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The Archaeological Project in al-Bad' (Tabuk Province), 2019 Season

Guillaume Charloux, Samer Ahmed Sahlah, Waleed Ali Badaiwi

With the contributions of Khaled bin Barman al-'Ajmi, (3) Paul Bernard,⁽¹⁾ Louise Bigot,⁽²⁾ Dominique-Marie Cabaret,⁽³⁾ Guillaume Chung-to,⁵ Claude Cosandey,⁽⁴⁾ Rémy Crassard,⁽⁵⁾ Benjamin Durand, (6) Bruno Gavazzi, (4) Kevin Guadagnini, (6) Yamandú H. Hilbert,⁽⁶⁾ Faisal bin Mohamed al-Khibri, (3) Juliette Laroye, (6) Sylvie Marchand,⁽⁷⁾ Sebastian Mazurek,⁶ Laurence Naggiar (6), Laïla Nehmé (1), Jérôme Norris⁽⁸⁾, Abdallah bin Khalf al-Taimani, (3) Talal bin 'Aid al-Uneizi (3) & Matisse Vobauré (6).

Following the example of the mission organized in 2018,⁽⁹⁾ the field operations of the 2019 campaign in the oasis of al-Bad' (ancient Madyan) were held in two stages: In September-November 2019, we executed the archaeological operations, and at the beginning of March 2020 completed the surveys and planned field studies.

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(9) Charloux, Sahlah et al. forthcoming, The Archaeological Project in a-Bad' (Tabuk Province), 2018 Season, *Atlat*.

The archaeological operations targeted primarily the al-Malha sector with the extensive excavation of three areas (1, 2 and 3) and the neighbouring archaeological sites (al-Usifir, al-Qal'a, al-Rudayda, Mughayr Shu'ayb and al-Malqata), where we opened no less than nine chrono-stratigraphic test trenches (Figure 1). Thus, our final remaining objective is to establish detailed cartography of the oasis and diachronic sequencing of the human settlements and map their main features. For this purpose, the analysis of the ceramic assemblages has already begun. Moreover, we carried out geophysical and hydrological surveys in parallel. These aimed to better understand the extension and distribution of human and agricultural settlements within the oasis (current and ancient).

1. Paleoenvironmental and archaeological surveys

1.1 Hydrological studies in al-Bad' (C. Cosandey, G. Charloux, W. al-Badaiwi, S. Sahlah)

The first mission observations allowed a global understanding of the hydrological function of the al-Bad' oasis, which is fully dependent on the wadi 'Ifal.⁽¹⁰⁾ In order to better understand the hydraulic structures within this hyper-arid oasis space, we mapped all remains of this type - whether they be wells, reservoirs, water

(10) For reasons related to the beginning of the covid-19 pandemic, our geomorphologists were not able to participate in the mission, and thus only the hydrological aspect was addressed.

channels or underground drainage galleries (Figure 2). The archaeological surveys, initiated by initial remote sensing, have thus counted more than 177 hydraulic structures on the mission's GIS, including the location of two "springs" that have now dried up. Based on satellite images and field surveys, the largest possible number of wells (including those measured last year) was recorded in March 2020. This included both conventional wells and boreholes in an attempt to cover the entire surface of the oasis. In the case of the underground drainage galleries (*qanat*), until then unknown in the oasis and completely filled in, geomagnetic prospecting made it possible to follow their route. This was further confirmed by local landowners, who were systematically questioned.

Thanks to all the information collected, we were able to establish an initial and schematic outline of the hydrological environment of the oasis, which can be divided into three main phases:

1. Crop water supply from springs and underflows during antiquity and the Middle Ages;
2. Increasing needs in water and a gradual decline in the water table during the 20th century led to the digging of wells, which were (re)dug several times between 1970 and 1990;
3. Digging boreholes in the fossil aquifers over the last fifteen years or so. Over the last thirty years, the exponential demographic development has led to the destruction of underground drainage galleries and the oblivion of collective water management

practices.

Despite this general pattern of evolution, we have noted today the persistence of a water table appearing at a depth of between 18 and 20 m, which does not seem to have fallen significantly over the last ten years.

1.2 Geophysical prospecting (B. Gavazzi, P. Bernard)

In total, about 150,000 m² have been covered by geophysical surveys within the oasis. Different strategies were implemented according to the prospected sites and specific questions, ranging from extensive mapping to punctual methodological testing. In order to present the preliminary results, we are proceeding with a listing by site, and where possible, gathering data from the surveys carried out in 2018.

Al-Rudaydah

The 2019 prospecting consisted of the study of the first zone of 32,150 m² in the north of the sector, which completes the test survey of 2018; the second zone of 15,500 m² in the south (Figure 3), and a third zone of 300 m², which corresponds to a test on a kiln area corresponding to test trench SD503. Three high amplitude point anomalies confirmed the presence of a kiln when compared to the results of the other maps.

Al-Qal'a

The prospecting on this site covered two areas, one of 3700 m² in the pass and a second of 700 m² below the escarpment of the fortress, on the side of the wadi. There is a clear presence

of structures with a rough N20 (+N110) axis. In the lower part, the anomalies could correspond to structures, but the survey area is too small to confirm that they are built structures and not just a heterogeneity in the colluvium.

Al-Malqata

Prospecting covered the entire area that could be relatively cleaned of metal pollution on the site, i.e. approximately 20,000 m². The interior of the fort is clearly visible, measuring approximately 80 x 80 m and with a roughly north-south (+east-west) axis with numerous subdivisions. One can also observe the good visibility of the north-east tower and the southern limit of the fort, which are the most pronounced features. We also notice lines to the west, which could correspond to structures (axis N75-80+perpendicular). Another remarkable feature is the anomaly just west of the fort, which follows a depression crossing the site from north to south to a reservoir.

Al-Usayfir

The survey consisted of covering part of the terrace (36,000 m²) and part of the necropolis (6500 m²) to the west. At the height of the necropolis, only a few tombs are visible. On the rest of the site, there are many structures. A large boundary crosses the map obliquely before making a bend in the southern part. The survey area is too small to determine whether this anomaly is of anthropic or natural origin. Nevertheless, structures are found on both sides of this boundary, generally following a perpendicular and a parallel axis to this boundary.

Al-Burj

A test carried out on approximately 14,500 m² shows structures with N20 (+ perpendicular) orientation in the central part. In the north, the anomalies are more complex and difficult to interpret without more context and/or more influence. In the southern part, the effect of the metallic barrier delimiting the site undeniably masks structures.

Al-‘Adafa

A test at Adafa on about 4750 m² allowed us to notice a water abduction structure in the northern part of the site marked by a succession of punctual anomalies (Figure 4). In the southern part, lower frequency anomalies seem to indicate the extension of the structure and could correspond to qanat manholes.

Maghayr Shu‘ayb (fort)

A test was carried out on 2000 m² to try to image a fort located in the eastern part of the Maghayr Shu‘ayb site. Unfortunately, the effect of the metal fence obscures the visible remains on the surface. It is not possible to make further interpretations of the signals because of these effects and the pollution of metal elements, which are still present despite surface cleaning.

Qanats

Two areas have been mapped within the oasis to try to identify qanats.

In Q1 (al-Bad‘ north-west, 1700 m²), the cartography piece alone in the centre corresponds

to the *qanat* shaft visible on the surface. Given the results and the pollution, it is difficult to validate any traces of the *qanat*. We can nevertheless see several limits consistent with what we know of its orientation.

In Q2 (al-Bad' centre-east, 3500 m²), we notice numerous anomalies on the N75 axis and its perpendicular neighbour, which clearly indicate anthropogenic structures (built or agricultural). The well-marked anomaly to the north could correspond to a *qanat* manhole. However, the lack of alignment with other elements does not make it possible to confirm this.

