



HAL
open science

The Archaeological Project in Al-Bad' (Tabuk Province), Season 2021

Guillaume Charloux, Samer A Sahlah, Abdulaziz Alorini

► **To cite this version:**

Guillaume Charloux, Samer A Sahlah, Abdulaziz Alorini. The Archaeological Project in Al-Bad' (Tabuk Province), Season 2021. *Atlal. Journal of Saudi Arabian Archaeology*, 2024, 34, pp.59-65. <hal-05519420>

HAL Id: hal-05519420

<https://cnrs.hal.science/hal-05519420v1>

Submitted on 19 Feb 2026

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Copyright - All rights reserved

The Archaeological Project in al-Bad' Oasis, Season 2021

Figures: pp. ٢٧٨ - ٢٨٩

Guillaume Charloux,¹ & Abdulaziz Alorin,² Samer Ahmed Sahlah,³

With contributions by

Mansour AL-Atawi,⁴ Virgile Blua,⁵

Lauriane Boideau,⁶ Guillaume Chung-To⁷, Elsa Cieselski,⁸ Kevin Guadagnini⁹, Laurence Hapiot,¹⁰ Yamandú H. Hilbert,¹¹

Bader Aba Hussein,¹² Sylvie M. Archand,¹³ Pierre Mollard,¹⁴ Laurence Naggoar,¹⁵ Ali Al-Rashydan¹⁶,

Ammar Al-Siwan¹⁷ & AbduElah Al-Tarib¹⁸

After three field seasons (2017–2019, with an interruption in 2020 due to the Covid-19)¹⁹ in the oasis of al-Bad' (ancient Madyan), consisting of both surveys and selected soundings, we concentrated our efforts on the excavation of three specific areas (Fig. 1). An extensive excavation focused on Area 2 at al-Malha, where a large elite residence from the Nabataean/Byzantine period is currently being uncovered, close to the Nabataean rock-cut tombs of Mughayr Shuayb. Investigations have also focused on Area 1, where late pre-Islamic tombs and an early Islamic building have been unearthed, as well as on the Early Bronze Age village on the other side of the wadi (Rudaydah South, Area 50), with the full agreement of the authorities.

At the same time, in parallel to activities of photogrammetry and study and recording of archaeological material, a restorer worked on the preservation and restoration of artefacts coming from 2021 and previous seasons.

1. Area 1: The early Islamic building and the underlying burials

Area 1 is in the northern part of al-Malha. It encompasses a large building dating from the early Islamic period, whose function is still unknown. The site has been undergoing excavation and analysis since 2018.

1.1 Stripping and excavation

Excavation in autumn 2019 had revealed older levels, whose understanding is still uncertain, although the chronology of the area finely fits with pottery information (report by S. Marchand). The deep sounding was located between walls 10010 (=10202) to the east and 10190, as well as 10302 to the west and wall 10009 to the south (Figs. 2-3). It enabled us to reach the bedrock and the foundation level of the walls, and thus to gain an understanding of the complete stratigraphy and all the occupations in the area associated with this building.

This new season had two main objectives: firstly, to open a sounding to uncover tomb 10210, found during the 2019 season; and secondly, to carry out more extensive surface stripping. This work was carried out between 4 and 19 November 2021 by Guillaume Chung-To and six workers.

1.1.1 Stripping the surface of the Islamic building

Surface stripping was carried out in the eastern part of the large early Islamic building, in continuity with the work done during the first season. The walls were under a thick deposit of aeolian sands: given its extent and thickness, the work took time. However, eight new walls were uncovered, and the initial plan was completed. The walls are all

(1) CNRS-UMR 8167, Orient & Méditerranée, Paris, France.

(2) Heritage Commission, Ministry of Culture, Saudi Arabia.

(3) King Saud University, Department of Archaeology, College of Tourism and Archaeology, Riyadh, Saudi Arabia.

(4) Heritage Commission, Ministry of Culture, Saudi Arabia.

(5) Independent, France.

(6) Student, École Normale Supérieure, France; Akademie der Bildenden Künste Stuttgart, Objektrestaurierung, Germany.

(7) Student, University Paris 1, Panthéon-Sorbonne, Paris, France.

(8) Independent, France.

(9) Independent, France.

(10) Biological, Environmental Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Saudi Arabia.

(11) CSIC, Institutió Milà Fontanals, Archeology of Social Dynamics

(ASD), Barcelona, Spain.

(12) Heritage Commission, Ministry of Culture, Saudi Arabia.

(13) Institut français d'archéologie orientale (French Institute of Oriental Archaeology), Cairo, Egypt.

(14) Student, University Paris 1, Panthéon-Sorbonne, Paris, France.

(15) Independent, France.

(16) Heritage Commission, Ministry of Culture, Saudi Arabia.

(17) Heritage Commission, Ministry of Culture, Saudi Arabia.

(18) Heritage Commission, Ministry of Culture, Saudi Arabia.

(19) Charloux et al. 2022a, The Archaeological Project in Al-Bad' (Tabuk Province), 2017 Season, *Atlat* 31: 61-80; Charloux et al. 2022b, The Archaeological Project in al-Bad' (Tabuk Province), 2018 Season, *Atlat* 32: 7-18, pl. 1.1-1.9; Charloux et al. Forthcoming, The Archaeological Project in al-Bad' (Tabuk Province), 2019 Season, *Atlat*.

made of mudbricks, with the exception of 10333, which is stone made. Wall 10326, running north-south, is located between walls 10071 and 10072, blocking the passageway (Fig. 3).

The stripping work undertaken this season showed the limitations of such an operation. The investment in time and manpower is very high in relation to the results obtained. Although 660 m² were uncovered as a result of these stripping campaigns, this extent only represents 1/3 of the building. While the surface stripping will provide a better understanding of the building in plan, it will be necessary in the forthcoming seasons to determine the function of this large building in Area 1. It is, therefore, necessary to undertake extensive excavations in this sector to consider the occupation here, which extends from the beginning of the 1st millennium CE to the first centuries of the Islamic period.

The results of season 2021 are therefore mixed. Future seasons, including soundings, will enable us to better define the organisation and function of the first and lowest structures, to determine the extent of the cemetery area, and to understand the last architectural phase. At the same time, in the early Islamic period, a settlement was located to the north of the building, whose structures are visible on the surface.

1.1.2 Opening a new sounding

The aim of the new sounding was to complete the analysis of the late phases of occupation of this area. It also allowed the preparation for the excavation of the burial pits to be assigned a phase within the stratigraphic sequence.

The sounding began with a surface stripping operation to remove any aeolian deposits that may have accumulated in the area. This surface stripping exposed wall 10191, which had been recorded in 2019, and also clearly defined the edges of walls 10190 and 10302, located between wall 10191 to the west and the boundary of the 2019 excavation (Fig. 3). For safety reasons and to allow the parallel excavation of burial 10208 by the palaeoanthropology team, the sounding was initially limited to the area between wall 10191 to the west and wall 10302 to the east (Fig. 4).

