natural soil was discovered. Excavations carried out in Trench 1/GN allow us to distinguish 5 settlement phases in the researched area:

Phase I

Sub-phase 1a – the existence of wooden architecture (represented by post-holes in Deposit 14_B_1GN).

Sub-phase 1b – continuation of wooden architecture with the emerging of mud brick architecture (represented by post-holes in Deposits 13_1GN, 14A_1GN and Wall w7).

Phase II

Construction, use and destruction of Feature 1_2021_3 (storage) and the furnace in its northeast corner (Feature 5_2021_3).

Phase III

Emerging of wooden and mud bricks architecture (represented by post-holes discovered in the Deposit 5_1GN and Walls w1 and w2).

Phase IV

Robber activity (represented by cut in wall north (w6) of Feature 1_2021_3 containing ash and consumption debris, and Deposit 9_1GN, fill of cut made in wall west (w3) of Feature 1_2021_3).

Phase V

Occasional consumption activity, represented by the upper backfill Deposits (4_1GN, 3_1GN, 1_1GN) as well as robber activity (Deposit 2_1GN).

Trench 2/GN: short fieldwork report

Trench 2/GN was established on Nov 23 and excavated from Nov 24 to Dec 9, 2021 and from Jan 16 to Jan 30, 2022. The trench, measuring 10 by 10 metres, was located to the southwest of Trench 1/GN and aligned along a N-S axis. The area was chosen for excavation based on the geophysical survey conducted by Robert Ryndziewicz in the previous season. Magnetometric rendering showed a row of square and rectangular rooms, the northernmost of which were selected for exploration.

Before excavation the area of the future trench was photographed and all artefacts (pottery and stone tools) were collected from the surface. The excavation of the first layer, ca. 15–20 cm in thickness, uncovered among other things two mud-brick walls (Wall 1 running N-S and Wall 2 running W-E along the southern half of the square's central axis) (Fig. 15). Deposit 1, slightly compacted gravel sand with moderate admixture of broken red bricks, pottery sherds (Fig. 16) and animal bones (top soil), was identified throughout the trench down to a depth of ca. 20 cm.

During the exploration of Layer 1 sandy soil with a large amount of animal bones (Deposit 2_2GN, southeast corner of Trench 2/GN) and

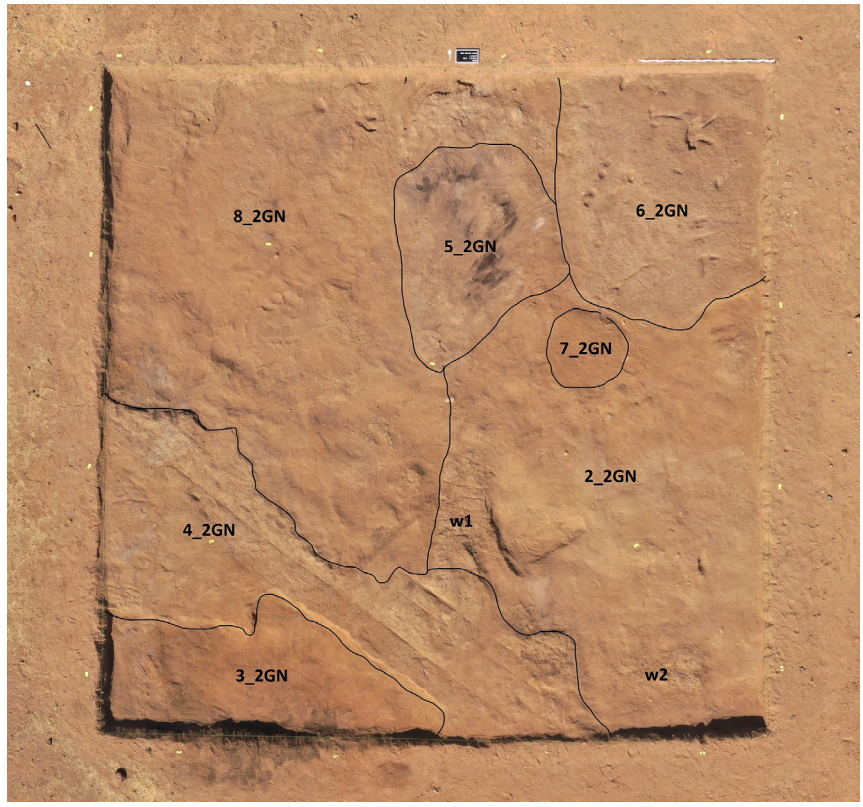

Fig. 15. Trench 2/GN after exploration of Layer 1. The photo shows uncovered walls (nos. 1 and 2), as well as deposits distinguished after exploration of Layer 1 (2_2GN-8_2GN)
Photo Mariusz Drzewiecki.

a concentration of brown soil with large admixture of organic matter were identified (southwest corner of Trench 2/GN, Deposit 3_2GN). Additionally, a large deposit of ash with charcoal was recorded in the central portion of the northern half of the square (Deposit 5_2GN). Upon the conclusion of the excavation of Layer 1, the level was documented using aerial photography and GPS RTK positioning.

The level uncovered underneath Layer 1 seemed to have been composed of a number of different deposits (Fig. 15):

Deposit 2_2GN – greyish yellow sand with some admixture of ash in the southeast corner;

Deposit 3_2GN – dark brown sand with large amount of organics in the southwest corner;

Deposit 4_2GN – greyish mud layer (walking level?) running obliquely from the midpoint of the west side of the trench to the middle of the southern side;

Fig. 16. A selection of pottery sherds collected from Deposit 1
Photo Joanna A. Ciesielska.

Deposit 5_2GN – ashes with charcoal in the middle of the northern half of the trench;

Deposit 6_2GN – grey mud plaster walking level with postholes in the northeast corner;

Deposit 7_2GN – concentration of organics to the south of Deposit 6 (poss. fill of pit);

Deposit 8_2GN – silty sand in the northwest corner.

At the level of ca. 20 cm below the modern ground surface the excavation area was reduced to the southeast quarter of the trench, an area encompassed by Wall 1 to the west and Wall 2 to the south, limited to three deposits nos. 2_2GN, 5_2GN and 7_2GN (Fig. 17), containing some pottery fragments (including some re-used fragments, see Fig. 18a, 18b) and animal bones. The decision to limit the area of research was related to recognition the relationship between the Walls w1 and w2 (whether they form a room?).

Two more deposits were distinguished underneath – no 9_2GN in the southern part and no 10_2GN in the northern. The former appeared to be composed of sand with large admixture of ash, while the latter was