1.3 Archaeological survey

1.3.1 The necropolis of al-Qal'a (G. Charloux, B. Durand, K. Guadagnini)

In 2019, further archaeological prospecting led to the discovery of a pre-Islamic necropolis to the east of the al-Qal'a sector (Figure 5). At present, it consists of a set of 26 tombs, concentrated on the heights of Jabal al-Safra', over an area estimated at almost 3 ha (ca. 390 x 90 m).

The tombs are rectangular, almost trench, generally measuring between 3 and 4 m on each side (Figure 6). They are erected in small gypsum blocks, most of them with one or two foundations. The ceramic assemblage, which is relatively coarse, seems to date back to the 1st millennium BCE, before the Nabataean phase. Because of the numerous caves around the Jabal, it is not impossible that other tombs were installed in these cavities. This would mean that speleological examinations would be necessary in the future.

This necropolis seems to be linked to the sites of Rudayda and al-Qal'a, which were probably occupied at that time.

1.3.2 Test trenches in the oasis

1.3.2.1 Al-Usayfir, test trench 900 (R. Crassard, Y. Hilbert, W. Badaiwi)

The site of al-Usayfir, discovered during the first surveys at Al-Bad' and later re-assessed in February 2019, has been partially excavated in November 2019. Dated to the Neolithic period, al-'Usifir is an open-air site located on a high alluvial terrace along Wadi 'Ifal (Figure 7). It lies at the southern side of the Al-Bad' pre-Islamic site.

al-'Usayfir is characterized by the presence of a high amount of lithic artefacts, such as flakes, blades and bladelets, as well as various lithic tools, including arrowheads, scrapers and borers. Some small-sized worked shells are also present, revealing the nature of the site as a dwelling place, where all sorts of domestic activities must have been performed. al-'Usayfir comprises a series of loose sand hips covered by a recent Holocene reg of rocky desert pavement. The presence of these hips and the geomorphological processes that lay at the heart of their genesis remains puzzling; it was initially hypothesized that these features are related to some form of architectural structures. The discovery of lithic artefacts on the surface of the site was mainly associated with sand-filled depression zones located between the hips.

A general collection of lithics and shells was conducted in February 2019, followed by a first

test trench at the base of one of the monticules (Structure 127). This test trench revealed an extremely rich assemblage of organic material, including large (< 30 mm) wooden charcoal fragments, faunal and botanical remains. A radiocarbon dating falls within the Late Neolithic, potentially the Late PPNB in the Fertile Crescent's prehistory terminology. Due to the site's very high potential highlighted by both its age and stratigraphy, additional excavations comprising of a 5 x 1 m trench was conducted in November 2019.

Sediments throughout the excavated trench were generally composed of extremely loose sand, an almost permanently ashy dust that made the differentiation of layers and features in the trench problematic. Nevertheless, a clear stratigraphy could be revealed. It contained an abundant lithic assemblage made of local cherts and quartz, as well as worked shells for bead production (17 beads, mainly made out of small *Conus sp.*), coming most probably from the Red Sea coast. Within an approximately 50 cm-deep stratigraphy, al-Usayfir yielded more than 1000 lithic finds, including tools. Nine arrowheads represent the main type that allows us to perform techno-typological comparisons with neighbouring regions. This type of arrowhead is mainly made on small elongated flakes or bladelets, and a simple tang is made out of its proximal part. Furthermore, another type of artefact, which yields a specific type of use-wear traces, was very important – it is known as the sickle gloss. Its presence indicates that cereal harvesting, and likely also cultivation, took place within the wadi oasis.

At the lower part of the trench, a large

combustion feature of more than 1 meter in diameter was excavated and yielded large quantities of wood charcoal, which was sampled for anthracology analyses and radiocarbon measurements. One carbonized grain has been discovered in situ during excavation, which led to sampling the sediment itself in various parts of the trench for archaeobotanical analysis and searching for more vegetal remains.

al-Usayfir represents one of the rare and only sites in Saudi Arabia dating to this period. Archaeological finds indicate that a fully developed agro-pastoral society inhabited the oasis of al-Usayfir nearly 9,000 years ago. Further excavations are imperative to reconstruct this largely unknown period in Arabia.

1.3.2.2 Al-Malqata (G. Chung-To, K. Guadagnini, K. bin Barman al-'Ajmi, T. bin 'Aid al-Uneizi, M. Vobauré)

Following initial investigations by A. al-Ghabban in the 1990s⁽¹⁾, two new test trenches, 530 and 531, were opened this season in the al-Malqata area, on the eastern bank of the wadi.

Test trench 530 is located against the northern limit of a large open-air reservoir in the southern part of the site (Figure 8). It was opened in order to understand better and date this important heritage feature. Excavations revealed a coated canal leading to the reservoir and at least two main phases of canalization. Digging was also done inside the reservoir

(1) A. al-Ghabban, *The two Syrian and Egyptian pilgrimage routes in northwest Saudi Arabia*, Cairo: IFAO, 2011.

itself to reach its bottom. However, due to the hardness of the soil, it was decided to stop the test trench and to move further north for getting a complete stratigraphy.

A second test trench 531 was undertaken from 12th-20th October, in the central-western part of the site. The purpose of this test trench was to obtain a complete stratigraphic sequence. We decided to open it inside a looting pit because this area is relatively high compared to the rest of the site and because several baked brick structures were visible. Moreover, some wall remains and room organization in the area suggested the existence of a residential area.

At this stage, the digging of the main room revealed four main phases from bottom to top: the first one with alternating occupation levels, which were buffered by more ashen levels.

A second largest phase with a kind of basin S53121, probably associated with a floor. This structure could also be associated with some residues of a lime floor and noticed in the section, which would correspond perhaps to the repair of the bottom of S53121 during a third phase. Subsequently, there was a fourth phase with the walls, the brick floor going towards the south and in the middle of the room, and a white floor disturbing the previous levels. Here, we possibly reached the geological substratum but need to confirm its wider extent.

1.3.2.3 Maghayr Shu'ayb (test trench 520; G. Charloux, G. Chung-to, S. Sahlah)

Surface prospecting conducted in 2017-2018 revealed a vast fortress built in gypsum blocks on the side of the north-south road separating

the al-Malha and Mughayr Shu'ayb sectors (Figure 9). The walls exposed on the surface in the fenced area traced the course of a thick wall, about 2.2 m thick and about 70 m long, in a north-south axis (possibly consisting of two or three units), and the presence of at least two rectangular towers, one of which was a corner tower. However, it was clear from the outset that the rampart extended beyond the fenced area in the direction of the road.

In order to specify the date of this building and to show the need for an extension of the site protection zone eastwards, we opened a small test trench (520) between the asphalt road and the fence wall. The intervention lasted four days, from 23rd to 26th September 2019, and was implanted in the axis of the rampart. The archaeologists carried out four test trenches with the help of three workers.

The cleaning of the structures and the various test trenches highlighted the limits of the north wall of the fort and showed its state of conservation on four foundations (52A). A rectangular tower could be identified along this wall, showing the overflow in the foundation. The presence of an inferior state was also highlighted in test trench 52D.

Test trenches, therefore, show the potential of this sector, which is nevertheless strongly disturbed by the installation of the modern power line and the road which obscures its eastern boundary. The discovery of walls from an earlier phase and with a different orientation also sparks interest in the evolution of the plan of the building over time. Thus, this fort might shift into the focus of a full-fledged excavation in the future to bring out its plan and internal organization.

