

Dakhleh Oasis Project
Columbia University
Excavations at Amheida 2007
Architectural Conservation Works

Site work was carried out from 15 February to 8 March under the direction of Dr Nicholas Warner with the assistance of Inspector Magdi Ibrahim Mohamed and Conservator Baha'a Goma'a Ahmed. Inspection visits were also made during the course of work by the Director of the SCA Dakhleh office, Maher Bishendi. Conservation interventions were made at two buildings on the site: the House and the Pyramid.

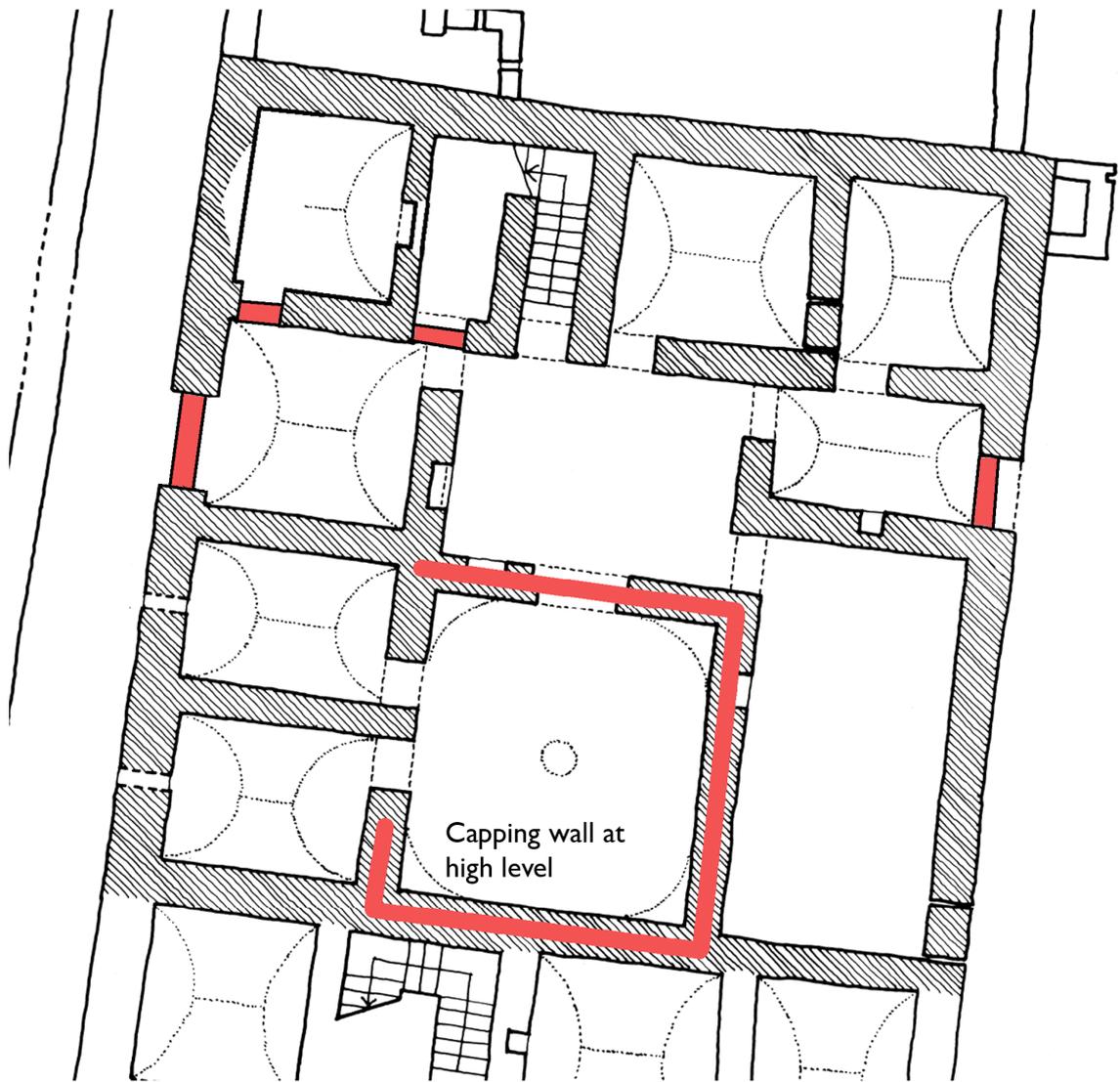
1 The Roman House

The house was completely excavated this season, and no further in situ conservation work either of the wall paintings or the structure of the building is anticipated. With this in mind, and following on from the interventions last season, a number of new blocking walls were built to allow for internal areas of the villa to be backfilled independently from each other. These walls are shown on the attached plan, Fig.1. New brickwork was used in the capping of the existing walls around the painted main room