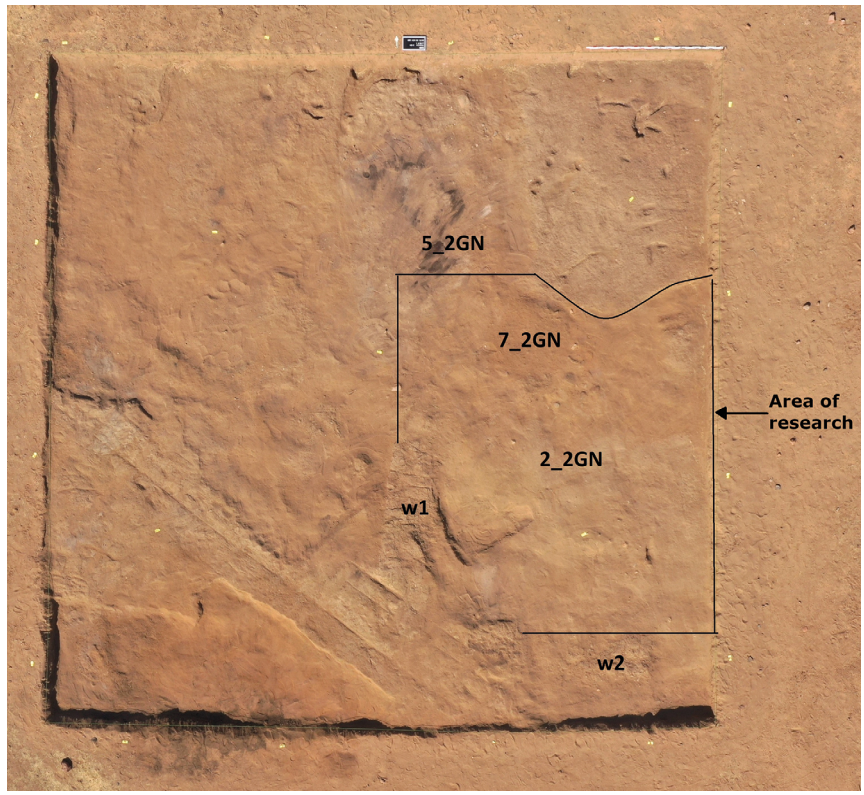

Fig. 17. Area selected for research
Photo Mariusz Drzewiecki.

Fig. 18a, 18b.A re-used fragment of pottery (SOBA_2021/GN2/sf160) from Deposit 2_2GN
Photo Joanna A. Ciesielska.

much looser in composition with no ash present. Excavation of both contexts yielded moderate amounts of pottery and animal bones. A walking level made of mud with the addition of lime as a hardening agent was uncovered below. Deposit 9_2GN was entirely removed from the top of the walking level (Deposit 11_2GN), while the excavation in the northern part of the square showed a large circular pit in the middle (Feature 2_2021_3), a similar semi-circular one to the east (Feature 3_2021_3, the other half appears to disappear into the eastern section) and a quarter of a third in the northwest corner of the square (Feature 4_2021_3) (Fig. 19). Additionally, the remnants of a water channel constructed of fired bricks were found running across Wall 1 into Feature 2_2021_3 (Fig. 20).

Excavation of the fill of Feature 2_2021_3 (i.e. Deposit 12_2GN) was quickly concluded upon reaching the bottom at ca. 10 cm below the walking level. The entire bottom was lined with plaster, in continuity of Deposit 11. The pit was also provided with two small bore holes – one leading towards NE, another to NW – possibly connecting it with other pits? In the middle of the fill of Feature 2_2021_3, some organic remains were found, suggesting the presence of a plant (not likely a tree, due to the shallowness of the pit). The pit might have also been used to distribute water from the channel to the adjacent pits.

Feature no 3_2021_3 was excavated down to 40 cm below the surface, Deposit 11_2GN, and no plaster lining was found. The upper part of the fill contained large amounts of animal bones, especially of large mammals. The eastern section of the trench showed that the pit was re-filled with trash after it went out of use. Below, the sand was much clearer,

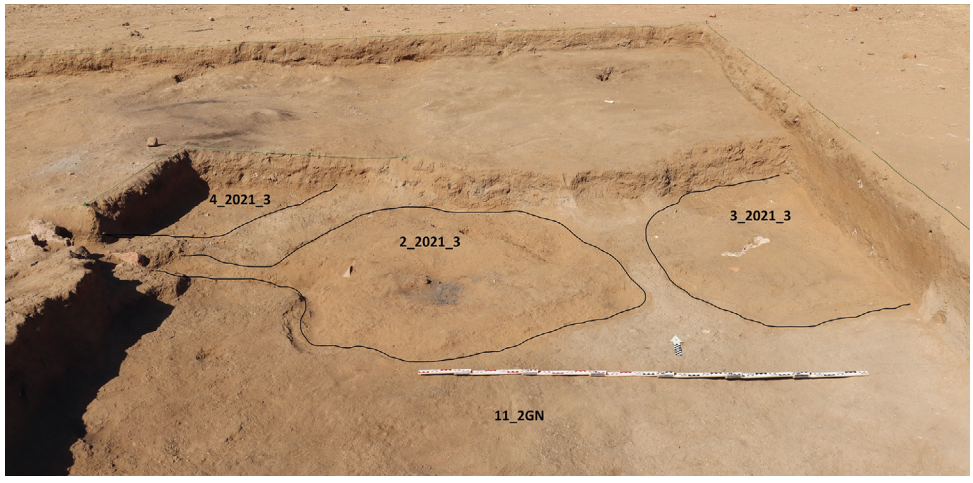

Fig. 19. Features discovered in southeast part of trench 2/GN (remains of plants cultivation system?)
Photo Tomasz Michalik.

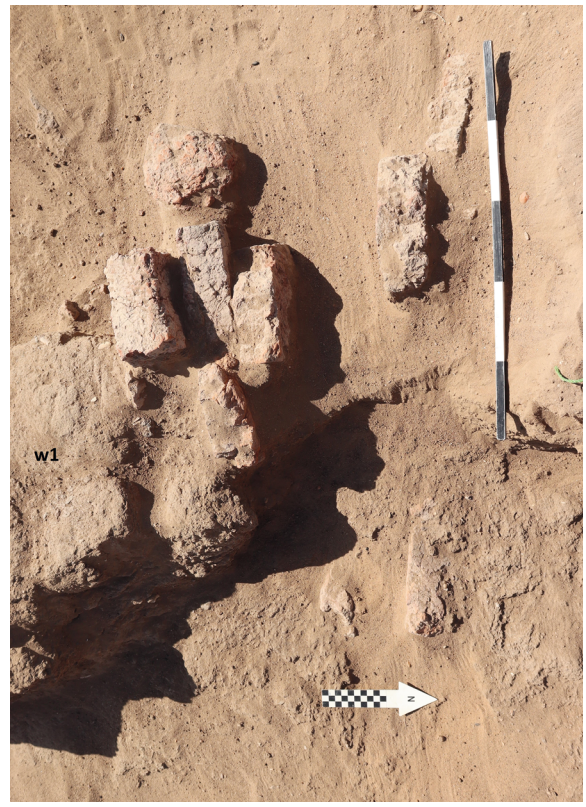

Fig. 20. Remains of a water channel discovered next to the northern edge of Wall 1. The conduit possibly supplied Feature no 2_2021_3 with water
Photo Tomasz Michalik.

but still yielded small amounts of pottery and bones. At a depth of ca. 80 cm below the surface the work was halted. Half of Feature 4_2021_3 was excavated. The work was halted at about 20 cm from the walking level (Deposit 11_2GN).

Cleaning of the entire square revealed that Wall 1 was founded at the walking level (Deposit 11_2GN) and appears to be connected to the water conduit. It is not clear whether Walls 1 and 2 are connected, as the two are separated by a narrow passage. However, they seem to be roughly contemporary. Furthermore, the foundations of Wall 2 seem to lie ca. 15 cm above an earlier mud-brick structure (Wall 3) running along the same axis, the top of which is at the same level as Deposit 11_2GN.

The excavated area was extended to the west beyond Wall 1, along the northern border established for the square excavated previously on its eastern side (Fig. 21). The purpose of the enlargement was to recognize structures located to the west of Wall 1, mainly whether there is a continuation of the plant cultivation system there. The excavation of Deposits 5_2GN and 8_2GN yielded moderate amounts of pottery and no other material. The walking level (Deposit 11_2GN) was also identified, along

Fig. 21. Trench 2/GN after extension of exploration to the west. Red bricks in the central part of the trench can constitute the remains of a water channel
Photo Mariusz Drzewiecki.

with a number of broken red brick fragments scattered in close proximity to the water conduit cut across Wall 1. A large piece of conglomerate (a clastic sedimentary rock) was found next to the bricks, in line with the reconstructed course of the channel. The area was cleared down to the walking level, cleaned and photographed. Three-dimensional rendering of the trench was also prepared at this stage, recording the final state of excavation at the end of the season.