1.3.2.4 Al-Qal'a, test trench 510 (G. Charloux, G. Chung-to, S. Sahlah)

An archaeological operation was carried out from 18th to 21st September 2019, at a site located on a natural terrace behind the promontory of al-Qal'a, on the north-eastern bank of the al-Bad' oasis. The opening of a stratigraphic test trench was intended to confirm the dating obtained from the ceramics collected on the surface in 2017.

A first, the opening of test trench 510 in a gap between two thick walls at the bottom of the sector was quickly stopped, as the risk of being confronted with fillings without in situ dating elements was too great. Our attention, therefore, turned to test trench 511 (Figure 10). We decided to place it in the centre of the natural gully between the al-Qal'a promontory and the Jabal al-Safra' to the east.

Twenty-two layers and structures have been identified. The ceramic material that has been unearthed seems to support a dating of the 2nd-1st century BCE for this architectural ensemble and the rest of the inhabited area in the lower part of al-Qal'a-East. Radiocarbon dating should confirm this proposal.

1.3.2.5 Al-Rudayda

Four small targeted operations were carried out in 2019 in the al-Rudaydah sector, located on the east bank of the wadi (Figure 11).

1.3.2.5.1 Al-Rudayda, test trench 500 (G. Charloux, G. Chung-to, W. Badaiwi & K. Guadagnini)

The archaeological intervention was carried out from 15th to 17th September 2019 on a housing area located on the edge of the natural gypsum terrace around the base of Jabal al-Safra' (Figure 12). The operation aimed to date the installation of the built-up area, on which "pre-classical" ceramics had previously been found, and to identify the type of structure in question, by carrying out a stratigraphic test trench in one of these structures. It was also a question of verifying the layouts made from the high-resolution images in the field.

The choice of the location of test trench (numbered 500, UF 500XX) was made on a small mound, largely disturbed by clandestine excavations, but which had the advantage of being kept upright and possibly presenting a reasonable thickness of deposit in relation to the surrounding terrace, as indicated by the pillage holes. The operation lasted three days, during which we cleared the eastern part of one piece, all the way up to the rock. Thirteen layers were identified. The collected material sealed by the upper collapse layer suggests a 1st millennium BCE dating. Moreover, the domestic nature of the habitat seems well proven.

1.3.2.5.2 Rudayda, test trench 501 (D.M. Cabaret, W. Badaiwi)

Test trench 501 was opened in the southernmost part of Rudayda, beyond Wadi Darak, where numerous archaeological remains are exposed, and whose orientations seem to follow the counterpart of Wadi Darak. The small test trench (2.5 x 3 m) took place between three walls of a dense residential area.

Three phases have been identified under the surface layer, highlighting small civil structures: hearths, door sills, bench and tripod positioning holes on the hearth, rare ceramic sherds and some flint tools. The bedrock was reached only about 1 to 1.50 m below the surface (Figure 13).

An older dating, possibly from the Early Bronze Age, is not excluded. However, this is still preliminary, especially due to the small extent of the excavation and the fragmented state and low occurrence of the ceramic material collected during this operation.

1.3.2.5.3 Al-Rudayda, test trench 502 (D.M. Cabaret, W. Badaïwi)

The small test trench 502 (4x2 m) was drilled south of test trench 500 in an area with many gypsum walls with an approximate East-West and North-South orientation (Figure 14). The layout of the structures appears to be a very dense and well-organized habitat.

Within a partially open room, three main architectural phases have been identified above the bedrock. The archaeological features, which are not abundant, seem to indicate a 1st millennium BCE occupation, possibly contemporary with test trench 500, located further north.

1.3.2.5.4 Al-Rudayda, test trench 503 (L. Bigot, S. Sahlah, G. Charloux)

Test trench 503 is located in the northern part of the al-Rudayda site, on a small hill (Figure 15). The research was carried out in three days only

and focused on a kiln visible on the surface (corresponding to structure S943). The highly heated, vitrified appearance identified the walls of the kiln. Adjacent to the feature, several emerging gypsum walls were also visible, and two Islamic oval tombs were covering the ancient features.

After the surface cleaning, it turned out that the kiln consists of two chambers separated by a pillar. It has a diameter of ca. 2.20 m, and the two chambers are about 70 cm wide. The kiln's interior (ca. 1 m deep) was filled with a surface layer formed by aeolian deposits and sedimentary crusts typical for rain phases. Underneath, clear differentiation of the sediments between east and west chambers appeared and was explained by the presence of the central brick pillar, which has been largely preserved over a thickness of 40 cm for a height of about 60 cm. On the one hand, the eastern chamber is filled by a succession of micro-aeolian layers resting on a very thin layer of ash without any material at its base. On the other hand, the western chamber was filled with a heterogeneous layer with a fairly loose beige sediment containing fragments of brick collapsed from the kiln walls. A probable Islamic burial (not excavated) damaged the west wall of the kiln.

Although almost totally washed in the past, this kiln was probably devoted to pottery firing, as confirmed by the few collected overfired sherds of pottery on the surface. A mudbrick feature along the north and west walls places this kiln within a larger structural ensemble, possibly a workshop, which was unfortunately badly damaged by erosion, later tombs and illegal

digging. Despite the absence of pottery inside the kiln, dating to the classical period seems possible at this stage. The C14 analysis should hopefully provide a more precise and secure date for its use.

2. Excavations in al-Malha

In September–November 2019, archaeological operations in al-Bad' oasis focused on three major areas (1-3) at the site of al-Malha (Figure 16).

2.1 Area 1 (S. Mazurek, W. Ali Badaiwi, K. bin Barman al-'Ajmi, S. Sahlah, A. bin Khalf al-Taimani, A.E. Kalaf Al Timani, T. bin 'Aid al-Uneizi & M. Vobauré)

During the 2019 season, it was decided to focus our research on the occupational sequence of the monumental building in Area 1, identified in al-Malha North in 2017 (Figure 17). Measuring about 80 m in length and 40 m in width, this building notably comprises what looks like a flat courtyard to the east, rooms and corridors in its centre, and a small hill to the west. A small rectangular trench was conducted on top of the eastern side of this hill (previously identified as a 'tell'): it is, in fact, an artificial accumulation of a thick mixed layer of dust, ashlar, funerary architectural elements and human bones probably coming from the mechanical cleaning of a nearby funerary zone.

A 3.40 m deep trench was excavated at the western base of the hill, west of the long corridor from the upper building observed during the 2018 season. A preliminary assessment showed four levels from the geological substratum (Level 4) to the abandonment and contemporary human activities (Level 0):

- The upper **Level 1** consists of two architectural phases. Thick ash layers comprising large quantities of burnt camel bones were uncovered in this room, while the pottery appears to be from the early Islamic period. The well-planned organization of the large architectural unit, with large rooms and thick occupation layers, suggest for the moment an economic or commercial function: e.g., a caravanserai or a market.

A well-preserved inscribed gypsum block (O.W10010-1= BDJPA) was found reused upside-down in the masonry of a wall in Level 1 (*see note Nehmé and Norris below*). It probably originated from the funerary area identified in Level 2.

- **Level 2** (Byzantine period) that partly reused older walls and structures displayed a possible change in the function of the area as testified by the presence of two untouched tombs sealed with blocks. Collapse and filling correspond to the upper phase in this level.

- **Level 3** consists of a long and complex sequence of architectural and occupation phases dating to the Nabataean/Roman period. Two major phases comprising seven stages have been identified.

- Geological **Level 4** is composed of sterile sand and gravel pockets, probably coming from a palaeo-wadi, deposited above the sandstone bedrock. (Figure 18)

Future fieldwork in Area 1 should focus on the extensive clearing of the monumental building and the study of the tomb.

