

# THE DANISH - GERMAN JARASH NORTH-WEST QUARTER PROJECT 2013: PRELIMINARY FIELD REPORT

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## Introduction

Between 21 July and 30 August, 2013, the Danish - German team from the University of Aarhus, Denmark and Ruhr - Universität Bochum, Germany conducted its third season in the north-west quarter of the ancient city of Gerasa, modern Jarash, in northern Jordan. On the basis of the results of the 2011 and 2012 seasons, which included architectural, geodetic and geophysical surveys and excavation of three trenches, it was decided to lay out five additional trenches in the 2013 season.<sup>1</sup> These were chosen to gain further insight into the settlement history of the north-west quarter of the city, which is the highest area within the ancient city walls and which since 2011 has been the focus of the team's research in Jarash. The project is directed by Achim Lichtenberger (Ruhr - Universität Bochum) and Rubina Raja (Aarhus University) and funded by the Carlsberg Foundation, Deutsche Forschungsgemeinschaft (DFG) and H. P. Hjerl Hansen Mindefondet for Dansk Palæstinaforskning.<sup>2</sup> We would like to thank the acting Director General of the Department of Antiquities, Fares A. K. Hmoud for the permission to undertake the 2013 season and the Director of the Department of Antiquities

in Jarash, Dr Rafe Harahsheh for his support and the support of his staff during our season. Furthermore thanks go to our representatives Dr Mohamed Abu Aboleh and Adnan Mujalli, who were an invaluable help during our season.

The principal aim of the season was to gain a more detailed insight into the settlement history of the hill. Additional aims were to extend the geodetic net of fixed points for further investigations and to map the remains of a trench excavated in 1982.<sup>3</sup> In total, five trenches D-H (**Fig. 1**) were laid out on top of the hill on its northern slope and in the large cistern on the southern slope of the hill.

Trenches D and E were excavated in order to investigate the Islamic period hamlet on top of the hill. Trench D was located at the east corner of the so-called 'Ionic Building'<sup>4</sup> to better understand the development of this prominent structure in the north-west quarter. Trench E was laid out some 30 m south-east of Trench D over the west corner of a Mamluk building to clarify broad north - south anomalies displayed in the magnetogram of 2011 and also to clarify the relationship between the so-called 'Ionic Building', the large terrace south-east of it and the buildings situated north of the terrace.<sup>5</sup>

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1. See Lichtenberger and Raja 2012, Kalaitzoglou *et al.* 2012 for the 2011 season and Kalaitzoglou, Lichtenberger and Raja 2013 and Lichtenberger, Raja and Sørensen 2013 for the 2012 season.

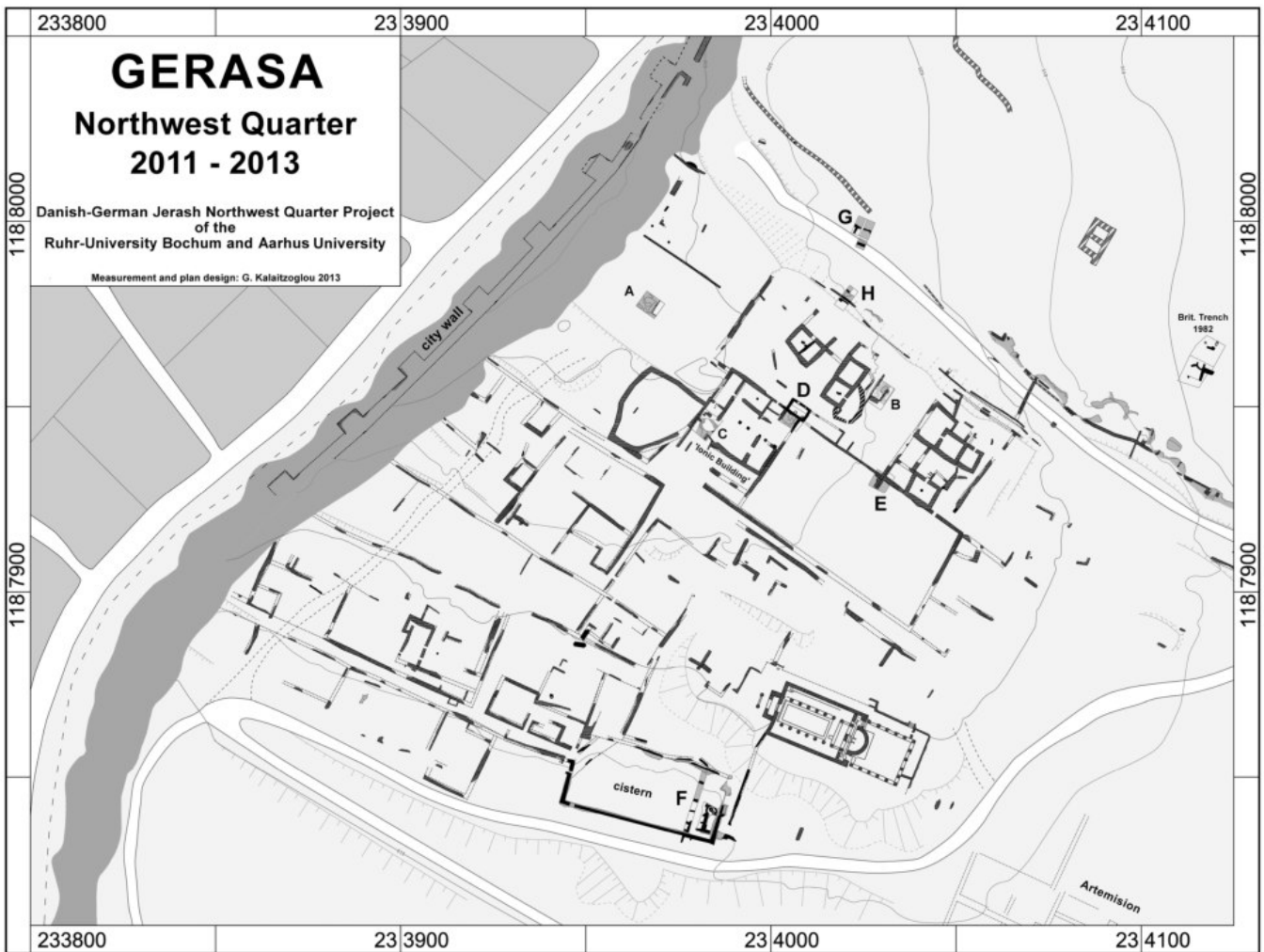
2. The team consisted of the two directors Achim Lichtenberger and Rubina Raja, head of the field team Georg Kalaitzoglou, head of the registration team Annette Højen Sørensen, architect Jens Christian Pinborg, conservator Helle Strehle, photographer Michael Benecke and the field and registration team: Dorothea Csitneki, Philip Ebeling, Eicke Granser, Anne Ditte Koustrup Høj, Hans-Peter Klossek, Signe Krag, Signe Bruun Kristensen, Nadia Schmidt

Larsen, Anders Meander, Anders Olesen, Cathrin Pogoda, Anne Riedel and Stefan Riedel. Holger Schwarzer (Münster University) analyzed all glass finds from the 2012 and 2013 seasons and the geologist Alf Lindroos (Åbo University, Finland) took mortar samples for Accelerator Mass Spectrometry (AMS) analysis.

3. Clark and Bowsher 1986. This trench was laid out in order to trace the course of the North Decumanus.

4. The name derives from spolia of Ionic capitals being incorporated within this building.

5. For the geophysical results see Kalaitzoglou *et al.* 2012.

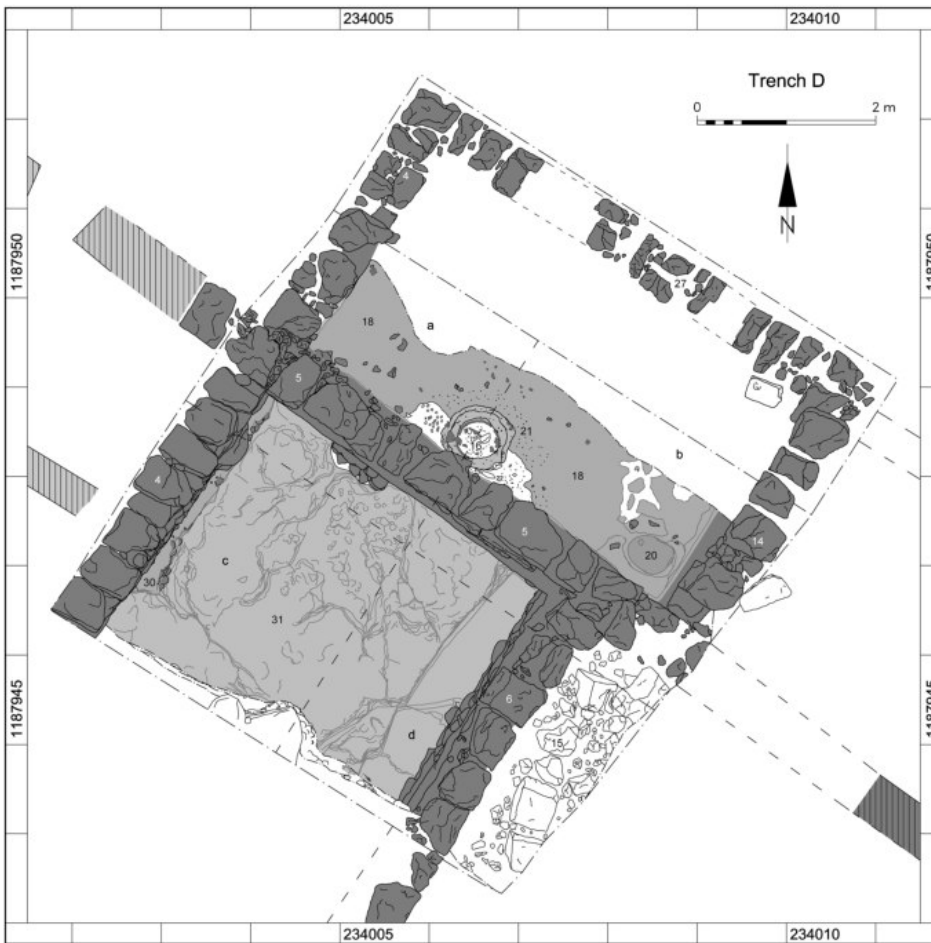


1. Plan of the north-west quarter with Trenches A - C (2012) and D - H (2013).

Trench F was located in the large rectangular cistern on the southern slope of the hill. The aims of this trench and an additional sondage were to investigate the original use and later re-use of the cistern. Trench G was laid out on the northern slope of the hill, on the line of the presumed course of the North Decumanus, in order to examine the urban development of the north-west quarter and the North Decumanus within the urban system of Jarash. On the northern ridge of the hill Trench H was laid out south of Trench G in order to clarify the relationship between the built structures on the hill, the partly visible terracing of the sloping terrain, and the bedrock.

In 2013 a total area of 153 m<sup>2</sup> were investigated in detail and of this 137 m<sup>2</sup> were excavated to bedrock or until the oldest structures were reached.

This was in line with the overall objective of the project which was to understand the chronological development of the area by reaching bedrock or virgin soil without removing ancient built structures. All trenches were backfilled at the end of the season. Although the relative chronology of the trenches was reconstructed, in most cases a refined absolute dating of the various features will be subject to further ceramic and artifact studies. The majority of the finds point to an overall Byzantine to Mamluk date. Nonetheless, a greater proportion of artifacts recovered in the 2013 season than in the 2012 season can be related to earlier periods (Hellenistic to Roman). A representative sample of the finds from the 2013 season is published in this volume of ADAJ (see Lichtenberger, Raja and Sørensen).