The excavation of Trench 2/GN was continued after a short break (in January 2022). First, the remnants of a walking level in the northeast corner of the trench (Deposit 6_2GN) were excavated, sitting on top of Deposit 15_2GN (separated by a thin make-up layer). The western limit of Deposit 6_2GN was clearly formed by a later pit cutting in the middle through the northern half of the square (Feature 4). Initially thought to be another plant pit, Feature 4 turned out to be much larger than Features 2 and 3, with an irregular outline. The pit was first filled

with Deposit 14_2GN, a yellowish sand with some pottery and animal bones, as well as occasional charcoal pieces, followed by another deposit (no 5_2GN) with large admixture of charcoal, ash, animal bones and pottery, filling the its uppermost portion. Deposit 5_2GN contained also a number of stone artefacts, among them a limestone relief fragment (SOBA_2022/GN2/sf224, Fig. 22).

On the western side Feature 4 was found cutting through a sub-square mud-brick structure (Feature 5, Fig. 23), uncovered upon excavation of Deposit 8_2GN. The latter was an orange brown lumpy soil with large admixture of medium-size gravel, semi-compacted, with some pottery and fragments of red bricks in its southern portion. The sub-square structure (Feature 5) was composed of three mud-brick walls joined at right angles, diverging slightly from the N-S orientation towards west. Feature 5 measures ca. 2.75 m (N-S) by 2.25 m (E-W), ca. 30 cm in height (measured from the level of its foundation on top of Deposit 23_2GN, see below). The northern and southern walls are not perfectly parallel, slightly slanting towards each other on the eastern side instead. The N-S wall was covered with a thick layer of plaster with admixture of lime and red-brick fragments (largest of them measuring ca. 20×22 cm, ca. 7–8 cm in thickness), which seems to have extended both outside and inside the structure. At least two levels of red gravel make-up can also be spotted in the section of the fill on its eastern side. Cleaning of the entire structure showed two large pits (post-holes?) on the northern and southern sides, plus a small post-hole next to the western wall. On the northern side a row of red bricks appears to be running perpendicular to the structure and disappears into the northern section of the trench. On the outside (to the west), a priming composed of medium-sized gravel was provided under the layer of plastering.

In the northwest corner of the trench, to the west of Feature 5 and under Deposit 17_2GN (sand mixed with ash and fragmented animal bones) a walking level (Deposit 19_2GN) made of mud with addition of lime was uncovered. Two rows of post-holes were recorded running E-W (Feature 7, Fig. 24), with a northern row of three measuring ca. 15 cm in diameter, and another one below (to the south) composed of four ca. 8–10 cm in diameter. The plaster covering Feature 5 appears to be one with Deposit 19_2GN, indicative of its construction being contemporary with the walking level.

Excavation of Deposit 8_2GN further south along the western section of the trench uncovered the existence of a semi-circular red-brick structure (Feature 6) protruding from the middle of the western section of the trench (outer diameter ca. 2.30 m). The excavation of the upper part of the fill suggested that the structure might be a circular well, in its upper part built of fired brick (ca. 13 cm in width, and 7–8 cm

Fig. 22. Limestone relief fragment (SOBA_2022/GN2/sf224) found in Deposit 5_2GN, the upper part of the fill of Feature 4
Photo Joanna A. Ciesielska.

Fig. 23. Feature 5 in the north-western part of Trench 2/GN, view from the west
Photo Joanna A. Ciesielska.

Fig. 24. Feature 7 in the north-western part of Trench 2/GN, view from the north
Photo Joanna A. Ciesielska.

Fig. 25. Feature 6, a water well with lining of red brick, mud-brick and stone, view from the west
Photo Joanna A. Ciesielska.

thick) lined with stones further down. Three to five upper courses of red brick were arranged in a step sequence, with the lower tiers narrowing downwards. Upon the conclusion of excavation within the trench, it was decided to extend the trench towards west in order to confirm the identification of the well and record its full extent. An extension measuring 2 by 3.5 m was thus delineated directly adjacent to Feature 5. The section was excavated ca. 30 cm below the modern ground surface, uncovering the outline of the well, tear-shaped on top, pointing NW, and oval below with main axis running N-S (diameter 2.30 m, both N-S and E-W) (Fig. 25). The fill of the well was explored to a depth of ca. 2 m, uncovering courses of bricks tapering inwards, i.e. protruding to narrow down the light of the well (ca. 1.10 m N-S, ca. 95 cm E-W). At the top, the mouth of the well was provided with an opening on its northwest side, possibly to facilitate pulling up buckets of water. Furthermore, at least three spurs were furnished out of single red bricks, evenly spaced around the western side of the well.

Deposit 18_2GN, the upper portion of the well's fill, was a dark grey soil with a large admixture of charcoal, ash, as well as animal bones and pottery fragments. In the lower fill (Deposit 21_2GN) the soil was more compact, with a large amount of ash, but less pottery (Fig. 26) and animal bones. A mud-brick mastaba was constructed next to the well, extending eastwards (Feature 10), towards the channel running across Wall 1. The structure measured 2.20 m in length (i.e. along its E-W axis), ca. 1.20 m in width (measured at its midpoint, although widening towards the well and slightly narrower at its eastern end), ca. 25 cm in height. Feature 10 was clearly constructed on top of the fill of the construction pit of the well (Feature 11), as it showed traces of subsiding mid-way. At its eastern limit the structure ended with two large fired bricks placed in a N-S line, as if forming a blockage. The bricks marked the border of a small, roundish depression (ca. 1.20 m in diameter), possibly a basin (?), between Feature 10 and a mud-brick mastaba provided to support the red-brick channel running across Wall 1.

Deposits 3_2GN and 4_2GN were excavated in order to clarify the extent and context of Wall 4. Deposit 4_2GN proved to be a thick, very compacted mass of rubble, probably from the adjacent walls. Deposit 3_2GN, a thick brown layer of lumpy soil with large amount of animal bones and some pottery fragments was excavated down to the walking level which seems to be identical to Deposit 11_2GN on the northern side of Wall 4. On the southern side of Wall 4, Deposit 11_2GN is only preserved in the southwest corner of the trench, being completely absent towards the east. Meanwhile, Deposit 11_2GN was also identified extending into the northeast corner of the trench, upon excavation of Deposit 15_2GN.

Fig. 26. A selection of pottery from Deposit 18_2GN, Feature 6
Photo Joanna A. Ciesielska.

After cleaning the trench it could be seen that Wall 4 (l = 4.80 m, w = 65 cm, h = ca. 46 cm) was connected perpendicularly with Wall 1, both being founded on top of Deposit 11_2GN. Post-holes of a less-clear patterning were also identified in a portion of Deposit 11_2GN between Walls 1 and 4 (Feature 8).

The excavation of Deposit 11_2GN between Walls 1 and 4 yielded some pottery and animal bones. Underneath, another deposit (no 22_2GN) of yellowish sandy soil with large amounts of pottery and animal bones was found and excavated down to another walking level (Deposit 23_2GN), composed of a very compacted, dark grey alluvial mud with patches of white precipitate – possibly salts (?).