of the house. This followed the original brick dimensions of 8 x 17 x 34cm but without the inclusion of straw/*tibn* (to avoid termite infestation). The mortar used was a mud mortar made from a combination of imported clay (*tafl*), old crushed fragmentary bricks, and a small percentage of fly-ash (*osromil*).

Future work:

It was agreed that a project to build a replica of the Roman House, suitable for visitors to access, would be initiated and put forward to the SCA Permanent Committee for their approval, following the approval given on site by the Director of the SCA Dakhleh office, Maher Bishendi. The replica, constructed of mud brick, would be located at the lowest level of the site near existing work and guard houses, away from any areas of archaeological interest. Additional features, such as dry-drop toilets and a shaded pergola area for seating should also be provided at the same time.

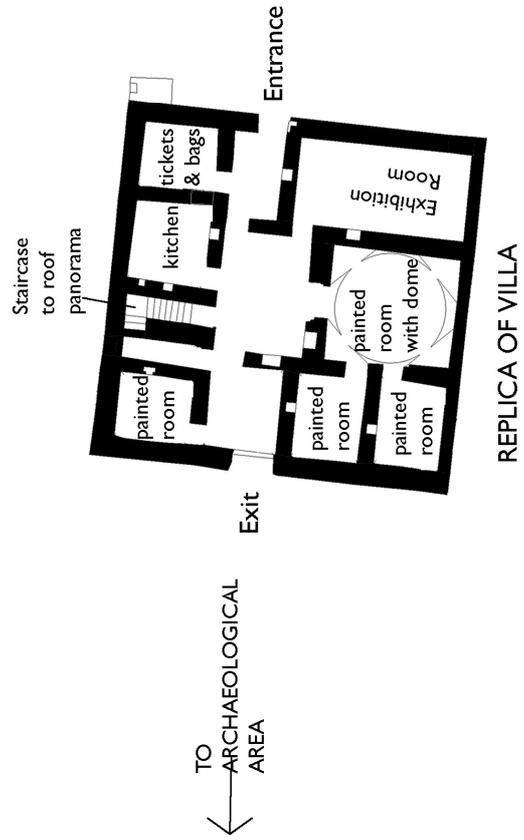
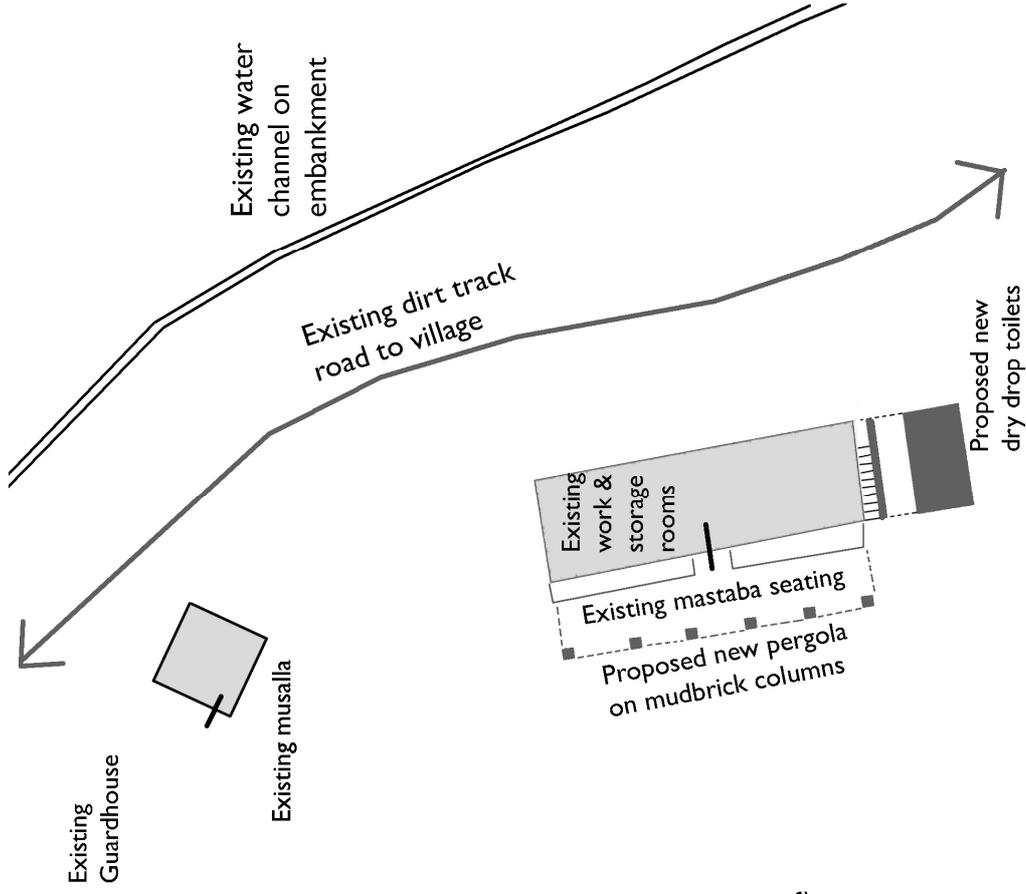
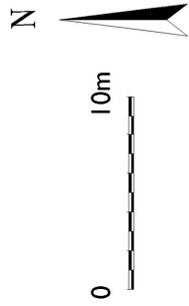
[See attached sketch location plan, Fig.2]