2. Trench D: excavated structures.

## Trench D

### General Characteristics

Trench D was laid out over the east corner of the so-called ‘Ionic Building’, measuring c. 5 m x 5 m and later extended to the north and east to c. 7.3 m x 6 m (Fig. 2).<sup>6</sup> An area measuring 23.25 m<sup>2</sup> was excavated to the deepest levels, 3.5 m<sup>2</sup> were investigated and documented at a superficial level. The chronological sequence in this area begins with quarrying traces of an indeterminate date (Phase 1) and with houses dating to the Byzantine to Early Islamic periods (Phase 2), followed by an extensive re-use and re-building in the Ayyubid - Mamluk periods (Phase 3).

The excavation of the west corner in 2012 (Trench C) demonstrated that the ‘Ionic Building’ was a roughly rectangular courtyard house of c.

465 m<sup>2</sup> constructed in Ayyubid - Mamluk times over buildings and other structures such as a cave - cistern dating to the Byzantine and Early Islamic periods. The main objective of Trench D was to further clarify the chronology and function of the complex. Furthermore it was an aim to understand the relationship between the older structures and a long east - west wall that is traceable on the surface for 75 m and seems to be part of the overall extensive terracing system, which characterizes the north-west quarter.

During excavation it became clear that the north wall (ev. 5)<sup>7</sup> did not stop at the east corner of the Ayyubid - Mamluk phase of the ‘Ionic Building’ but continued beyond it towards the east. Excavation showed that the Early Islamic phase, extended north of the later perimeter wall of the Ayyubid - Mamluk house. The

6. The trench supervisor was Stefan Riedel.

7. Instead of ‘locus’ or ‘unit’ we use the term ‘evidence’ to label archaeological complexes, assemblages and also finds *in situ*.

walls, including the north wall (ev. 27) of the earlier north room, were documented but the room itself was only excavated in the southern part adjacent to the 'Ionic Building'. The north room, which is fairly narrow, measured 4.75 m in length and 2.80 m in width, in total c. 13 m<sup>2</sup>. In the earlier south room the southern wall could not be traced. Only a poorly preserved wall, visible on the surface, outside the trench's west corner might have belonged to this older construction phase. Thus the room would have measured 3.9 m in width and about 4 m to 4.5 m in length, of which 3.25 m were excavated.

### *Phases 1 and 2*

The first traces of human activity in Trench D are the walls and faces of a surface stone quarry uncovered only in the south room (Phase 1, ev. 31 in Sectors C and D). The remains are more distinct than in the Trenches A and C, excavated in the 2012 season, where most often carved grooves and tool marks indicated quarrying activity. In Trench D quarry walls about 0.3 m to 0.5 m high and a stepped surface attest a quarry pit. The bedrock slopes towards the east, or was worked in steps in eastern direction. All later structures (Phases 2 and 3) were built over this stone quarry, and the north room (Phase 2) was set into a corner of the quarry walls, which gave the room its orientation, while the south room (Phase 2) was built over a 0.4 m to 0.8 m higher, and mostly unworked, part of the bedrock sloping from west to east.

The east - west wall (ev. 5) was in its first phase (Phase 2) erected on top of one of these quarry walls. It is obvious that the western wall (ev. 4) belongs to the same construction phase, because it is integrated with the east - west wall (ev. 5) and also forms the western boundary of the north and the south rooms. The perimeter of the south room (to the east) was formed by the

wall (ev. 6), which runs against the east - west wall (ev. 5). However, it seems to have continued in a southerly direction for approximately 17 m beyond the trench limits, visible on the surface. The boundaries of the north room are the east - west wall (ev. 5) to the south, the wall (ev. 4) towards the west, the wall (ev. 27) to the north and towards the east the wall (ev. 14). All walls extending to the north are bonded at the corners and therefore were part of one construction phase. The east wall (ev. 14) was set against the wall (ev. 5) but not in line with the east wall of the south room, thus forming a slightly broader north room. Although both rooms belong to the same construction phase and are linked by the east - west wall (ev. 5) and the west wall (ev. 4) the plan of this oldest building complex is not strictly symmetrical. As far as we can see there was no access from one room to the other, neither through a door nor by a path, showing that we are dealing with independent architectural units, which were situated on different floor levels.

The masonry of the walls of the earliest buildings (Phase 2) has characteristic features, which are typical for this phase.<sup>8</sup> Unlike two-face masonry, larger blocks were used only on the outside faces, and on the inside rubble was set into clay, which was subsequently covered by plaster.

### North Room (Fig. 3)

This room was found in an undisturbed condition. The long rectangular room, measuring c.13 m<sup>2</sup>, was accessible from the north only through a 0.79 m wide door in the western part of the north wall (ev. 27). In the eastern part of the same wall a small (0.36 m wide) window gave light. On the inner wall faces and the inner sides of the door and window a smooth whitish plaster was partly preserved. The floor (ev. 18) was made of mortar and was unevenly levelled (between 624.68 m asl<sup>9</sup> and

8. The same kind of masonry was used for the earliest walls in Trench E and for the earliest house excavated 2012 in Trench C. A similar masonry was used for Building B of Stratum V in the Umayyad Citadel of Amman, see Ahn 2010: 20-22 (giving a date for Stratum V between 735 ± 10

years and the earthquake of 747-8 [correct 749 AD]). The Early Islamic wall W550 excavated in square D30 during the trial excavation at the railroad in Ramla shows identical features to ours. See Haddad 2010 with fig. 7 and 10.

9. 'Above sea level' refers to the Jordan geodetic net.



3. Trench D: installation in the north room (view from north).

624.77 m asl). In the south-east corner a small basin (ev. 20) was sunk 0.3 - 0.35 m into the floor and lined with mortar. The rim of the basin was raised slightly above floor level and it had two inflows, one from the west and one from the north. In front of the middle of the south wall (ev. 5) a round oven was excavated in situ (ev. 21). It was c. 0.25 m high and the upper part (neck to shoulder) was constructed of a large storage jar (0.47 m diameter) which was set upside down into a round clay structure (c. 0.8 m diameter).<sup>10</sup> The clay was hardened by fire and the hearth was filled with ash and charcoal (ev. 16). The hearth was either used for cooking or was preheated for baking bread.<sup>11</sup> On the eastern side, between the hearth and the south wall a large iron knife (cat. no. 133, cf. report by Lichtenberger, Raja and Sørensen, this volume) was found in situ partly covered by the oven clay and the ash. The installations and the sparse inventory on the floor suggest that the north room functioned as a kitchen.

On the mortar floor (ev. 18) some coins but no intact vessels or greater amounts of broken pottery were found. The coins range from the mid-3rd to the 5th century AD but the associated pottery dates from the Late Byzantine to Early Umayyad period, giving a more realistic date for

the structure.<sup>12</sup> The room was largely filled up with debris (ev. 13, 17, 19) containing not only stones of the collapsed walls and a homogeneous yellowish clayish soil but also large quantities of pot sherds, some Byzantine glass finds (a goblet foot, cat. no. 170, cf. report by Lichtenberger, Raja and Sørensen, this volume) and parts of broken roof tiles. However, the most recent finds date to the Umayyad period. Also, the basin was filled with the same material but contained two Roman coins, a bronze pin, a serpentinite spindle whorl, some pottery sherds, a fragment of a roof tile, two iron nails and two non-diagnostic iron objects, an iron key (cat. no. 132, cf. report by Lichtenberger, Raja and Sørensen, this volume) and two rounded stones. The preserved height of the walls (the south wall stands up to 2.9 m) and the large amount of homogenous fill indicate that this room originally had more than one storey and that the debris derives from the collapse of an upper storey. The fact that some sherds in the upper part of the debris are of Mamluk date and that some may date to the Abbasid period (ev. 13 and cat. no. 99 for example, cf. report by Lichtenberger, Raja and Sørensen, this volume) indicate a disturbance of this layer. The finds in the lower part of the debris cannot be dated later than the Umayyad period. Neither the walls nor the plaster on the walls and the floor show traces of repairs or restorations. Hence the construction of the room most likely took place not long before its destruction.

### South Room

No entrance to the south room (which extended over a minimum of 13.40 m<sup>2</sup>) was found and owing to later disturbances (construction of Phase 3) no additional installations were preserved. A door might have been situated in the unexcavated south wall. Inside the room, remains of a plastered floor (ev. 30) were found,

10. As part of an original structure the jar was kept in situ.

11. This kind of clay oven belongs to the tabun oven types that were used through history not only for baking bread but also for cooking. For tabun ovens in general see McQuitty 1984

and Obeidat 2010.

12. Cf. for the problem of the discrepancy between the date suggested by coin finds and the date suggested by pottery: Lichtenberger, Raja and Sørensen (in this volume).

preserved only immediately adjacent to the west wall (ev. 4). This floor lay at an average of 625.54 m asl over a brownish clay (ev. 32) similar to the residual clay, which earlier had been filled in to cover the sloping bedrock (ev. 32) and to provide a more or less levelled ground. In the west corner of the trench the floor runs against the bedrock (625.76 m asl), which indicates that the bedrock was unworked and an uneven surface existed in the south room. It is clear that the floor belongs to the oldest building phase and that it was therefore contemporary with the floor of the north room. However, the difference (c. 0.8 m asl) between the floors reinforces the conclusion that there are different building phases and structures on either side of the east - west wall (ev. 5). No further archaeological features belonging to this phase (Phase 2) were found in the south room as the extremely invasive Ayyubid - Mamluk reconstruction included a razing of almost the entire area to bedrock.

*Phase 3*

Unlike the results of the 2012 season, there were no hints of a second Early Islamic building phase in Trench D which could have been contemporary with the construction and use of the cistern excavated in Trench C. Thus in this part of the complex the Ayyubid - Mamluk phase follows on stratigraphically from the Early Islamic phase. For the construction of the Ayyubid - Mamluk courtyard house the east - west wall (ev. 5) was used as the northern boundary of the entire complex. The east wall (ev. 6) formed its eastern limit and the southern part of the older west wall (ev. 4) was also reused. This is evident by a thinner wall visible on the surface, which was buin the west wall (ev. 4) and another surface wall situated 4 m west of it. Thus the older walls were reused to form the east corner of the new building complex and forming a room on top of the earlier south room (Phase 2). The area of the north room was

not integrated into the ‘Ionic Building’ and left untouched. On top of the debris (ev. 13) of the north room (Phase 2) the collapse (ev. 7) of the ‘Ionic Building’s’ north wall (ev. 5) was found mixed with Ayyubid - Mamluk finds. This points to the conclusion that the terrain north of the Ayyubid - Mamluk house was much higher in Phase 3 than in former times (Phase 2).