2.2 Area 2 (B. Durand, M. Vobauré, W.A. Ali Badaiwi)

Following the narrow test trench opened in 2018, it was decided to extend the clearings in Area 2 (Figure 19). These focused on the northern part of the building identified last year.

The 2019 excavations have clearly shown the presence of three major phases of building use:

Phase 1. The deepest phase, which was not observed previously, was only excavated in a few rooms in the north-western part of the building, without any extensive cleaning, but in several spaces. The excavations yielded a large quantity of fine Nabatean ceramics, as well as many complete coarse bowls.

To our surprise, we unearthed a hydraulic architectural set composed of small contiguous basins, separated by a corridor, all coated with white hydraulic plaster. One of the basins has a small bench with direct access to the corridor, which presents a slope for the run-off water. The basins also have small drains in their walls for emptying and are located near a heating zone (*praefurnium*) where a large quantity of ash has been discovered. This area was used for private bathing purpose during the Nabataean period. This proposal finds support in the discovery of a bronze lamp with acanthus leaves and two dolphins (Figure 20). Therefore, we can suggest that the large building built in Phase 1 was probably devoted to the private accommodation of elite individuals, not far from the monumental tombs.

Phase 2 is marked by an enlargement of the building and by significant changes in

circulation pathways. Phase 2 is the best understood and has delivered abundant ceramic vessels in situ, including many containers for everyday use, large buried storage jars, but also bowls, lamps and funnels, as well as pieces of textiles. The containers are often found semi-buried in the floors. The function of the building seems domestic but probably less luxurious than in the previous phase. For how long the occupation had been interrupted during phase 1 remains to be established.

The last occupation, **Phase 3** (Figure 21), was only exposed partially at the surface of tell 2. Erosion has led to the disappearance of a large part of its original area. Only the remains in the upper part of the tell have been preserved, and the current understanding, therefore, remains biased. Although there has been an evolution in the organization of the building - a phenomenon already observed between Phases 1 and 2 - it is clear that the overall structure of the building itself stayed the same. While doors were blocked, floor levels were raised, walls appeared or disappeared, the main circulation axes seem to have stayed identical. It is difficult to ascertain if this restructuring immediately follows Phase 2, and a more or less short abandonment could indicate a gap in the use of the building.

Although the building's construction sequence now seems to be well established (Figure 22), the extensive excavation should provide a better understanding of the internal use of each phase. The quality, variety and quantity of the archaeological material discovered bear witness to the major importance of this building for the knowledge of the pre-Islamic settlements within the oasis and beyond.

2.3 Area 3 (L. Naggiar, L. Bigot, D.M. Cabaret, F. bin M. al-Khibri)

A stratigraphic test trench was conducted from 12th October to 9th November 9, 2019, in the southern sector at al-Malha (Area 3) (Figure 23). It was carried out in the south-western part of the site with the opening of an east-west trench, 21 m long and 3 m wide over 63 m², on the steeply sloping ground (almost 4 m of height difference) towards the western wadi. This area was covered with stones with no apparent organization and in very large quantities due to the natural gradient towards the wadi and the erosion of the land.

Preliminary results allowed us to recognize a dense settlement in the Nabataean and Byzantine eras, followed by a more recent sporadic presence marked by pits and surface scree slopes. Four architectural levels were uncovered:

- **Level 1**, the oldest, was installed directly on the bedrock. To date, it is only known from three walls facing north-south without any soil or surface having been found. Unfortunately, it did not contain any material in the trench.
- **Level 2** is the most represented architectural state, as 8 distinct phases (2a to 2h) have been determined. Sub-phase 2a signalled by walls is installed directly on the substrate while the walls of state 1 continue to function. Between Phases 2b and 2e, several walls, floors, fireplaces and structures have been uncovered with abundant material corresponding to significant human occupation. These phases are sealed in Phase 2f by a limed surface poor in the material found throughout the trench. This

could indicate an ‘open-air’ occupation. The final Phase 2h, an abandoned layer, sealed Phase 2. Fragments of Nabataean ceramics were identified in the final Phases.

- **Level 3** corresponds to the remains excavated in 2018 and is only present in the upper part of the trench, implanted directly on the abandonment of Level 2. Later, this occupation is to be linked to the important remains excavated in the northern sector during the 2018 campaign.
- **Level 4** is marked by a series of pits and scree slopes that have punctually altered the underlying remains but are not attested in the northern part of area 3 (excavation 2018).

2.4 A preliminary study of the ceramic assemblages (S. Marchand)

The main objective of this first study mission was to identify and specify the main chronological phases of the site as far as possible. This was done based on the ceramic remains from the excavation of Area 1. A few archaeological layers considered important (floors in particular) were selected for the analysis according to the stratigraphic sequence of Area 1: from the oldest Level 3 to the intermediate level (Level 2), and finally to Level 1, which is the most recent.

This first examination remained very preliminary, as the number of archaeological layers considered was reduced. Moreover, the nature of the sherds in the archaeological layers examined is very fragmentary. This is not very favourable data for a perfect understanding of ceramic assemblages strongly marked by their regional characteristics. It should also be pointed out that Area 1 has delivered very few archaeologically complete or complete vases, with only two individuals.

However, this study can present three ceramic facies (Nabataean/Roman, Byzantine and Islamic) corresponding to each of the three archaeological phases at this still very preliminary stage. They are organized by formal/functional category and material/fabric (local and imported production). The study of the ceramic pastes was carried out simultaneously with the formal study; a repository of fabrics, one for each archaeological phase/ceramic form, was established for future analyses (and restoration: Figure 24).

3. The inscription BDJPA1 (L. Nehmé & J. Norris)

The inscription BDJPA1 (=O.W10001-1, Area 1) is a funerary text written in the Jewish Palestinian Aramaic (JPA) script on a finely cut rectangular block of yellowish gypsum, 27.7 cm high, 18.3 cm wide and 20.4 cm thick (Figure 25). The text has seven lines which are elegantly and deeply incised within a rectangular recessed panel. The four-letter word which stands alone between lines 3 and 4 (line “3bis”) was probably first omitted by the scribe and was subsequently inserted there. The edge of the block has suffered damage, especially its upper left and lower right corners. Conversely, the inscribed area is in very good state. There is a slight abrasion at the end of line 1 in addition to two small chips in lines 3 and 4, none of which, fortunately, really affect the letters. Note also a more important chip below line 7. The text is complete, clear, and the reading proposed below can be considered as certain. ⁽¹⁾