Further exploration revealed that Deposit 23_2GN extends northwards, to the northwest corner of the trench, and into the base of Feature 4. Careful examination of the section on the boundary between Feature 4 and Deposit 11_2GN in the northeast corner showed that the two walking levels (nos. 11 and 23) were divided by a thick, dark brown layer, possibly same as Deposit 22_2GN between Walls 1 and 4. Feature 4 seems to

have cut through Deposit 11_2GN and its priming in the form of Deposit 22_2GN and reached Deposit 23_2GN at its bottom (382.28 m a.s.l.).

Meanwhile, Deposit 23_2GN was also uncovered under Deposit 19_2GN in the northwest corner of the trench, exhibiting an entirely different distribution of post-holes, attesting to the presence of wooden architecture of a circular shape (Feature 12, Fig. 27). It appears that upon the construction of Feature 5 to the east, the floor was re-furbished (Deposit 19_2GN) and a differently-patterned wooden structure (Feature 7) was installed.

Excavation of Deposit 19_2GN uncovered the outline of a circular pit around Feature 6, possibly the construction pit of the well (Feature 11, Fig. 28). Feature 10 [a mud-brick mastaba to the east of the well (Feature 6)], which was partially compromised due to its foundation on top of the fill of Feature 11, was thus excavated in its entirety. The outline of the pit suggests that the well was built at the level of Deposit 23_2GN. The pit was then re-filled with occupation debris. A portion of the walking level (Deposit 23_2GN) on the northern side of the well was subsequently patched up (Deposit 26_2GN), clearly distinguished in colour from the portion that was left untouched during the construction of the well. The distribution of post holes recorded within both portions of the walking level indicate that wooden architecture in the northwest corner of the trench was installed after that. Excavation of Deposit 27_2GN, the fill of Feature 11, showed that the lower layers of the well's outer diameter were built of randomly placed mud bricks, either whole or broken. Adjacent to the walls, the fill was composed of smashed red bricks mixed in with brownish soil. Further from the walls, the pit was filled with brownish, lumpy soil with large amount of animal bones and pottery fragments.

On the southern side of Wall no 4, the excavation of Deposit 20_2GN (uncovered under Deposit 3_2GN, to the east of Deposit 11_2GN) was undertaken and concluded upon encountering a new activity phase composed of a walking level (Deposit 24_2GN) set on top of clean, yellow sand (Deposit 25_2GN). The walking level here is set lower (382.29 m a.s.l.) than the one on the other side of Wall 4, i.e. Deposit 23_2GN (382.39 m a.s.l.).

A small test trench was excavated to the south of the corner where Walls 1 and 4 join. ca. 10 cm below the adjacent walking level (Deposit 24_2GN, 382.27 m a.s.l.), very compacted red clayish soil, was encountered underneath Deposit 25_2GN at ca. 382.05 m a.s.l. No pottery nor other artifacts were found within this context; the excavation was concluded after ca. 20 cm of digging. Another test trench was delineated in the corner between Walls 1 and 4, yielding the same results.

The following phases of activity were distinguished during excavation of Trench 2/GN:

Phase 1: activity level = Deposit 23_2GN installed on top of the natural/geological layers;

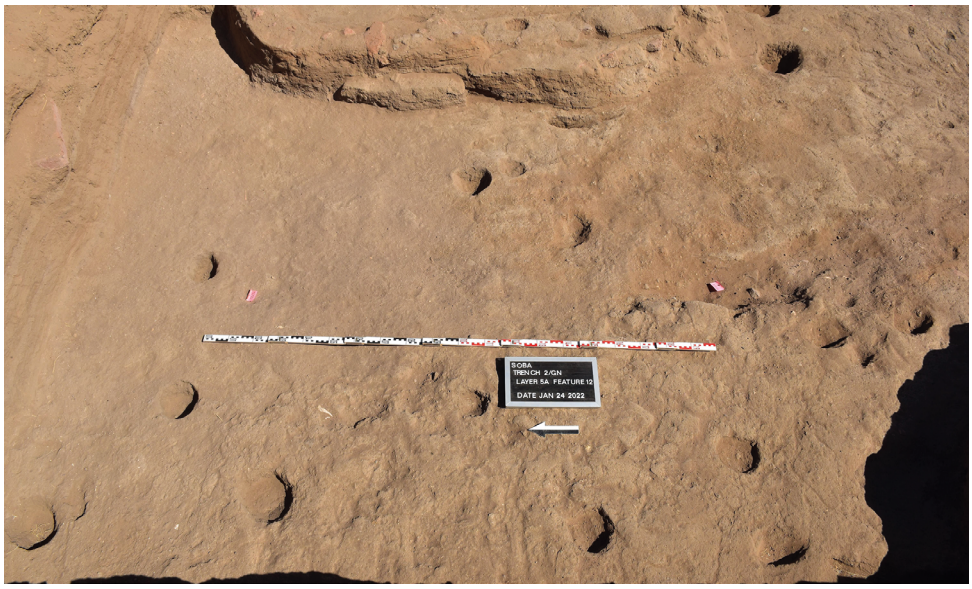

Fig. 27. A set of post-holes (Feature 12) forming a circular arrangement within Deposit 23_2GN
Photo Joanna A. Ciesielska.

Fig. 28. Feature 11, the construction pit of the well, fill Deposit 27_2GN
Photo Joanna A. Ciesielska.

Phase 2: construction of the well (Feature 6), preceded by the excavation of an irregular pit (Feature 11), followed by the refurbishment of the walking level (Deposit 26_2GN) + erection of wooden architecture in the northwest corner of the trench (Feature 12) and construction of the mud-brick mastaba (Feature 10) extending eastwards from the well, along with the earthwork supporting the water channel;

Phase 3: construction of Feature 5 + walking level, i.e. Deposit 19_2GN on top of Deposit 23_2GN in the western and northern parts of the trench, along with wooden architecture of different design than the previous one, evidenced by a number of postholes arranged in linear patterns;

Phase 4: mud brick architecture (represented by the walking level 11_2GN, Walls 1 and 4, and possibly Wall 3) and plant cultivation (Features 2 and 3);

Phase 5: mud-brick architecture (Wall 2) and wooden architecture (represented by the Deposit 6_2GN (walking level with postholes);

Phase 6: cessation of activity, refiling of Feature 3 and Feature 6 + deposition of upper layers, i.e. Deposits 2–4, 7–10;

Phase 7: digging of Feature 4, cutting across the layers down to Deposit 23_2GN + deposition of its fill (Deposit 14_2GN), followed by the deposition of Deposit 5_2GN on top.

Charcoal samples were collected in the course of the excavation to further clarify of the stratigraphy and sequencing of phases.

Pottery studies

Throughout the season pottery from five trenches (1/SH, 1/CW, 1/CS, 1/G and 1/GN) was examined.

Trench 1/G

Area G, excavated in 2020, was chosen based on the results of the magnetometry survey, which revealed some oval anomalies suggestive of a cemetery. Excavation of the subsurface layers yielded moderate amounts of pottery sherds and a level of brownish silt with an admixture of lime. Natural factors behind the formation of such a compressed layer just below the surface remain obscure (Drzewiecki et al. 2020b: 239).

In this area the amount of pottery collected was small and consisted mainly of kitchenware with a few examples of tableware vessels. The pottery assemblage was mixed with modern pottery and modern bricks. The state of preservation and the small quantity of diagnostic sherds makes it challenging to identify the vessel types (Fig. 29).

Trench 1/SH

Trench 1/SH was also excavated in 2020. In this area, layers with multiple post holes and mud-brick structures were documented. Timber architecture in Trench 1/SH was erected after AD 892–1014 (95%). Mud-brick architecture coexisted with the late phases of timber architecture. The topmost preserved remains were dated to the eleventh century (Drzewiecki et al. 2021: 612).