The results of the sounding made it possible to refine the chronology of the area, particularly the upper Islamic phase. The excavation indicates that the last phase of occupation can be linked to phase 2C and the penultimate phase can be linked to phase 1C (2019 sequence). The relatively high elevation of the new sounding shows that this

area, where the remains of imposing structures were uncovered, was previously characterized by a cemetery phase. After a period yet to be determined, the beginning of the Islamic period is marked by the construction of a large building over this cemetery. The first phase of this upper building saw the construction of large walls (10048 and 10191; 10009, 10110 and possibly 10105) whose plan is at odds with the orientation of the earlier building (10137, 10181, 10184). Other walls, probably internal partitions (10113 and 10302), were also built. A final phase of occupation in the upper building followed, before the area was abandoned.

1.2 Excavation of two intact pit graves

The aim of the anthropological mission was to excavate and study the tombs discovered in 2019 in Area 1. The work took place from 8 to 30 November 2021 by a team made of four specialists: Laurence Hapiot, archaeologist in charge; Elsa Ciesielski, archaeo-anthropologist; Virgile Blua, data specialist; and Lauriane Boudeau, a conservator who worked on the textiles, assisted by one to three workers, depending on requirements. The latter member was co-funded by King Abdullah University of Science and Technology (Thuwal, KSA).

1.2.1 Tomb 10800

Tomb 10800 is located in the west room of Area 1, on floor 10154 belonging to phase 2C or 3A of the site (Fig. 5). The grave is SSW-NNE oriented. The cover of tomb 10800 was discovered in 2019 but was not well documented. The tomb had not been opened by the excavators and appeared to be intact. At the end of the season, it had been covered with sediment to conceal it until the following season.

As no clearly comparable tomb has been excavated so far in Saudi Arabia, it was decided to carry out a meticulous, well-documented excavation of this tomb, and to treat it as a case study. For example, the fill of the pit was excavated in stages, following the different infiltration deposits, as this will provide a better understanding of the dynamics of the infilling and the general taphonomy of the tomb.

This meticulous excavation led to the highly unusual discovery of textile impressions, which subsequently also reoriented the work strategy. Locating, removing, and preserving the textile impressions became the priority in the hope of being able to reconstruct the nature of the textile

and perhaps its function (clothing, shroud, etc.).

The covering consisted of five flat limestone stones, set transversely to the axis of the tomb and laid on floor 10154. They were wedged in place by a few smaller stones that sealed the tomb. The largest stones measure 0.60 m x 0.37 m x 0.21 m and the smallest 0.50 m x 0.17 m x 0.18 m.

Beneath the stone covering, a possible shuttering board (10809) was identified against the east wall at the junction of the middle and northern thirds. It consisted of a layer of sandy soil, rich in organic material.

The edges of the pit were visible as soon as the large flat stones were removed. The pit is quadrangular with rounded corners, a flat base and vertical sides. Beneath the covering stones, the pit was filled with earth: the first layer (UF 10802) was grey and highly compacted, with a flaky appearance in places and sloping northwards. The facial bones of the inhumation were exposed directly beneath the stones, revealing the incisors. Numerous layers followed one another, showing the gradual filling of the grave.

The tomb contained the primary burial of a single individual (10803). The individual lay on its back with head to the south and facing upwards. The skull was turned very slightly to the right. The upper limbs were pronated and extended along the body. On the right, the distal extremity was resting on the iliac crest and the hand was bent slightly downwards. On the left, the bones appeared on their lateral side, showing a linearity caused by the wall. The lower limbs were in extension, with a very slight outward rotation on the left and a much more marked rotation on the right, where the bones appeared on their medial side, from the femur to the phalanges of the toes.

The individual was buried in an empty space, but an initial early fill (10815) maintained the rib cage. This took place before the costo-sternal cartilage had decomposed. In a second phase, the sternum collapsed into the thoracic cavity. The infilling gradually filled up the spaces left empty. The position of the first cervical vertebra indicates that the skull rotated during decomposition.

Preliminary *in situ* examination indicate that this individual was a female, around 20–25 years old.

Although there were no grave goods, the presence of textile impressions, i.e. a negative of the object imprinted on the soil while the textile has disappeared, shows that the individual was covered when it was buried. Many textile impressions were found and collected for further study.

1.2.2 Tomb 10210

Tomb 10210 is located 0.90 m west of the previous grave, beneath the later wall W10302 (Fig. 6). The two tombs have the same SSE-NNW orientation. Unlike tomb 10800, here it was immediately possible to identify the floor, 10312, as the level from which the burial pit was dug.

Also Tomb 10210 had been found during the 2019 season. At that time, only the north-east corner had been opened, allowing a photograph to be taken showing a skeleton, probably *in situ*, wrapped in textile. The tomb was resealed at the end of the 2019 season using a large stone block. The photograph taken in 2019 showed a significant amount of textile still in place. Before the tomb was reopened, the north-east corner was reopened by simply removing the large block and the tomb was explored using an endoscope. It turned out that almost none of the bones close to the opening were any longer covered with textile, as they had been in 2019. Priority was therefore given to recording and collecting the textile, which was particularly fragile; numerous samples were taken, numbered, and located on a plan of the tomb.

The position of tomb 10210, whose only one corner was visible beneath unexcavated soil, provided the opportunity to better understand its relative chronology by looking for the floor from which the burial pit had been dug. We therefore descended gradually layer by layer, looking for the level at which the pit appeared.

The grave pit has an oblong shape, 2.30 m long, with a narrower slot at the bottom where the skeleton was placed. The upper part of the pit measures 0.53 m high before reaching the bottom slot, which measures 2.45 m x 0.40 m x 0.27 m.

A first thick layer of fill (0.53 m, L10316) allowed the sides of the pit to be delineated. This layer, which was loose, homogeneous in composition and stone-free, was consistent with an anthropogenic fill. It covered a complex system for closing the bottom slot. This consisted of:

- A first cover made of large limestone and gypsum stones, arranged transversely to the long axis of the tomb (UF 10320). Just below, a darker layer could correspond to a wooden plank, as was the case in tomb 10800.

- A filling of pebbles, small limestone stones or gypsum (UF 10319) to fill the gaps left by the large stones. These stones had probably been sorted before the grave was filled in, since they were all at this level, and none in 10316 above.

- A very compact, irregular clay layer covering the large stones and encompassing the layer of small stones. It consisted of clay that had been wetted and was intended to seal the tomb.

The tomb contained the primary burial of a single individual (10324). Apart from the disturbance of the lower limbs in 2019, the skeleton was very well preserved. Here again, even the smallest bones were found and collected. The environmental conditions in this tomb were favorable for the preservation of textiles, as well as hair and soft tissue:

- Very black, short, curly hair still covered part of the skull, under the cloth.
- Hairs were found clinging to the thyroid cartilage. Possible remains of a beard?
- Fingernails, from both hands.
- Skin, in the form of small, very dry fragments, mixed with the textile remains and often collected together.

In addition, calcifications (possible kidney stones?) and the individual's feces were found in the abdominal cavity. Samples of all organic remains were collected.