When this part of the building was constructed in the Ayyubid - Mamluk periods the older floor (ev. 30, Phase 2) was removed and razed to bedrock (**Fig. 4**). Thereafter it was deliberately refilled to a much higher level. On top of the refilled material (ev. 25, 26) and a fill layer of limestone gravel (ev. 24) a clay floor was laid out (ev. 23 and 29) c. 0.5 m above the older mortar floor.<sup>13</sup> This is confirmed by pieces of red-painted wall plaster that had fallen on this level (bottom of ev. 10 and 11). Pieces of multi-colored but mostly red-painted plaster were found still in situ sticking to all three walls. Pottery was found scattered sparsely on the floor level, but the decay deposits inside (ev. 10, 11, 8, 9 and 2)<sup>14</sup> and outside the room (ev. 7 and 15) were interspersed with roof tile fragments, pottery and some small finds. The youngest datable artifacts stem from the Mamluk period. In ev. 2, the upper part of the deposit, two handmade miniature-vessels were



4. Trench D: the Ayyubid - Mamluk floor (ev. 23) in the south room (view from south).

13. The average elevation of the surface is 626.03 m asl.

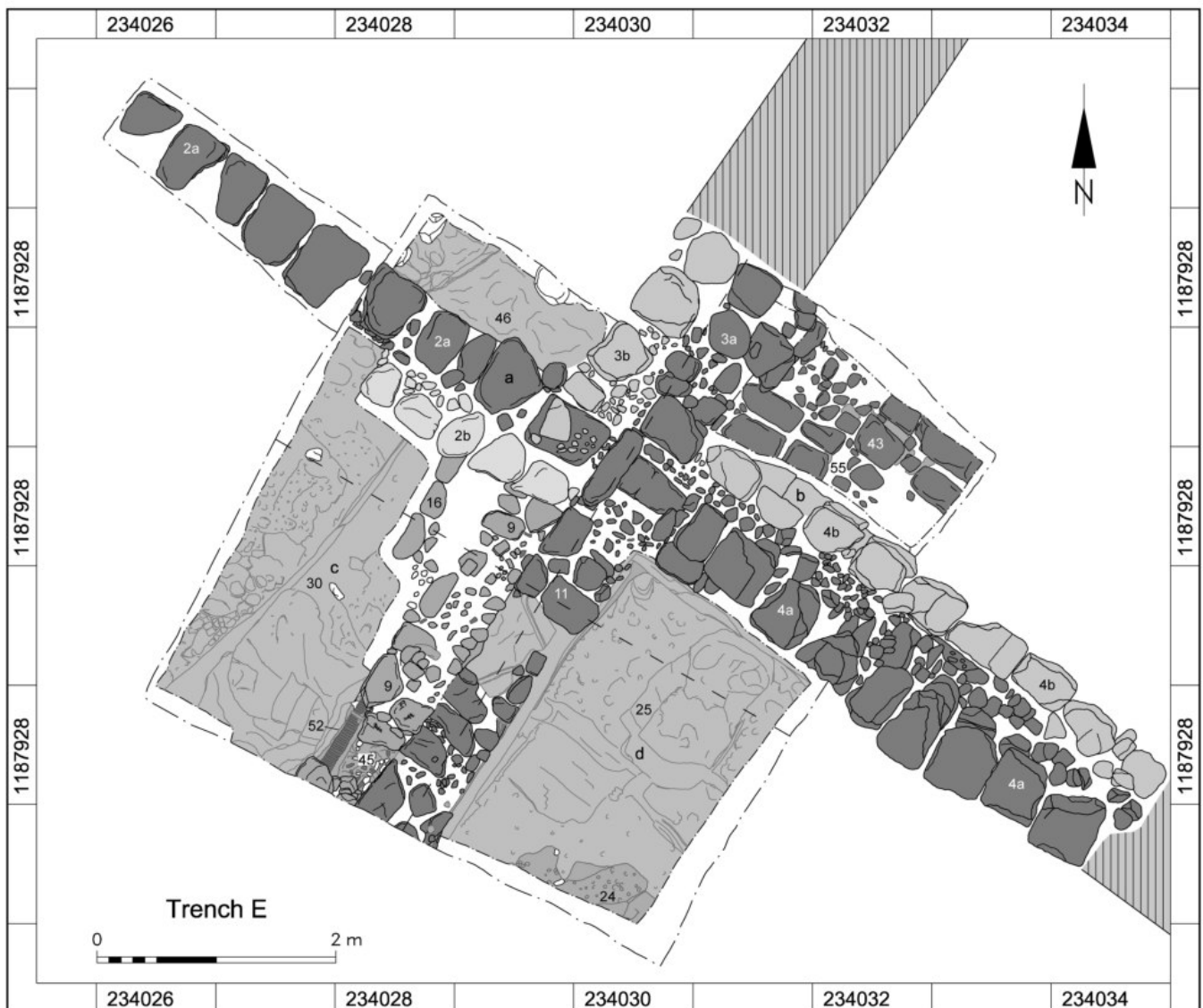
14. The evidences are given in the order from the deepest to highest position above the clay floor.

found, one with a lid (cat. no 117-118, cf. report by Lichtenberger, Raja and Sørensen, this volume). Worth mentioning are Ayyubid - Mamluk pottery sherds found in ev. 9 which join with sherds from Trench E (cat. no. 37, cf. report by Lichtenberger, Raja and Sørensen in this volume). In the north-west corner of the room the torso of an almost life-size marble statue of the Artemis Rospigliosi-type (cat. no. 146, cf. report by Lichtenberger, Raja and Sørensen, this volume) was found in the collapse. It had been dressed and reused as building material in the upper part of the north or west wall.

### Trench E

#### *General Characteristics*

Trench E was laid out across the south-west corner of an Ayyubid - Mamluk house complex, north of the large courtyard and east of the ‘Ionic Building’, measuring c. 5 m x 5 m (**Figs. 5 and 6**).<sup>15</sup> Later, the tops of the walls around the trench were cleaned and documented resulting in a sounding area of 29 m<sup>2</sup> and an excavated area of c. 20.5 m<sup>2</sup>. Bedrock was reached in almost all parts of the trench, except in the north-eastern sector, where excavation was stopped on a paved surface.



5. Trench E: excavated structures

15. Trench supervisor was Cathrin Pogoda.

The main objective of excavating Trench E was to clarify the possible relation between the 'Ionic Building' and the Ayyubid - Mamluk complex. Furthermore, the date and structural context of the east - west wall (ev. 5 in Trench D) and tracing one of the c. 5 m broad, roughly north - south anomalies detected in the 2011 season in the geomagnetic survey were objectives to be clarified.<sup>16</sup> Four main phases were encountered in the trench and the chronological sequence established was as follows; Phase 1 - the first traces of human activity are the quarry marks which cannot be dated absolutely, Phase 2 - a north - south clay water pressure pipe, Phase 3 - several walls dating to the Byzantine to Umayyad periods with several subphases, and Phase 4 - Ayyubid - Mamluk structures belonging to a house complex.

Trenches D and E are related to each other, which is demonstrated by the nature of the evidence encountered. In addition to another large Ayyubid - Mamluk building the main corresponding feature was the continuation of the long east - west wall (Phase 3, ev. 5, but labelled in Trench E with evs 2 and 4a). This wall links the first traceable building structures (Phase 3 in Trench D) in both trenches over a distance of 24 m and thus allows the conclusion that in this phase (Phase 2 in Trench D) not only free standing isolated houses were erected on top of the hill but an extensive complex was planned and realized. The pressure pipe attests to a well-planned water supply system in this area.

### *Phase 1*

The worked bedrock of a quarry was reached in the south-eastern part of the trench, c. 1.20 to 1.30 m below the surface (ev. 25 in Sector D, ev. 30 in Sector C and ev. 46 in Sector A) (**Fig. 6**). In Sector A the trench was not excavated down to the rock surface as a paved floor dating to the pre-Ayyubid - Mamluk period was found and preserved. Visible are an east - west quarry

wall and another quarry wall to the south (0.6 m wide). Later in Phase 3 the walls, evs 4a and 11, were constructed on top of these quarry walls. The latter quarry wall (under ev. 11) was cut on both sides and preserved to a maximum height of 0.6 m. As the difference in altitude between the west and east sides of this quarry wall is between 0.55 m and 0.6 m, stones up to a size of c. 0.5 m could have been quarried here. In Trench D the quarry wall under wall ev. 4 runs roughly parallel to the north - south oriented quarry wall in Trench E (ev. 11). Thus it can be assumed that organized quarrying activity took place on a large scale in this part of the north-west quarter. With an altitude of 622.26 m asl in the north and 621.96 m asl in the south the rock surface slopes approximately 10% towards south. The difference in altitude between the quarry surfaces measured more than 2.50 m from Trench D to Trench E and approximately 6.50 m from Trench A (2012 season) to Trench E.

Although a natural hole in the bedrock (ev. 29) in the south of Sector C was carefully excavated to explore whether this could contain possible earlier material an absolute dating of the quarry in Trench E was not possible, as the hole only yielded small fragments of unidentifiable, worn pottery.



6. Trench E: overview from south.

16. Cf. Kalaitzoglou *et al.* 2012.

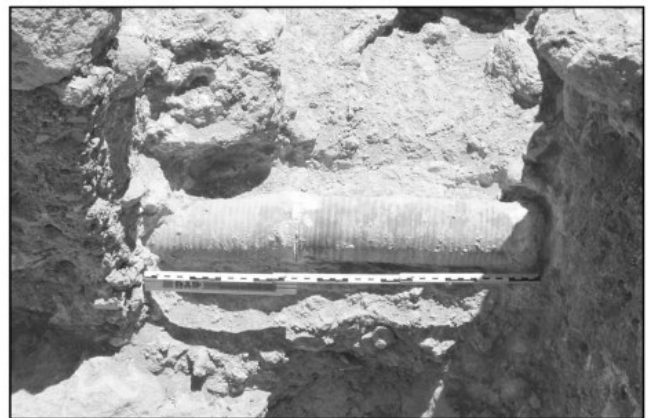


*Phase 2*

After the use of the area as a quarry, a north - south pressure clay water pipe was constructed on the west side of the quarry wall (ev. 11) (Figs. 7 and 8). It consisted of ribbed pipe segments with a length of c. 0.36 m and a diameter of 10.5 cm at both ends. They were connected with mortar of a very strong consistency. The pipe was also traced in the northern (ev. 53) as well as the southern (ev. 52) part of the trench. The pipe was situated on top of a 10 cm-thick fill (ev. 28 and ev. 50), which lay directly on bedrock and contained finds from Roman to possibly Byzantine times. The pipe was surrounded by another fill layer (ev. 47) and a mortar layer (ev. 57) on top of the pipe to protect it. In ev. 47, Roman and Byzantine pottery dominated the artifacts. This assemblage was attached to the quarry wall (ev. 11) with mortar. Another later wall was constructed on top of the pipe and the quarry wall (ev. 11). The sequence in the north-western corner of Sector A shows that the clay pipe was constructed earlier than the walls of Phase 3. The surface of the clay water pipe and mortar construction constituted a floor level, which was older than the east - west wall (ev. 2) that connected the structures in Trench E with those in Trench D. As the northern face of this wall (ev. 2) was constructed on top of a 0.2 m earth fill (ev. 37 and ev. 41) above this surface it can be concluded that when it was constructed it respected the pre-existing water pipe.<sup>17</sup> Although the northern face of the wall ev. 2 was built on this fill, the southern face made of rubble was built on the rock. This shows that the wall ev. 2 was initially planned on bedrock and the heavy stones of the northern face were founded intentionally on a higher level above the water pipe. Although it was impossible to excavate the part of the southern wall face of ev. 2, which runs above the water pipe, without destroying other walls, it may be concluded that it was probably



7. Trench E: clay water pipe (evs 52 and 53) crossing the trench (view from north-west).



8. Trench E: clay water pipe (ev. 52) (view from west).

constructed over the water pipe (ev. 53) or at least left a gap for it. The 'floor' level belonging to the water pipe was destroyed and removed in most parts by the building activities of Phase 3. Parts of it and of the foundation fill (ev. 28) were preserved under later fill layers<sup>18</sup> only in Sector C, west of the southern part of the water pipe (ev. 52), as this area was not built over. The water pipe seems to run in a southerly direction against the natural slope.<sup>19</sup> A slightly disproportionate incline is not unusual for pressure pipes; later earthquakes could also have caused changes in the general inclination of the terrain. The dating of the water pipe has to await final analysis of the finds in the construction fills (ev. 28, ev. 47 and ev. 50) and the AMS-dating of the mortar samples taken