Amheida Roman Villa: location of mudbrick walls constructed 2007 season

Figure 1

AMHEIDA ROMAN VILLA
 Proposed location plan of
 villa replica and associated
 structures March 2007



2 The Pyramid

Work was concentrated on consolidating the north-west and south-west corners of the pyramid, which had been seriously damaged by the loss of bonded masonry, either as a result of the structural failure of the western half of the pyramid due to subsidence, or due to anthropogenic damage. New bricks, matching the dimensions of the original Roman bricks but without the inclusion of straw (to avoid termite infestation), have been used in the consolidation (8 x 17 x 35cm after cleaning and squaring up). The existing bonding pattern (English Bond of alternating stretchers and headers) was also replicated in the new brickwork. The mortar used in the consolidation works was a mud mortar made from a combination of imported clay (*tafl*), old crushed fragmentary bricks from the collapse of the pyramid, and a small percentage of fly-ash (*osromil*).

On the north face, the consolidation of the entire base of the pyramid that had not been attempted last season was carried out to the height of the top of the plinth and the sloping setback. This included the extension of the masonry on the north-east corner. The original foundation course was only partly evident, and the length of the wall to be reconstructed on this face was arrived at by an interpolation of the dimension of the existing known east face of the pyramid. Above the line of the square base, a second tier of masonry consolidation was executed, following the sloping profile of the pyramid. This incorporated elements of surviving solid original masonry but did not extend all the way to the north-west corner. The entire north-western corner itself, up to the full height of the plinth, was rebuilt in gradually stepped courses over the collapsed fill of the original structure: the only way to proceed in view of the general instability of the remains.

The entire north-eastern corner of the pyramid was also rebuilt above the line of the base, following an angle of inclination that was arrived at by eye rather than any geometrical calculation. This had to reconcile the two distinct angles used in the construction of the original pyramid: an initial, extremely steep angle which, at a height of approximately 1.2 metres above the top of the plinth, was changed to a lesser angle. This was presumably done, as at the Bent Pyramid of Dahshur, to correct the angle of inclination once it was realised that this would result in an excessive (not to say) impractical total height for the pyramid. It also suggests that the construction was started without any mathematical calculation of the precise angle of inclination. A single line for the corner was therefore adopted, set back by between 10 and 15 centimetres, which permits the easy appreciation of this subtle feature of the original construction.