The individual was lying on the corpse back with the upper and lower limbs extended. The right upper limb was pronated like the left, except that the two bones of the forearm were resting on the pelvis. Relaxation of the joints caused the radius to move medially, while the ulna fell outside the pelvis. This observation as well as several other indicators suggest that the body was buried in an empty space and held in place by a shroud.

Preliminary observations suggest this individual was a male. Age estimation based on the aspect of the pubic symphysis indicates an mature age (> 60 years). Other indicators support this interpretation, such as diffuse presence of osteoarthritis, oral and dental condition, ossification of costo-sternal cartilage, ossification of thyroid cartilage, etc..

1.2.3 Preliminary conclusions and study of human remains and textiles

Two tombs have been excavated during the 2021 season in Area 1 at al-Malha. These tombs showed no signs of ancient looting and their content was intact. They therefore represented a real scientific opportunity, for both the analysis of their content and the reconstruction of burial practices.

There were no finds to date these tombs. Pending the results of ¹⁴C dating of the bones, the tombs have been assigned to period 2C or 3A, i.e., the occupation phase of late antiquity.

In both tombs we found evidence of burials

in textiles. In the first case (tomb 10800), the evidence is indirect, given the presence of textile negatives, while in the second tomb, fragments, sometimes with several layers, were found. The meticulous excavation of these two tombs, the inhumations, and the impressions and textiles, enabled the gathering of a large amount of field information and samples (Fig. 7). At the end of the excavation season, the human remains and textile samples were taken for further study to the Archaeology Lab at KAUST, Saudi Arabia. This material is currently being studied taking advantage of the university facilities. Indeed, first observations revealed on most of the bones of the individual from tomb 10210 numerous diffuse lesions, several of which have already been CT scanned (Fig. 8). Further bioarchaeological investigation on the human remains and the textiles will lead to a better understanding of the funerary practices as well as the sanitary condition of the individuals.

1.2.4 Ceramic analysis

The main objective of the pottery analysis led by S. Marchand at the beginning of March 2021 was to identify and clarify the main chronological phases of Area 1. To this end, G. Charloux selected a number of archaeological layers of particular significance important, following the stratigraphic sequence of Area 1, from the oldest level (Nabataean and/or Roman period, around the 1st century CE), through the intermediate level (late Byzantine period), and finally the most recent level (Islamic period, from the end of the Byzantine period to the beginning of the Umayyad period, 7th-8th century CE).

This initial examination is still preliminary, as the number of archaeological layers is small and the often highly fragmentary nature of the sherds hampers a clear understanding of the material. It should also be pointed out that Area 1 yielded only two complete vessel profiles or complete vases.

However, this study led to the identification of three ceramic facies consistent with each of the three archaeological phases. The three corresponding catalogues are organized by form/functional category and, at the same time, by ware category (local and imported production). The study of the wares was carried out simultaneously with the study of the forms, and a reference system of wares was established, one for each archaeological phase/ceramic facies. Finally, it should be noted that the ceramics used as documentation for the

three ceramic catalogues produced this season have been sorted, washed, and numbered. They will have to be drawn in the next season. The drawings in the working catalogues are freehand drawings at 1:1 scale. They are of sufficient quality for this first stage of research. Finally, the statistical study has been completed. It provides useful information about the importance of one ceramic group in relation to another, and offers some indications, however brief, about the function of the spaces.

2. Area 2: Excavation of a Nabataean/ Byzantine building

The excavation took place in Building A of al-Malha area 2 (Fig 1), and more specifically in the southern part of the building, which had not been the subject of extensive excavations during the two previous seasons in 2018 and 2019.²⁰ This building rises slightly above the secondary bed of a wadi, the main bed of which lies just over 200 m to the east (Fig. 9). On either side of the tell — which extends for around 80 m from north to south and 40 m from east to west — traces of flooding are visible, resulting from torrential rains that occurred further north. The elevation of the tell has probably spared it from destruction: wind erosion has been the main cause of deterioration in the northern part, while in the southern part hydraulic erosion has also played a major role.

The initial season, in 2018, revealed several buildings (A and B). The subsequent season, in 2019, focused on Building A and three phases of occupation were partially uncovered, dating from the Nabataean and Byzantine periods. This excavation season took place from 2 to 30 November 2021, directed by L. Naggiar, with the help of Dr Samer Ahmed Sahlah, assisted by P. Mollard, G. Chung To, A. Alsiwan, L. Boudeau, V. Blua and between eight and twelve workers.

The main aim of the 2021 season was to expose phase 3 in the southern part of the building, followed by phase 2 in the same area, bearing in mind that the sloping ground meant that phase 3 could have been partially lost. The work took place in the rooms originally known as R20054, 20055, 20056 and 20057, R20250 and R20234. To achieve this, an extensive excavation was carried out to create an accurate plan of the southern part, as well as six soundings, all of which reached virgin soil and provided a

complete stratigraphy of the area.

Another aim this season was also to uncover phase 2 where it had not been reached in 2019 in the northern and central parts, i.e. in rooms R20262, R20060, R20256, along wall W20004 in room R20059, and to carry out a check in the north-eastern part of the building, under wall W20196, in order to understand the reduction in space caused by the construction of wall W20196 (Figs. 10-11).

At the end of the season, it could be seen that the study of phases 1 and 2 remained incomplete and requires further work, as several parts have not yet been investigated.

The oldest phase (Nabataean period, Fig. 12), known as phase 1, was only partially exposed, in soundings SD.8 to SD.14. The walls of this first phase were built on the bedrock at an average elevation of 252.58 m to 251.72 m, while the floors of this phase were only visible in the sections.

The intermediate phase, known as phase 2, and the recent phase (phase 3), have an almost identical layout, with rooms arranged around a central space. Both phases are well represented in this area, particularly to the east, but they remain to be clarified to the west, especially as hydraulic erosion has been significant there. Wall W20018 to the south continues outside the original trench and could call into question the hypothesis of an enclosed space within the boundaries defined during the previous seasons. Flooding of the wadi to the west was a major factor in the destruction of the south-western part of the building.

3. Area 5: A village at the beginning of the Early Bronze Age

The site, dating to the final Early Bronze Age 1 (around 3100 years BCE), is located at Rudaydah South, on a gypsum and colluvium terrace in the extension of Jabal Safra to the east of the Wadi 'Afal (Fig. 1).²¹ A series of small soundings was made in an area of settlement (SD501) at the north-eastern end of the terrace bounded by a deep notch created by the Wadi Darak and on a large platform, which presumably had a public function (SD504).

3.1 Sounding 501

Sounding 501 was opened in 2019 by D. M. Cabaret. A room, R50139, with two narrow accesses to the east (S50122) and north (S50123), as well as a central heating area were cleared, but there were few finds in situ. Given

⁽²⁰⁾ Charloux 2018, Durand 2019.

the promising results, in particular a potential attribution to the Early Bronze Age, we decided to extend the excavation area on either side of the room in the hope of recovering more datable material (Fig. 13).