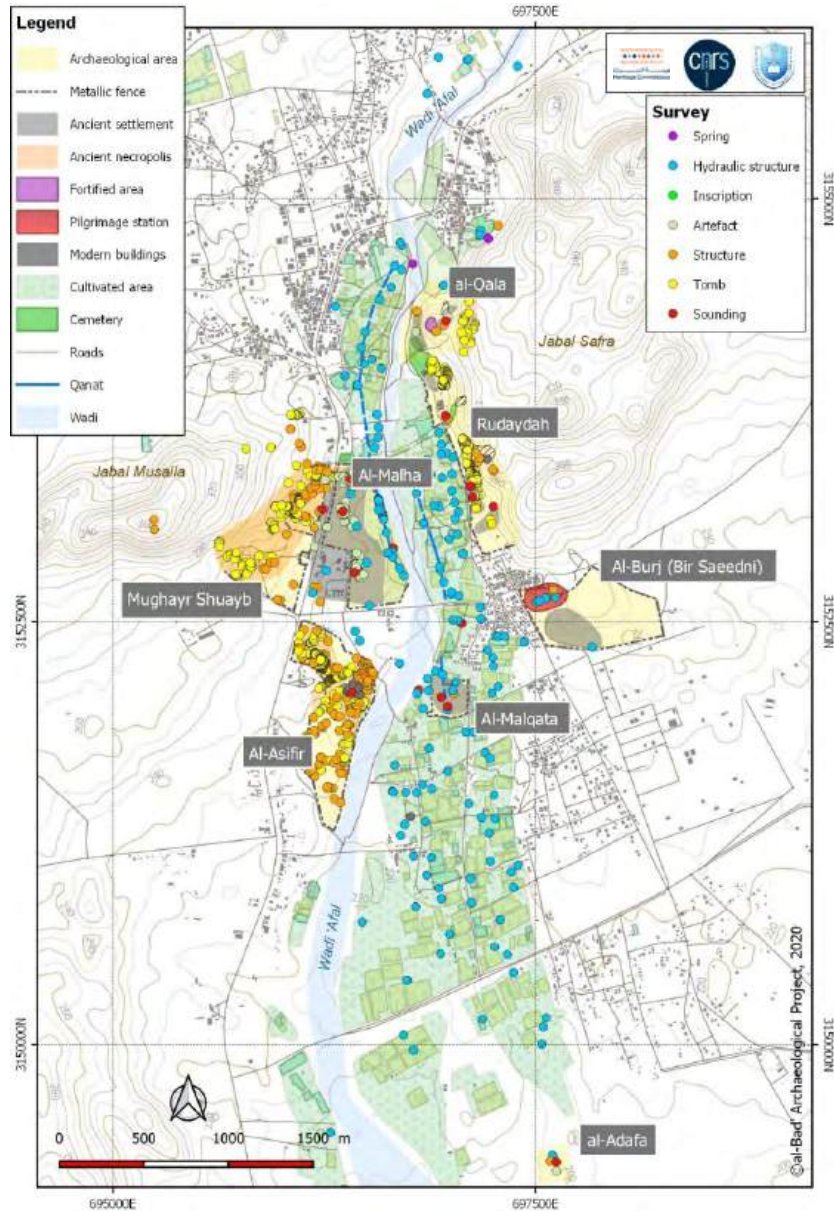
3.1. Transliteration

1. d' npšh dy
2. 'bd 'byšlm
3. w 'ḥyw 'l-'m-hwn
- 3bis.** m {r/d} yn
4. dy mytt b-yrḥ
5. 'yr šnt m'tyn
6. w 'šryn w ḥd'
7. l-hprkyh d'

3.2. Translation

“This is the nefesh which 'byšlm and 'ḥyw made for their mother, M {r/d} yn, who died in the month of Iyyar year two hundred and twenty-one of this Province [April/May AD 326]”

(1) For a full commentary of the inscription, see Nehmé, L., Norris, J. and Charloux, G. 2021. The Nabataean and Aramaic inscriptions from the Saudi-French Excavations at Al-Bad' (2017-2019). *Semitica et Classica* 14.



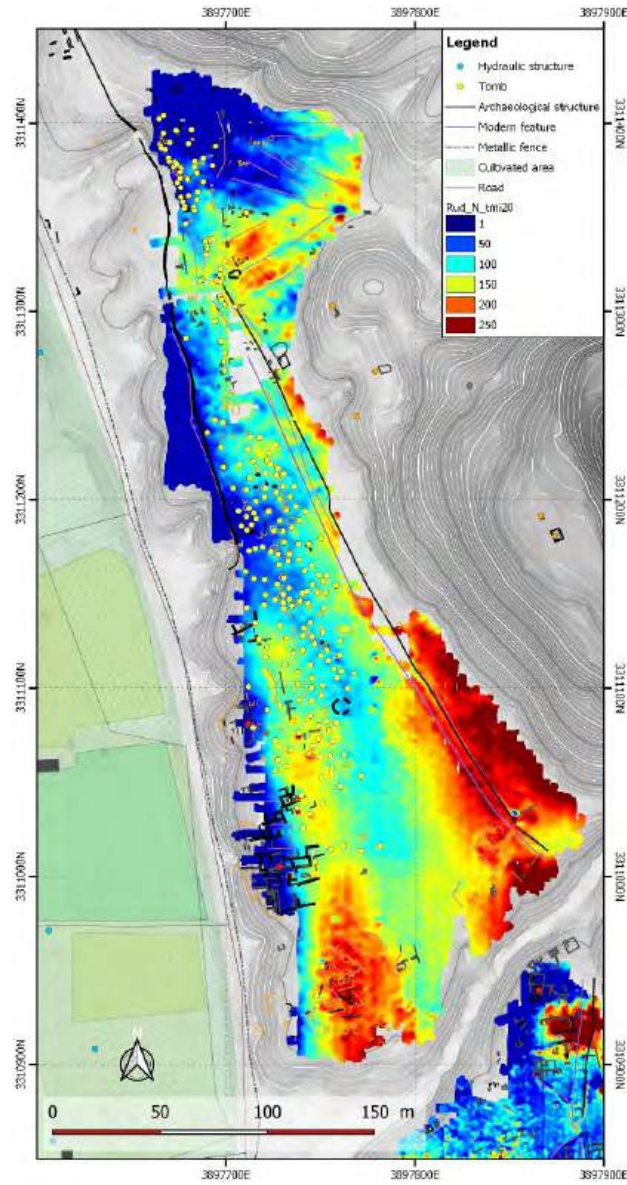
شكل 1. المواقع الأثرية في واحة البدع قيد الدراسة عامي 2019 و2020.

Figure 1. Archaeological sites in al-Bad' oasis under study in 2019 and 2020.



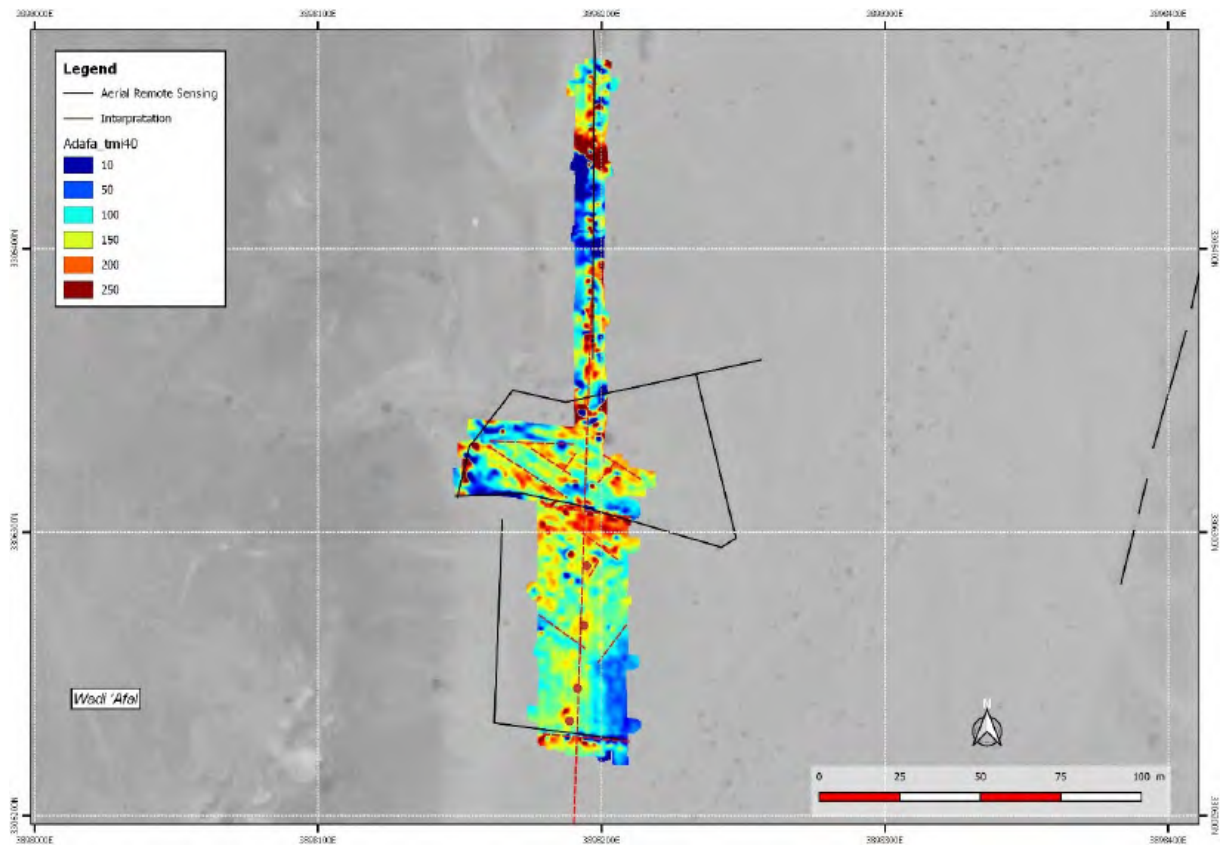
شكل 2. القياس في بئر واحة بواسطة عالم المياه كلود كوساندي، عام ٢٠٢٠م.