17. It is impossible to decide if the water pipe was still in use, but this would explain its protection.

18. Evs 13 and 27.

19. The difference in altitude between the northern and southern part measures 0.29 m in a distance of 4.75 m.

from the segment fitting of the water pipe ev. 52. The ribbed clay pipe is not datable with sufficient precision as these types of pipe are attested from the Early Roman period until well into Byzantine and Early Islamic periods.<sup>20</sup>

### *Phase 3*

The walls of this phase formed a cross in the trench, with its centre below the south-west corner of the Ayyubid - Mamluk building complex. The wall ev. 2 originates in the west and connects the structures in Trench D with those in Trench E. Only its southern face rests on bedrock. The continuation of wall ev. 2 in an easterly direction is wall 4a. This wall can be traced over a distance of 4.5 m, of which 2.1 m were cleaned and excavated. The excavated part shows that the wall was erected on a quarry wall. The wall ev. 11 led from the south to the point of the wall intersection and continued as wall ev. 3a in a northerly direction for at least 4.6 m, 2.5 m of which were excavated. Whilst the southern part (ev. 11) was built on a quarry wall, the northern part (ev. 3a) seems to have been built on bedrock. This shows that the stone quarry formed an angle to the south-east between two quarry walls, which gave the orientation for the constructions of Phase 3. The walls of this phase formed four rectangular spaces with the center above the corner of this angle.

Doorways or connecting passages between these four units were not found in Trench E. This is the same situation as discovered in Trench D. Another comparable feature to Trench D is the difference in altitude between the floors of the rooms. This would also have hindered or prevented communication between them. In the south-east room the floor lay c. 1.1 m deeper than north of the wall ev. 4a and the later floor is situated c. 1.0 m higher as in the area west of wall ev. 3.<sup>21</sup>

The walls are built in the same technique

as those in Trench D. In Trench E, however, the inner wall faces were constructed of rubble. It suggests a change in the building technique as well as building orientation used respectively in Trenches D and E.

### South-East Room

Following the orientation of the stone quarry was a room that was excavated in the angle opening to the south-east, the walls of which (ev. 4a and ev. 11) rested on the quarry walls. The inner wall face and the bedrock were lined with plaster (ev. 40). The floor was mortared (ev. 24) and was only preserved in the south-eastern corner of the trench. It lay on a thin layer of brownish clay (ev. 26) that functioned as a type of foundation and to level the uneven rock surface (ev. 25). In the remaining parts of the room no mortar floor was found, only a layer of yellowish clay (ev. 20). This layer is either a later beaten earth floor or part of debris similar to those unearthed in the north room of Trench D. Given that wall collapse is missing in the south-east room and because it was intentionally refilled the collapse deposits must have been removed in later times.

### So-called North-East Room

In the northern part of Sector B it was only possible to excavate a limited area of approximately 2.6 m<sup>2</sup> in the angle between the walls ev. 4a and ev. 3a. The stratigraphy in this area was partly disturbed by illicit digging and the collapse of heavy wall stones, but it was possible to identify two floors at different levels belonging to two different building phases. In the deepest level (c. 1.2 m to 1.3 m below the surface), a stone pavement (ev. 43) was found. The stone slabs were embedded into clay and mortar (ev. 55). A pavement was constructed against walls ev. 4a and ev. 3 and was covered by a thin layer of silty soil (ev. 42) which seems

20. Similar types of ribbed clay pipes were used in the Paneas aqueduct which was in use from Roman to Late Roman times (Hartal 2009: 37-38 [with table 2.8. for measurements] and pp. 105-106 [summary

of the dating]).

21. The approximate elevations of the floor surfaces are 621.90 m asl in Sector D, 623.00 m asl in Sector A and 622.05 m asl also in Sector A.

to be a natural slump. This soil contained some pottery of Byzantine to Early Islamic date but no remains of wall plaster was found, which suggests that ev. 43 was the pavement of an open space or a lane situated north of the south-east room.

#### North-West Room

The area excavated in Sector A, north of wall ev. 2, measured only 1.3 m<sup>2</sup>. For this reason only preliminary conclusions about the layout of this room are possible. As already mentioned wall ev. 2 was erected on a fill (ev. 37 and ev. 41) to respect the water pipe. Above this fill a layer of small stones (ev. 36) was laid out as a foundation for a thin mortar floor (ev. 35). Both layers abut the southern wall ev. 2. Although no plaster was found on the northern face of wall ev. 2 and the western face of wall ev. 3 could not be excavated, the mortar floor ev. 35 suggests that the area was an interior space in Sector A. A collapse of debris in Phase 3 could not be traced in this room. The latest finds from the floor foundation (ev. 36) date from the Byzantine period to Early Islamic times.

#### So-Called South-West Room

West of wall ev. 11 and south of wall ev. 2, an open space or courtyard appears to have been situated west of the south-east room as no traces of a floor or installation were found. The bedrock here was covered by layers of fill up to the modern surface. Of these, the lowest originate from the construction of the water pipe. The fill layers above them are rich in ceramics (ev. 13 and ev. 27) but they can hardly be distinguished from one another. They abut the water pipe (ev. 52, Phase 2) and southern side of wall ev. 2 (Phase 3), which demonstrates that this area was filled up to a level c. 20 cm above the water pipe in the third phase. Sometime later, two wall-like structures were erected on these fill layers. These structures are preserved to a height of one course only. Structure ev. 9 has a width of 0.65

m and was constructed to the west against the older wall ev. 11. It runs above the water pipe in south - north direction against the older wall ev. 2. Mortar was used as a binding agent at its base and between the larger stones. Another narrow (c. 20 cm) row of stones (ev. 16) was laid on the same level parallel to the northern part of the wall structure ev. 9. This structure is built without mortar but also seems to run against wall ev. 2. The gap between both structures was filled with soil and small stones. Whereas the wall-like structure ev. 9 could have served as additional protection for the water pipe, the structure designated ev. 16, cannot be explained in this way. Both structures must belong to Phase 3 or a later building alteration because they were covered by the fill layer ev. 10, which was found covering all of the area south of the Ayyubid - Mamluk building complex, and the collapse<sup>22</sup> of the Ayyubid - Mamluk walls was found lying on top of it. It is difficult to establish the function of another wall (ev. 2b), which is 45 cm thick and built from the south for a length of c. 1.5 m against the older wall ev. 2. This wall ran in an easterly direction over the structures ev. 16 and ev. 9 and stopped at the older wall ev. 11. Along its course the wall slopes distinctly. As it is neither a stairway nor a wall collapse an interpretation must remain open. Nevertheless it is clear that wall ev. 2b must be later than both the wall-like structures ev. 9 and ev. 16 because it was built on the fill layer ev. 27, which runs against these structures.

#### *Phase 4*

In Trench E only the south-west corner of the Ayyubid - Mamluk house complex was investigated. The construction of this building displays an effort similar to that undertaken for the construction of the 'Ionic Building'. Of the walls belonging to Phase 3 only the southern wall ev. 4a and north - south wall ev. 3a were reused. This means that the south-east corner of this

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22. Trench H: excavated structures

later building was situated above the intersection point of the older cross wall. It appears that the older walls were not strong enough to offer full support and therefore the southern and the western walls were supported by an additional wall face (Fig. 9). Against the southern wall a 30 - 40 cm thick wall face (ev. 4b) was constructed in the interior of the building. Its foundation fill (ev. 38) was laid over the remains of Phase 3. Above this foundation a simple clay floor (ev. 22) was constructed and was later covered by the collapse of the younger building (ev. 5, ev. 17 and ev. 21). The simple floor and absence of wall plaster suggest that it was a courtyard or a stable, rather than an internal room. This room was situated in the south-west corner of the Ayyubid - Mamluk building. The outside of the western building limits was strengthened by a wall face (ev. 3b) of c. 60 cm thickness. It was not possible to excavate the western wall face completely but the sequence of deposits in this sector proves that the exterior area had been refilled (ev. 31) and protected by a dense layer of stone packing (ev. 12). The top of this packing probably corresponds to the street level outside the building to the west. This is indicated by the wall debris which more or less correlates with the modern surface that scarcely covered the east - west wall ev. 2. An apparently large-



9. Trench E Sector B: foundation fill (ev. 38) under Ayyubid - Mamluk wall ev. 4b (view from north).

scale levelling and filling event had taken place south of the building complex as well. Both the unused area in the south-western part of the trench and the south-east room (ev. 10, ev. 14, ev. 18 and ev. 19) were deliberately filled up to the preserved height of the older walls (Phase 3). Noteworthy in particular is the deliberate fill in the south-east room (ev. 18 and ev. 19) which is remarkably deep, directly above the clay layer (ev. 20) and contains large amounts of pottery. The composition and condition of the pottery is similar to the Early Byzantine to Early Islamic pottery found in 2012 in Trench B. As this fill was rich in pottery and was concentrated at the east baulk of Trench E, it is likely that it extended in an easterly direction. West of the older walls, ev. 11 and ev. 9, a corresponding concentration of pottery is absent, although large numbers of mixed sherds were found. Above these fill layers the collapse of the Ayyubid - Mamluk house was found.<sup>23</sup> This kind of constructional effort outside the building complex can only be explained if the large courtyard measuring 50 m x 28 m and extending south of the Ayyubid - Mamluk building complex was built in this phase. To achieve this it would have been necessary to level the older building structures and to fill in the terrain up to the requisite level. A construction project like this could only have been realized through greater than household-level organisation. Partners in such a project could have been the residents of the 'Ionic Building' that limits the court to the west. Not only were both buildings linked by the reuse of the same older walls and by their positioning at the large courtyard, but also by a join found between potsherds (cat. no. 37) in the Ayyubid - Mamluk debris in Trench D (ev. 9) and Trench E (ev. 17).