The excavation, supervised by G. Charloux assisted by three workers and the Saudi representative Ali al-Rashydan, took place from 4 to 9 November 2021. On this occasion, the room to the west (R50140) was completely cleared, as was the room to the east (R50141) of R50139 (Fig. 14-15). These two rooms were easy to demarcate on the surface by gypsum walls parallel to those previously observed.

The results were excellent, as the excavation of the western room (R50140) revealed a domestic area made up of small, low, coarse compartments with virtually no material in between, while the room to the east (R50141) yielded an abundant in situ assemblage of ceramics, ornaments (shells) and, above all, lithic artefacts belonging to a small domestic workspace.

Like the flint tools, which are morphologically and technically similar to south Levantine parallels, the ceramics undoubtedly date to the Early Bronze Age. Most notably, we found the base of a large jar, a juglet and a handled jug with a red slip, all dating from the end of the Early Bronze Age 1, probably from the end of the 4th millennium BCE. Contemporaneous ceramics were collected on the surface of the area.

3.2 Sounding 504

Sounding 504 was opened by G. Charloux, assisted by three workers and the Saudi representative Ali al-Rashydan, on 10 November 2021, in the large structure S1610 located against the base of Jabal Safra, to the east of the southern part of Rudaydah (Fig. 16). Work was interrupted on 14 November 2021. A second identical structure, S1609, was also located further south and will be investigated in the next season.

The large structure, S1610, measuring approximately 19 m per side, is heavily eroded to the west and south due to the presence of water flow to the north-west coming from the base of the terrace and another flow to the south linked to a gully located high up in the mountain. The opening up of four small soundings to the north, center (x2) and west showed that this structure

was built on a small natural rise in the extension of the mountain, which protected it from destruction.

Structure S1610 has an irregular shape, the exact layout of which is difficult to ascertain. However, observations made in the field and recorded on high-resolution aerial orthophotographs, highlight the presence of a series of fairly long and sometimes curved axes (over 10 m) in the centre and to the west of S1610. These axes are approximately perpendicular, running north-south and east-west, offset by a few degrees anticlockwise.

The walls are built of irregular courses of roughly squared, irregular gypsum blocks (notably W50409 and W50411). Their thickness seems to vary. W50409, for example, is 0.85 m thick and still stands 1 m high. Most of the other walls surrounding the central area appear to be narrower: around 0.65 m and low walls of 0.2/0.3 m to the north delimiting a series of small, square caissons. It should be noted, however, that these observations are the result of simple surface cleaning and the difficult excavations carried out in the soundings in the center of the building. The surface is covered with a thick layer of gypsum, which makes it difficult to read the overall layout. The lines of the walls are therefore approximate, as is their thickness.

To sum up, in the northern part of the building, there are small, adjoining caissons, while in the western part, the less clear organization is made up of caissons of varying dimensions, apparently added as construction progressed. In the center, the thick orthogonal walls seem to stand out. Perhaps we have here the traces of two phases of construction: an initial stage comprising the core of the structure and the later addition of these small structures around it.

Soundings 1–3 were opened along the same north-south axis, while sounding 4 was opened at the western end of the remains, continuing from the southern section of sounding 1.

Sounding 1 (1.8 x 1.7 m) provided the main stratigraphic information (Fig. 17). Despite the difficulty in locating the wall faces, we went down to the bedrock in a narrow space. The excavation began around a small depression filled with aeolian sand L50401, and continued with the difficult task of removing a deposit made up of large gypsum blocks and indurated yellow sand L50106, which fills the gap to the south of wall W50109 and to the east of W50111. To the south, the very irregular blocks overlap quite clearly, but the nature of wall W50111 remains questionable. Due to the narrowness of the sounding and the very dense nature of the fill, a small, very fine layer of ash, used as a preparatory layer, was dug through but

(21) Charloux G., Sahlah S. & Badaiwi W.A. 2021. Madian revealed? Assessing the history and archaeology of the oasis of al-Bad' in northwestern Arabia. *Semítica et Classica* 14: 97-141. <https://doi.org/10.1484/J.SEC.5.129522>

was seen in the sections on all four sides of the sounding. This layer, located at the base of the walls and the fill, rests on a succession of three layers: L50416, grey-beige and slightly granular, beneath which were a few fragments of faunal bones lying flat in layer L50417, which is looser and sandier with inclusions of small gypsum nodules. The surprise was a light brown-orange layer L50418 (sieved), about a dozen centimeters thick and laying immediately on the bedrock: it included an impressive quantity of faunal remains (half a bucket in a small space, 1 x 0.7 m, at the base of the sounding), some flints and a sherd.

This succession of fills suggests an initial phase of preparation on the bedrock with the intentional deposition of animal bones covered by several layers serving as preparation and levelling plans. In a second phase, the platform walls were installed and filled in with boulders, creating a large platform that may originally have been quadrangular.

All these indications suggest that this was a communal building that required considerable human investment, quite distinct from a simple domestic construction. The presence of the underlying faunal bones suggests cultic deposits placed before the structure was built. It is therefore possible that this structure had a symbolic role.

The ceramic assemblage found on the surface of the structure and in the few meters around it suggests an Early Bronze Age date, which seems to be supported by the discovery of a rim of a holemouth jar at the base of the stratigraphic sequence.

In summary, the results of the two soundings SD501 and SD504 in 2021 were very informative. The preliminary dating and original nature of this platform, as well as the excavation of SD501, seem to confirm the presence of a large settlement in the southern part of Rudaydah, possibly of an urban or village nature, dating from the Early Bronze Age.

3.3 Lithic analysis

All the lithics were exported to France (then to Germany, Material Sciences Laboratory at the Prehistory Department of the University Tübingen) at the end of the 2021 season, then re-imported on 27 September 2022 to the offices of the Saudi Heritage Commission in Murabbah (together with the lithics from the Camel site and the surveys at Dûmat al-Jandal). Yamandù Hilbert drew and carried out technological and traceological analyses (Fig. s 18-19). Qualitative and quantitative assessment of the chipped stone tool assemblage was conducted. Artefacts were

classified into cores, blanks, and tools. Each class was subjected to different analytical protocols to obtain a representative sample of the material.

A total of 112 chipped lithic artefacts and 12 ground stone tools were recovered from the Phase 1 floor of sounding 501 at Rudaydah. The vast majority of those lithics were classified as chips and are smaller than 10 mm in maximum width. A set of highly standardized stone tools classified as tabular scrapers and rectangular blade insets with sickle gloss were also identified.

Out of the 112 chipped stone tool artefacts excavated in rooms R50141 and R50139, 45 were subjected to traceological analysis, and a total of 17 show microchipping and micro polish resulting from use and hafting. Organic residues are rare and have been identified only on one specimen.

Based on the analysis conducted on the chipped stone tool assemblage from Rudaydah, we suggest that the tools were being stored and possibly curated in room R50141.

