THE KERKENES PROJECT

PRELIMINARY REPORT ON THE 2002 SEASON

Figure 1: The extensive stone pavement leading to the 'Palace Complex'. (02dpjv4406)

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http://www.metu.edu.tr/home/wwwkerk/

THE KERKENES PROJECT

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Figure 2: The Team at the Karabaş Temple. (02dpjv1919)

ABSTRACT

In 2002 the Kerkenes Project brought to a conclusion the remote sensing survey in which various methods, balloon photography, close contour GPS mapping and geomagnetic survey, have been used to reveal surface and sub-surface remains. Coverage extends over the entire area of this exceptionally large Iron Age capital which has thereby been revealed in remarkable detail. Geophysical survey will continue to play a role, albeit, much reduced in the next phase of research design at Kerkenes, but the great task of surface and sub-surface mapping is complete. In addition, excavations in the Palace Complex revealed architecture of quite unexpected sophistication while at the 'Cappadocia Gate' a section was cut across the entrance passage and part of the stone glacis was repaired.

THE TEAM

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ACKNOWLEDGEMENTS

We are grateful to Dr Alpay Pasinli and his staff at the General Directorate of Monuments and Museums for the warmth of their support, to our representative Mevlüt Üyümez of the Afyon Museum who once again showed tremendous enthusiasm and friendship, to the Yozgat Museum Director, Erol Özen, who was most encouraging and helpful. We would also like to thank Mr Hüseyin Önal, Governor of Yozgat; Ms Salime Doğan, Yozgat Director of Culture; Mr Mustafa Dündar, Sorgun District Governor; and Mr Yılmaz Kılıçarslan, Mayor of Sorgun, for their continuing support.

The Kerkenes Project is officially sponsored by the British Institute of Archaeology at Ankara and operates from a Project Room provided by the Faculty of Architecture at METU. Yibitaş Lafarge continues to be a major year-round sponsor of the project through the METU Development Foundation. The METU Computer Centre provides technical support and hosts the Kerkenes web page. With completion of the Remote Sensing program, which primarily targets study of the dynamics of the urban geography, we would like to make special mention of the generous support that has been provided by the National Geographic Society for this aspect of the Project. In 2002, in addition to grants from the BIAA and the NGS, generous support was received from the Stahl Fund of the University of California at Berkeley, Mr Khosrow Semnani, Mrs Linda Noe Laine, The Joukowsky Family Foundation, The Charlotte Bonham-Carter Trust and anonymous donors. The Faculty of Architecture at METU provided a research grant for Photo-Rectification and 3D Modelling studies which was coordinated by Prof. Ömür Bakırer and to which Mr Refik Toksöz contributed expertise.

Thanks to the British Embassy and the BIAA the new laboratory and storage facilities have been furnished. GEOSCAN, ESRI, ERDAS and Işlem GIS assist with software. Sponsors contributing to our current publication program and other aspects of the project include Artı, Bell Helicopter-Textron, METU Press, MNG Holding, Royal Color, Sokkia-Seza, Soylu Aviation and Yenigün AŞ. Assistance is also provided by the Geological Engineering Department and GGIT (Geodetic and Geographic Information Technologies) at METU, as well as by the Hydrogeology Department at Hacettepe University.

We continue to be deeply indebted to the Headman, Ali Erciyas, and people of Şahmuratlı Village for extending traditional Anatolian hospitality. Osman Muratdağı, owner of the village minibus, continues to assist with transport and logistics while Dr Şevket Bağcı, to help with seasonal water shortages, has very kindly allowed a borehole to be drilled on his plot of land opposite the Kerkenes house.

Figure 3: The Governor of Yozgat, the Director of Culture and the Sorgun District Governor, are guided round the new excavations by the Ministry Representative, the Project Director and daughter Natalie. (02dpjv6108)

Figure 4: Good team-work can move a mountain! (02dpjv2113)

Figure 5: Osman Muratdağı takes team and visitors up to site in his minibus, but one at the wall everyone walks if the Landrover is not around. (02dpjv7807)

Figure 6: Shelving from the BIAA installed in the depot. (02dpjv6101)

Figure 7: Celebrating the Kerkenes Project 10th anniversary. (02dpjv3001)

On the 3rd of August the Project celebrated its 10th season. On this same occasion and trees were planted to mark the first grant, awarded by the Australian Embassy, for the Kerkenes Eco-Centre initiative. The Yozgat Köy Hizmetleri, TEDAŞ and Türk Telekom (Rural Services, Electricity and Telephone) also provided assistance. Our guests were well received thanks to the contributions from the Ankara Hilton, Kamar Supermarket and Kavmar AŞ.

Ten years of hard work, the dedication and enthusiasm by the Kerkenes team, including that essential element of men employed from the village, have provided significant results. The complete list of Project sponsors and participants can be found on our web page:

http://www.metu.edu.tr/home/wwwkerk/

THE ROLEX AWARD FOR ENTERPRISE

It is perhaps more than fitting that at the very juncture whereby the Kerkenes Project is metamorphosing from Remote Sensing to Excavation and Site Enhancement, our innovative approach has been recognised through the accolade of a Rolex Associate Laureateship. This Award will not only secure the start of the new program but will also enable conservation and partial reconstruction of one of the most visibly impressive stone built monuments at Kerkenes, the 'Cappadocia Gate'. Total clearance, preservation and enhancement of this, perhaps the most important of the seven gates at Kerkenes, have thus been transformed from a dream into reality. The Rolex Awards web page includes:

http://www.rolexawards.com/lauteats/laureate1.jsp?id=

Figure 8: The Rolex Award presented to Geoffrey Summers by Mr David Maingot.
(Photo Ian Macauley, © Rolex Awards for Enterprise)

THE URBAN SURVEY

Completion of the Geomagnetic Survey

The geomagnetic survey was completed in 2002 (Fig. 9). Since our first tentative steps we have mapped more than 2 square kilometres using Geoscan FM 36 fluxgate gradiometers, taking four readings per metre at one-metre traverse intervals (Fig. 11). Only the Kale and the Kiremitlik, where Byzantine and other remains obscure Iron Age structures, were omitted (Figs 17, 21, 23a, 24a, 25 and 26). When Lewis Somers of Geoscan started us off in 1993 none of us imagined that in our tenth season we would complete a magnetometer survey of the entire site.

Other news includes the award of a scholarship to Nahide Aydın to read for an MSc in geophysics and anthropology at the University of Mississippi. Nahide has been a central pillar of the Kerkenes Project, coordinating the survey and training local workmen. Mark Francis has completed outstanding data processing and has also created an archive of both the raw and processed data.

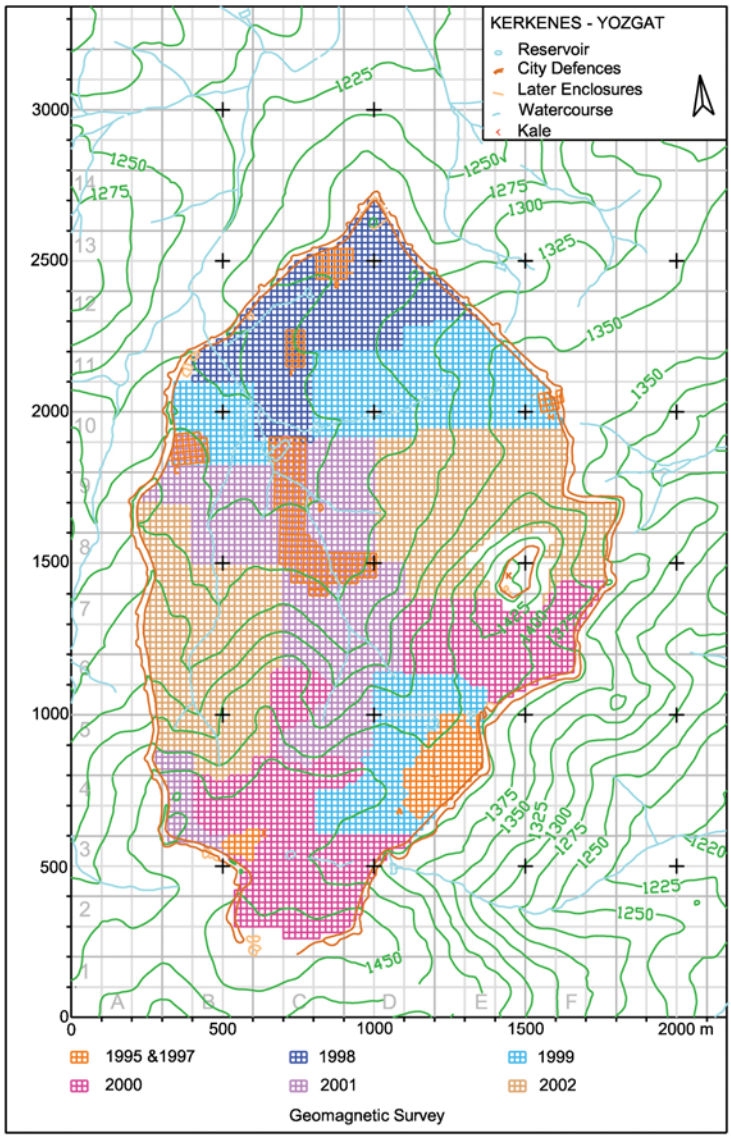

Figure 9: Progress map of the geomagnetic survey at Kerkenes. By the end of 2002 the entire area of the Iron Age city had been surveyed, omitting only the Kale and its cliffs, and the Byzantine village on the Kiremitlik at the southern extremity.

Resistivity Survey

Following the excellent 2001 results in the lower area of the city, a large portion of a three-week spring season in May and the earlier part of the main summer season in June was given over to extending the resistivity survey (Fig. 10). Before the soil dried out exceptional results were obtained in relatively stone-free areas (Figs 12, 14, 18, 22, 23b and 24b). At a maximum of eight grids per day it would take more than 100 years to make a complete resistivity survey, so it is perhaps no bad thing that most of the site is unsuitable!

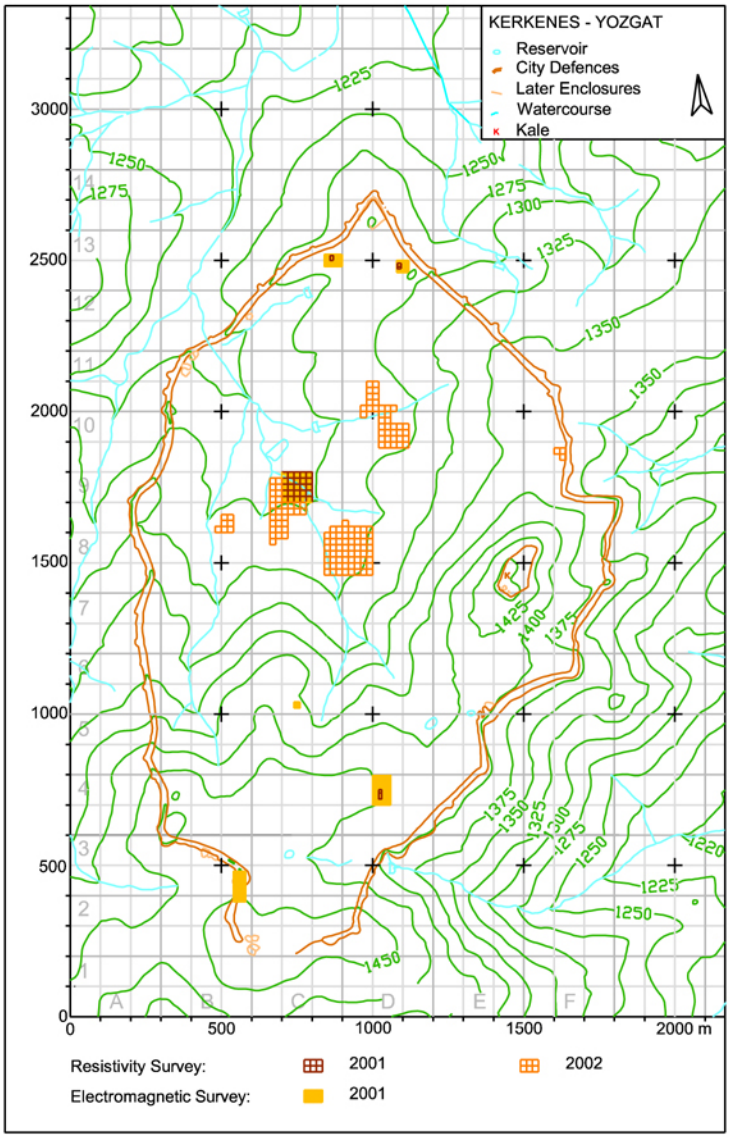

Figure 10: Progress map of the resistivity and electromagnetic conductivity surveys. In 2002 three areas were selected for extensive resistivity survey and trials were conducted at two additional places.