Figure 2. Measurement in an oasis well by hydrologist Claude Cosandey, 2020.

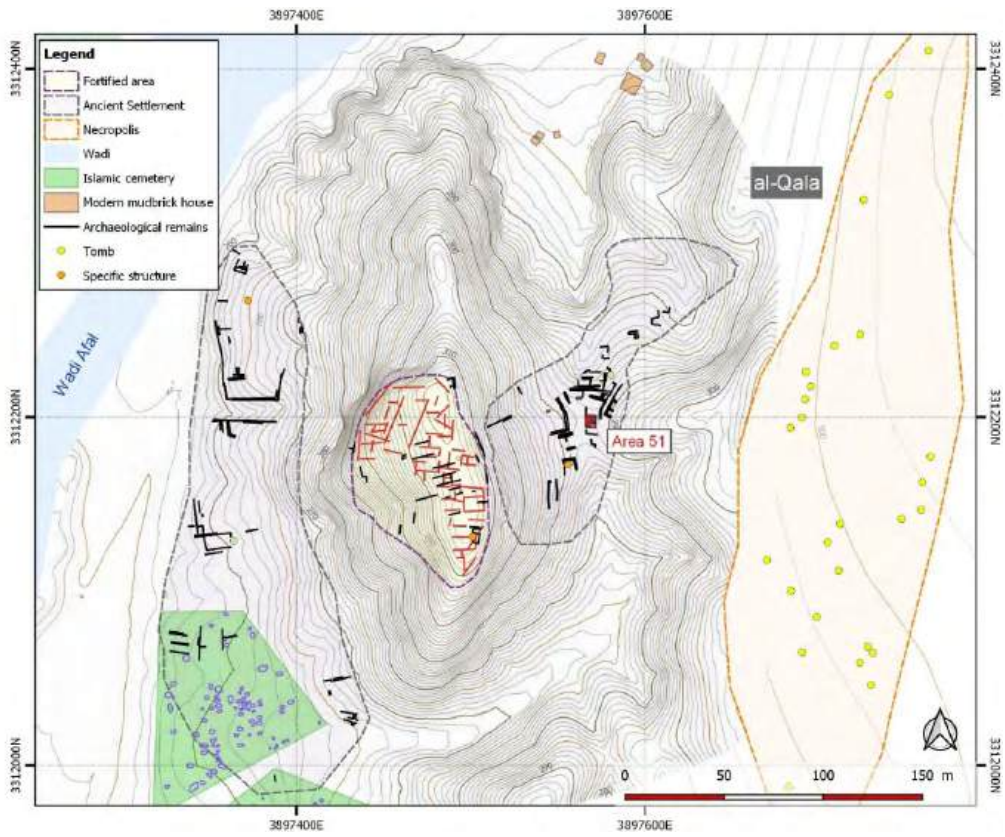


شكل 3. خريطة جيوفيزيائية لجنوبي الرديدة، تحدد مقبرة قديمة لم تكن معروفة سابقًا في هذه المنطقة (النقاط الصفراء)، عام 2020.

Figure 3. Geophysical map of Rudayda South, localizing in particular a previously unknown ancient necropolis in this area (yellow dots), 2020.



شكل 4. خريطة المسح الجيوفيزيائية لخط الأنابيب في قطاع العدفة (جنوبي البدع)، عام 2020.
 Figure 4: Geophysical prospecting map of the pipeline in Al-'Adefa sector (al-Bad' south), 2020.



شكل 5. خريطة منطقة القلعة وتحديد مواقع المربعات الاختبار والمقبرة شرقاً، عام 2020.

Figure 5. Map of al-Qal'a area and localisation of test trenches and the necropolis to the east, 2020.



شكل 6. القبر رقم 1118 في مقبرة القلعة، حقوق النشر عام 2020.
Figure 6. Tomb 1118 in the Necropolis of al-Qal'a, 2020.



شكل 7. المجس 900 والغريلة في منطقة العصيفر، عام 2020.
Figure 7. The test trench 900 and sieving in the al-USayfir area 2020.



شكل 8. المجس 530 في منطقة الملقطة. شق القنوات في المقدمة والخزان في الخلفية، عام 2020.

Figure 8. Test trench 530 in the al-Malqata area. Canalization in the foreground and reservoir in the background, 2020.

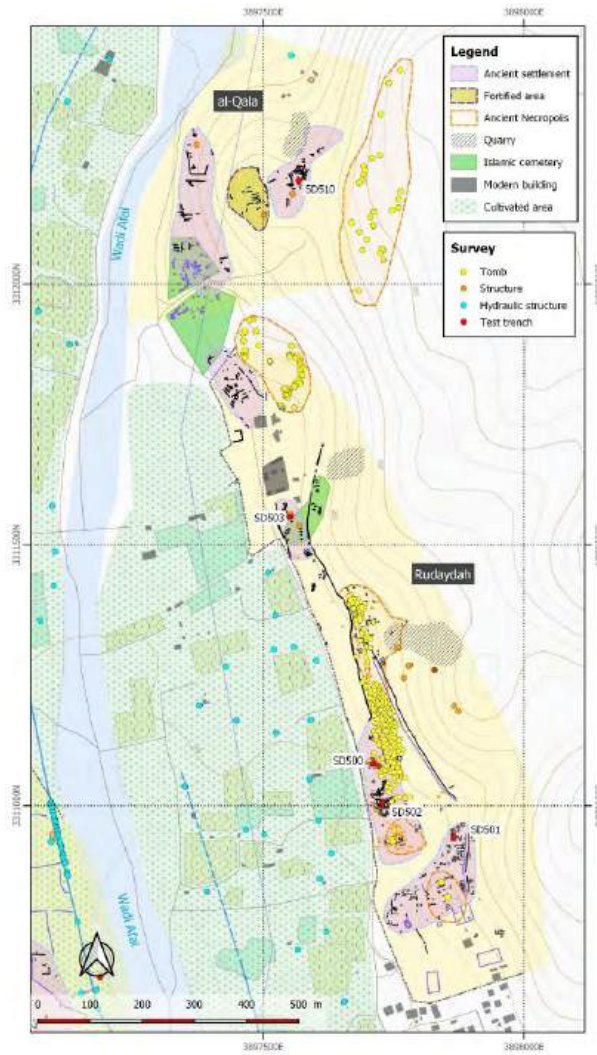


شكل 9. مجس في القلعة الواقعة على طرف موقع مغاير شعيب الذي كان يقطعه الطريق، عام 2020.