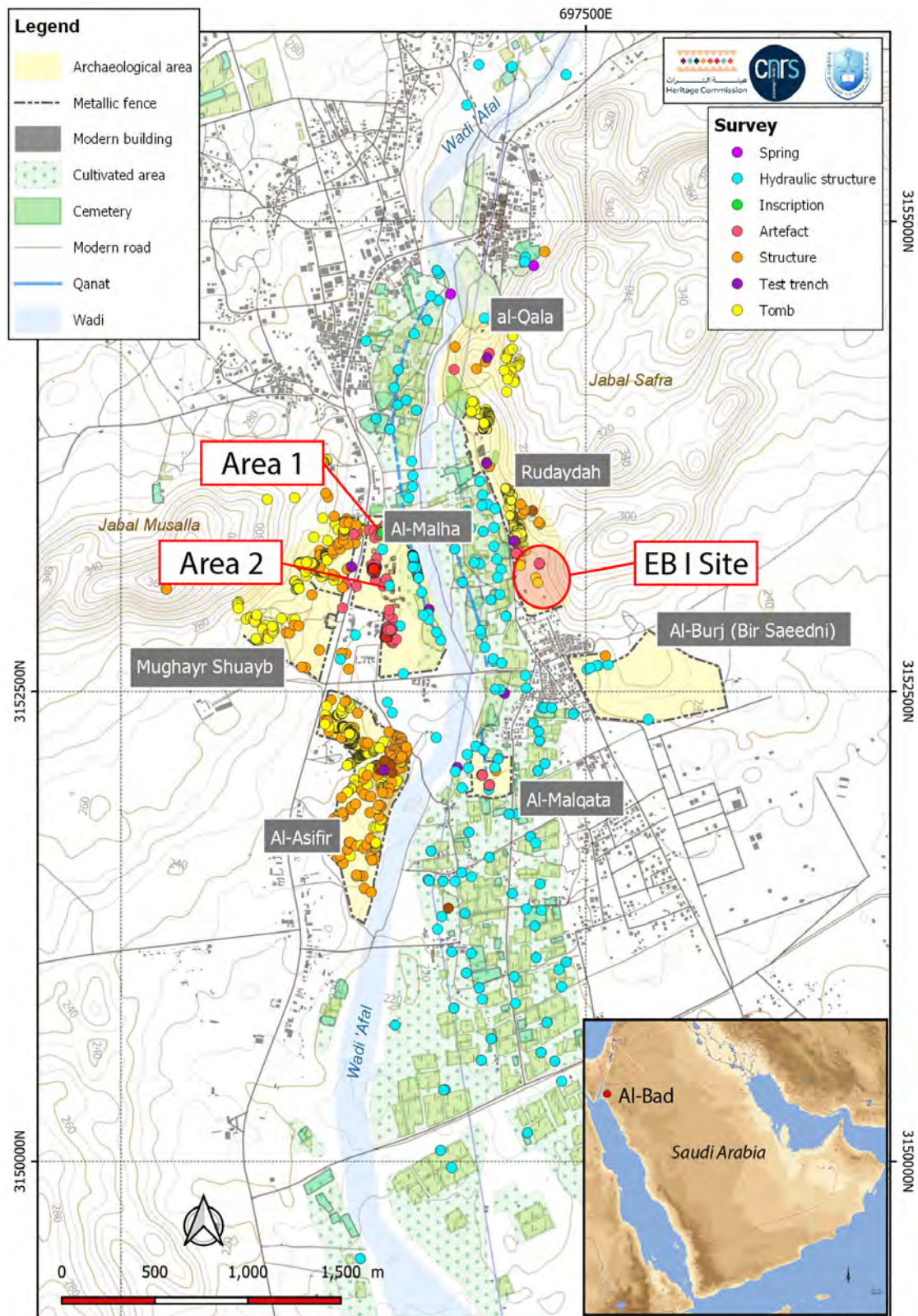
4. Conservation and registration of the archaeological finds

Following several fieldwork seasons, it became urgent to collate all the artefacts from the surveys and excavations carried out since 2017. By the end of 2021, 694 objects and ceramics had been identified.

Conservator Lauriane Boudeau checked the numbering and description of the objects and ceramics and completed the photographic documentation. She also reassembled numerous pieces of pottery, as well as carrying out restoration, and repacking the artefacts (Fig. 20).

5. Acknowledgements

We want to address our sincerest thanks to His Excellency His Royal Highness Prince Badr b. Abdullah b. Mohammed b. Farhan Al-Saud, Ministry of Culture, for permission to carry out research in Saudi Arabia. We would also like to extend our thanks to the directors of the Heritage Commission of the Ministry of Culture, CEO Dr Jasir AlHerbish and particularly to Dr Abdullah al-Zahrani, for his indefatigable assistance and patience. We are also grateful to the following French institutions for their financial and logistic support: the French National Center for Scientific Research (UMR 8167, Orient & Méditerranée); the French Ministry for Foreign Affairs; the French Embassy in Riyadh; the CEFAS (USR 3141); and the Labex Resmed ANR-10-LABX-72 / ANR-11-IDEX-0004-02.



©BDAP, G. Charloux.

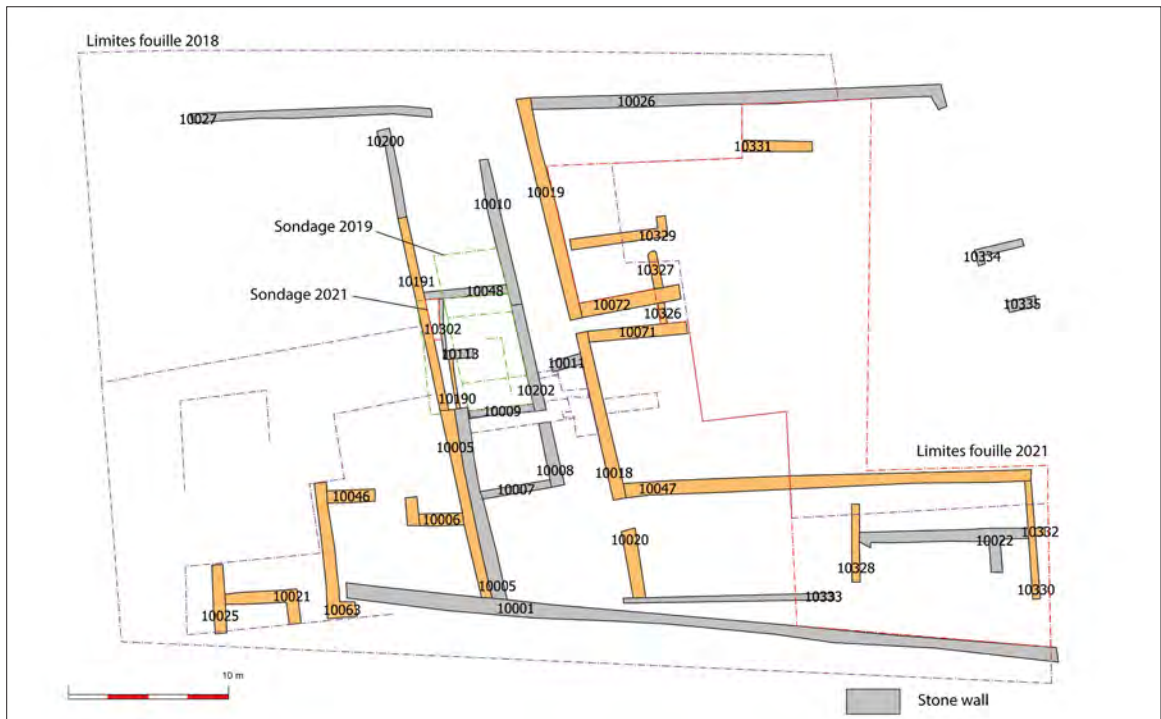
الشكل رقم ١: خريطة للواحة مع مواقع التنقيبات لموسم ٢٠٢١