## Trench F

### *General Outline and Structures*

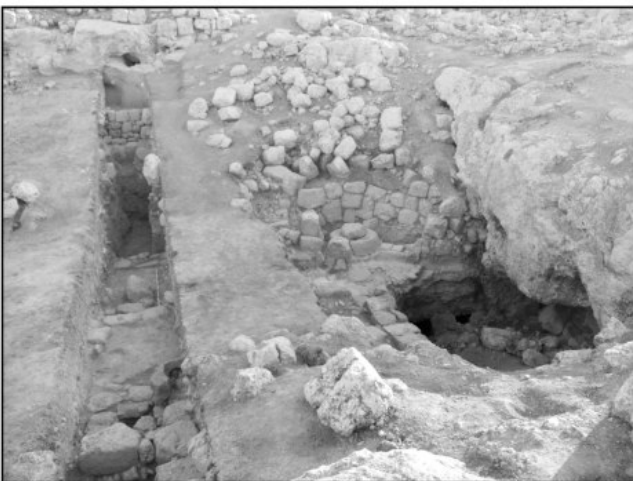
Trench F was positioned to investigate the large rectangular cistern on the south slope of

23. The evidences in stratigraphic order are evs 48, 49, 5,

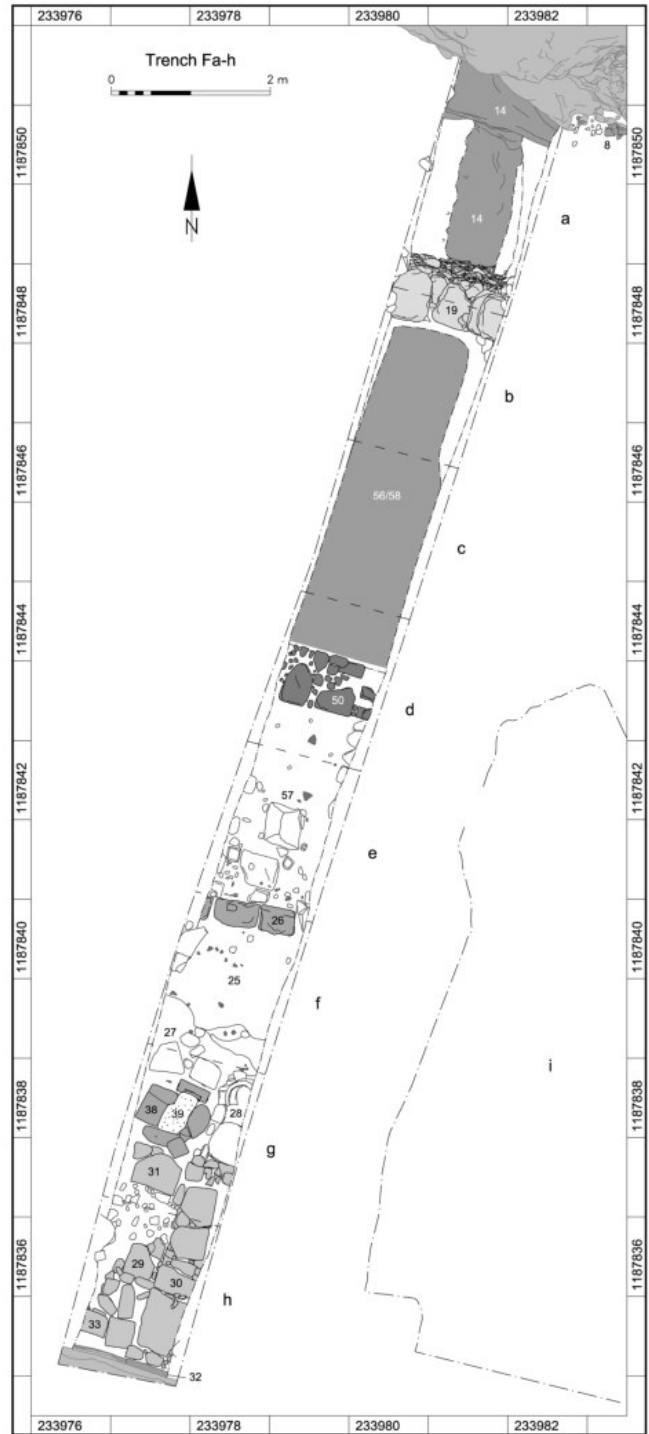
17, 21(partly), 6, 8, 33 and 32.

the hill.<sup>24</sup> As it is the largest water reservoir inside the walls of ancient Gerasa and is situated high above the valley in the north-west quarter this structure is of special importance for understanding the water supply of the city. A trial trench<sup>25</sup> 17 m long and 1.5 m wide (c. 25.2 m<sup>2</sup>) was laid out in the eastern part of the cistern from north to south to gain insight into the building technique (Figs.10, 11, 12 and 15). One aim was to clarify whether a sediment basin could be detected along the northern side of the cistern. An additional cistern discovered in 2012 in a karst cave under the south-eastern part of the rectangular cistern also required further investigation in order to understand the chronology of the cistern's various phases. This cave was lined with mortar and accessed from the surface by a well pit and well head. Owing to the collapse of the cave ceiling, the cave cistern became accessible from the south-east corner of the rectangular reservoir. A thick plaster lining sealed the inner surface of the large cistern. Excavation of this area (Sector I) was intended to locate the well head visible inside the cave, to explore the function of the rectangular walling and to clarify the chronological relationship between both cisterns.

The larger cistern was filled with rubble and waste from the surrounding walls and buildings



10. Trench F: overview from south.



11. Trench F Sectors A - H: excavated structures.

and showed evidence of considerable reuse (Fig. 13). The secondary use of large cisterns as a site for the construction of other buildings is

24. Trench supervisor was Anne Ditte Koustrup Høj. For the large cistern cf. Lichtenberger and Raja 2012.

25. This trench was sectioned from north to south in Sectors A - H, each 2 m in length.



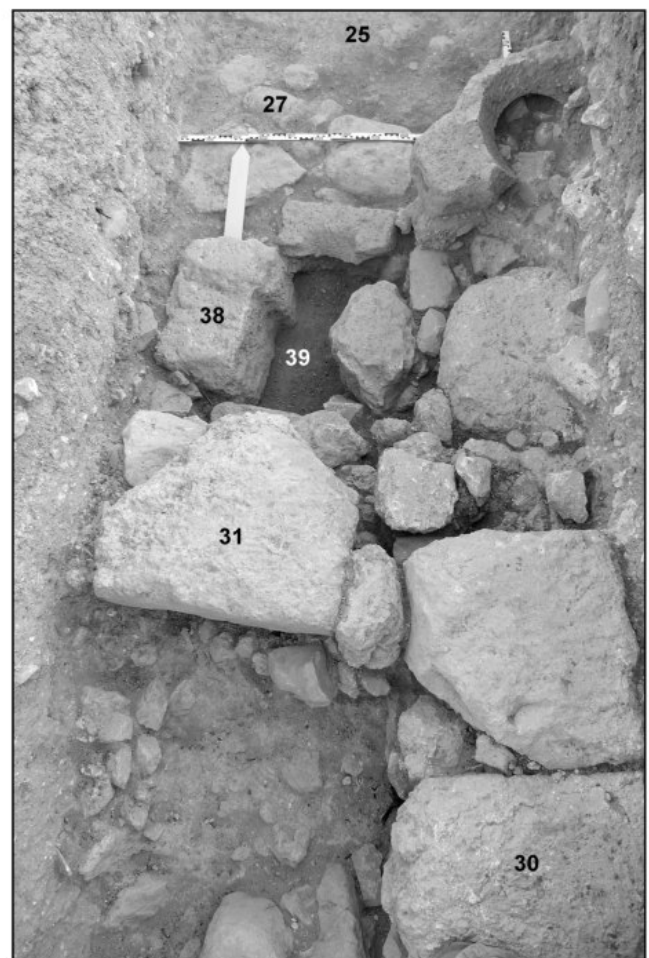
12. Trench F Sector I: excavated structures.

occasionally attested in the region.<sup>26</sup> During our investigation, no evidence for a sediment basin was found. The cistern was probably constructed around 100 AD and was in use until at least the 5th century AD. After this, the cistern was used as a construction site for other buildings, along with the smaller cave cistern under the large cistern. This secondary phase of use continued until around the Byzantine to Early Islamic periods when all structures were intentionally covered.

In the northern part of the trial trench (Sector B), a dry masonry wall (ev. 19) was found standing directly on the mortar base of the cistern (ev. 14) (Fig. 14). The wall was relatively thin but measured 3 m in height and continued for an indeterminate length parallel to the northern rock edge, which constitutes the northern limit of the large cistern. Further south, two much lower walls (ev. 50 and ev. 25) were discovered in the

trench under debris. These walls were roughly east - west orientated and continued for a distance of c. 2.5 m parallel to each other. In the southern sectors of the trench further wall structures (ev. 26 and ev. 33) were unearthed, associated with a clay floor (ev. 25) and an oven (ev. 38) and partly built against the southern rock wall (Fig. 13).

Sector I in the south-east corner of the large cistern yielded numerous multi-phase structures, which are mostly connected to the use of the cave cistern under the older rectangular cistern. Parts of these structures include an older wall (ev. 3), built against the southern rock face, and an open rectangle of walls (ev. 2 and ev. 5) that encloses both the collapsed cave ceiling and an open karst cave under the eastern rock face (Figs. 12 and 15). This wall enclosure separates the south-east



13. Trench F: floor (ev. 25) and oven (ev. 38) in Sector G (view from south).

26. Cf. e.g. the later reuse of the Bethesda pool in Jerusalem:

Gibson and Dauphin 2011.



14. Trench F Sector A: fill north of wall ev. 19 (view from east).

corner containing the open caves from the rest of the large cistern. Furthermore a well head (ev. 44) was found above the cave cistern, which was surrounded by a semi-circle of walls (ev. 37 and ev. 43) that obviously was erected over an older structure (ev. 36) with similar function.

Owing to the fact that a space of 1.8 m between the trial trench and the south-eastern Sector I was left unexcavated, it is not possible to link the structures in both parts directly. For interpretation and dating we have to rely on the finds and comparison with other contemporaneous, similar structures. Excavation of this area is one of the future aims of the project.

#### *Large Rectangular Cistern*

The cistern measures c. 40 m x 18 m and is surrounded on all sides by double-walls built on top of the bedrock. The southern rock wall is covered in a compact lime mortar, while the south and east walls show signs of vertical tool marks. The northern face has no such traces of tool marks. The bulging surface is lined with a compact but relatively soft mortar plastering (ev. 8 and ev. 14), which in Sector A is in its original condition. Clefts and small natural cavities were in filled, as in the case of the small karst cave (ev. 6) directly north of Sector A. This cave was filled at first from above with large stones (ev. 13), which were found to lie on a fine soil (ev.

11), most likely washed in. Finally the horizontal opening to the south was closed with mortar. Remains of this mortar (ev. 7) were found on both sides of the opening. The fill in the karst cave served as a foundation for a wall situated on the northern rock edge. At the northern side of the cistern, traces of quarrying were documented predating the construction of the cistern.

The base of the cistern is not even but rises towards the north-eastern and south-eastern corners. Its average elevation is c. 611.35 m asl. The deepest point identified so far is situated above the collapsed cave and is approximately 0.5 m deeper (610.80 m asl) than average. In order to calculate the reservoir capacity, maximum fill level is needed. At 614.70 m asl, the top of the eastern and southern rock walls are approximately the same height, but the northern rock cliff and the walls on it are standing up to 2 m higher (616.00 m to 616.83 m asl). The western limit of the cistern is critical in this regard; it has a height of 613.40 m asl and gives a maximum depth of c. 2 m. This, roughly estimated, gives a minimum capacity of 1,440 cubic m for the cistern<sup>27</sup>, which could be greater if the south and the west side were further built up with a walled enclosure. Although part of the north side has an elevation of more than 2.5 m above this filling level, this side was completely lined with mortar. This might point to the fact that water flowed into the cistern from the north. How this worked in detail is not yet clear as a sediment basin has not been found in the cistern and the bedrock of the northern side remained unworked, thus the water could have flowed in from the north following the slope gradient. Only further excavation in future seasons can answer this question.

Currently the dating of the cistern is an open question. Carved grooves and quarry marks on the walls at different levels at the north side of the cistern show it to be later than the quarrying in this area. Compared with features found around the much later buildings on the

27. This is about 25% more than calculated on base of the

surveyresults. See Lichtenberger and Raja 2012.