Figure 9. Test trench in the fort located on the edge of the Mughayr Shu'ayb site that was sectioned by the road, 2020.



شكل 10. المحسسات في منطقة القلعة، عام 2020.
Figure 10. Test trenches in al-Qal'a area, 2020.



شكل 11. موقع المجسات 500-503 و510 في الرديدة، عام 2020م.

Figure 11. Location of the test trenches 500-503 and 510 in Rudayda, 2020.



شكل 12. المجس 500 في مقدمة المصطبة في قطاع الرديدة، عام ٢٠٢٠م.

Figure 12. Test Trench 500 in the foreground on the terrace in the Rudayda sector 2020.



شكل 13. المجس 501 في الرديدة أثناء أعمال التنقيب، عام 2020م.
Figure 13. Test trench 501 in Rudayda during excavations 2020.



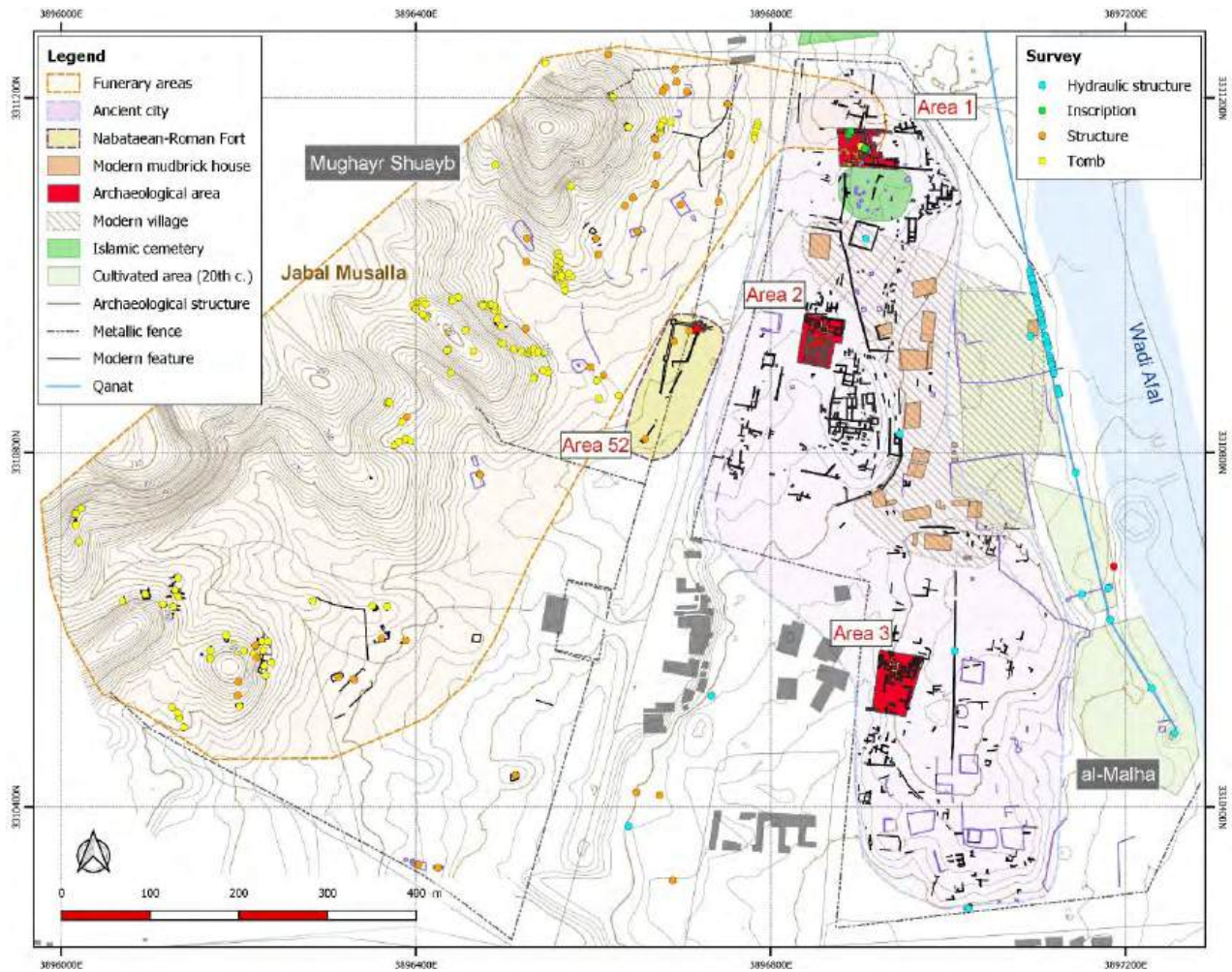
شكل 14. المجس 502 في الرديدة. عام 2020م.

Figure 14. Test trench 502 in Rudayda, 2020.



شكل 15. الفرن S943 في منطقة الورشة (مربع الاختبار 503) بعد التنقيب عام 2020م.

Figure 15. Kiln S943 in the workshop area (test trench 503) at the end of the archaeological operation.

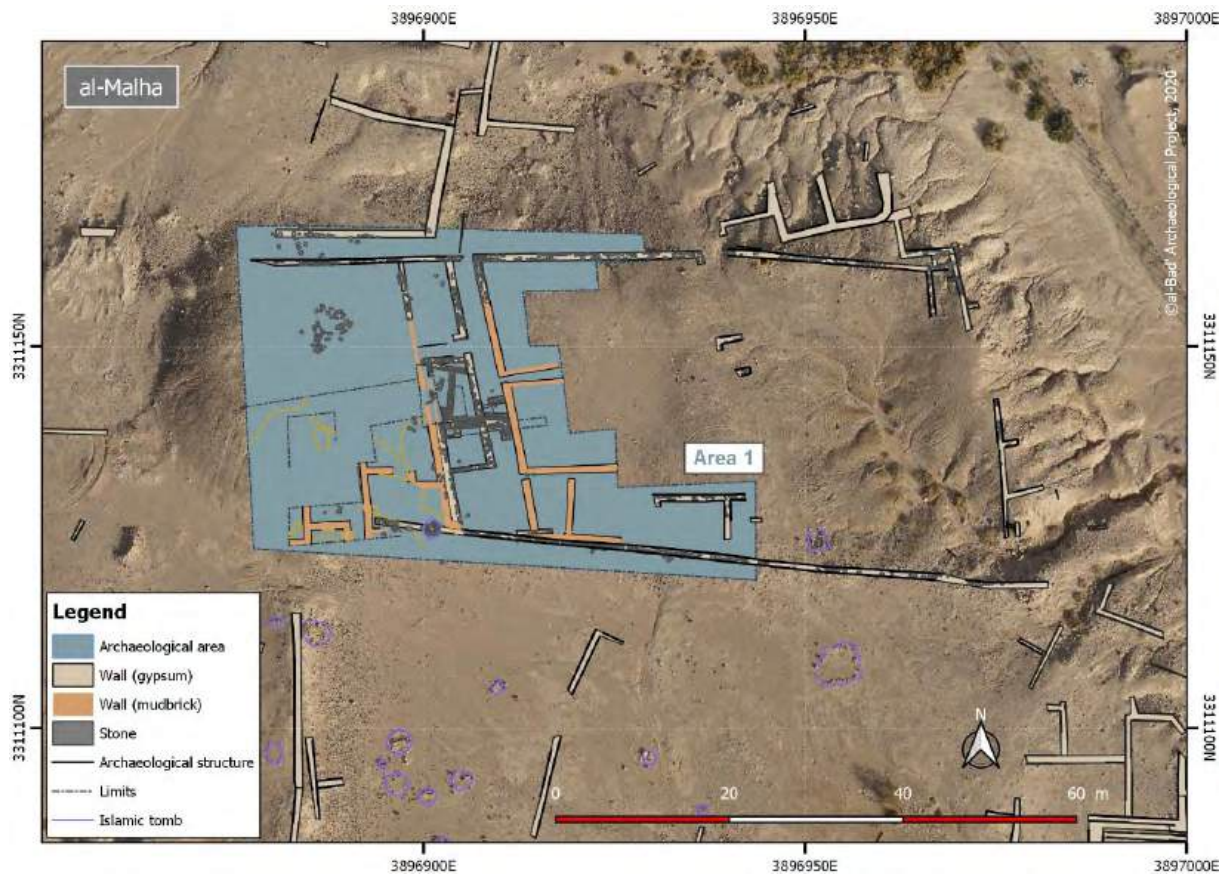


شكل 16. خريطة المالحة ومغايير شعيب.