The pottery recorded in this area consist mainly of kitchenware and storage vessels (Fig. 30 and 31) of the same types as discovered in areas 1/O and 2/OS (cooking pots A, handmade pots B, C, D and storage jars E, F) (Drzewiecki et. al. 2021: 613–616). Only a few examples poorly preserved tableware vessels were recorded (Fig. 32).

Among the recovered pottery, a few examples of sherds re-used as 'discs' and discs with drilled hole were discovered. Some of them were probably used as lids, gaming pieces, loom weights or buttons (Fig. 33).

Fig. 29. Pottery examples from Area 1/G (context G1/287)
Photo Joanna A. Ciesielska.

Fig. 30. Pottery sherds from Trench 1/SH (context SH1/153)
Photo Joanna A. Ciesielska.

Fig. 31. Pottery sherds from Trench 1/SH (context SH1/158)
Photo Joanna A. Ciesielska.

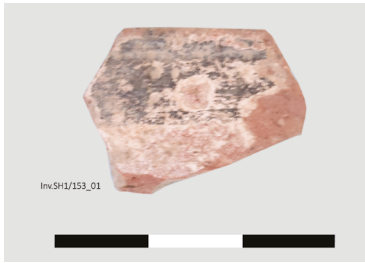

Fig. 32. Poorly preserved pottery examples (Inv. SH1/153_01) from Trench 1/SH
Photo Ewa Czyżewska-Zalewska.

Fig. 33. Re-used pottery (Inv. SH1/153_03 left, Inv. SH1/164_12 centre, Inv. SH1/165_08) from Trench 1/SH
Photo Ewa Czyżewska-Zalewska.

Trench 1/CS

Area CS was excavated in 2020. A linear arrangement of fired red bricks was spotted running northwest-southeast on the surface in Area CS, to the south of the Church C. The results of the geophysical magnetometric survey indicate the presence of a 'U'-shaped structure on the western side of the putative wall. Nine layers were excavated. A feature causing magnetic anomalies was not found. The excavated area exhibited a high degree of destruction and charcoal samples taken from the intact deposits dated this area to the 8th–9th century AD. The pottery assemblage is quite abundant in this area, consisting mainly of kitchenware (Fig. 34), the same types as in area 1/SH. Pot stands and a so-called "Pilgrim" Flasks (Fig. 35), rare in other examined contexts, were also recorded. A few examples of tableware pottery were also recorded (Fig. 36). Also re-used pottery, as mentioned above, used as lids and gaming pieces were also discovered here (Fig. 37). Unfortunately, analysis of the sherds showed that some contexts were mixed (single vessels were located in several contexts).

Trench 1/CW

Trench 1/CW is located to the west of Church C, in one of the few places where the red brick debris is visible on the surface. The geophysical survey recorded regular anomalies in the vicinity, suggesting the presence of a large complex (Drzewiecki et al. 2020b: 238). Four occupation phases have been identified in this trench. The earliest is comprised

Fig. 34. Kitchenware examples from Trench 1/CS (context CS1/295)
Photo Joanna A. Ciesielska.

Fig. 35. Potstand (Inv. CS1/250_11) and "Pilgim" Flask (Inv. CS1/220_23) recorded in Trench 1/CS
Photo Ewa Czyżewska-Zalewska.

of a mud-brick complex with small and elongated rooms, built after AD 527–615. The second phase of occupation is connected with timber structures built after the mud-brick complex fell into ruin. Phase three, dated to AD 890–1013 (95%), sees the return of mud-brick architecture together with timber constructions. The entire structure was heavily damaged by modern digging (phase four), which reached a considerable depth and cut through phase two, ending at the upper levels of phase one (Drzewiecki et al. 2021: 611).

Fig. 36. Inv. CS1/217_08+217_08+234_02, Pottery examples from Trench 1/CS
Photo Ewa Czyżewska-Zalewska.

Fig. 37. Inv. CS1/220_46 (left), Inv. CS1/269_01 (right), re-used pottery from Trench 1/CS
Photo Ewa Czyżewska-Zalewska.

Large amounts of pottery sherds and more than 30 inscribed fragments of pottery vessels were collected in this area (see also Drzewiecki et al. 2020a: 32, Fig. 40). The pottery assemblage consists mainly of kitchenware as mentioned above: cooking pots (A), handmade pots and storage jars (B, C, D, E, F) (Fig. 38) (Drzewiecki et al. 2021: 613–616), but a quite extensive collection of tableware pottery, so called 'Soba Ware' was also recorded (Fig. 39). Such a large amount is not present in other examined areas. Re-used pottery fragments were also discovered in this area (Fig. 40).

Unfortunately, as in Trench 1/CS, the study of the pottery showed that some contexts were mixed.

Trench 1/GN

This area was abundant in pottery, which as in other examined areas consist mainly of kitchen wares and storage jars (Fig. 41), as mentioned above. Especially noteworthy is Deposit 7 (context GN1/329), which yielded the most complete collection of pottery: kitchen wares and storage jars (Fig. 42), pot stands, lamps (Fig. 43), and so-called "Pilgrim" Flasks (Fig. 44). An interesting set is the tableware pottery, combining different types of vessels which share the same style of decoration (Fig. 45).

Preliminary report on ground stone tools from Soba

Preliminary classification

During the season, technological analysis of ground stone tools was carried out. The analysis strategy was designed to determine the function of objects and includes use-wear analysis, morphological and technological descriptions. However, as scientific analyses have not yet been carried out, the categories of this classification aim to narrow the activities to which a given tool was destined.

The assemblage of ground stone tools comprises 234 objects and was recovered during the 2019–2022 field seasons. Based on use-wear analysis they were divided into three main categories:

1. Grinding and pulverizing tools (N = 182; Fig. 46, 49)

The category comprises objects used to grind, pulverise and/or crush. Tools can be divided into two main groups indicating the manner of handling of the tool – active (i.e. 156 grinders) and passive tools (i.e. 31 querns). Grinding tools were used in processing activities, probably mostly in food preparation, but as indicated by traces a red substance (7 instances), also in pigment processing.

Fig. 38. Examples of kitchen vessels from Trench 1/CW (context CW1/190)
Photo Joanna A. Ciesielska.

Fig. 39. Example of tableware vessel (Inv. CW1/217_01 +270_01+226_12) (Trench 1/CW)
Photo Ania Weźranowska.

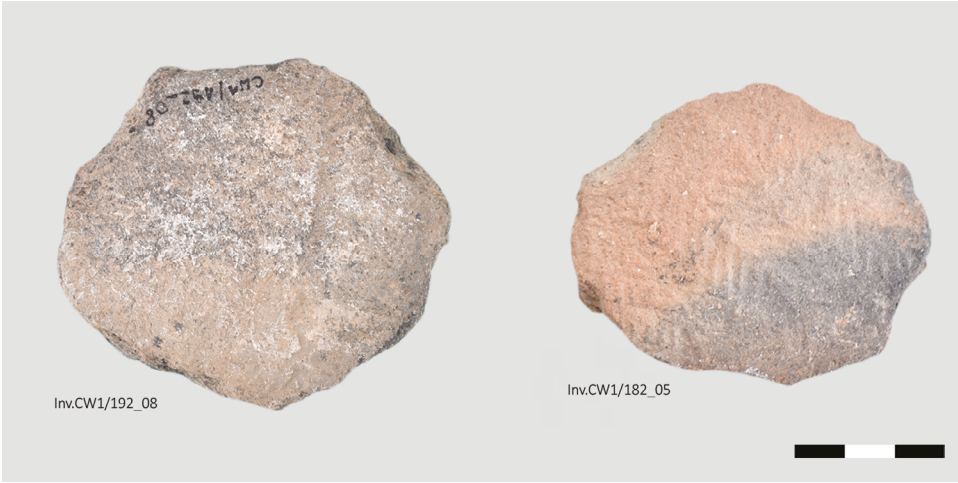

Fig. 40. Re-used pottery (Inv. CW1/212_04 left, Inv. CW1/236_43right)
Photo Ewa Czyżewska-Zalewska.