Geographic Information Systems, GIS

Scott Branting, now a graduate student at the Department of Anthropology, SUNY Buffalo, and a member of the Kerkenes team since 1994, has become an Associate Director of the Kerkenes Project. Scott, whose special contributions lie in GIS and Remote Sensing, completed the close contour GPS survey in 2001 and has since been able to scale, mosaic and overlay the colour slides taken from balloons in the first two seasons. He is currently developing research into GIS applications and transport modelling systems at Kerkenes. Nurdan Atalan, who has assisted Scott since 1998, is now coordinating the building of the GIS database at the METU Project Office. ESRI and ERDAS's generous provision of ArcGIS and ERDAS Imaging enables the Kerkenes Project to remain at the leading edge of innovative research.

Figure 11: Gradiometer survey on some of the steep slopes below the Kale revealed evidence of structures and terrace walls. (02dpjv0415)

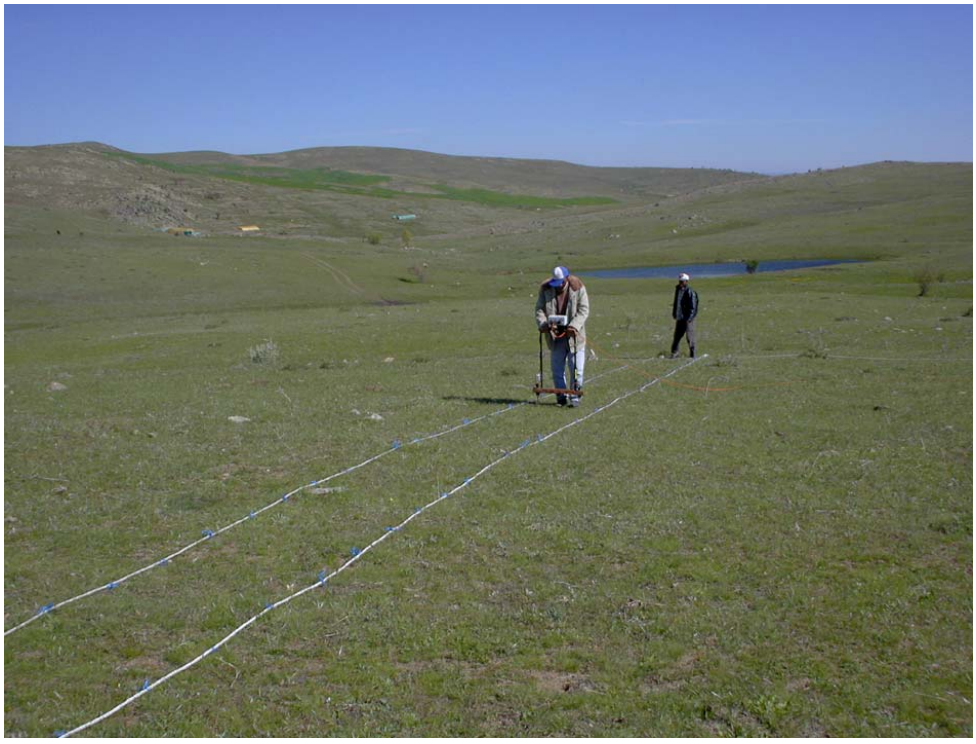

Figure 12: Resistivity Survey on stone-free level areas can only be done while the ground is wet in the spring. (02dpjv0401)

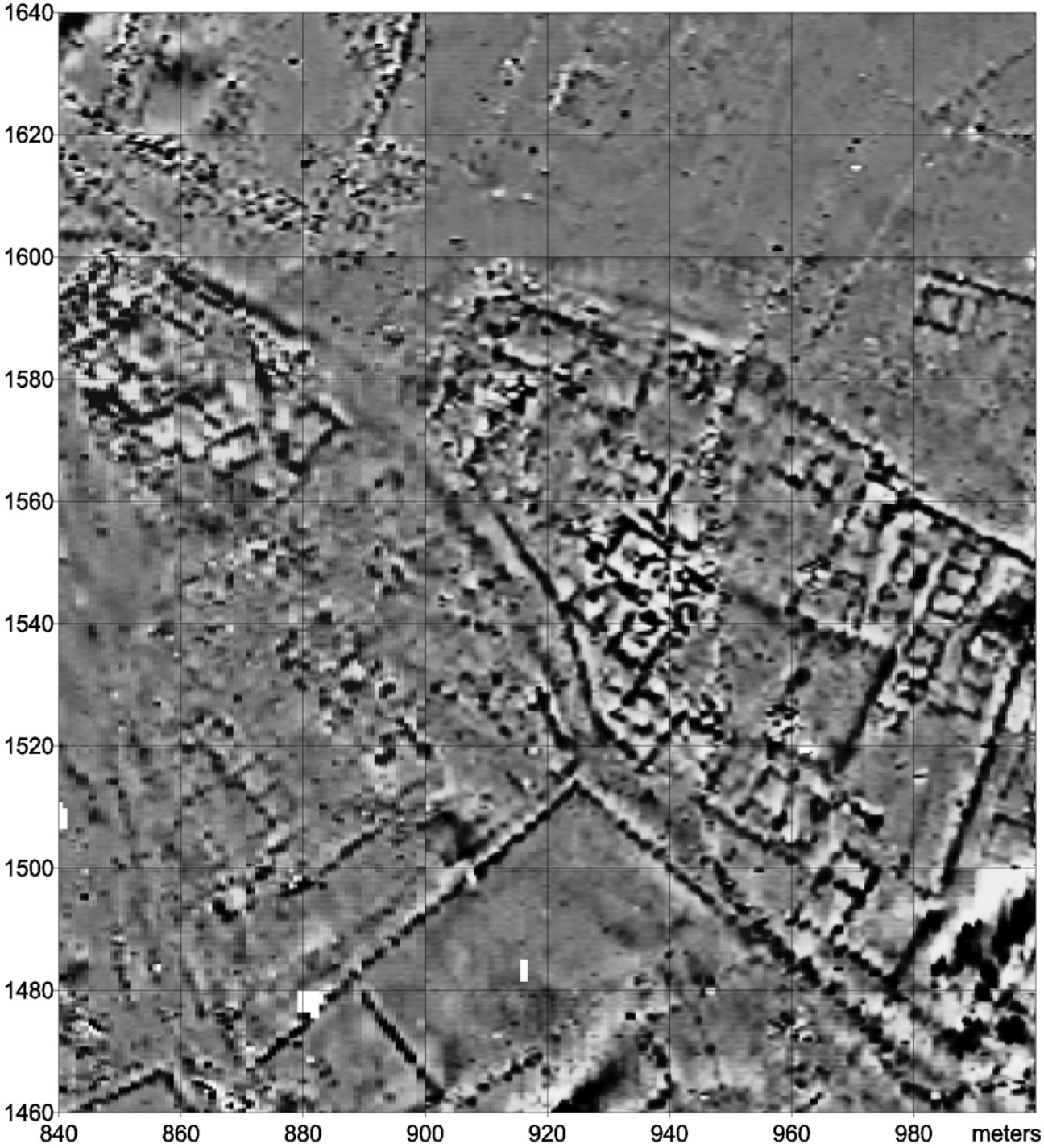

Figure 13: Geomagnetic survey of this central area provided some of the most detailed imagery. None of the Iron Age features can be seen on the surface in this part of the city.

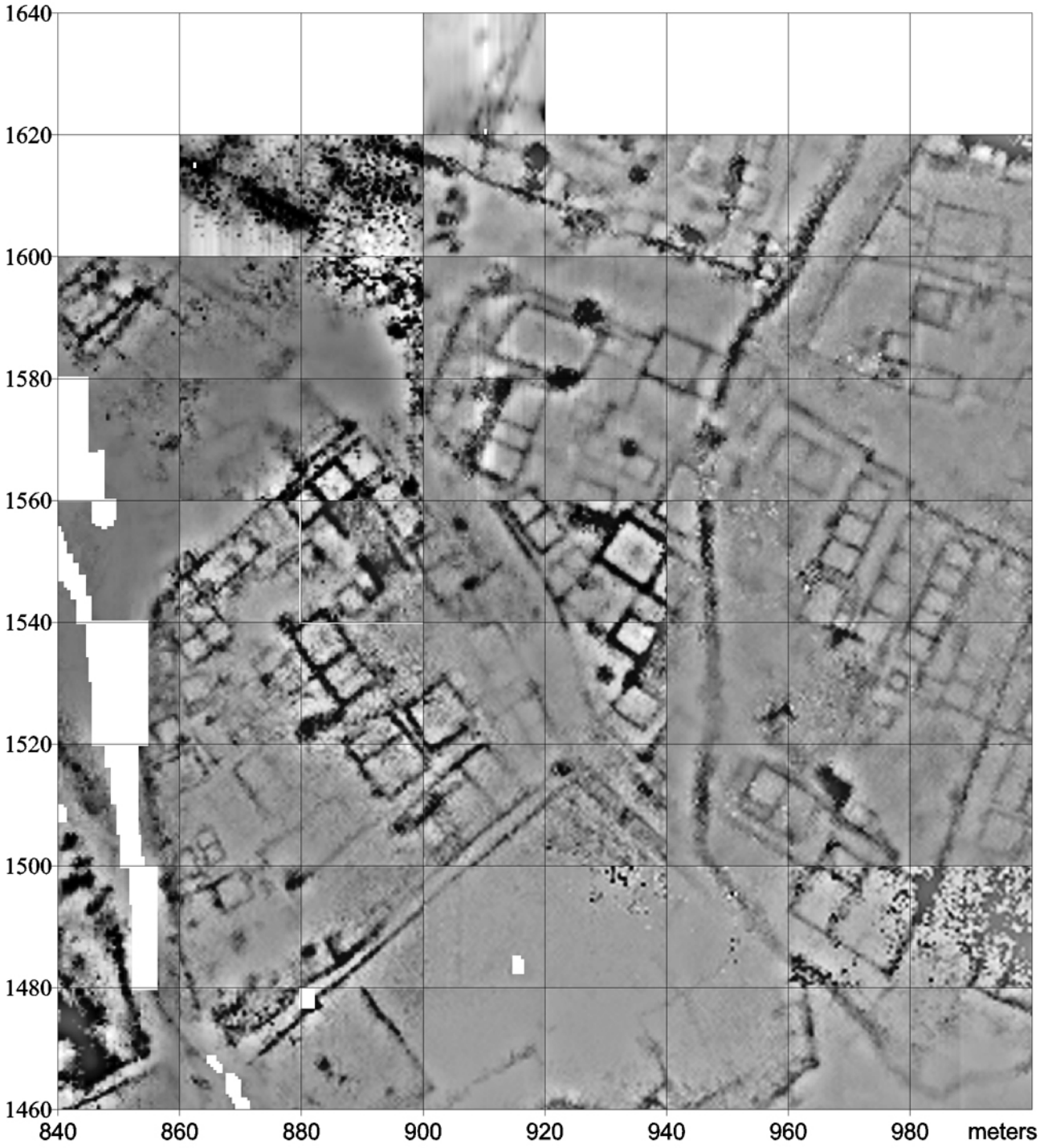

Figure 14: Resistivity survey provides some additional detail and a somewhat different overall impression. Not all the features seen on the magnetic survey are revealed by this method. Blank patches at left represent the stream.