The consolidation of the second tier of masonry on the north side of the pyramid also provided for scaffolding access to the top of the structure which was capped with new brickwork. This, combined with

the rebuilt north-east corner of the structure, contributes greatly to the realisation of the overall silhouette of the pyramid.

[See Figs 3, 4, 5, 6 for photographs before and after works.]

Future work:

As a result of the works carried out this season, the pyramid is now stable. In the opinion of the author, no further consolidation or reinstatement needs to be carried out.

Figure 3



North face of pyramid before (top), in 2006 (middle), and after completion of work in March 2007 (bottom)

AMHEIDA PYRAMID
2007 SEASON

Figure 4



South face of Amheida Pyramid pre-consolidation



Post-consolidation February 2006



SOUTH FACE POST CONSOLIDATION MARCH 2007

AMHEIDA PYRAMID
2007 SEASON



East face before consolidation



East face after consolidation



EAST FACE POST CONSOLIDATION MARCH 2007

Figure 5

AMHEIDA PYRAMID
2007 SEASON



WEST FACE OF PYRAMID BEFORE (TOP) AND AFTER CONSOLIDATION

Figure 6

AMHEIDA PYRAMID
2007 SEASON

3 Site protection measures

The archaeological area of Amheida extends considerably to the south of the land currently in the control of the SCA, according to information received from the local Inspectorate (see Fig.7 below). Cemetery areas and the southern (red) pyramid are, for example, outside this zone. This would indicate that the first site protection measures should be bureaucratic rather than physical. The fact that the boundaries of the archaeological resource and the area currently designated as a site do not correspond must be addressed by the SCA, perhaps through the EAIS before the latter body is phased out. This mismatch between a protected area and the real extent of a given site is normal situation, but the issue should be raised before any physical action is taken. The local Inspectorate has, indeed, acknowledged the real extent of the site by locating a new guardhouse to the south, outside the boundary it technically controls (see below).

The site cannot be easily protected from individuals on foot, or from animals. The main threat to the site, however, comes from vehicles (4 x 4 cars, loaders, or tractors) which are capable of doing a considerable amount of damage whether intentionally or unintentionally. A new guard house in the southern part of the site (presently unoccupied) will one day provide protection additional to that already offered by the existing guardhouse on the north-east edge of the site (an area which has a good view of the road but almost no view of the most vulnerable areas of the site).

Neither of the guard houses, however, will prevent vehicles from continuing to access the site, so it is therefore proposed to create a physical barrier between the road and the site. Of the three options available (a fence, a ditch, or a kerb to the edge of the road), the installation of a concrete kerb beside the road is recommended for the following reasons: it is more durable than a palm rib fence, needs little to no maintenance, is cheaper than a steel fence, and does not risk undermining the road itself in any way. The kerb will not appreciably affect the perception of the site from the road itself, unlike a fence.

A preliminary estimate for the cost of installing such a kerb has been obtained, which is 30 Egyptian Pounds for 10 metres (inclusive of materials and labour). As the length of the perimeter to be protected is in the region of two kilometres, a projected total cost for this undertaking would be in the range of 60,000 LE (approximately USD 11,000). The perimeter to be protected, once again, bears no relation to the area under the control of the SCA, and the kerb would have to be extended considerably to the south in order to be an effective vehicle barrier. This sum of money may be beyond the budget of the Amheida Mission, and indeed it should be suggested that such a project be undertaken by the Governorate itself (which regularly changes or constructs kerbs throughout the New Valley).

To enforce the effectiveness of the kerb, there is also a need for an additional barrier between the dirt track road to the village to the north of the site and the archaeological area. This would deter the passage of people and herded animals through the site. The local inspectorate has already taken the initiative by attempting to install a palm rib fence to counter this, but it is clear that the steps taken have not only damaged the archaeological resource, but will also not have the desired effect. A much longer fence (approximately 600 metres) would be required to fulfil this function, which would have openings / gates in it leading to the compound comprising the workroom, guard house, *musalla*, and future replica Roman Villa, extending all the way to the road. It is proposed that this fence should be constructed as a traditional palm-rib woven fence on a mud upstand, although it is known that the SCA are unlikely to maintain even this form of low-cost protection. A budget price for such a fence is estimated to be in the region of LE 6,000.