Fig. 41. Pottery from Trench 1/GN (GN1/306)
Photo Joanna A. Ciesielska.

Fig. 42. Pottery from Trench 1/GN (GN1/306) inv. GN1/329_09 left), inv. GN1/329_17 (right)
Photo Joanna A. Ciesielska - left, Ewa Czyżewska-Zalewska – right.

Fig. 43. Example of potstand (GN1/sf174) and lamp (GN1/sf167) from Deposit 7 (GN1/329)
Photo Joanna A. Ciesielska.

Fig. 44. Example of so-called "Pilgrim" Flasks (GN1/sf161) from Deposit 7 (GN1/329)
Photo Joanna A. Ciesielska.

Fig. 45. Set of tableware pottery form Deposit 7 (GN1/329), bowl – GN1/sf182 (left), lantern? – GN1/sf169 (center), pot stand – GN1/sf181 (right)
Photo Joanna A. Ciesielska.

Fig. 46. Category one – grinder CS1/268
Photo Joanna A. Ciesielska.

Fig. 47. Category two – pounder CW1/193
Photo Joanna A. Ciesielska.

Fig. 48. Category three – abrader CW1/183
Photo Joanna A. Ciesielska.

Fig. 49. Category one – grinders OS1/005
Photo Joanna A. Ciesielska.

2. Percussion tools (N = 15; Fig. 47)

Tools in this category were involved in various activities related to the use of forceful pressure – impacting, smashing, crushing and battering. The group comprises pounders (15) with percussion marks visible only within the small area of a surface. It indicates that tools were used in activities where only brief, abrupt movements were needed.

3. Abrading, smoothing and polishing tools (N = 32; Fig. 48)

This category includes objects used to abrading, smoothing or polishing, and also sharpening tools. The largest subtype constitutes rectangular abraders (24) which also were reused as whetstones (2); the category also includes scrapers (3), cupstone and smoother. The defining feature is removing material from the contact surface, so they could have been used on bone, wood or stone.

The tools often appear to be multifunctional and/or of unique shape. An individual tool may have had various functions within a single category.

The set of ground stone tools found in trench 1/GN, Deposit 7

Tools discovered in Trench 1/GN were classified as grinding tools (6 querns, 14 grinders). The context in which they were found as well as their morphology indicates clearly a correlation between them. Large, basin type querns were used together with disc-shaped grinders, and probably were involved in large-scale processing, grinding cereal grain to flour, for example. Smaller querns were probably used to pulverise and grind substances on a smaller scale, such as processing spices, legumes or seeds.

Plant macroremains from Soba, Sudan
Preliminary Report from season 2021–2022

In February 2021, archaeobotanical material from Soba (seasons 2019–2020 and 2021–2022) was studied. A total of 13 samples (Table 1) were examined (7 archaeobotanical samples and 6 mudbrick samples). Archaeobotanical samples were processed in February 2022 using the dry sieving method (mesh sizes 1 mm and 0.5 mm). Mudbrick samples were crushed and then processed by the using water flotation method (mesh sizes: 1 mm and 0.5 mm). All samples were sorted manually using a PZO MST 130 microscope in Soba. Taxonomic identifications were based on reference images in van Zeist & Bekker-Heeres 1984; Jacomet 2006; Neef et al. 2012. In most cases specimens were well preserved, most of them are carbonized. The majority of uncharred items (Fig. 52)

seems to be modern contamination (except desiccated wild grasses extracted from mudbrick samples).

Four of the samples contained no seeds, grains, fruits or vegetative parts of plants, only charcoal fragments. Archaeobotanical samples contained typical plant remains (charred) for the region: broomcorn millet caryopses (*Panicum miliaceum L.*) (Fig. 50), weeds and wild grasses and more unusual findings as grape seeds (*Vitis vinifera L.*) (Fig. 51) as well. The samples need further, more detailed analysis.

Mudbrick samples contained remains of charred and desiccated wild grasses, also in need of further analysis. The amount of plant remains in the material from the mudbrick samples is too scarce to be considered as intentional organic temper.

Table 1. Samples examined in 2022 in Soba

Sample ID	Context	Volume [ml]
Soba 2021/GN1/sf179	Fill of the pot	1500
Soba 2021/GN1/s203	Fill of the "Pilgrim" Flask	5600
Soba 2020/SH1/s083	Gray silt with ash	1000
Soba 2020/SH1/s088	Gray silt with ash	100
Soba 2021/GN1/s202	Fill of the "Pilgrim" Flask	100
Soba 2021/GN1/s194	Fill of Soba 2021/GN1/sf202	75
Soba 2021/GN1/s187	Fill of pot Soba 2021/GN1/180	450
Soba 2021/GN1/s205	Mudbrick	3500
Soba 2021/GN1/s206	Mudbrick	3000
Soba 2021/GN1/s204	Mudbrick	1500
Soba 2021/GN2/s 222	Mudbrick	300
Soba 2021/GN2/s 223	Mudbrick	500
Soba 2021/GN2/s 224	Mudbrick	500

Prepared by Agata Bebel-Nowak.

Fig. 50. Broomcorn millet extracted from Soba samples
Photo Agata Bebel-Nowak.

Fig. 51. Grape seeds extracted from Soba samples
Photo Agata Bebel-Nowak.

Fig. 52. Desiccated plant remains (modern contamination) extracted from Soba samples
Photo Agata Bebel-Nowak.

Ethnographic research

In November/December 2021 and January/Feburary 2022, ethnographic research was carried out in Soba. The research focused on the following areas: Ganaab (قنيعاب), Salama (سلامة), Tureab (توير اب), and Sigeila (سقيلة).

The field research was also carried out in the town of Eilafun. The main focus of fieldwork was to investigate the knowledge on the archaeological artefacts and archaeology, cultural memory as well as beliefs and customs connected with the site. A series of public consultations on the future of the site and forms of its protection was also organised. In November/December, activities were also organised in one of the primary schools in Ganaab – and a local oral folklore writing and art competition was held. Winners were rewarded with small gifts from Poland. In total, 41 ethnographic interviews and 13 observations (participant and non-participant) were conducted (Fig. 53).

The development of settlement in the study area after the fall of Soba (1504) until the beginning of the 20th century is hard to trace. According to oral traditions, in the 16th and 17th centuries, the region where Soba once stood, now devoid of permanent inhabitants, was above all a land of

Fig. 53. During one of the interviews in Soba in 2021
Photo Maciej Kurcz.