15. Trench F Sector I: well head over cave cistern (overview from east).

top of the hill, a date compatible with the later occupational phases of the north-west quarter is most likely. The only way of dating the building of the cistern is via the mortar lining. Thus, during the 2013 season, 22 samples were taken by Alf Lindroos (Åbo University, Finland) from six stratigraphically relevant points inside and outside the cistern for refined radiocarbon dating by AMS.<sup>28</sup> Even though it seems too early for final conclusions, some preliminary observations can be made. One of the samples already dated stems from the mortar lining from the south side of the cistern in Sector H.<sup>29</sup> Against this mortar, walls evs 30 and 33 were built in a later phase when the cistern was used for domestic purposes. This sample provides the surprisingly early date of 73 - 215 AD with a narrow margin of error. Another sample<sup>30</sup> from the south side was taken from the mortar covering the wall ev. 3 in the south-east corner of the cistern, against which more recent wall ev. 5 was built. It gives a very limited but highly precise date of c. 100 AD, which concurs with the first assay. The first sample comes from a place where the mortar plastering is only one layer thick and where there are no visible repairs, indicating that the date should correspond to the first mortar lining of the cistern. The second sample, however,

could stem from a later repair with very similar mortar. A third date comes from the north side of the cistern. The sample originates from a strong but thin layer of mortar on the rock surface west of Sector A.<sup>31</sup> Inclusions of tesserae hint at a later date. A date of 328 - 428 AD was given for this sample and confirms that it belongs either to a repair or a renewal of the mortar lining. That such an event took place 200 to 350 years after the first plastering implies that the large rectangular cistern was in use for this entire time span or even longer, well into the 5th century AD.

The large water reservoir on the south slope is one of the oldest constructions unearthed in the north-west quarter of Gerasa and seems to have played an important role in the water supply from the early 2nd century into the 5th century AD. Since no other structures of this period have been found in the north-west quarter it remains an open question as to who was supplied with water from the cistern. Further excavations will hopefully clarify the possible connection between the cistern and the pressure water pipe discovered in Trench E, which leads in a southerly direction to the cistern. The early date for the cistern also suggests that the traces of a stone pit at its northern side are older than the cistern or at least contemporary with it.

#### *Later Use of the Large Rectangular Cistern Sectors A - H*

It appears that the northern half of the cistern remained free from building activities. This may have been for safety reasons, as the northern rock cliff is about 5.5 m in height. The use of the cistern interior seems to have started with the construction of a 0.5 m high platform above the base. Wall ev. 50 comprises its northern limit. This was probably erected to protect the structures from water collecting in the cistern during rain. The structures were set into the platform or were built on it. To the north of this platform is a

28. All samples will be analysed by means of a grant from the Carlsberg Foundation. Three samples have been dated already.

29. Sample no. J13-F-S-M-7.

30. Sample no. J13-F-S-M-16-19.

31. Sample no. J13-F-S-M-3.



simple floor (ev. 56) that formed the base of the older cistern and was repaired from time to time with small stones and mortar. About 2.5 m south of wall ev. 50 is another wall (ev. 26). It is only 30 cm thick and is made of one course of stones laid in a row. Its east - west orientation is slightly different from wall ev. 50. Wall ev. 26 seems too thin to have been used as a building wall but towards the south an associated clay floor (ev. 25) was found, which points at an interior space on a slightly higher level (10 cm) than the northern part of the platform. The superstructure may have been constructed of mud brick or wood but, in the very limited area excavated, conclusive traces were not detected. The floor foundation (ev. 27) consisted of stone packing which contained an integrated oven (ev. 38) (**Fig. 13**). The oven is roughly rectangular and made of four stones, of which one is a reused grinding stone. The oven was found filled with ashes and charcoal (ev. 39). A little to the south, a wall corner (ev. 30 and ev. 31) was built on a fill layer consisting mostly of stones above the clay floor (ev. 25). The walls abut the plastered rock wall (ev. 32) in the south. Another thinner wall (ev. 33) is built parallel to the rock wall and abuts the north - south side of the wall angle. This wall is also built on the stone packing and should therefore be part of the rectangular structure above the clay floor. The space between walls evs 31 and 33 measures only 1.6 m, seemingly too narrow to have been a living space. More probable is that it was an enclosure for a staircase parallel to the rock wall that gave access to the cistern's interior. The observation that the structure is set against the southern rock wall at a higher level than the other structures favours this interpretation. All these structures were covered by fill layers<sup>32</sup> and, in front of the southern rock face, also by the collapsed walls (ev. 10 and ev. 20) on top of it. The latest pottery from some of these fill layers (ev. 23 and ev. 29) seems to date from the Late Byzantine

to Umayyad periods, perhaps giving only a slightly earlier date for the covered structures.

The most recent structure unearthed in the trench is wall ev. 19 which was found in Sector B, c. 2 m in front of the cistern's north side (**Fig. 14**). This wall, erected immediately over the mortar base (ev. 14) of the cistern, was preserved to a height of 3 m with a thickness of only 0.55 m. It is constructed of dry-stone masonry using smaller stones in the lower parts, many no more than fist size, but with larger blocks in the upper courses. No traces of mortar were detected as a binding agent or lining for the wall faces. This fragile stonework, proportionately too thin for its height, would not have been able to stand on its own and probably was not meant to apart from its upper course which was built of large boulders (ev. 15). This wall achieves stability only from the deliberate tipping of fill against it on its southern side. In the north the wall is supported by an extremely loose fill of rubble (ev. 12, ev. 16 and ev 17), which was filled in several places up to the tops of the walls and contained pottery only in the lower parts. The upper layer consists of almost pure lime gravel (ev. 12), the origin and function of which remains unclear. The loose tipping on the north side is completely different from the fill layers to the south of wall ev. 9. These contain more soil and layers of large stones, and are more compact.<sup>33</sup> The deposits in the south cover every structure in the trial trench, giving a stratigraphically confirmed later date for the fills. The most recent finds identified so far in the lowest of these layers (ev. 52) date from the Byzantine to the Umayyad periods. On these layers, parts of wall ev. 15 were found to have fallen in a southerly direction, perhaps as a result of erosion. Most probably wall ev. 19 was constructed gradually whilst the surroundings were filled in. The fact that the wall is standing on the mortar base proves that this part of the cistern was cleaned out prior to construction. Without further

32. Evidences 21 - 24, 29 and 51.

33. The evidences in stratigraphic order are: 15, 21, 40,

52 and 51.

research we can only conjecture about the function of such an extensive building project

### Sector I (Figs 12, 15 and 16)

The oldest built structure in the south-east corner of the cistern is the abovementioned wall ev. 3. It is built against the southern edge of the cistern and is lined with mortar plastering (ev. 4). According to preliminary dating, the wall could belong to the earliest phase of the cistern, even though its orientation is c. 1.7 m north of an ideal straight southern boundary line. After the cistern fell out of use as a water reservoir, a wall one course thick (ev. 5) was built against the mortar lining (ev. 4) of older wall ev. 3. The wall face was built of larger stones and faces north, while the mortar was kept in good condition behind the wall core on the south side. Another wall (ev. 2) is connected to wall ev. 5 and diverges from it to the north. The wall (ev. 2) is built of two stepped faces and is placed directly on the uneven base of the cistern. Gaps were managed with stones and soil. Owing to the building technique and its low height, it is unlikely that this wall could be an installation dating to the time the cistern was in use. A wall to the north corresponding to wall ev. 5 seems to be absent, but could have disappeared during the course of later construction activity. It appears that these walls enclose the collapsed ceiling of the cave cistern from two sides. This could represent the first use of the cave cistern and there is perhaps a connection with the joist supports along the eastern rock face, above the mouth of the horizontal karst cave. Some smaller walls diverge from this rectangular wall enclosure in a westerly direction, but it is still unknown how they correlate with the structures in the trial trench.

At some point either contemporary with this enclosure or slightly later, the cave was converted into a cistern and the vertical well shaft was sunk. A round millstone was set on top of the shaft as a well head (ev. 44). This well was encircled with a mortar floor (ev. 55) laid on the mortar plastering of the large cistern (ev. 1) up to the well head. A short wall segment could

belong to this first phase of the cave cistern; it was unearthed 0.9 m north-west of the well head and is aligned roughly north - south, but owing to later building activity and the limited area excavated a direct relation with this phase cannot be proven.

At a date after this first phase a second phase is attested in which the well was used. In this second phase the mortar floor (ev. 55) was covered with a layer of sandy fill (ev. 49); on top of this a poorly constructed wall (ev. 37 and ev. 43) was built in the shape of an irregular three-quarter circle around the well head. Thus, fill layer ev. 49 served both as a foundation for the walls and as a floor. The latest pottery in the feature dates to the Byzantine to Umayyad periods, giving an earlier date for the first use of the well. In this phase the cistern was supplied with water via a square channel (ev. 54) made of stone slabs and mortar (**Fig. 16**). The channel was partially sunk into the later floor (ev. 49) or was built at the same time on the mortar floor (ev. 55) of the preceding phase, effectively placing it between the well head and the eastern corner of the wall enclosure (ev. 43). This indicates that the channel was built after the enclosure. From this corner the channel continued almost vertically to the upper edge of the rock face, where a square rock-cut channel supplied it with water. Owing to the fact that the northern and eastern parts of the enclosure wall (ev. 43) were set against and into the debris and fill in the cistern, it seems that the structures of this phase belong to the latest levels excavated in the large cistern. A relationship between the extensive filling operations and wall ev. 19 may be possible but cannot be demonstrated at this time. In any case it is certain that the remains of this last use phase were covered by deliberate infilling; the well head (ev. 44) was closed with a large stone and the surrounding area filled up with a stony fill (ev. 46). Above this, another fill layer (ev. 53) interspersed with stones was found, covering all the wall structures. Since the latest finds are Byzantine to Umayyad in date, the last use of the well cannot have lasted long. Above this infilling, only surface rubble (ev. 2) was encountered.



16. Trench F Sector I: rock-cut channel and channel ev. 54 (view from west).

The concentration of millstone fragments in the cistern is remarkable. In other parts of the north-west quarter, fragments of millstones were rarely found. In the fill layers above the remains of the occupation phases, not only numerous small fragments were found but also a large broken capstan mill (in ev. 24), fragments of a stone mortar and the handle fitting of another capstan mill (ev. 40). Fragments of a quern were built into oven ev. 38 and in the older wall ev. 36 in Sector I. Even the well head (ev. 44) was made of a round millstone. No mill or grinding stones were found intact or *in situ*. The finds include simple grinding stones, fragments of slewing querns (of so-called Olynthian type) which are

known from the 4th century BC and - like the round querns of Roman times (of which some fragments also were found) - can be operated by a single person. We can add some fragments and larger parts of broken capstan mills (*miliaria*), which have to be processed by two persons or by mules. Such a concentration of different types of milling stones for flour, representing different stages of technical development, seems to be a unique feature of the north-west quarter.

## Trench G

### *General Outline and Structures*

This trench was excavated to investigate the North Decumanus that was assumed to continue from the northern Tetrapylon in a westerly direction to the supposed North-West Gate (Figs. 17 and 18). The positioning of Trench G is the result of an ideal hypothetical line between the visible eastern end of the North Decumanus north of the North Theater and the supposed position of the north-western city gate. The latter seems to have been indicated by a later wall blocking the gate and find spots of inscription blocks that can be related to the gate.<sup>34</sup> In 1982, excavations were undertaken further to the east on this supposed alignment by an Anglo - American team; these reached bedrock in places but yielded only ambiguous results.