Dr Nicholas Warner

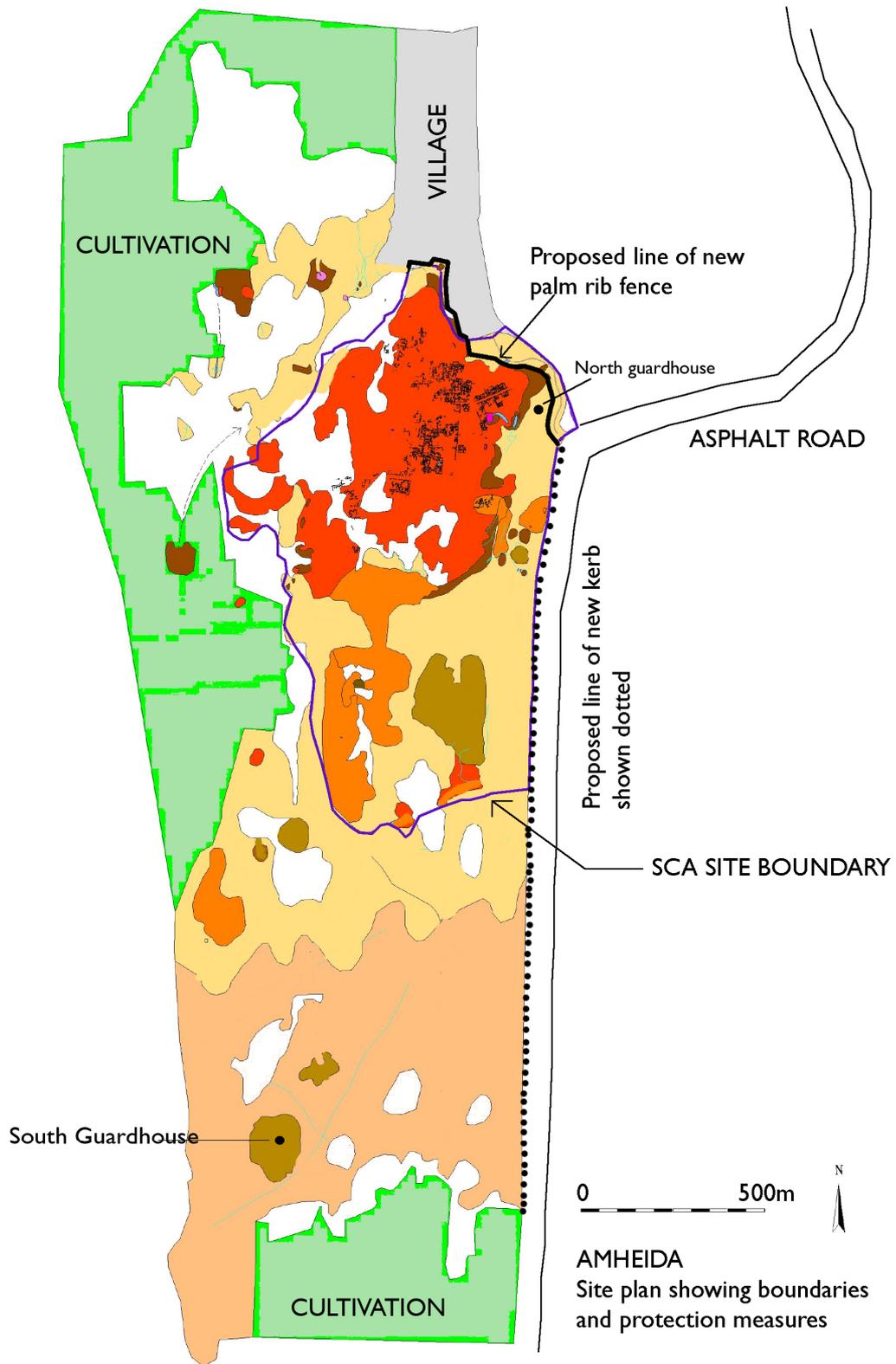


Figure 7