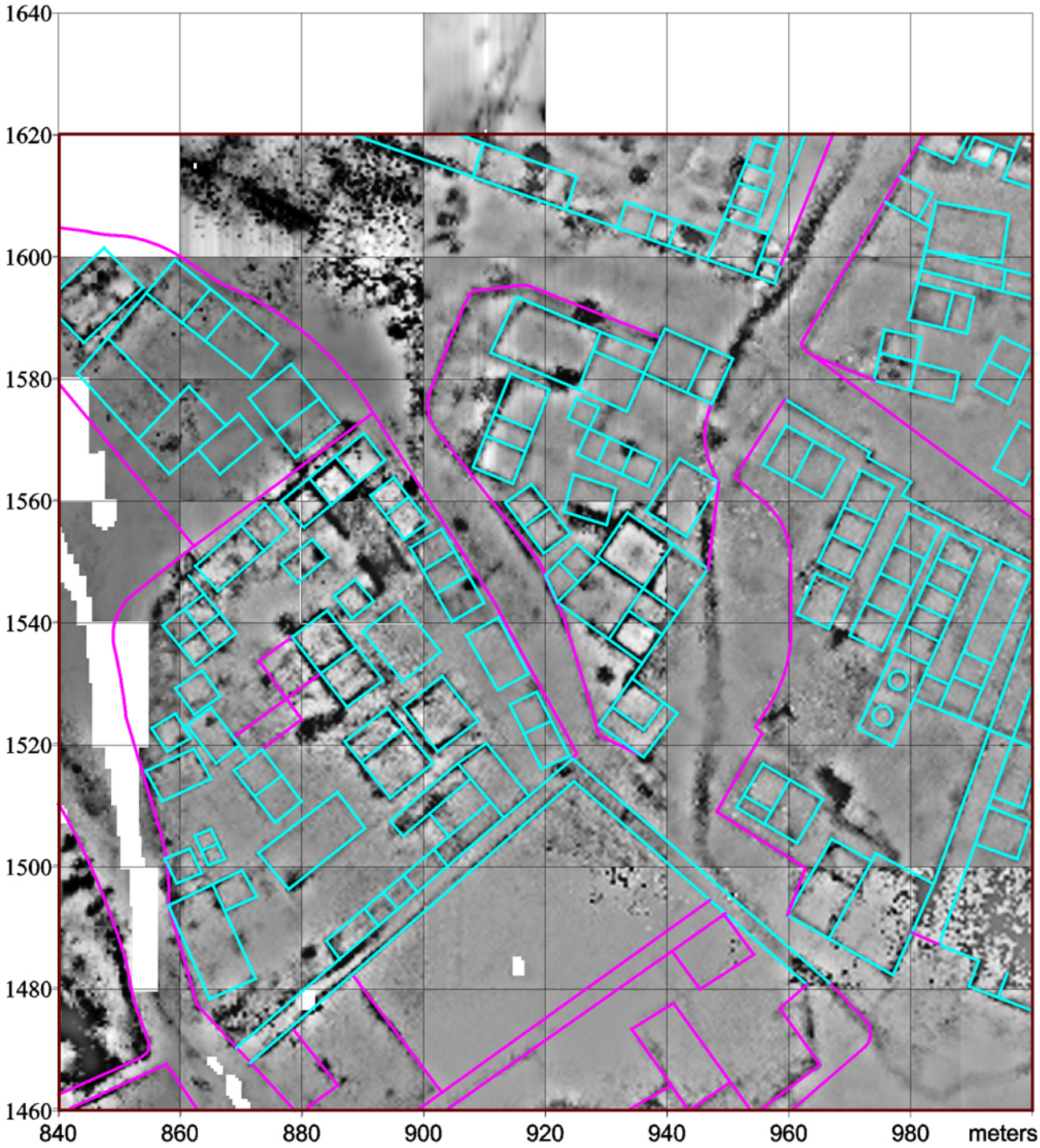

Figure 15: A drawing of Iron Age features based on an interpretation of the geophysical images together with verification on the ground.

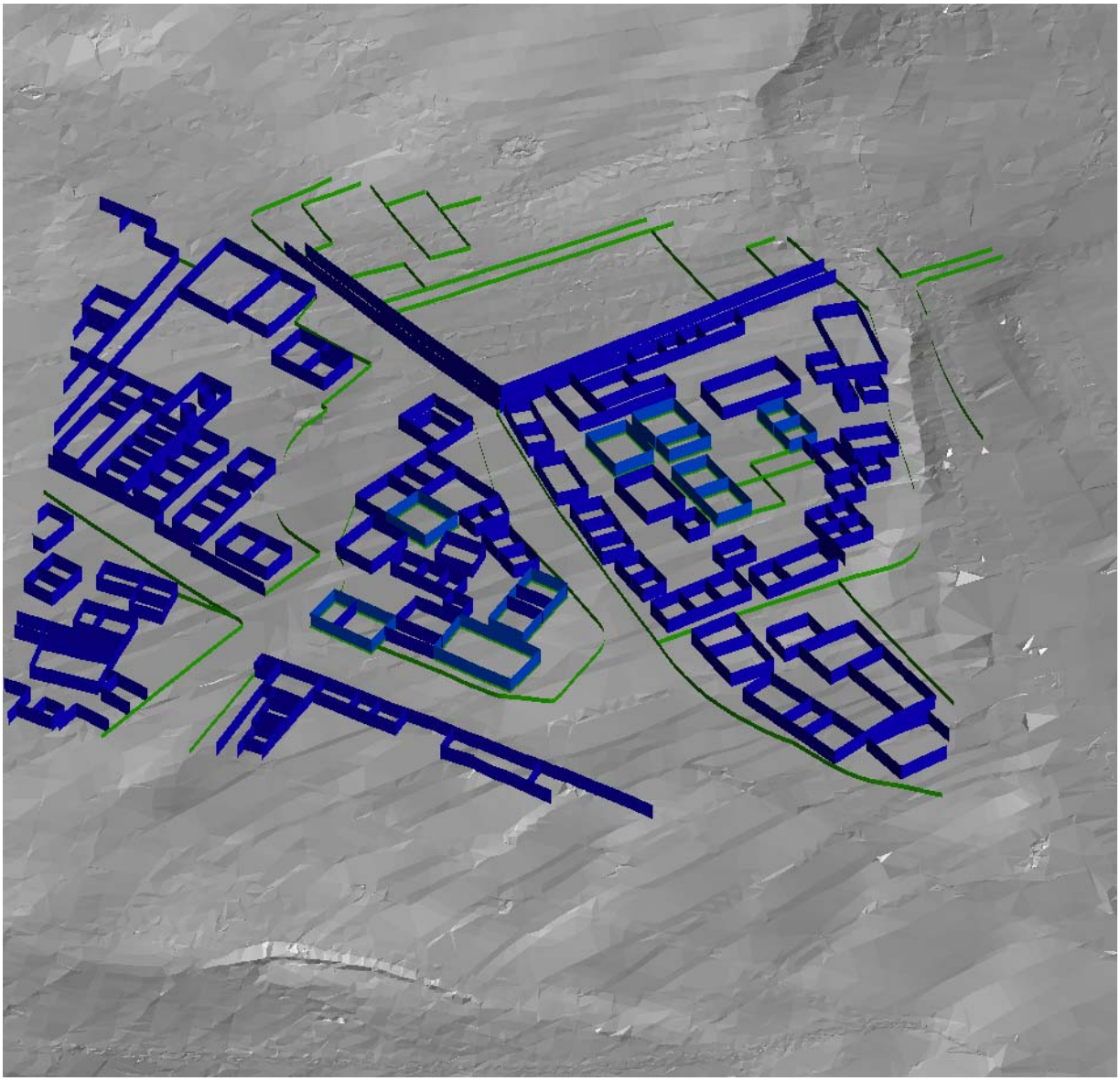

Figure 16: A 3D projection of the plan draped over a three-dimensional GPS simulation of the topography. ***Note that this image is looking south.***

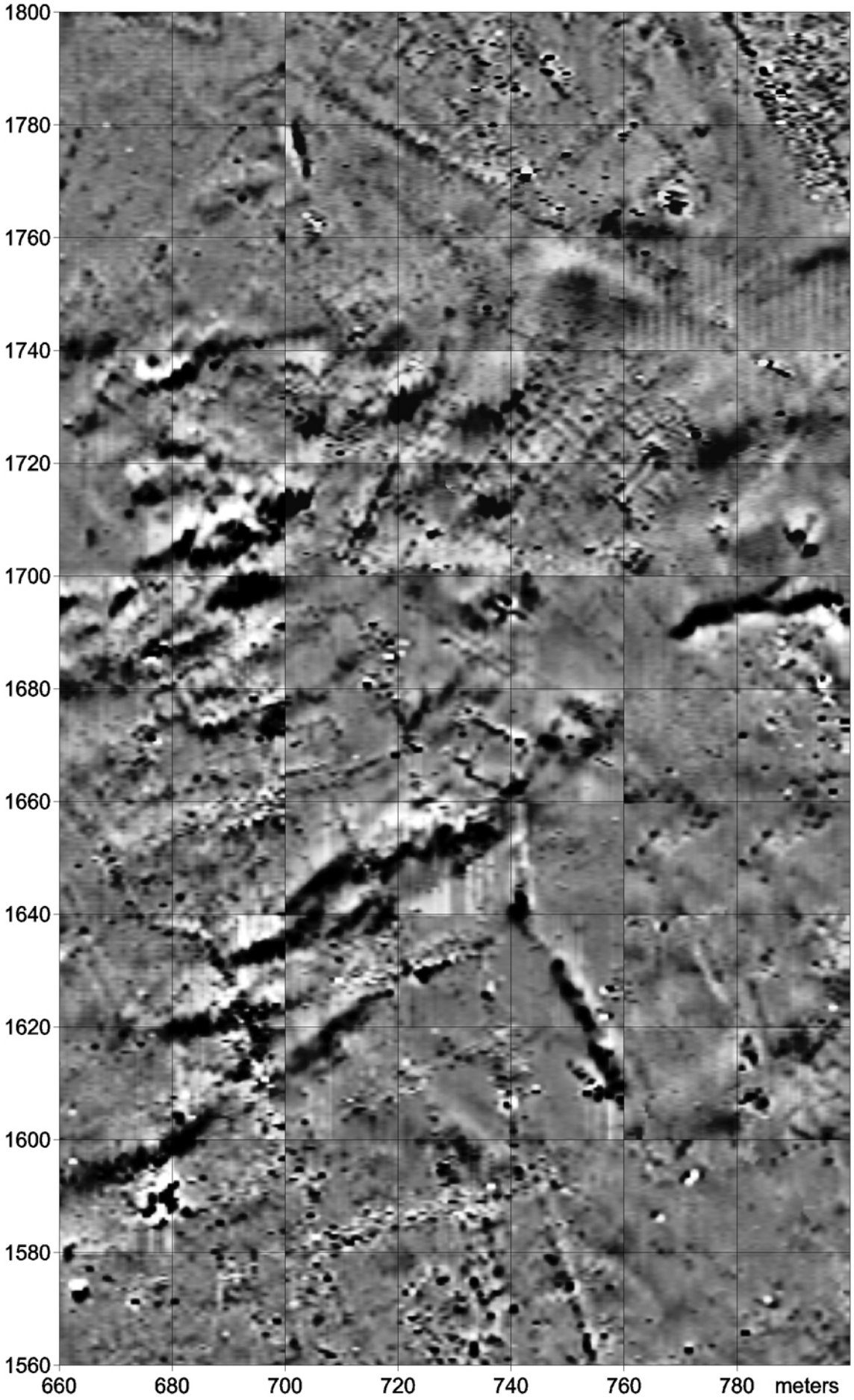

Figure 17: Geomagnetic survey of a low and level part of the site made in previous seasons. Some structures can be easily discerned but in other places the underlying geology masks much of the detail.