To track the possible course of the North Decumanus, a 5 m x 5 m trench was laid out and later extended towards the south by means of an additional sector (Sector F).<sup>35</sup> In total c. 31.6 m<sup>2</sup> were explored with a north to south extent of 8 m. Apart from Sector C, in which excavation was blocked by the structures exposed, virgin soil or bedrock was reached in all remaining sectors. In the northern sectors, virgin soil was reached approximately 2.6 m below the ground surface (approximately 3.4 m in the southernmost

34. C. B. Welles in Kraeling 1938: 397-398. It was never doubted that limestone fragments forming a flat arch might be the lintel of a North-West Gate. The topographical map by C. S. Fisher (Kraeling 1938: plan I) shows the

North Tetrapylon connected with the supposed North-West Gate by a street that shifts southwards and is not linked with the *Cardo* at a right angle.

35. Trench supervisor was Anders Olesen.

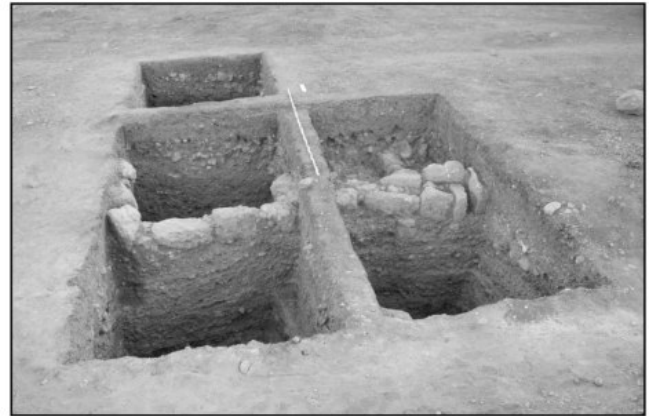


17. Trench G: excavated structures.

Sector F). This difference in elevation mirrors the modern ground surface and not ancient levels. The numerous strata located between ground surface and virgin soil result mostly from anthropogenic activity and to a lesser degree from natural processes of erosion and deposition. Between the fill layers, mostly modest structures were found; these can be attributed to three phases. Moreover they indicate that this area was always free of dense construction and was only used occasionally. It is clear that the North Decumanus never reached this western area, which has an impact on our understanding of the urban expansion of Roman Gerasa in this area.

*Phase 1*

The first discernable utilisation of this area is evidenced by east - west wall ev. 32 in Sector



18. Trench G: overview from north.

F (**Fig. 20**). This wall was built of coarse stones and consisted of two wall faces resting on different levels (c. 65 cm above bedrock; c. 1 m above virgin soil); only one course was preserved. The wall rests on dark fill layers (ev. 33 and ev. 28) originating from the north, the colour of which derives from organic inclusions such as charcoal and olive pits. The fill layer (ev. 33) south of wall ev 32 did not display such prominent stratification. An associated surface was not detected. In the adjacent Sector D and in the northern Sectors A and B similar fill layers were encountered, some of which contained considerable quantities of organic material, as well as concentrations of stones, mortar and occupation debris.<sup>36</sup> Intentional structures could only rarely be identified within the fill or else could not be interpreted properly, e.g. two flat mortar lines (ev. 23) in Sector B that run parallel to each other and converge near the east baulk, where they abut some stones (**Fig. 21**). In most cases we have to deal with features that are not easy to interpret, e.g. mortar pile ev. 21 that was surrounded by an earth fill. Surprisingly, this fill yielded numerous tiny coins displaying signs of exposure to heat. According to their position and orientation, the fill layers and debris layers seem mostly to come from a northerly direction. The pottery is mixed but includes numerous well-preserved sherds of Roman date. The most recent artifacts so far identified in the earliest levels (ev. 28 and ev. 33) might date to the

36. Evidences from Sector D include: 28, 22 and 26. Evidences

from Sector B are: 21, 23 and 20.

Abbasid period, but some could be even Ayyubid or Early Mamluk. Therefore, all fill layers and the structures above them must be later, with the finds of Roman date being later intrusions.

The simple wall structure ev. 32 was covered with further fill layers containing occupation waste (ev. 30) up to the structure's foundation in Phase 3.

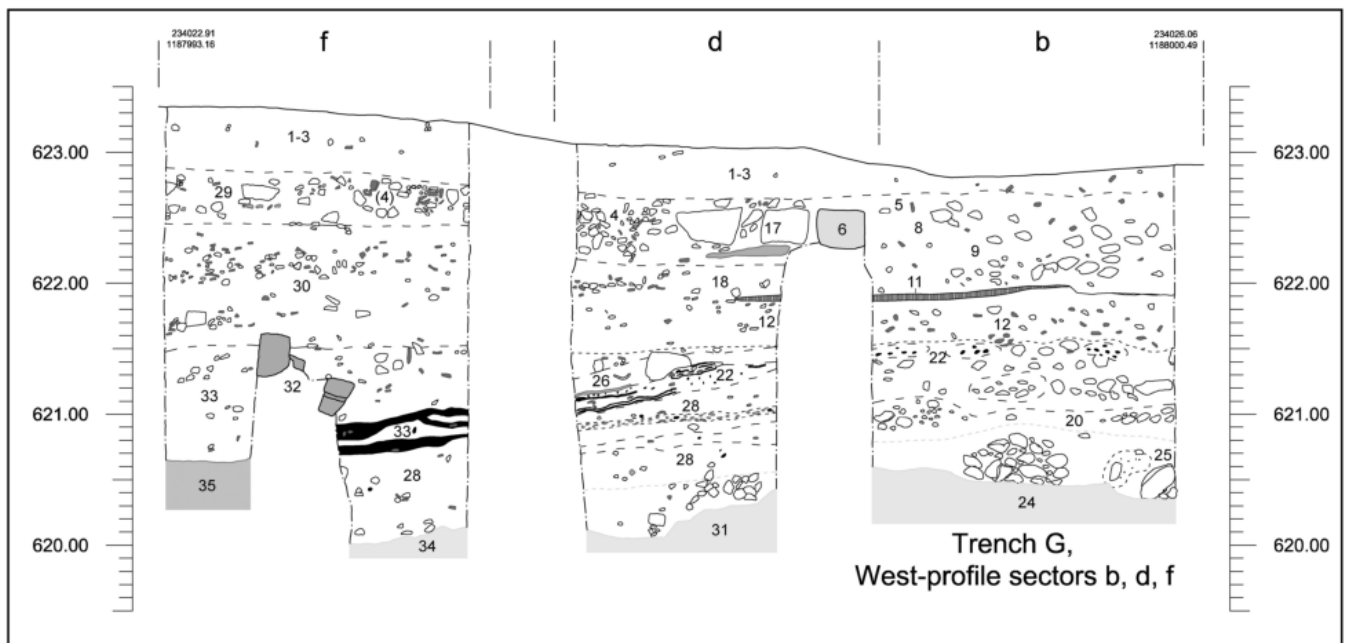
### Phase 2

An ordinary earth road is the main feature of the second phase. This was found above the fill layers, described above, crossing the northern Sectors B and A from east to west (**Figs. 19 and 21**). To it belongs a thick very compact foundation layer (ev. 12), which was deposited above the deeper fill layers. This foundation deposit is interspersed with large amounts of small pottery sherds, of which some are of Middle Islamic Green Ware and of Mamluk wares, which appear to be the most recent. A thin whitish layer of lime gravel (ev. 11) sealed the road. In Sector A it was less well preserved than in Sector B and in Sector D it disappears under the younger structures of Phase 3. Thus, the width of the road can be only be estimated as c. 1.4 m. The compact foundation layer (ev. 12) was detected in all three sectors. As is visible in the west baulk of Sector B, the surface of

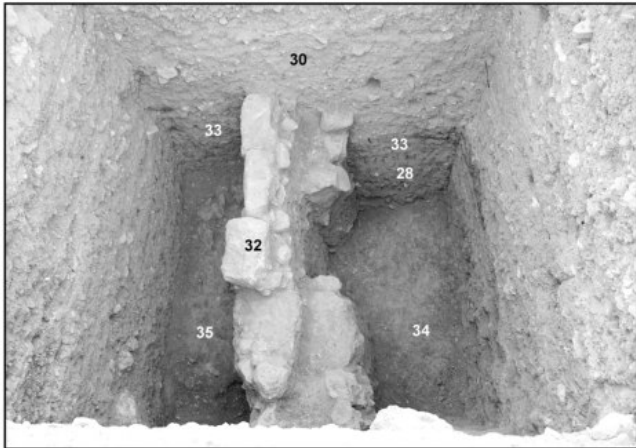
the road rises towards the north, which could indicate a strong use or a long useful life that caused the wear and could also explain the strong compression of its foundations.

### Phase 3

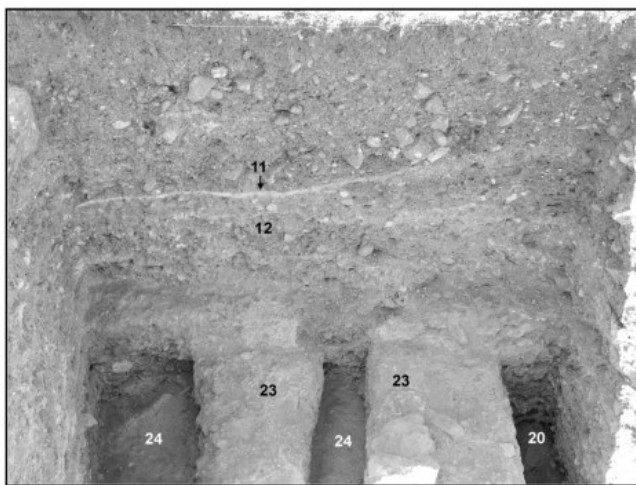
Only 50 to 60 cm under the surface, a wall crossed Sectors C and D from west to east; in front of the eastern baulk it turned in a southerly direction. The wall comprises two sections, built in different techniques but interlocked. Whereas the eastern wall (ev. 6) is made of larger oblong stones that are arranged in a row, the western wall (ev. 13) is constructed of the same kinds of stone but laid in two faces. The wall was founded on a soil fill with embedded mortar 'bands' (ev. 18 and ev. 17) c. 30 to 40 cm above the Phase 2 earth road (ev. 11 and ev. 12). It was most probably not a wall belonging to a building, since the wall was only one course high and the area south of it was backfilled with a stone and clay packing. In Sector C another wall (ev. 16) was found within the terrace running from the south and abutting wall ev. 13, meaning that it was built later. The wall probably belongs to a compartment system in the interior of the terrace. It was backfilled (ev. 15) to the top not only with soil but also with medium-sized



19. Trench G: west section of Sectors B, D and F.



20. Trench G Sector F: Phase I wall (ev. 32) (view from east).



21. Trench G Sector B: earth road in the west section (view from east).

stones, roof tile fragments and larger sherds. It is similar to the stone packing (ev. 4) lying on it and abutting the terrace wall (ev. 6 and ev. 13). Fills with similar compositions were found in many contexts even in deeper levels, but they seem to concentrate in the northern sections of the trench.

In summary, Trench G attains its importance more from the features that were not discovered than from the features that were. The full length of the North Decumanus was not determined, but the excavation results illustrate that in the vicinity of Trench G it never existed.<sup>37</sup> Also a possible city gate becomes dispensable in the presumed location and we need to reassess

the form and dimension of the northwestern part of Roman Gerasa within the city walls.

For reconstructing the palaeo-environment and the ancient ground level trench G provides us with the following information: In the trench the uneven surface of the virgin soil measures in the north 620.45 m asl, in the center 620.30 m asl and 620.00 m asl in the south. Because the bedrock reaches 620.65 m asl at the southern end of sector f the softer virgin soil shows a gentle base slope towards south, but, this is balanced by the bedrock. A more or less horizontal ground level is also indicated by the deep sounding in trench H about 10 m away, where the top of the virgin soil was reached at 619.90 m asl. The outcome of this is an almost plain terrace north of the cliff in trench H that declines towards east. This situation was the result of heavy erosion processes, which washed away older layers, and apparently took place sometime before the Middle Islamic period.