Figure 1: Map of the oasis with the location of 2021 excavations



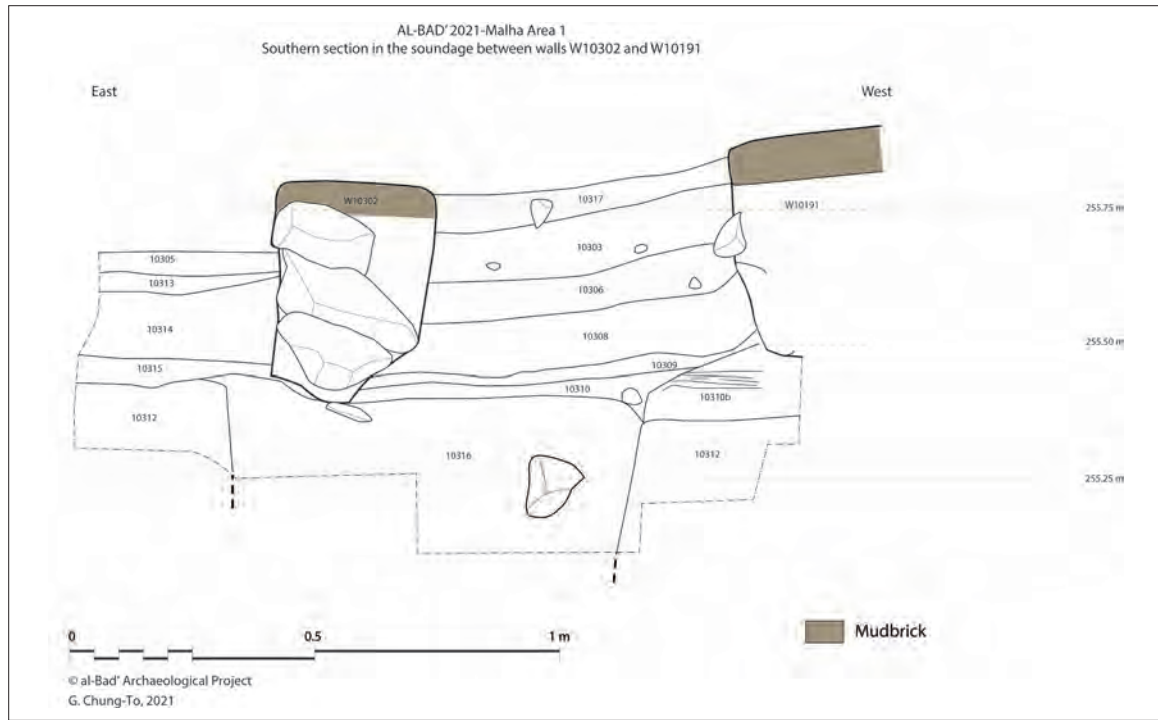
©BDAP, V. Blua.

الشكل ٢: إجراء أعمال التنقيب في المنطقة (١) شمال المالحة، المنظر باتجاه الجنوب الغربي
 Figure 2: Excavations underway on Area 1 at al-Malha North, looking south-west



©BDAP, 2021

الشكل ٣: مخطط أولي للمبنى في المنطقة ١ ، بعد إزالة الطبقة السطحية
 Figure 3: Simplified preliminary plan of the building in Area 1, after surface stripping



الشكل ٤: مقطع من المجس يظهر بئر المدفن (الطبقة ١٠٣١٦) تحت المبنى الإسلامي (جدران من المرحلة اللاحقة تتضح في W10191 و W10397)

Figure 4: Section of the sounding showing the burial trench (layer 10316) under the Islamic building (walls of the later phase, here W10397 and W10191)



الشكل ٥: أعمال التنقيب في المقبرة ١٠٨٠٠ مع الهيكل العظمي في مكانه،

Figure 5: Excavation of tomb 10800, with the skeleton in situ



©BDAP, G. Charloux

الشكل ٦: أعمال التنقيب في القبر رقم ١٠٨٠٠ وفحص القبر رقم ١٠٢١٠
Figure 6: Excavation of tomb 10800 and investigation of tomb 10210



©BDAP, L. Hapiot

الشكل ٧: أجزاء من عظام الوجه والجمجمة وفقرات العنق ملفوفة
بطبقات من القماش

Figure 7: Craniofacial block and cervical vertebrae covered
with several layers of cloth



©BDAP, L. Hapiot.

الشكل ٨: مقطع تصوير مجهرى بالأشعة السينية لضلع من القبر رقم ١٠٢١٠ يظهر تلف في عظام متحللة
Figure 8: X-ray microtomography section of a rib from tomb 10210 showing osteolytic lesions