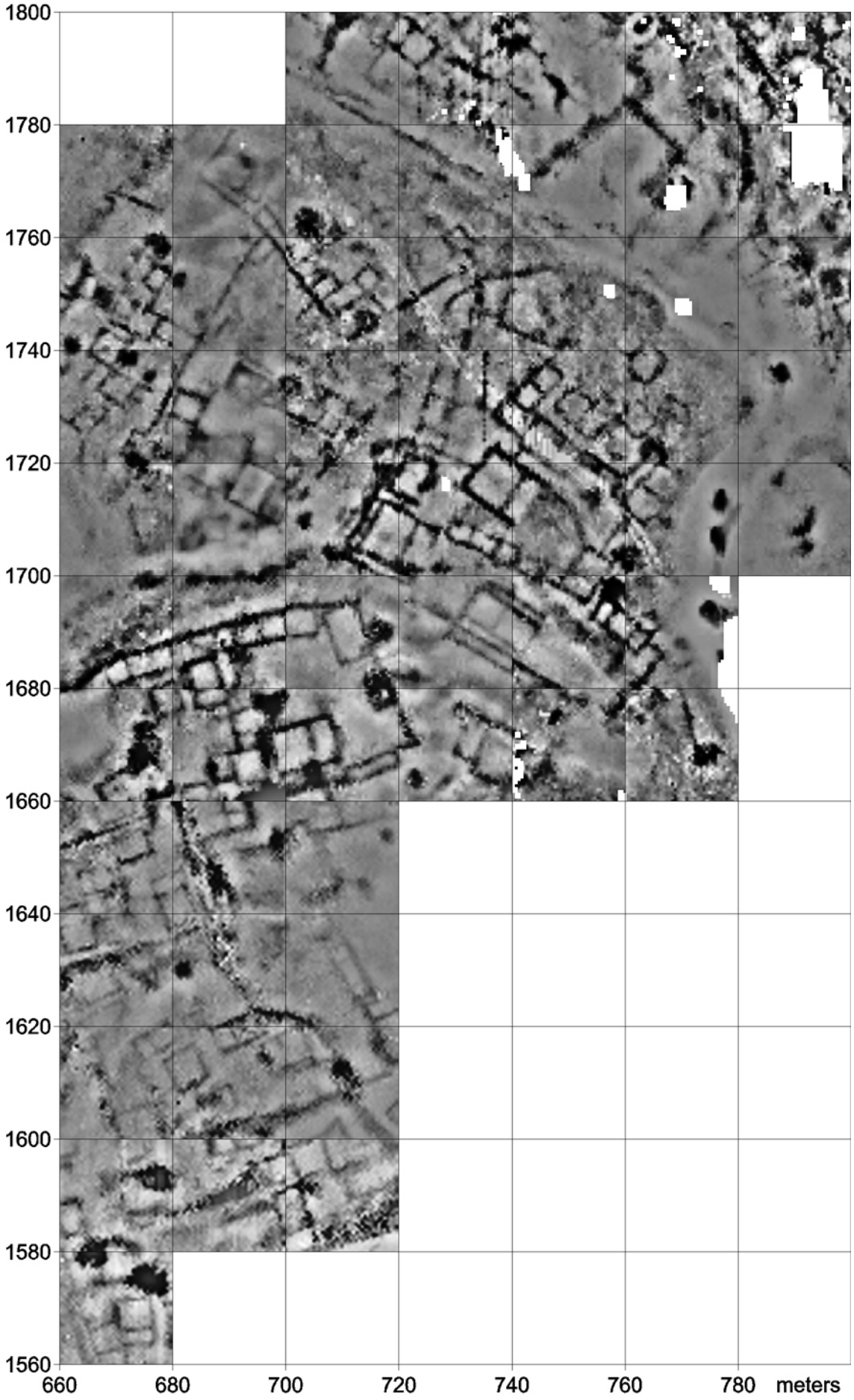

Figure 18: Resistivity survey in 2001 and 2002 reveals many more details of the buildings and also shows both hydrological features and modern tracks.

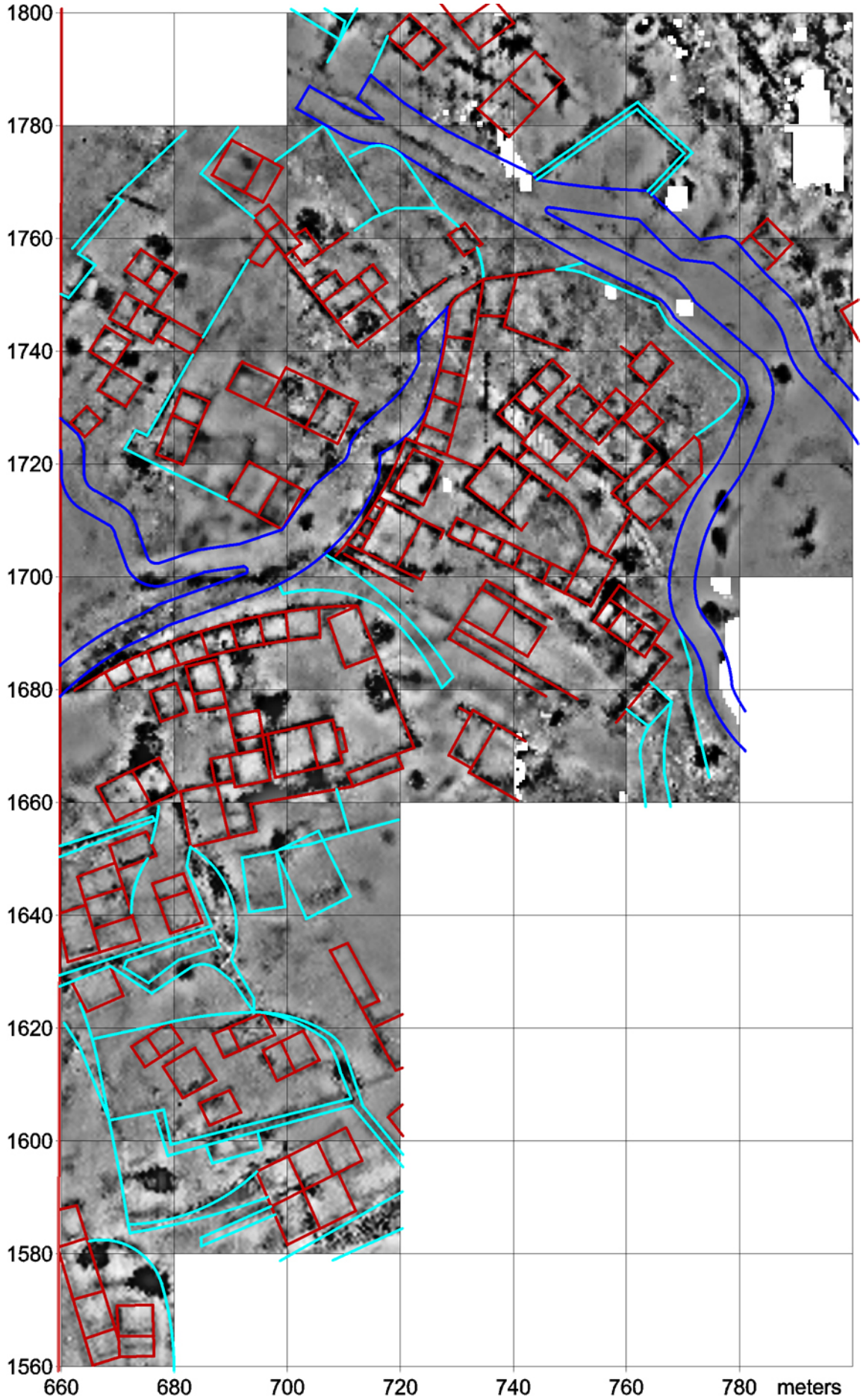

Figure 19: An interpretation based on Figs 17 and 18. Verification on the ground permitted topographic details to be taken into account.

Figure 20: The drawing draped over a three-dimensional GPS simulation of the topography.

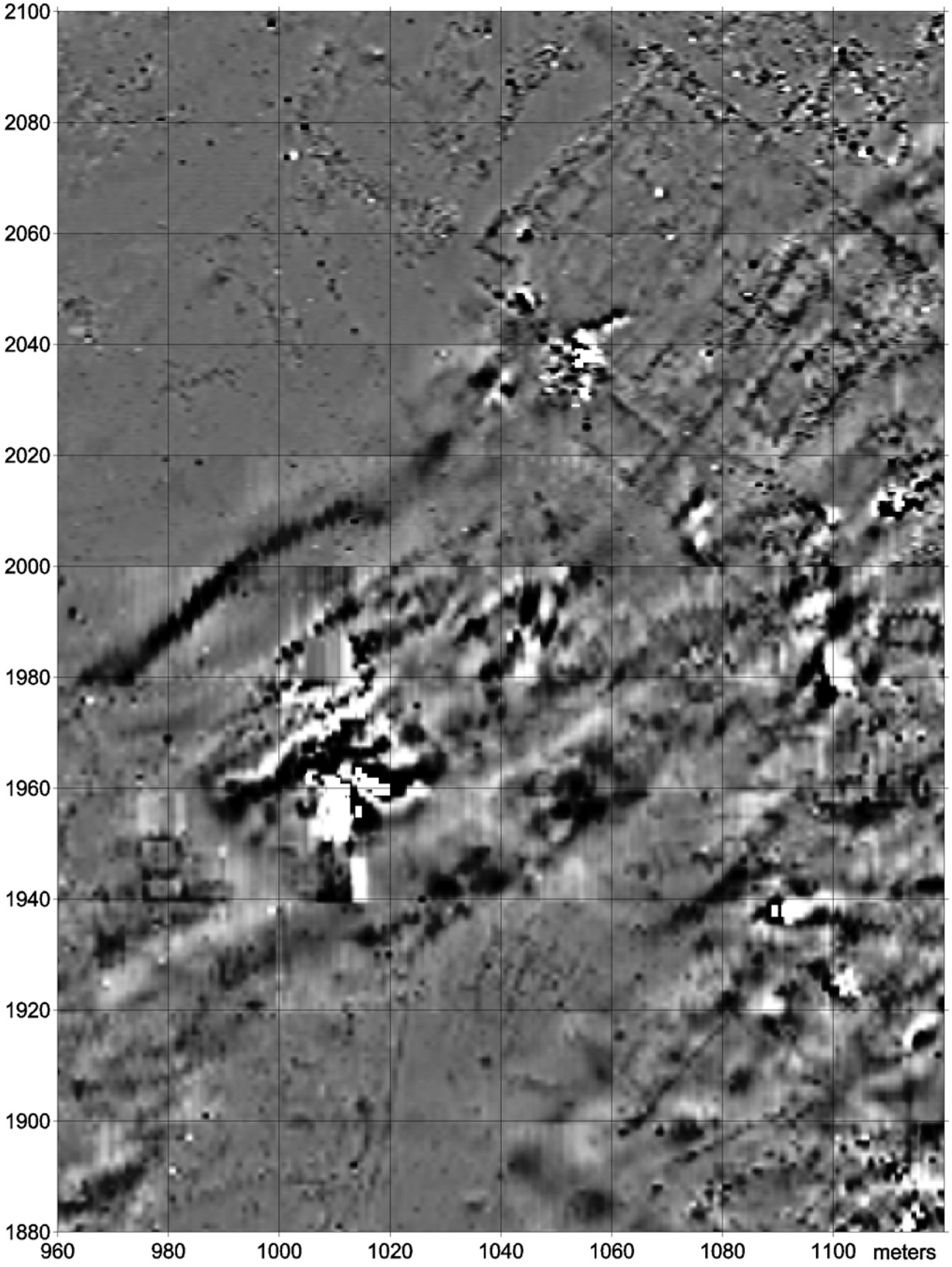

Figure 21: Geomagnetic survey of an area that perhaps contains water management features in a shallow valley with urban blocks to the NE and SW. The geology produces strong anomalies. Note the small faint structures at lower centre, which are thought to represent encroachment into open spaces.