## Trench H

### *General Outline and Structures*

This trench was laid out to explore the northern slope of the north-west quarter (**Fig. 22**).<sup>38</sup> Of special interest was the building history and function of the terrace and retaining walls of which some parts, belonging to different building phases, were already visible on the surface. It was expected that the northern boundary of the hill, exposed to erosion in particular, would have had a special retaining system. Furthermore the trench was intended to establish a link between Trench G lying 20 m to the north and last year's Trench B, some 25 m to the south-east. Hence a trench, 3 m wide and at first 6 m long, was excavated downslope and later extended 1 m towards north for a deep sondage. The area explored measured in total app. 19m<sup>2</sup>. In contrast to what was expected, massive retaining constructions were not found but instead there were indications of a common

37. The same situation was encountered re. the South Decumanus: Gawlikowski 1986: 109; Zayadine 1986: 8.

38. Trench supervisor was Stefan Riedel.

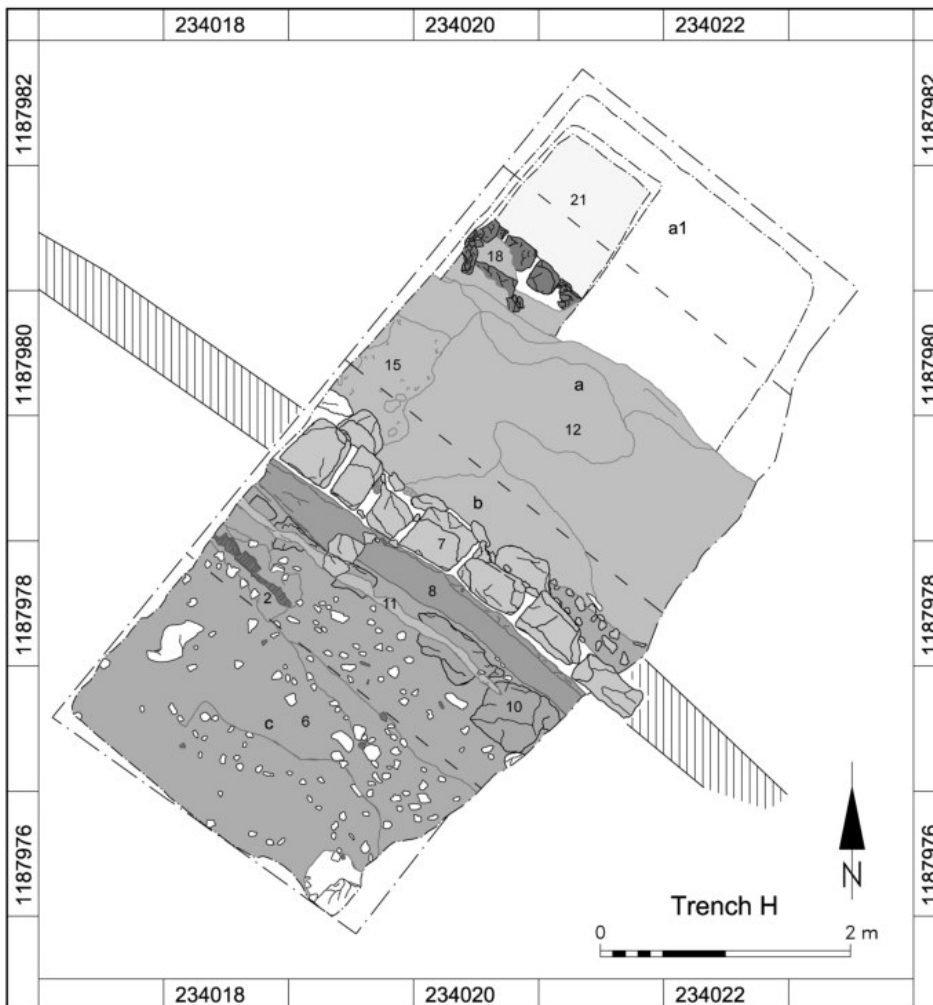
water supply, in the form of a covered canal and a pressure pipe running along the edge of the slope (Fig. 23). The deeper northern part of the trench yielded important new results for the morphology of the ancient topography. With an elevational difference of c. 7 m between virgin soil in the north and the retaining walls in the south, this turned out to be much steeper than the modern terrain (Fig. 24). The unearthed area of bedrock, standing relatively high up, shows no traces of quarrying. The soft, raw rock does not seem to have been suitable for quarrying in the same way as the bedrock exposed in other trenches. The evidence in the deep sondage of Trench H and in Trench G shows that the geological situation changes to the north. No solid rock was found in the deepest levels, but instead there was a solidified yellowish deposit containing a natural aggregation of gypsum.

In places this deposit is interspersed with solid rock. Based on these results, the northern limits of the large quarry should be situated somewhere upslope, further to the south.

The water pipes seem to have been in use until the Byzantine or Early Islamic period. The same is true of the supporting wall at the northern edge. Some finds from the erosional fill at the north side point to some kind of occupation of the north-west quarter during the Hellenistic period.

#### Water Pipes

Close to the slope, an uneven mortar surface was excavated (ev. 6), apparently running along the slope edge and extending further south (Fig. 23). It was covered by mixed layers of debris (ev. 1, ev. 3 and ev. 4) with a depth of 0.9 m, of which the upper parts seem to have been deposited in recent times. The northern boundary of this



22. Trench H: excavated structures.



23. Trench H Sector B: retaining walls and water pipes (view from west).

mortar surface is a well-built ashlar wall (ev. 10) that is also visible at some points on the slope outside the trench. That the wall and the mortar surface are linked to each other suggests they are largely contemporaneous, but that wall ev. 10 was constructed first. At a later date a rectangular water canal (ev. 8) was built from the north against wall ev. 10, running from north-west to south-east along the edge of the slope. To build the canal, another wall (ev. 7) was constructed 30 to 40 cm from the northern face of wall ev. 10. This more ordinary wall has only one face and was founded on the low-lying and uneven rock (ev. 12) using mortar. The canal emerging between the walls was dressed with 3 cm thick plaster and measures 27 cm in width and 45 to 48 cm in depth. In the 3 m wide section, the canal has an inclination of between 8 to 10%, which seems to be too steep for the design. It was covered by small stone slabs applied into

mortar (ev. 11) at both ends; the mortar bedding and one covering slab have been preserved.

Later, approximately 0.5 m south of the canal a clay water pipe (ev. 2) was placed on the mortar surface (ev. 6) in segments and with dimensions similar to the pipe discovered in Trench E. Because the water pipe was found directly under the surface, only its lower half was preserved in the west of the trench, however more fragments and distinct traces on the mortar surface indicate that the water pipe clearly ran along the slope. Its position on the mortar surface, embedded in a thin mortar layer, demonstrates that the water pipe is later than the canal and that the pipe must have been covered with at least soil to protect it. A buff clay deposit (ev. 5), found in places as a thin layer above the mortar surface, could originate from such a fill. Thus, it becomes clear that the mortar surface (ev. 6) is not only older than the clay water pipe but



was also taken out of operation and backfilled.

For the moment it is not possible to suggest precise dates for these features, but the pottery found in the fill of the canal (ev. 8) is predominantly Byzantine to Umayyad, with an unpainted Mamluk sherd. In addition, in the buff clay layer (ev. 5) we found primarily Roman pottery, but also another unpainted sherd that seems to be Mamluk in date. That said, neither the canal nor the covering fill of the water pipe are compatible with a Mamluk date. It is most likely that in this exposed position, erosion processes are responsible for the accumulation of chronological mixed material.

#### *Deep Sondage*

The bedrock (ev. 12) above and south of the deep sounding was covered with eroded material (ev.9). In the deep sondage, a wall with one face was found (ev. 18) built against the steep rock slope, apparently to support and cover it (**Fig. 24**). Wall ev. 18 rests on virgin soil (ev. 21) at 620.12m asl to 620.17 m asl and was preserved to a height of 1.55 m. As visible in the west baulk, its upper part had collapsed but some remaining stones give an original height of c. 2.35 m. An associated occupation layer was not found. The wall base was surrounded by a 65 cm thick foundation layer (ev. 20) consisting of soil and stones, with relatively numerous pottery sherds embedded in it. The most recent artifacts in this foundation layer date from the Late Byzantine to Umayyad periods, providing a terminus ante quem for the wall. North of the wall (ev. 18), the virgin soil lies about 10 cm (619.90 m asl) deeper than under the wall itself, giving evidence of the erosion processes taking place even after the retaining wall was erected.

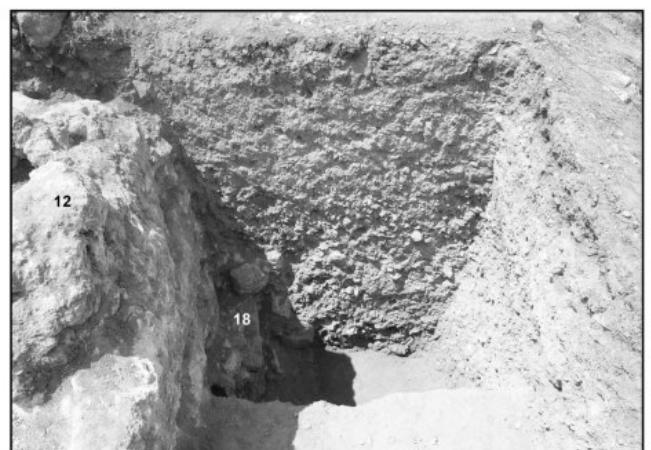
The area north of the cliff yields indications for a turbulent erosion history. It is filled with numerous layers<sup>39</sup> of material washed downslope and the collapse of wall ev. 18, all accumulated at the foot of the cliff. The finds in these layers

are chronologically mixed but the oldest material, dating back to Hellenistic and Roman times (cat. no. 1-3, 5-7, 43, 154, cf. report by Lichtenberger, Raja and Sørensen in this volume), was discovered in the uppermost layers. This is both an indicator of inverted stratigraphy and evidence for occupation on the top of the hill in the earliest phase.

#### **Concluding Remarks about the Sequence of Building and Use Phases Within the Excavated Areas**

The results of the 2013 excavation season enable us to trace the history of the north-west quarter back to the Roman and perhaps also the Hellenistic periods. The large cistern is Roman in its original layout and was used until at least the earlier Byzantine era, when it was reused for other purposes. A correspondingly early date could match the system of clay water pipes discovered this year that certainly predated the Early Umayyad structures on the hilltop<sup>40</sup>. This also would imply an earlier date for the open stone pit on the hill that is the earliest activity thought to have taken place in the north-west quarter. The absence of a Roman North Decumanus in this area must be taken as an opportunity to reconsider the Roman city plan and the role of the north-west quarter within the city.

We now know that the north-west quarter was



24. Trench H Sector A1: upper part of the deep sondage (view from east).

39. Evidences 13, 14, 16, 17 and 19.

40. For a preliminary study of the water supply of Gerasa see Seigne 2004.

occupied during the Byzantine period, but in the Early Islamic period a large-scale building complex is encountered in which rooms were arranged along a central wall on the crest of the hill. In this phase intensive building activity seems to have taken place. Although some very rare finds of the Abbasid and following eras are also present in small amounts, the next major building phase dates to the Ayyubid - Mamluk period.

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