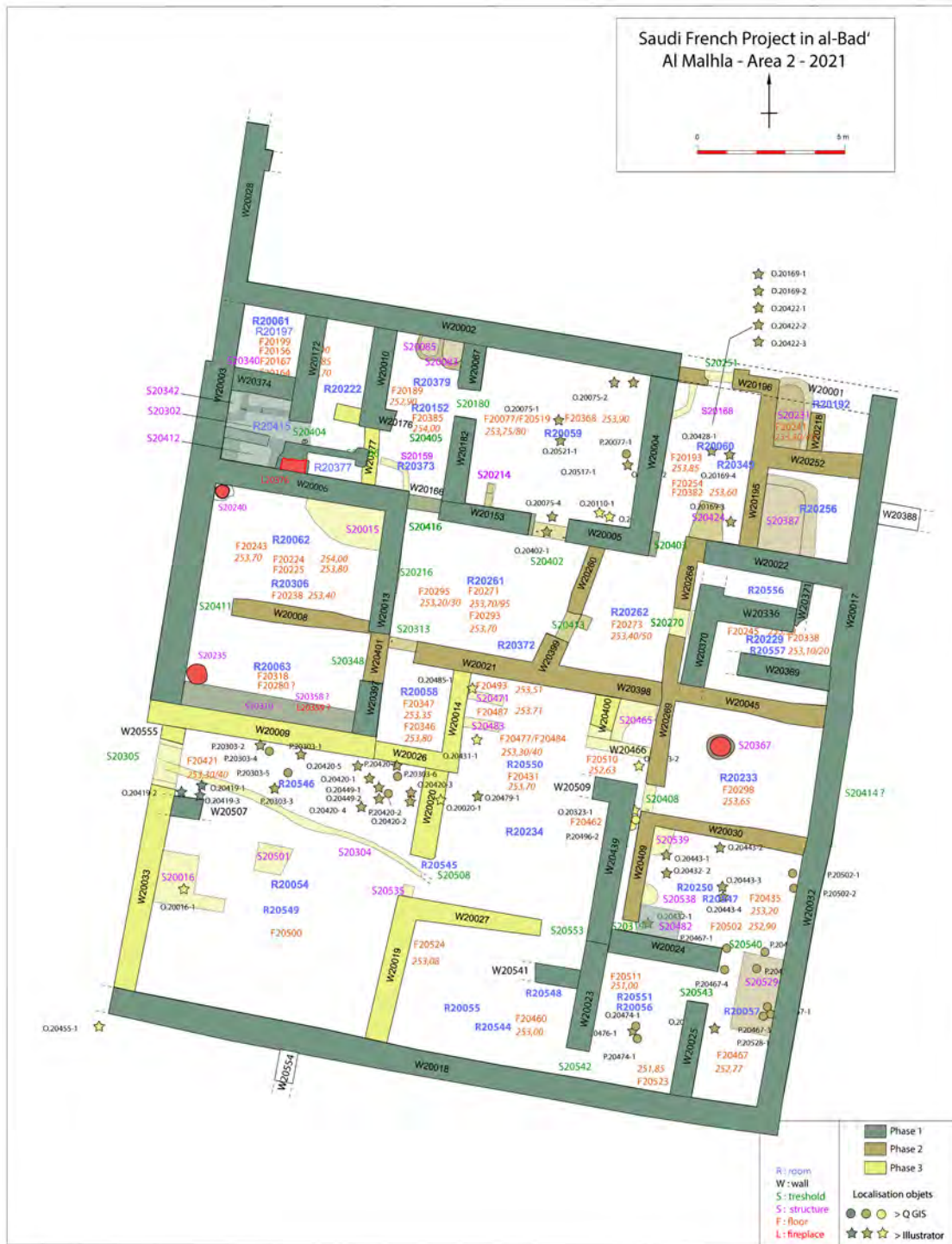


©BDAP, V. Blua

الشكل ٩: المبنى النبطي/البيزنطي في المنطقة (٢) أثناء التنقيب في عام ٢٠٢١
Figure 9: The Nabataean/Byzantine building (Area 2) during the excavation in 2021



الشكل ١٠: صورة جوية للمبنى النبطي/البيزنطي الكبير في المنطقة (٢)، في نهاية موسم ٢٠٢١
Figure 10: Orthophotograph of the large Nabataean/Byzantine building in Area 2, at the end of the season 2021



©BDAP 2021

الشكل ١١: مخطط أول مرحلة للمبنى النبطي/البيزنطي في المنطقة (٢)، مع مواقع البقايا التي عثرنا عليها في عام ٢٠٢١
Figure 11: Preliminary plan by phase of the Nabataean/Byzantine building in Area 2, with the location of the objects found in 2021



©BDAP, L. Boudeau

الشكل ١٢: خزفيات نبطية (القرن الأول) من الطابق السفلي للمبنى في المنطقة (٢)
 Figure 12: Nabataean ceramics (1st century) from the lower level of the building in Area (2)



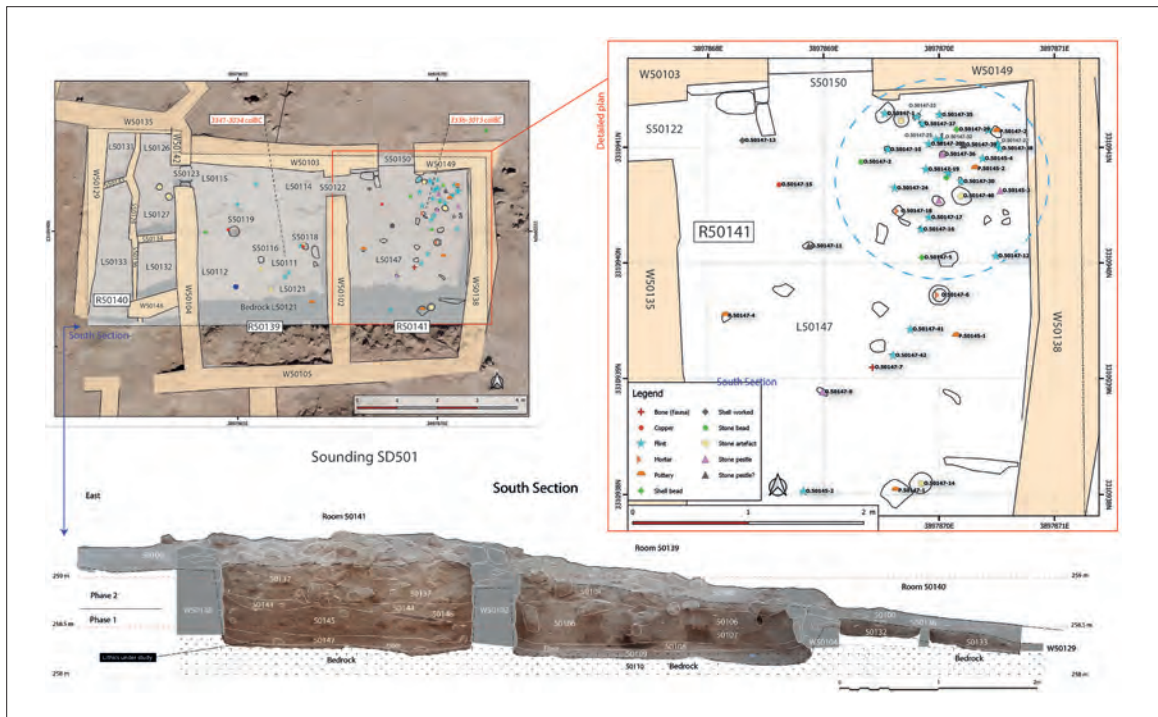
©BDAP, V. Blua

الشكل ١٣: أعمال التنقيب في منزل يعود إلى العصر البرونزي المبكر ١ في الرديدة، في واحة البدع
 Figure 13: Excavations of the Early Bronze Age 1 dwelling at Rudaydah, in al-Bad' oasis



©BDAP- A. al-Rashydan

الشكل ١٤: التنقيب عن البقايا الأثرية في الموقع على أرضية مستوطنة يعتقد أنها تعود إلى العصر البرونزي المبكر
Figure 14: Excavation of in situ archaeological material on the floor of the Early Bronze Age 1 settlement