Figure 16. Map of al-Malha and Mughayr Shu'ayb.



شكل 17. الخندق العميق (يسار) والمجس القريب على التل (يمين) أثناء أعمال التنقيب في المنطقة 1.
Figure 17. Deep trench (left) and nearby test trench on the hill (right) during excavations in Area 1.



شكل 18. مخطط المنطقة 1 نهاية موسم 2019، شمالي المالحة.
 Figure 18. Plan of Area 1 at the end of 2019 season, al-Malha North.



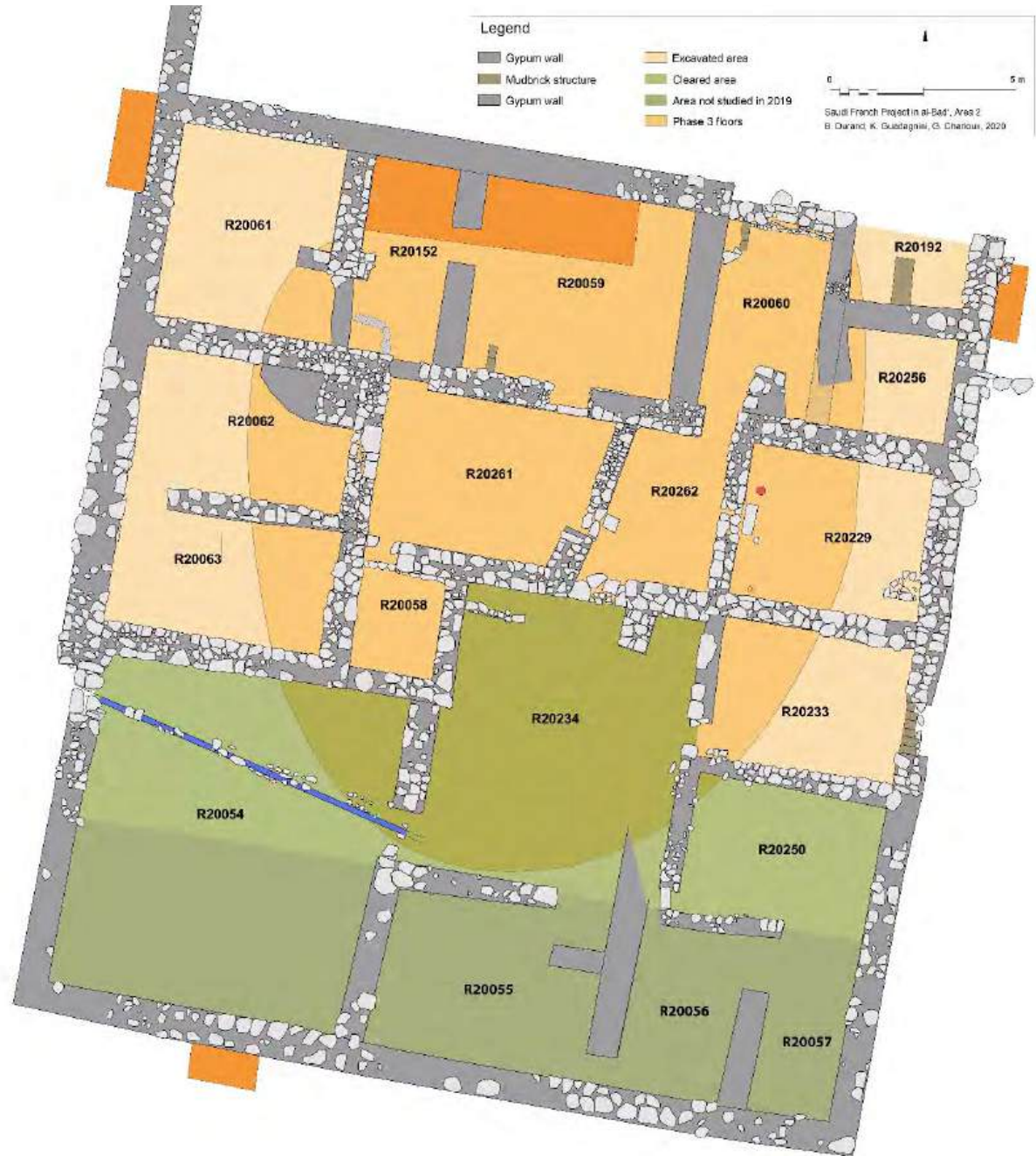
شكل 19. المنطقة 2، المبنى A أثناء التنقيب.

Figure 19. Area 2, Building A during excavations.

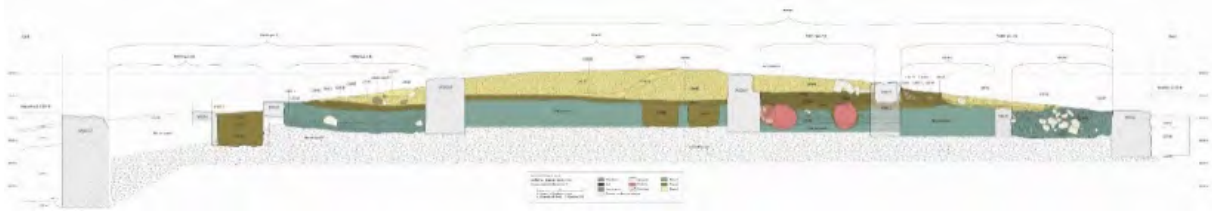


شكل 20 (a) و (b). المصباح O.20301-1 عثر عليه أثناء تنظيف حمام خاص في المنطقة 2، قبل الترميم.

Figure 20 (a & b). Lamp O.203011- found during the clearing of the private bath in Area 2, before restoration
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شكل 21. مخطط المبنى أ (المرحلتان 2-3)، المنطقة 2 (باللون البرتقالي، حفر المجسات عام 2018).
 Figure 21. Plan of Building A (Phases 23-), Area 2 (in orange, soundings opened in 2018), .



شكل 22. القسم الشمالي يوضح المراحل الثلاث المحددة في المبنى أ، المنطقة 2، عام ٢٠٢٠م.
Figure 22. North section showing the three phases identified in Building A, Area 2.



شكل 23. المنحس في المنطقة 3.
Figure 23. The stratigraphic trench in Area 3.



شكل 24. الجرار البيزنطية عثر عليها في المنطقة 2 في انتظار الترميم (وليد البديوي).

Figure 24. Byzantine jars found in Area 2 waiting for restoration (W. Badaiwi on the left).



شكل 25. النقش BdJPA1 المكتشف أثناء التنقيب بالمنطقة 1، شمالي المالحة.

Figure 25. The inscription BdJPA1 coming from the excavations of Area 1, al-Malha North.