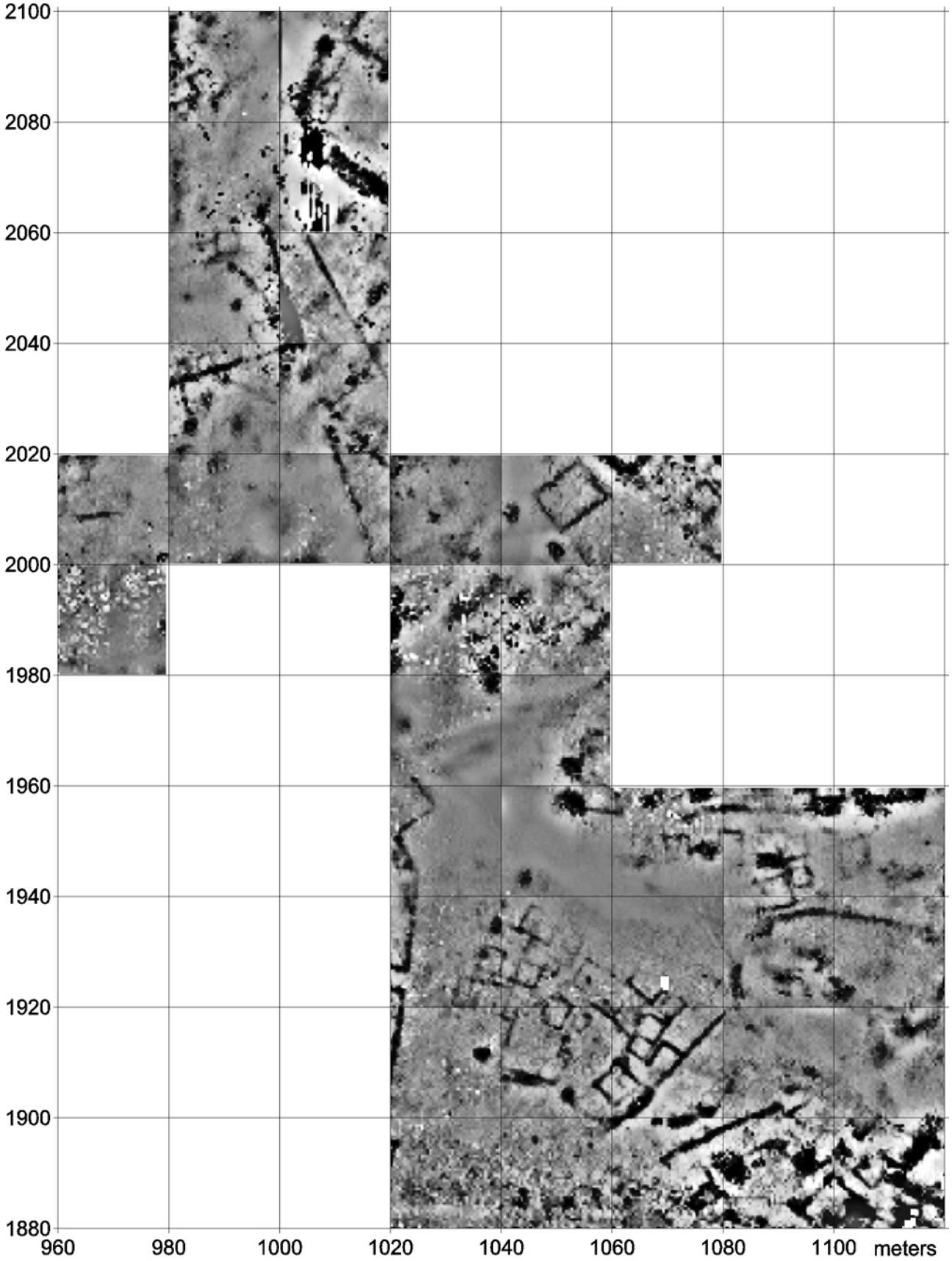

Figure 22: Resistivity survey is restricted to relatively stone-free grid squares where there is also sufficient moisture in the ground, hence the shape of the survey area. In May much of this area was under flowing water. By the time it had dried sufficiently to survey the adjacent grids had become too arid. This area of the survey will be extended in May 2003.

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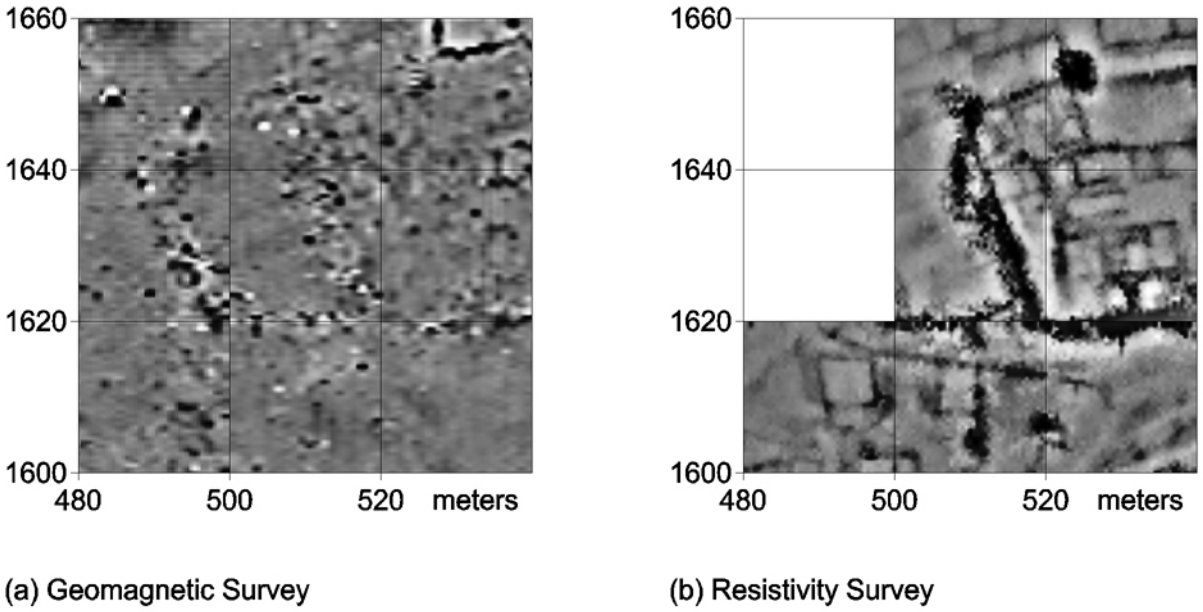

Figure 23: (a) The linear features on this image are vaguely discernable on the surface and appear to be terrace walls. Part of a single building, probably burnt, stands out at top right.
(b) A trial with resistivity survey revealed a plethora of features. The difference between the two images might reflect differences in burning, but this requires testing by excavation. This area, which dries out early on in the spring, is targeted for further resistivity survey.

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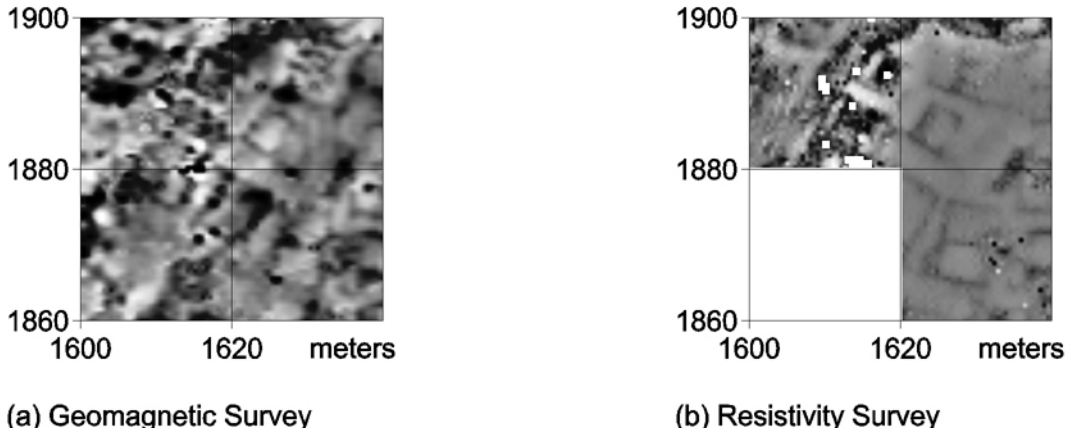


Figure 24: (a) Magnetic survey of this area, which lies immediately inside the east side of the city wall, has small areas that are smooth and flat between broken and stony parts. Traces of later tumuli are visible on the surface.
(b): Resistivity survey provides more details of the buildings in the restricted level space, but the terrain in this area means that progress is very slow indeed. Further resistivity survey in areas like this would only be justified for special reasons.

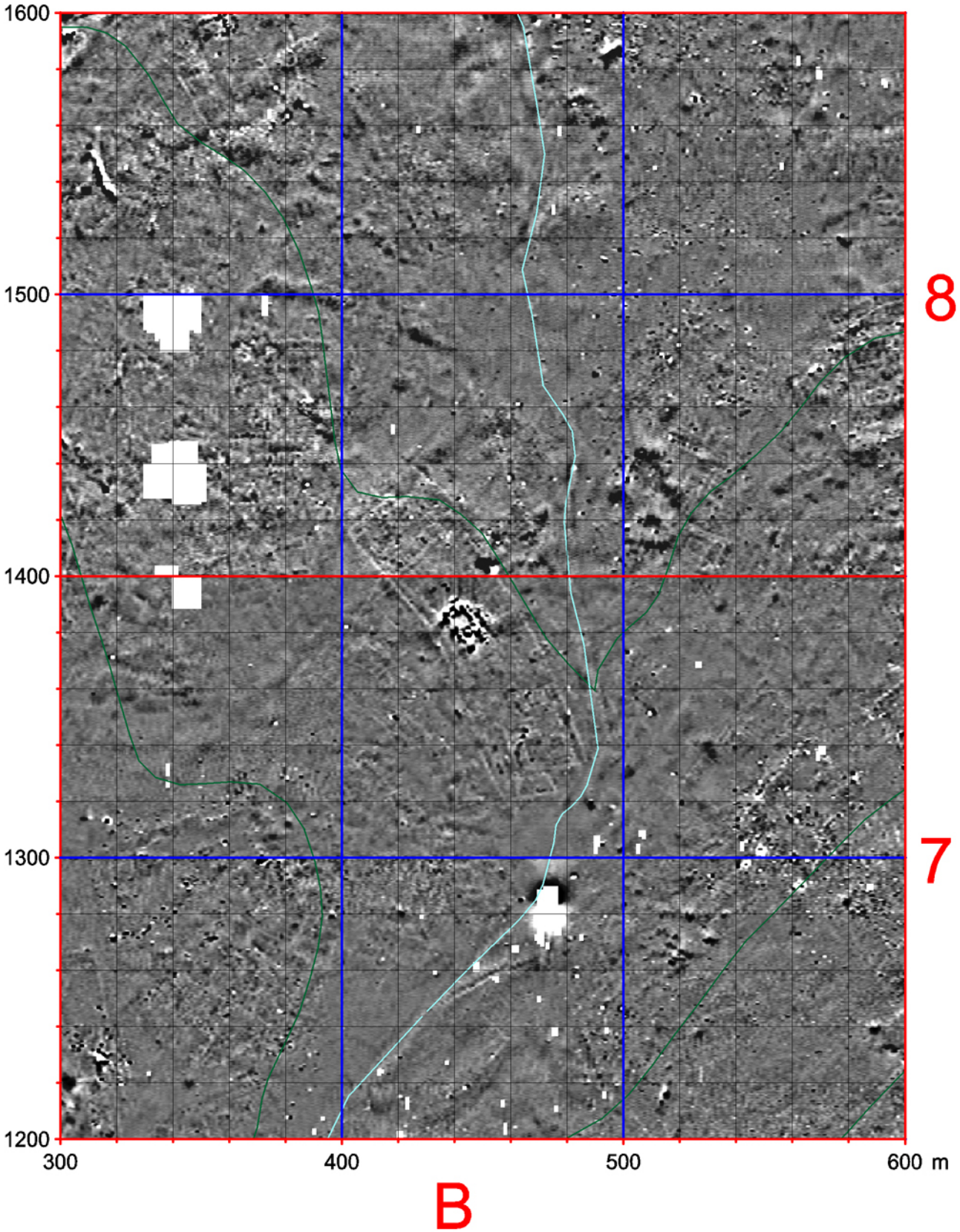


Figure 25: Gradiometer survey on the western side of the site may provide evidence that the burning was limited to large and exceptional buildings in this portion of the city.