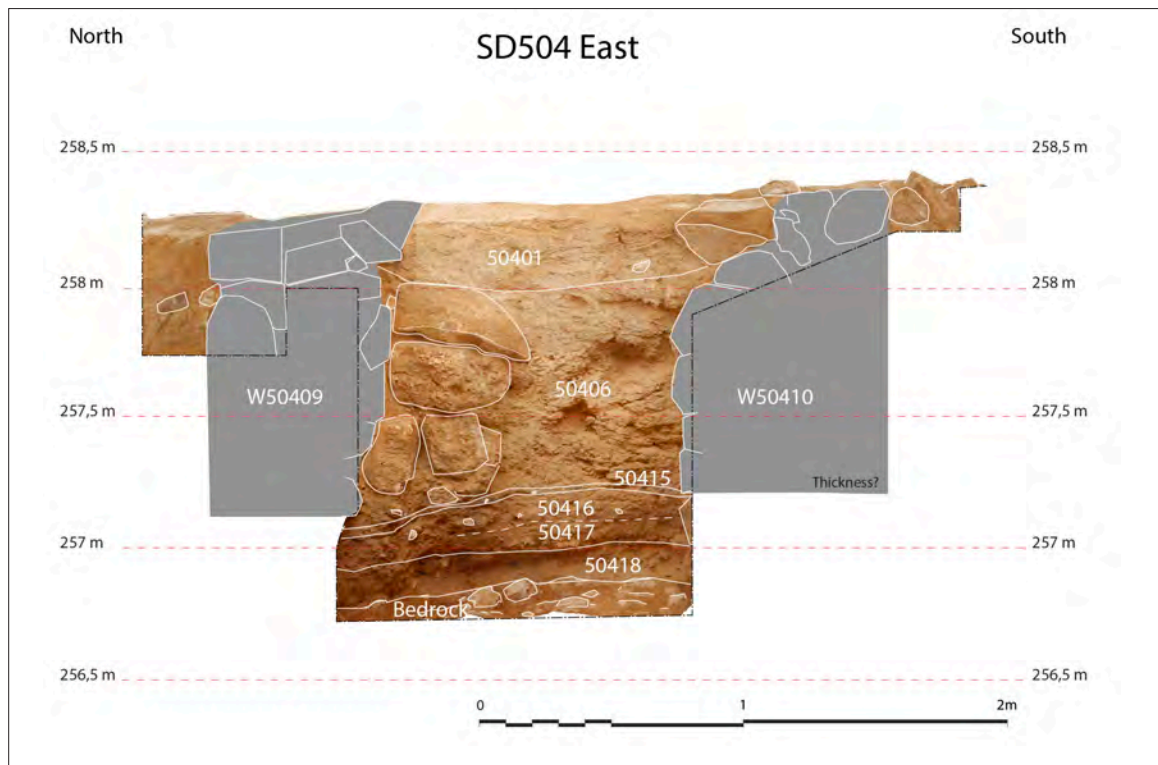
©Khaybar LDAP, G. Chung-To

الشكل ١٥ مخططات ومقاطع عرضية من المجس ٥٠١ يظهر مواقع القطع الأثرية
Figure 15: Plans and section of Sounding 501 with location of artefacts



©BDAP, G. Charlioux

الشكل ١٦: السطح S1610، في منطقة الرديدة، أثناء الحفر
 Figure 16: Platform S1610, in the Rudaydah area, during excavation

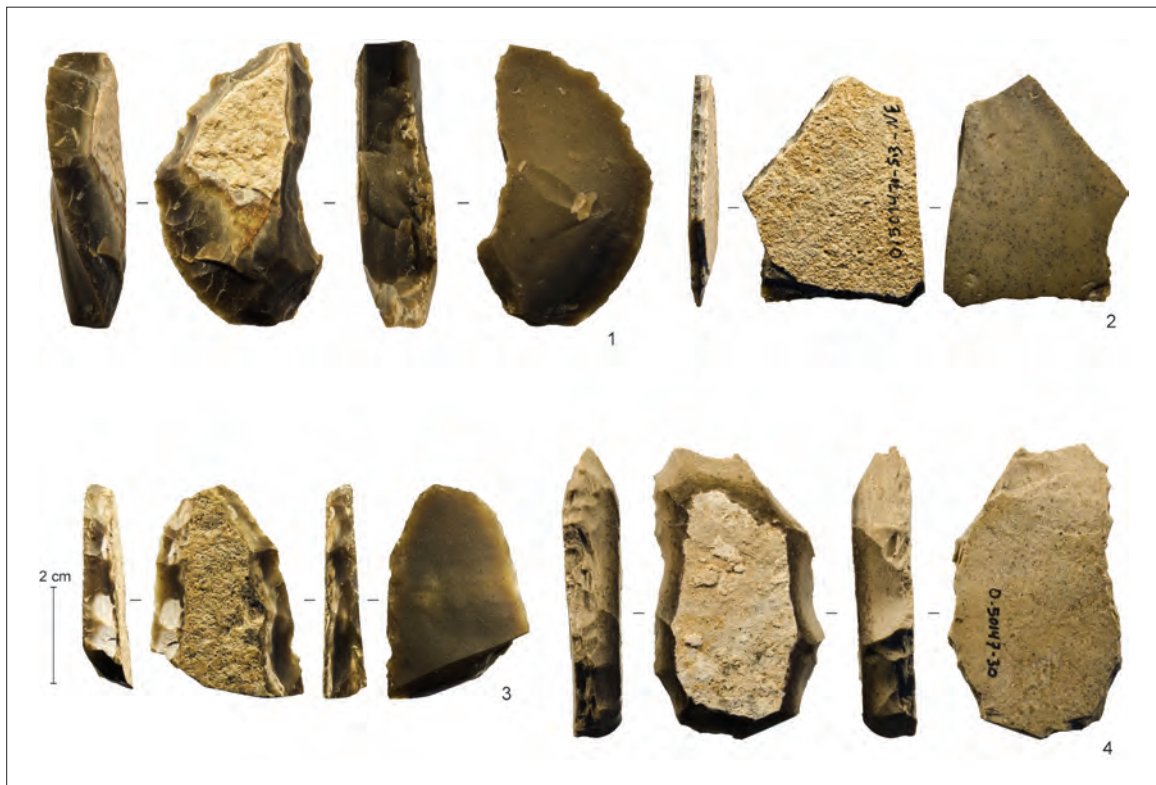


©BDAP, G. Charlioux

الشكل ١٧: المقطع الشرقي للمجس ٥٠٤
 Figure 17: Eastern section of Sounding 504



الشكل ١٨: قواطع حجرية من الرديدة
Figure 18: Sickles from Rudaydah



الشكل ١٩: أدوات حجرية عثرنا عليها في الرديدة. ١ و ٢ قطعتان قشريتان أُعيد تشكيلهما؛ ٣ و ٦ كاشطة سميكة، ٤، شظية مُعدلة من رفاقة ذات قشرة؛
٥، شظية من كاشطة مسطحة

Figure 19: Tools from Rudaydah and refittings. 1 and 2 refitted cortical blanks; 3 and 6 thick scraper, 4, retouched fragment of cortical flake; 5, fragment of elongated tabular scraper



الشكل ٢٠: ترميم وعاء من المنطقة ٢، في «مركز الزوار» بـ البدع عام ٢٠٢١
Figure 20: Restoration of a vessel from Area 2, in the 'Visitor Center' of al-Bad' in 2021