Sufi masters. Here they found ideal conditions to be connected with God through asceticism and living a life in solitude (Abd el Rahman ibn Tarraf, ʾAbdulla Wad Ḥasoba el Moghrabi), other holy men also found favourable conditions here for farming and political careers (Idriss Wad Mohamed el Arbab). According to oral tradition, in the second half of the 19th century, Mugharba nomads gradually began to settle in Soba. One of the first was sheikh Abd Salam, who settled here permanently in 1885 with his family and is responsible for the origins of the present day districts of Salama and Sigeil. Over time, other Arabs started migrating here: Batahin, Ja'alin, Shaigiya and, above all, Hanassiya. Settlement points such as Salama and Soba el-Tajiba (today's Sigeila) appear on British maps (1910–1975). According to a family tradition, Mohamed Ahmed Ganaab's family settled in the area in 1946, giving rise to the Ganaab district. As before, drought and the prospect of farming were the accelerator for migration. Over the

last hundred years Soba has been an object of ongoing migrations. Initially, the majority of the migrants were nomads and camel keepers. With time, other groups joined this process. Today, Soba attracts people from the peripheries and from nearby Khartoum alike. These are both people pushed out from various parts of Sudan, and even from outside its borders, by poverty, internal instability or disease, and relatively wealthy groups, residents of the Khartoum metropolitan area. The factors attracting migrants include: housing prospects (relatively cheap and accessible land), income (both in trade and agriculture). Important – as emphasised by many interviewees – are also harmonious social relations and security.

Today the archaeological site[1] begins right at the main road. A cast-iron fence runs along this part of the border; it creates a barrier for wind-blown rubbish – mainly plastic packaging. From the south, from the side of the urban development, the iron fence extends only for a few dozen metres, and the border becomes irregular. Formally, it is marked by the meandering valley of a periodic river. Further on, brick walls appear in places, and then a cast-iron fence again, which separates the site from the croplands and pastures. From the west (from the Blue Nile side), the site is also adjacent to croplands. In this place, however, the boundary is marked by a dense row of concrete posts. This is a new element which has appeared recently, and is supposed to protect the site not so much against the presence of people, but against the expansion of local farmers who, using the *fait accompli* method, take over more and more parts of the protected area for cultivation. The concrete posts immediately caused a big commotion among the local population – especially the local farmers. The farmers were concerned about the lack of communication with the farms, as well as the green areas along the Nile. The open character of the site is of great importance to the locals and will probably affect further attempts to protect the site. From the north, the boundary ceases to be a straight line; irregular cultivated fields cut into the site, forming nine separate areas, in terms of ownership; the largest of them belongs to Muzamil al Kurdi and is about 50 ha. In 2021, solar lights were erected. An important change. The site, from an unlit space, being some sort of a gap in the urban development, changed into a lit space, and therefore safer and more accessible. Unlike the fence, it does not arouse special emotions among the locals.

'Alua', 'Asar' or 'Kusha' – these are the names most frequently used to refer to the archaeological site. People connected with agriculture and breeding refer to the site as Masra al Kurdi ('Kurdi's farm') – the largest

1 The area which is currently free of buildings and has physically set boundaries is meant here, in contrast to the entire area where, as it is believed, the remains of medieval Soba may be located, i.e. also: Marabiyya, Ganaab, Suk, which today are covered by modern urban development.

in the area. All names are beautiful examples of metonymy and express a certain specific attitude to 'Old Soba'. For many it is also a place where antiquities (asar) exist; it has the status of a protected area, has defined boundaries and is guarded by the police. This is also a deserted space, full of rubbish, literally and symbolically impure. Finally, for a large part of the interviewees, it is still a mysterious and uncanny place. It is a part of religious folklore deeply rooted in the rural community of inhabitants of Soba. It is also a place where nature can come back to life and explore the deserted urban landscape. It is used by people as a source of food, fuel, material for the production of tools, traditional medicines or shade. Interestingly, knowledge about a large proportion of these species is rather poor. They are almost completely unknown to the locals, as they cannot be found in the typical urban greenery. This is a place where two worlds meet – the woody savannah and the intensively cultivated Nile valley. An area of undeniable beauty, which is in contrast to the typical urban development and gives the place a somewhat rural character. Ecological conditions make this area attractive for the nearby town – among other things for its teenage inhabitants.

For children and young people, the site offers all kinds of opportunities. It is invariably a children's playground. Yesterday and today. Children comb the surroundings in search of something interesting to re-use. It happens that their curiosity is caught by artefacts lying on the surface. For young people, on the other hand, it is above all a place to meet or 'walk aimlessly' – especially within the green areas, closer to the Nile. A broad, undeveloped strip of land, together with the proximity of the river, make the site an important local transport route. Trash collectors, beggars or simply 'loose people' regularly appear here. They probably look for some 'treasure' as much as for some privacy and rest from the hustle and bustle of the city.

The archaeological site is, as it was signaled earlier, referred to as 'kusha' by some, i.e. a place where waste is stored. Formerly it was also a term used to describe a rubble heap, a place covered with the remains of old buildings, often a source of building materials. In the past centuries, Old Soba had precisely such a function – the characteristic large-sized red brick, locally known as *tub* – was obtained here. The inhabitants of Soba stressed that the most important public buildings in Khartoum, such as the Anglican Church next to the Governor's Palace (today the Republican Palace Museum), Gordon Memorial College (today the University of Khartoum), a railway station in Khartoum North, El-Oyoun Hospital, Turku-Egyptian Hospital (later 'The River Hospital' and today the seat of the Federal Ministry of Health) and tombstones in Farouk Cemetery were built from local bricks. In fact, 'bricks from Soba' have appeared in the context of almost all historical buildings in Khartoum or even Omdurman (Fig. 54).

Fig. 54. The bricks from Soba in the Khalifa's house
Photo Maciej Kurcz.

For many inhabitants it is a source of pride that the most important historical buildings in the capital were built from the material coming from Soba. Perhaps these stories should also be treated as elements of a legend of some sort about the origin of the city, a series of mythical events that lay at the foundations of the metropolis, and were in fact connected with crucial moments in the modern history of Sudan (Turkish occupation, Mahdist Revolt, British-Egyptian reconquest). If, for some, these stories are associated with pride and classified as glorious, for others they rather speak of the imperial theft that Soba has experienced since colonial times. To some extent they are objects of an 'ethnic' nature – in the eyes of the locals symbolising the kingdom of Alua and former Soba. What is interesting, the so-called 'Christian brick' appears as evidence of indigenousness of the people living here. Especially as they used similar building techniques. However, the bricks from Soba were of better quality. This is also the opinion of the vast majority of the local inhabitants. Thus, simultaneously, it is also a tangible proof of splendour of Old Soba – of the high standard of living of its inhabitants, and even their above-average physiognomy (the myth of Anaj). This fact has often been pointed out. The positive valourisation of the past may be related to the economic crisis in contemporary Sudan. The use of medieval bricks to construct tombstones can be considered as a sign of respect for ancient materials. Examples of such re-use of this material can be found in the local cemeteries, including Eilafun, several kilometres away from Soba. Informants

confirmed that once bricks from Christian buildings were also used to construct residential buildings. However, nothing confirms this fact today. Maybe since modern building material became a part of architectural decor, the re-use of medieval bricks has become rare. In nearby el-Gereif East, there are now brick factories producing bricks from local clay, highly valued in the area. To some extent, they can be regarded as continuation of the tradition of producing building materials of fired bricks.

In the cultural memory, every end (of a civilisation, dynasty, epoch…) is usually associated with an extraordinary story. Often it takes a form of a legend woven around the figure(s) who directly led the 'old world' to destruction, thus assuming the role of a mythical scapegoat. Also the fall of the medieval Nubian kingdom of Alua had a dramatic ending and was basically connected with one person – a woman named Ajoba. We do not know when this story appeared. The interviewees stressed unanimously that it was very old, and that they knew it from the stories of their grandparents, parents or holy men. The source of popularity of the legend of Ajoba is also the contemporary school or popular culture, which made Ajoba almost a historical figure, referring to the beginnings of Islam in Sudan. Archaeological (also ethnographic) research has 'revived' the legend of Ajoba. This character has even become synonymous with the ruins of medieval Soba. Old Soba is "Ajoba's kingdom", and finding Ajoba's 'castle' or 'tomb', in the locals' opinion, should become the main objective of archaeological research. Interesting are also the attempts to reinterpret the story in the context of protests following the November (2018) coup. This element should be, without any doubt, added to the panoramic picture of Ajoba. On a tide of the revolution, at least among the young generation, Ajoba was reduced to a pop culture figure of *kandake* – a leader (Fig. 55), built on the experience of political protests at the end of Omar al Bashir's rule.