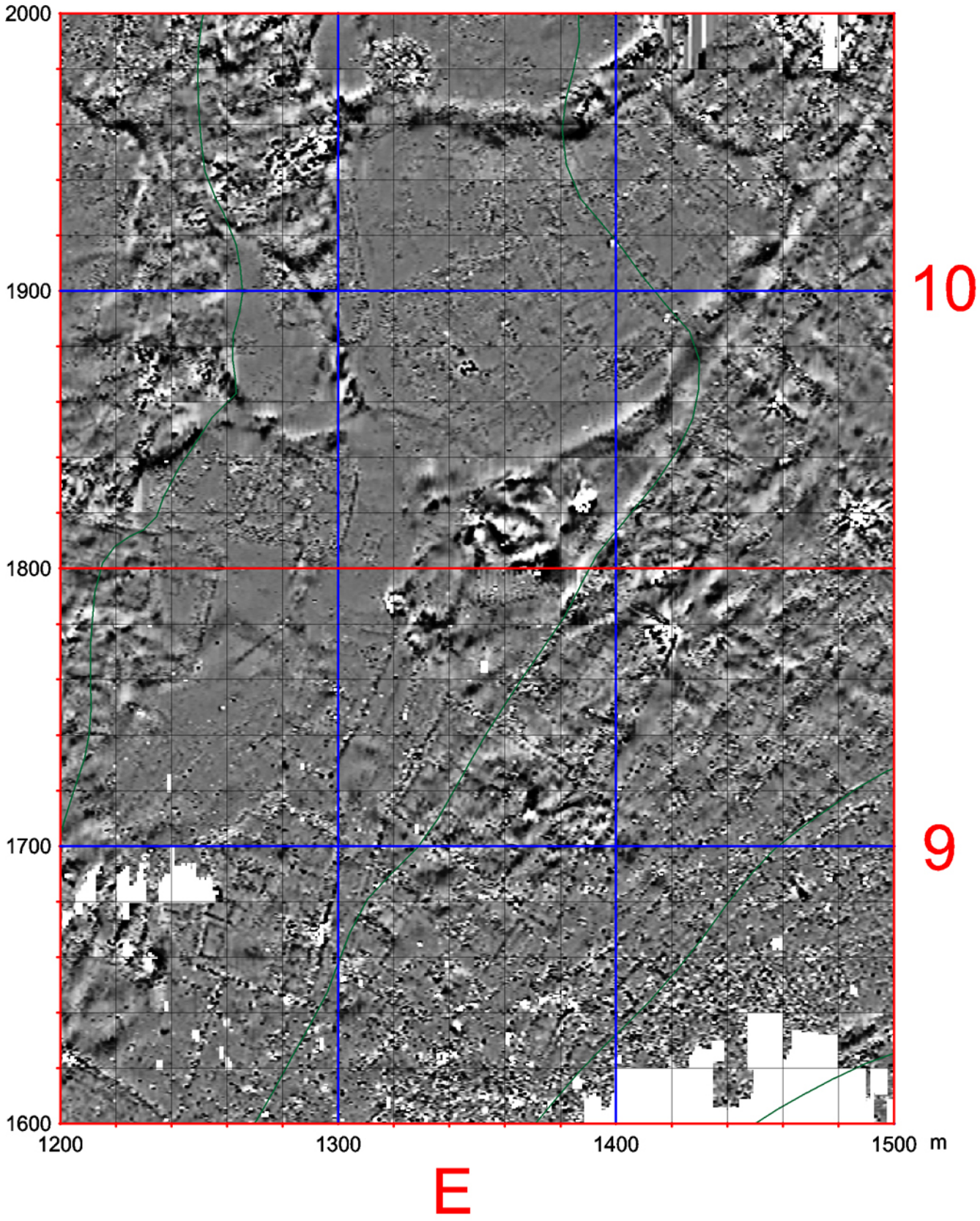


Figure 26: City planning is evident on the northern slopes of the Kale.

EXCAVATIONS

The 2002 Excavations

The 2002 campaign of excavation was concentrated on continuing work at two important locations, the Palace Complex and the Cappadocia Gate (Fig. 27).

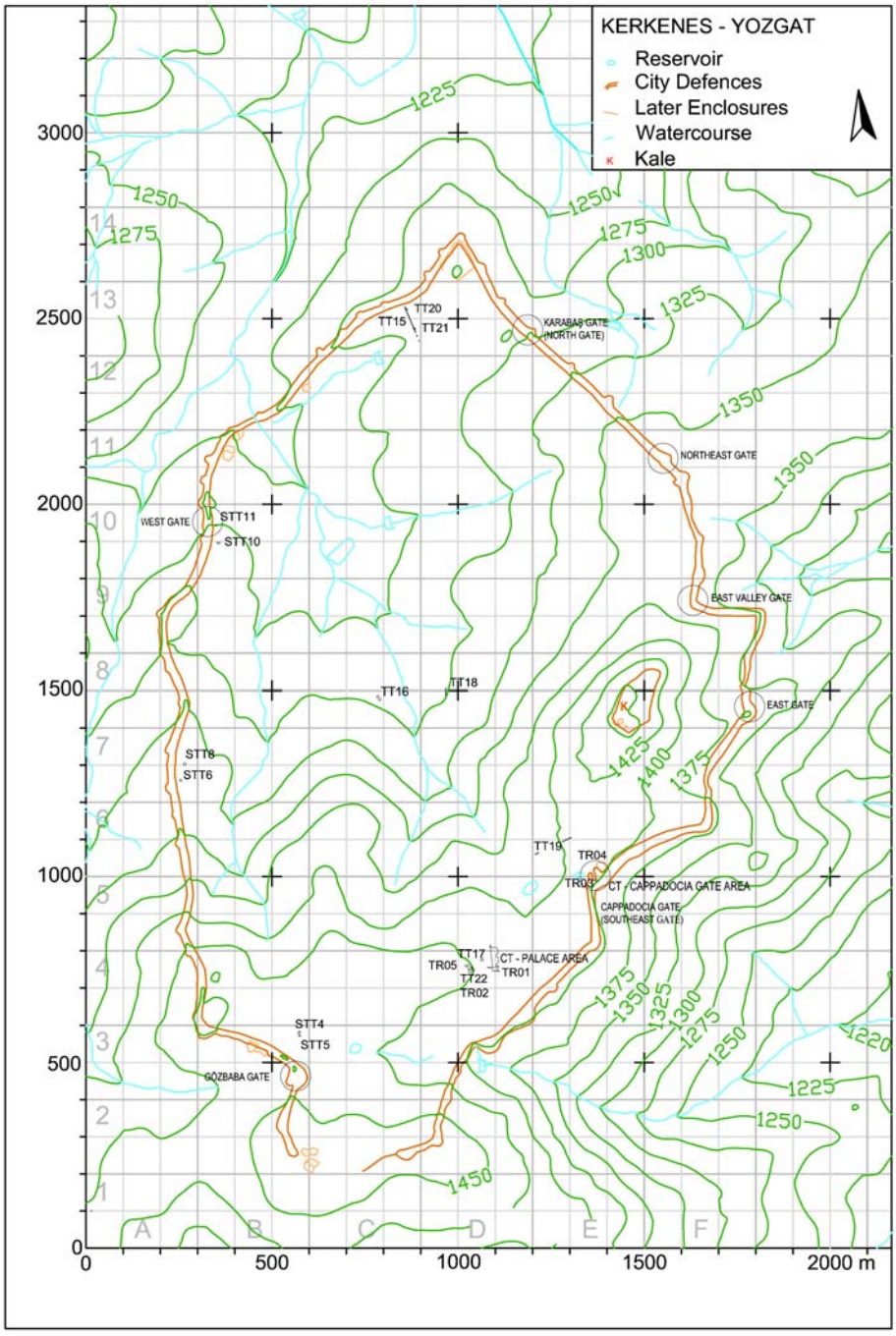


Figure 27: A map showing the location of excavations.

The Palace Complex

There are three main results from the relatively extensive excavation that David Stronach, assisted by Isabelle Ruben, conducted at the Palace Complex. Firstly, the position of a monumental gateway leading to the complex was established and an extensive area of the pavement leading to it was cleared. Secondly, further explorations were made in the very large two-roomed building, perhaps an 'Audience Hall' comprising a columned hall and anteroom, which was partially examined in 2000. Thirdly, just to the north of the 'Audience Hall', but apparently located in a separate section of the complex, excavation uncovered part of a two-roomed building with wide central doorways, which we have called the 'Ashlar Building'.

The Pavement and the Monumental Gateway

The south-eastern corner and a small stretch of the south wall of the very large tower flanking the north side of this monumental gateway was exposed Figs 1, 28, 29, 30 and 31). This corner was built of large granite ashlars with horizontal squared timbers between each course, and capped by a single course of huge blocks of dressed sandstone. Large pieces of carbonised timber were recovered from amongst the fallen stone. Impressive though it must have been, the incorporation of so much timber meant that when the city burnt the heat generated by beams in the walling was sufficient to damage very badly the granite. Further, the voids that were left when the beams burnt away caused the upper courses of the wall facing to collapse, or perhaps aided its deliberate destruction. Fragments of a sandstone column base suggest a monument of considerable grandeur. This monumental gate was constructed during the course of major modifications to an earlier scheme which were in some way associated with the cutting through of the stone glacis at the eastern end of the Palace Complex, and also with the addition of the terraces that belong to Structure B. This latter structure was partially built over the original stone paved entrance to the fortified building (Structure A). Further excavation will be needed to unravel the precise sequence of construction, but sufficient has already been recovered to demonstrate that the monumental gate was also built on top of the pavement.

Figure 28: The extensive stone pavement in Trench 01 was laid in at least two phases. The Structure B terraces are on the left. The 1m wide trench in the centre demonstrated that the stone paving did not extend across the street. (02dpjv4408)

With regard to the pavement itself, it was found that there had been at least one major extension to the paved area before the building of Structure B. The original south-eastern limit of the paving was defined by a row of particularly large slabs. The extension to the south-east was composed of smaller stones that appear to have been laid with less care and attention. This addition to the pavement did not, however, continue as far as the base of the stone glacis in front of Structure A, nor did it extend across the street on the southern edge. Further clearance will be necessary to establish whether some of the straight lines that can be discerned in the northern area of paving represent methods of working or secondary extension of the paved area. In either event, it would seem that the paving covers an open or public space rather than a street or road.

Two large sheet bronze cut-outs of the lower halves of a pair of ibex were found resting directly on top of the pavement. These finds are described later in this report, but it is appropriate to note that they were discovered in close proximity to Structure B not far from the western limit of Trench 01 (a little to the right of centre in Fig. 29). Suggestively, a small iron nail with a gilded head was recovered nearby. It would seem to be very possible that the upper parts of these ibex were made of more precious metal and that they were attached to a timber element of the monumental gateway. It might then be imagined that the entire decorative arrangement was torn off and the bronze pieces thrown aside with disdain before the Complex was put to the torch.

The stone paving was drawn in the field at a scale of 1:20. It was also photographed in 1 x 1m sections for photo-rectification and drawing. This second method is no less accurate than the first and, although the total input of time and effort is perhaps no smaller, it is a less gruelling method of recording large areas of pavement. Ideally drawings made from rectified photographs are checked against the actual remains in the field, although in this case it was deemed sufficient to resolve any uncertainties by means of reference to the field drawings.

Figure 29: Isabelle Ruben planning the stone pavement in Trench 01. Structure B, at right, was built on top of the paving. The ruinous wall at the rear of the excavation belongs to north tower of the Palace Complex gateway. (02dpjv2510)

a-Digital photo b-Rectified photo

Figure 30: Digital and rectified digital photographs of a 1.00 x 1.00m area of the pavement in Trench 01.

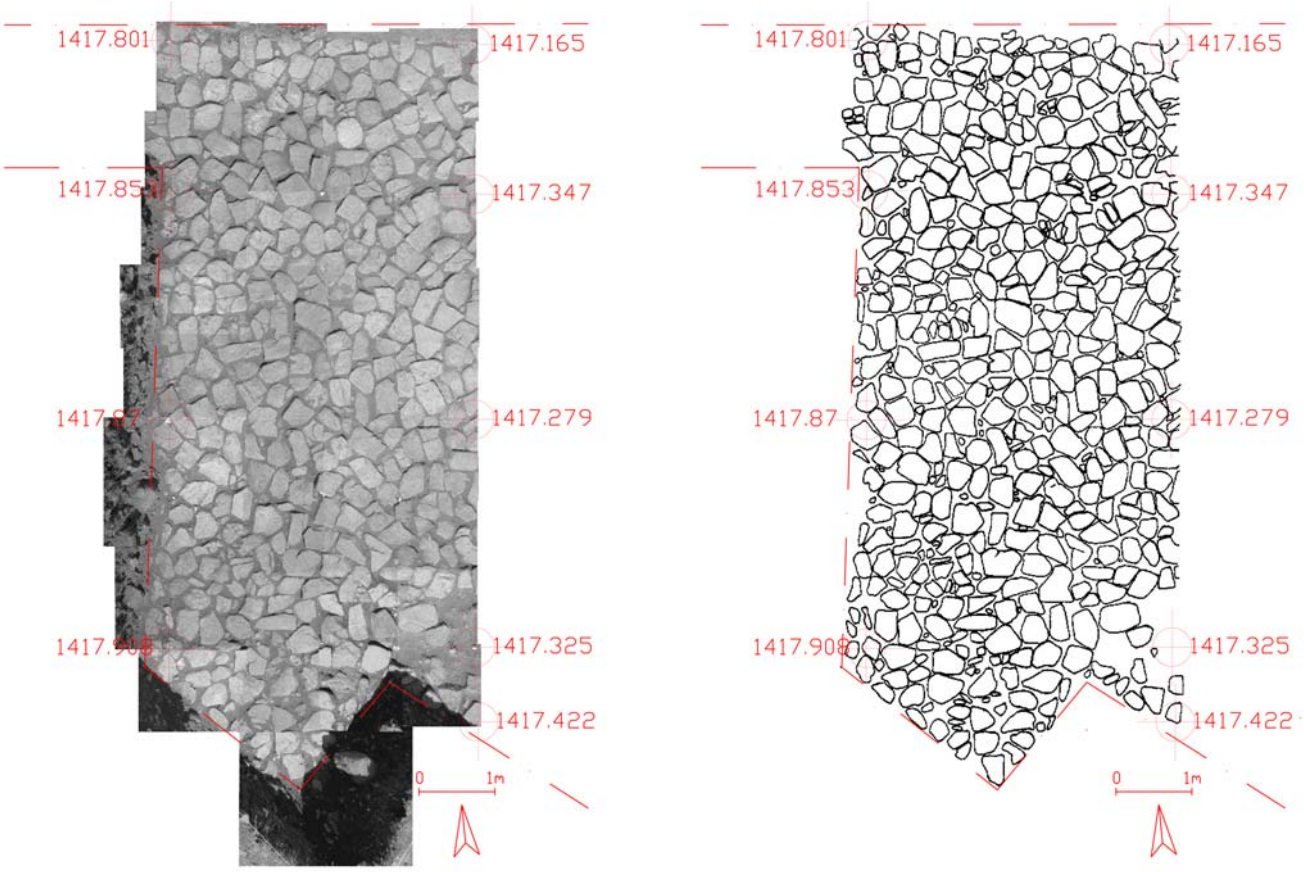


Figure 31: Each one-meter square grid of the pavement was photographed and the rectified pictures were combined in a single image from which a drawing was made.

The 'Audience Hall'

Test Trench, excavated in 2000, revealed the corner of a very large building, comprising a columned hall and anteroom. In 2002 a new trench, Tr 02, substantially increased the exposure of this structure (Figs 27 and 32). The monumental gate appears to have opened into a large precinct opposite the central doorway of this impressive building which must surely, therefore, have been an 'Audience Hall'.

The main room, which measures approximately 20m along each side, had two rows of wooden columns resting on carved sandstone column bases. There appear to have been 6 column bases in each row, but these, together with ashlar door stones and thresholds, were robbed at some later date, so that only fragments remain. Nevertheless, it is possible to state that the column bases were approximately 1.00m in diameter and had a simple concave or incurving profile with no moulding.

The roof would have been pitched and covered with thatch or, perhaps, shingles. In any event, there was sufficient combustible material to have baked the floor hard during the fire but, unlike other buildings that have been tested by excavation, burnt roof fragments of reed impressed clay were not found in this impressive building.

Figure 32: Further excavation of the 'Audience Hall' revealed an extensive burnt floor on which dark patches indicate the where beams might have fallen during the fire. A deep robber trench, behind the 1.00m red and white scale, produced pieces of carved sandstone from a simple column base. (02dpjv3504)

The 'Ashlar Building'

The main characteristics of this 'Ashlar Building' are a single course of granite pseudo-ashlars on both the inner and outer faces of each wall, which supported a timber frame filled with stone rubble covered by a flat roof of reeds and clay (Figs 33 and 36).

Figure 33: The Ashlar Building. At the end of the excavation the fragile remains were blanketed with geotextile and carefully covered with earth. (02dpjv3503)

The building comprises two rooms each with a wide central doorway on the eastern side (Figs 34 and 35). The overall length of the building is estimated to be very close to 15.00m while the width, which can be more precisely calculated because the centre points of the threshold stones are known, is 8.80m. The width of the south and east walls is 1.00m whereas the internal wall is somewhat broader at 1.30m. All walls appear to have been provided with slightly wider stone footings.

The larger, inner room (Room 2) is square, measuring approximately 6.80 by 6.80m and, apart from an undulating, multi-layered floor of mud plaster, the excavated area was found to be devoid of features (Fig. 38). The outer, rectangular room (Room 1) was smaller, measuring some 4.90 by 6.80m. The central doorway in the east wall was, at 3.00m, a whole meter wider than that connecting the two rooms.

The outer room was provided with a surround of sandstone paving and a lightly burnt mud-plaster floor (Figs 36, 37 and 39). Originally some combustible flooring material would have covered the little worn mud-plaster floor and lapped over the roughly cut offset edges of the sandstone pavers, although no trace of any such material remained.

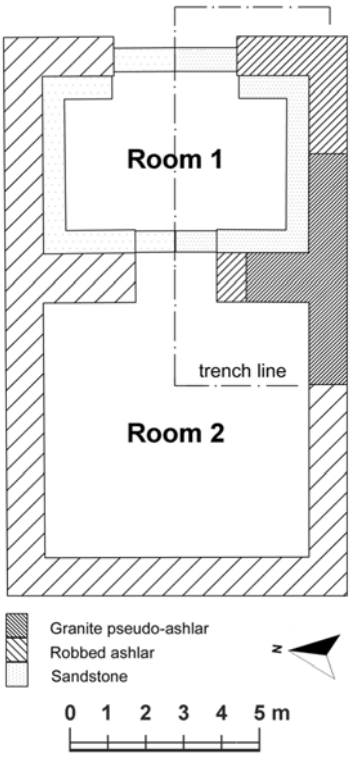


Figure 34: Reconstructed Plan of the Ashlar Building.

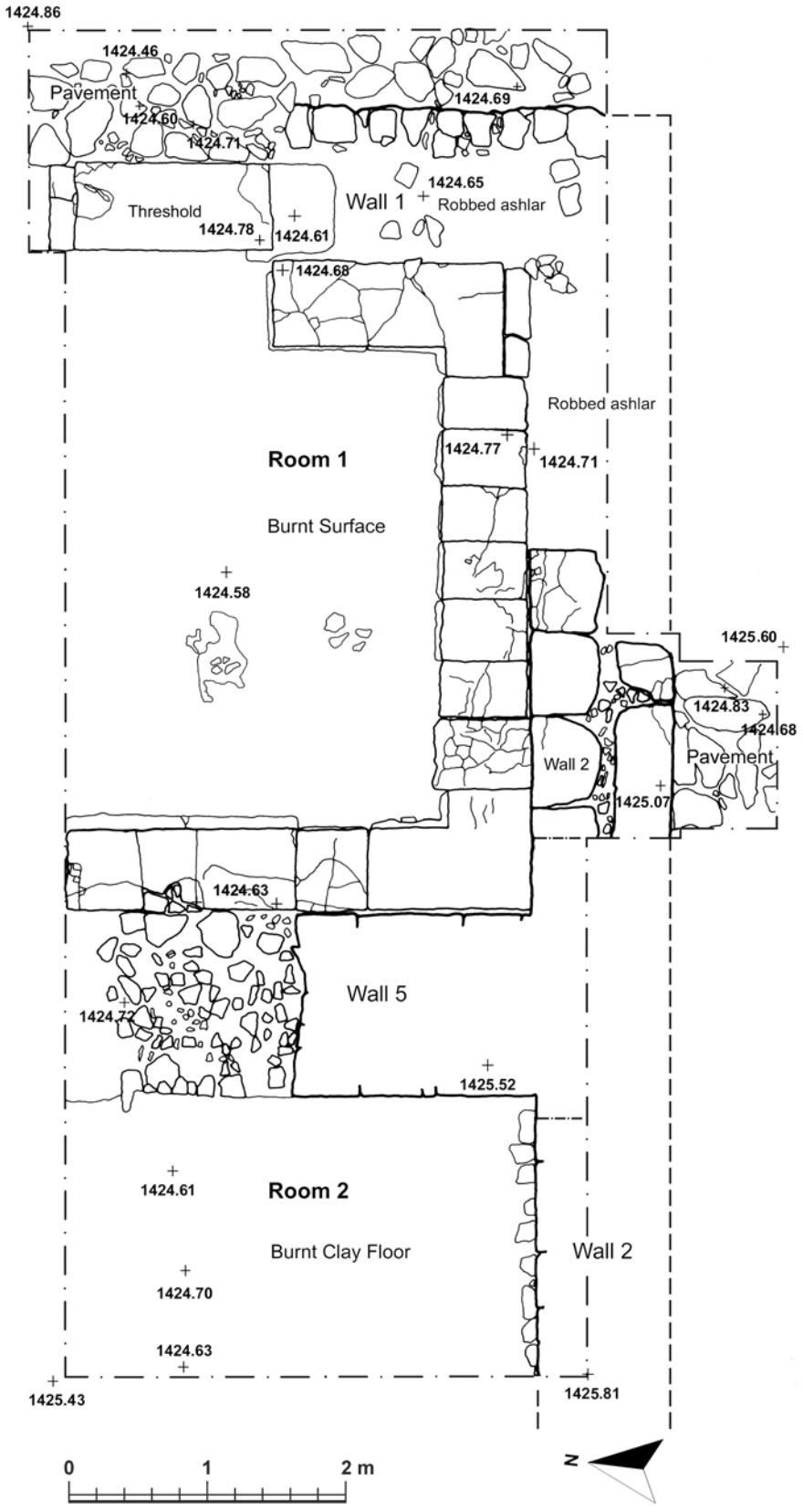


Figure 35: Plan of The Ashlar Building in Trench 05.

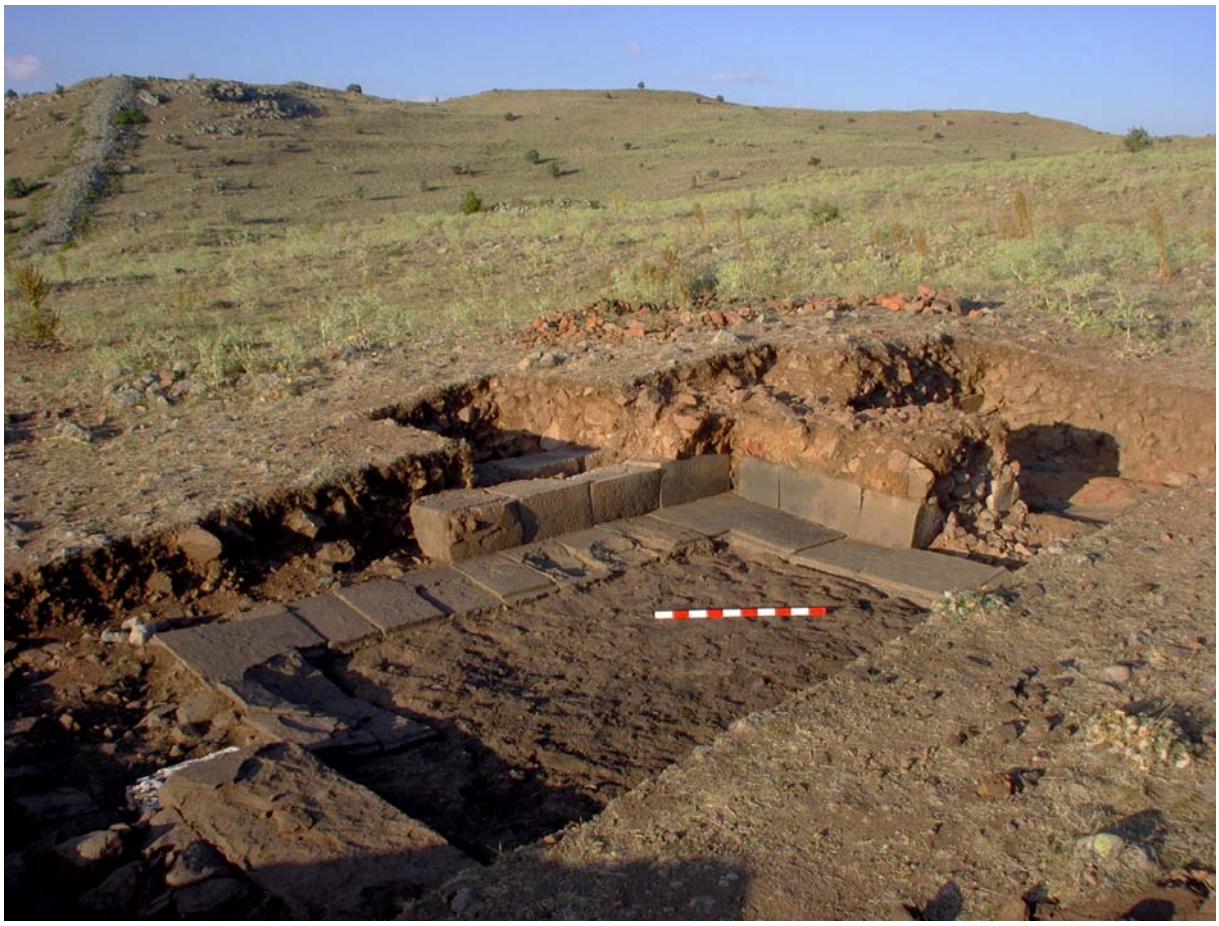


Figure 36: The Ashlar Building comprised a timber frame resting on granite blocks. The outer room was provided with an elegant sandstone surround. Granite ashlars were robbed from both doorways and also from the eastern end of the building. (02dpjv3606)

Figure 37: The intense heat of the fire damaged the granite ashlars as well as the sandstone pavers. The upper walling comprised rubble filling a timber frame coated with mud plaster. (02dpjv3609)

Structurally the building comprised a very substantial timber frame which was bedded on the level top of a single course of pseudo-ashlar masonry. In the smaller outer room the flat reed and mud portion of the roof was held up by beams with a span approaching 5.00m. The larger, inner room would have required beams close to 9.00m in length unless there were supporting columns. The walls were preserved to a height of about 0.90m, except where the ashlars had been robbed at the eastern end of the building and from either side of the central doorway between the two rooms. The rooms themselves were filled with burnt debris from the upper walling and roof.