What is the attitude of the residents to archaeological remains? As regards building houses, they were above all a problem which had to be discretely resolved. The situation was similar with the bone material, maybe with the difference that human remains were exhumed. Perhaps the practice of treating monuments as rubbish should also be read metaphorically. As we know, in many cultures graves are a meaningful sign, certifying the ownership of a given territory. Therefore, their removal or profanation can be considered as an action symbolising a final change to this state of affairs. During the field research we managed to establish that the status of the archaeological site and monuments is not clear. Old Soba belongs more to the past than to the future. In fact it does not refer to any current affairs. Some objects, mainly due to their similarity to the equipment still in use in the province, were brought back to life. Once, according to some respondents, anything people needed was taken from

Fig. 55. Ajoba-Kandake from a school girl's drawing – Soba, 2021

the ruins. They were kitchen utensils, pieces of wood, cowrie shells or whatever else that could be useable. Today these items have literally become a thing of the past. They were been destroyed, given away or sold. Much of what seemed to be known and invariable for decades sinks into oblivion today. Many people were aware that these 'new ways' of everyday life appeared at the end of the 'old ways'. It must be remarked here, however, that it is not a process that has definitely come to an end. For some part of the residents, who seem to be strongly rooted in a rural environment or has recently appeared at Soba, the past is still not a different land where everything was done differently. A good illustration of this fact are different reactions to the artefacts excavated from the site. For some, they are still evidence of familiarity with the people who used to live there, and also evoke nostalgic memories of their family home, rural life or the times before migration to Soba. Finally, for some, objects from the past are simply nice or intriguing and therefore worth preserving. We see that for a large part of residents of modern Soba archaeological monuments are 'objects of memory' that refer to the past and activate memories. We should, therefore, treat them both as archaeological and anthropological traces, since tangible, ethnographic stories have been condensed in them. It has an enormous potential for the actions which are aimed to involve the local population and draw the attention of residents to research conducted in their own neighbourhood. This is probably why the idea of a 'museum in the sand' and the inclusion of

both objects from the excavations and those which will show the 'traditional' culture of the Mugharba Arabs was received with general enthusiasm by the inhabitants. Heritage and history recreated from exhibits.

GIS and Remote Sensing for Archaeologists: An Introduction, The University of Neelain, Khartoum, February 13th–17th, 2022

Between the 13th and 17th February 2022 the University of Neelain, in cooperation with the University of Warsaw, organised a five-day workshop on GIS and remote sensing methods and their applications for archaeologists. The aim of the workshop was to introduce basic concepts and tools used by archaeologists in field survey and data processing. It began with a discussion of the participants' knowledge about the topic and their expectations for the outcome. The following areas of interests were identified:

1. to learn modern techniques,
2. to use GIS for field survey and making archaeological maps,
3. to provide new ideas for teaching,
4. to introduce GIS as a research tool for past societies' studies as well as heritage protection and management.

The broad range of proposed issues resulted from the structure of the group. This included archaeologists working both in academia and heritage management who also had different backgrounds and experiences – i.e. early stage vs. advanced practitioners (see the list of participants in Table 2). The ensuing curriculum was structured to meet those expectations. Due to its introductory character, the main emphasis was put on basic concepts although various ideas of GIS and remote sensing applications were discussed following participants' particular interests, including adjustment of those tools for use in their work/projects.

The workshop was divided into two parts: theoretical lectures and practical exercises. The theoretical module introduced basic terminology, categories and historical background to GIS and remote sensing applications in archaeology. The practical part of the workshop covered both fieldwork and computer labs, during which participants obtained and worked on vector and raster data. During fieldwork survey at Soba site participants acquired spatial data using hand-held GPS and mobile applications (e.g. Gaia GPS, GPS Essentials etc.). This allowed them to record locations of archaeological features and artefacts and also to record the extent of surveyed areas. Additionally, students also took ground-based photographs of archaeological structures and documented a range of threats. A second module of the field survey covered photographic documentation by drone (Fig. 56a–e).

Computer labs covered several steps from data acquisition through processing to preparation of an archaeological database and data visualisation. A range of spatial data were acquired from open sources (historical and modern maps, satellite imagery, administrative data etc.) which allowed us to introduce participants to various internet resources (e.g. Library of Congress). Both field survey data and open source data were processed using open source softwares. This included EasyGPS (initial processing of GPS data) and GoogleEarth (access to VHR satellite imagery to control data accuracy/quality). Data processing and maintenance also emphasised the importance of understanding metadata (image resolution, geotagging etc.). The collected data was processed, analysed and visualised in QGIS (Fig. 57a–e).

An integral part of the workshop was the application of satellite imagery to identify archaeological structures and existing natural and anthropogenic threats. Based on it, participants prepared a spatial database which included information that is important both for research and heritage protection and management.

Table 2. List of participants

No.	Name	Affiliation
1	Selma Khogli Ali Ahmed	University of Neelain
2	Fawzi Hassan Bakhiet	National Corporation for Antiquities and Museums of Sudan
3	Rehab Shamboul Musaab Musaad	University of Neelain
4	Nuha Abdel Hafiz Abdael Aziz	University of Khartoum
5	Salma Dawelbeit Hamid Nafi	University of Neelain
6	Ahmed Alhaj Omer Balela	University of Neelain
7	Nagla Abdeen Mohammed	National Corporation for Antiquities and Museums of Sudan
8	Abdelgadir Elkhazien	University of Neelain
9	Nusayba Abdalhameed Ahmed Alajab	University of Bahri
10	Ibrahim Bushara Mamoon	University of Neelain
11	Suaad Mohammed Ismail Ahamed	University of Neelain
12	Hadia Mohammed Shawgi Gamal	University of Bahri
13	Magda Ahmed Maghani Mersi	University of Neelain
14	Elmontaser Daffalla	National Corporation for Antiquities and Museums of Sudan

Prepared by Rehab Shamboul Musaab Musaad.

Fig. 56a–e. Field survey using a hand-held GPS, mobile applications and drone at the site of Soba

Photos Lidia Żuk and Mariusz Drzewiecki.

Fig. 57a, 57b. Participants working during the workshop in the computer lab and closing ceremony

Photos Lidia Żuk.

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* * *

Having completed our research work we attempted to contact the persons featuring in the photographs presented herein, in order to be granted their consent for making their images public; however, in the process we were faced with insurmountable difficulties. The Editors thereby declare that they used their best efforts to have found copyright holders and/or administrators. If you happen to be one of the aforementioned persons but have not been identified, please send us a message.

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Joanna Ciesielska, PhD is an archaeologist and bioarchaeologist in the field of Nubian studies, with special focus on the funerary archaeology of the medieval Nile valley. She has received her doctoral degree from the University of Warsaw in 2022. Dr. Ciesielska was a participant in multiple archaeological projects, incl. Egypt, Sudan, Saudi Arabia, Lebanon, and China. She is a member of the project "Soba - the heart of the kingdom of Alwa" as an archaeologist and anthropologist.

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