Figure 38: The multi-layered clay floor of the inner room. (02dpjv3817)

Figure 39: An extension to the trench revealed an ashlar course around the outside of the building. (02dpjv3224)

Mud plaster covered the upper walling, but not the granite blocks. The outer room was provided with a surround of sandstone paving. The faces of the granite ashlars had drafted or bevelled edges on three sides, the bottommost edge being left slightly proud. Some of the ashlars, including those either side of the doors, were found to have been robbed out. The intensity of the heat from the fire had badly cracked the stonework, leaving no option other than to cover the walls and surfaces with geo-textile, which discourages burrowing animals and the growth of deep-rooted plants, and to backfill carefully the building.

Inscribed Marks

Five of the presently exposed ashlars have lines of intentionally cut marks or signs of uncertain significance. All exposed marks are on the interior faces of the building. The marks were apparently made with a chisel. There is no indication as to the particular script that is represented by these marks, except that they would seem not to be hieroglyphic. Ashlars 2 and 4 in the south wall of outer room, possess very similar markings (Fig. 40). Ashlar no. 2 carries a row that reads 'O I I I I I I I' while ashlar no. 4 carries the longest row 'O I I I I I I I I I', i.e. a circle or lozenge followed by seven and nine strokes respectively (Figs 41, 42 and 43 Blocks 2 & 4).

In the inner room three further ashlars, nos. 10, 12 and 14 possess shorter, simpler and slightly less prominent marks consisting, in each case, of three narrow, either vertical or diagonal strokes (Fig. 43 Blocks 10, 12 & 14).

These types of markings are often referred to as masons marks, although in this instance both the length and the position of the markings is unusual.

Figure 40: Some of the granite ashlars bear rows of incised marks. Burnt mud wall plaster can be seen *in situ* above the stone blocks in the corner. (02dpjv3611)

Figure 41: The longest row of marks comprises a circle or lozenge followed by nine strokes. (02dpjv3614)

Figure 42: Another row of marks, also with, a circle or lozenge at left, had only seven strokes. (02dpjv3220)

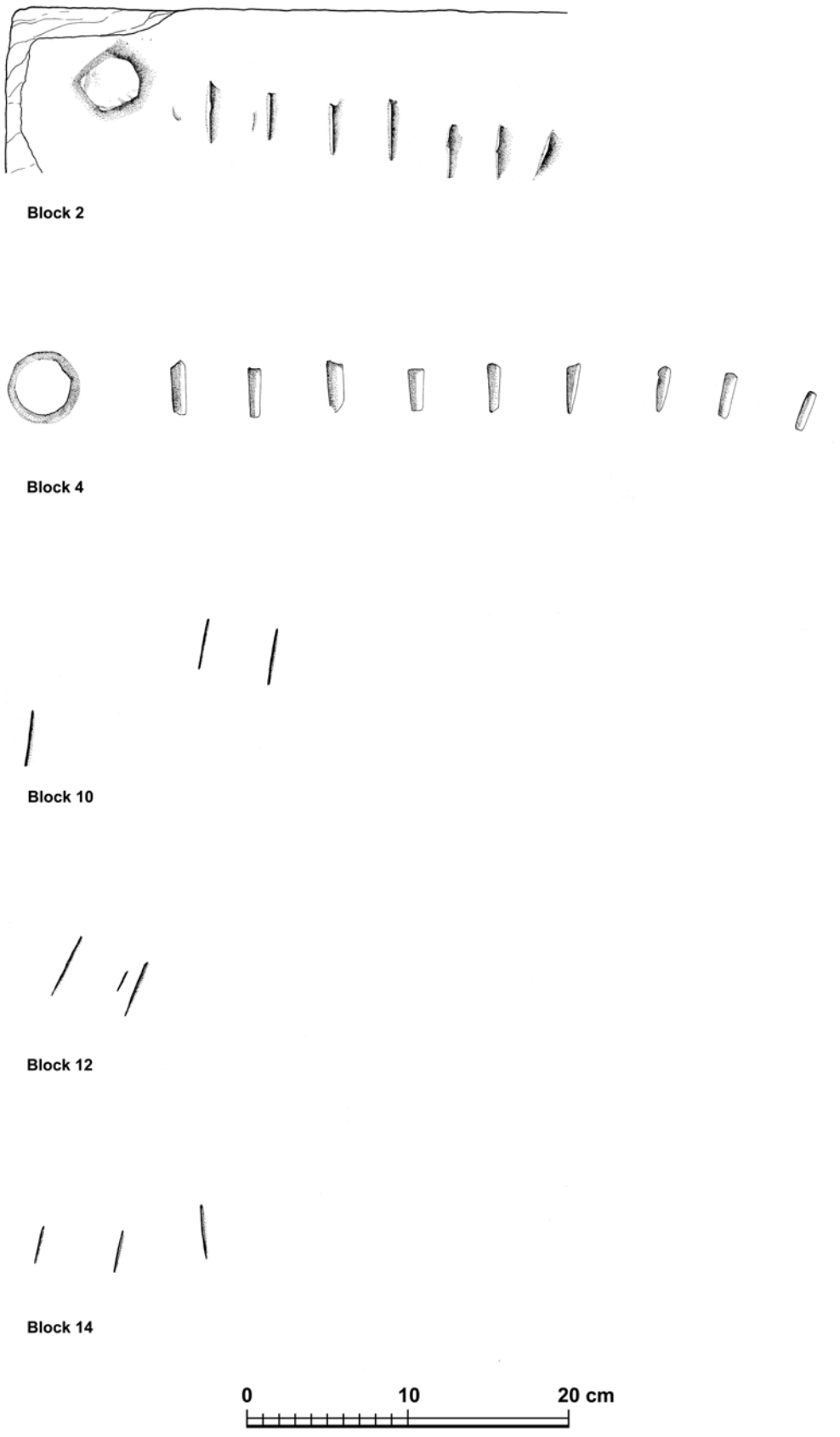


Figure 43: Drawings of the inscribed marks.

The "Cappadocia Gate"

The cutting of the section across the entire width of gate passage revealed that it would only have been possible for wheeled vehicles to pass through the gate during the Iron Age (Figs 44 and 45). Immediately after the fire, in or around 547 BC, the gate was deliberately destroyed. At some later date, perhaps, as suggested by pottery sherds, in the Byzantine period, part of the rubble fill of the passage was removed so as to make a track fit for animals. A battered pile of stones was used to retain the very loose rubble fill on the western side of this narrow track. It is now understood, therefore, that the wide and prominent road that climbs gently up the hillside to the "Cappadocia Gate" is Iron Age in date. The floor of the gate passage was unpaved, the eroded Iron Age surface of the passage being covered with charcoal fragments from the city's destruction.

Other work at the gate was carried out in preparation for more extensive clearance and conservation in 2003. When this program is completed, the "Cappadocia Gate" will provide a focal point with strong visual impact for a growing number of visitors (Figs 46, 47, 48, 49 and 50).

Figure 44: When the entire gate passage has been cleared and a new protective surface laid, visitors will be able to enter the city through the original gate. (02dpjv2204)

Figure 45: Section across the passage of the "Cappadocia Gate". (02dpjv2207)

Figure 46: Gülnur Uçar drawing the glacis over a rectified photograph before consolidation. (02dpjv2519)

Figure 47: Some of the stones in the glacis were reset in their original positions to prevent them falling during the winter. The passage itself was lined with geotextile and covered with rubble in order to protect the original surface. (02dpjv5610)

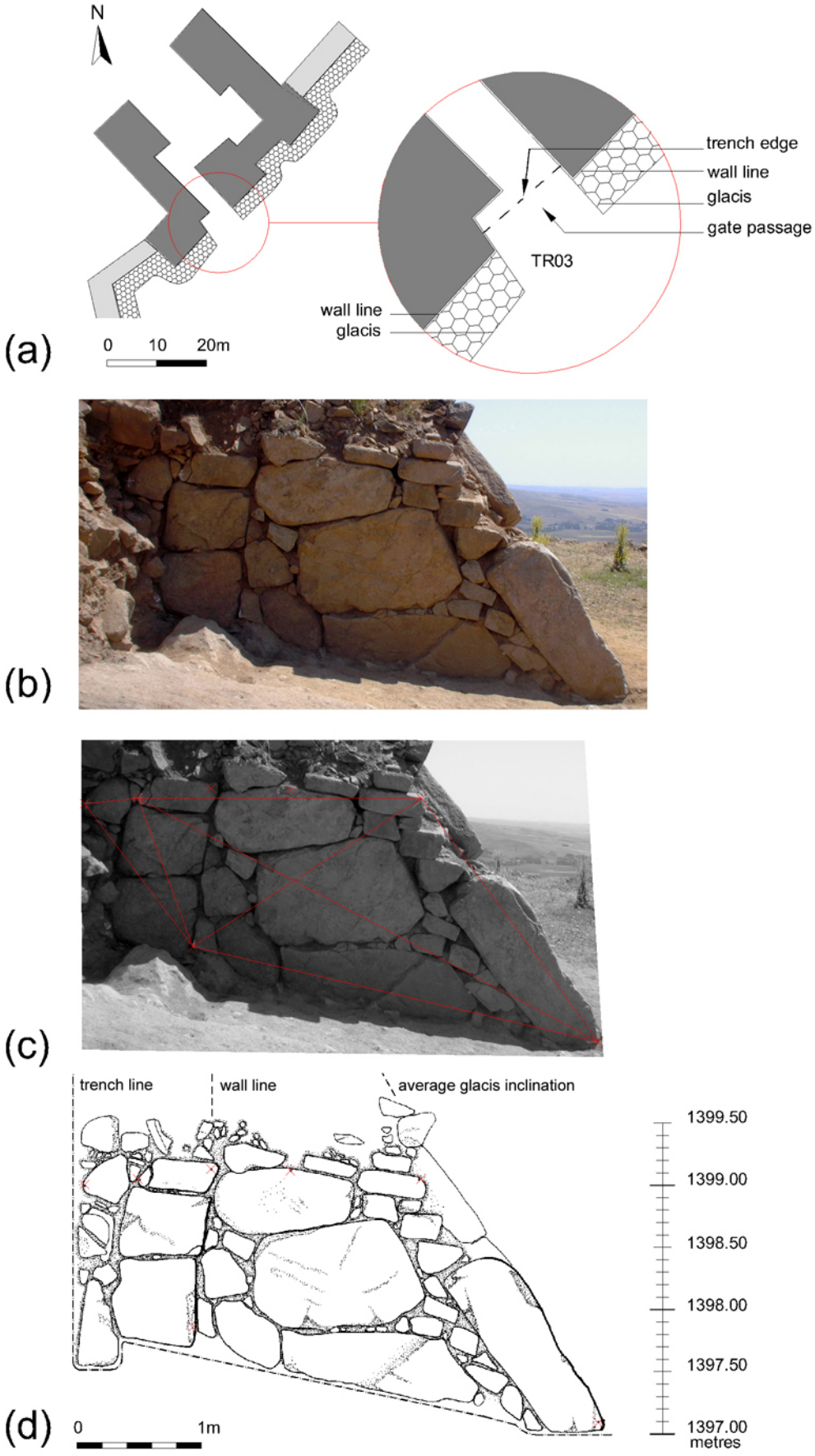


Figure 48: (a) The location of the section across the passage of the Cappadocia Gate.
(b) Large lumps of bedrock protruded through the heavily eroded passage floor. The addition of the glacis to the front of the north-east passage wall was revealed.
(c) Accurately measured control points and lines are used for photo-rectification.
(d) A drawing of the wall face made from rectified photographs.

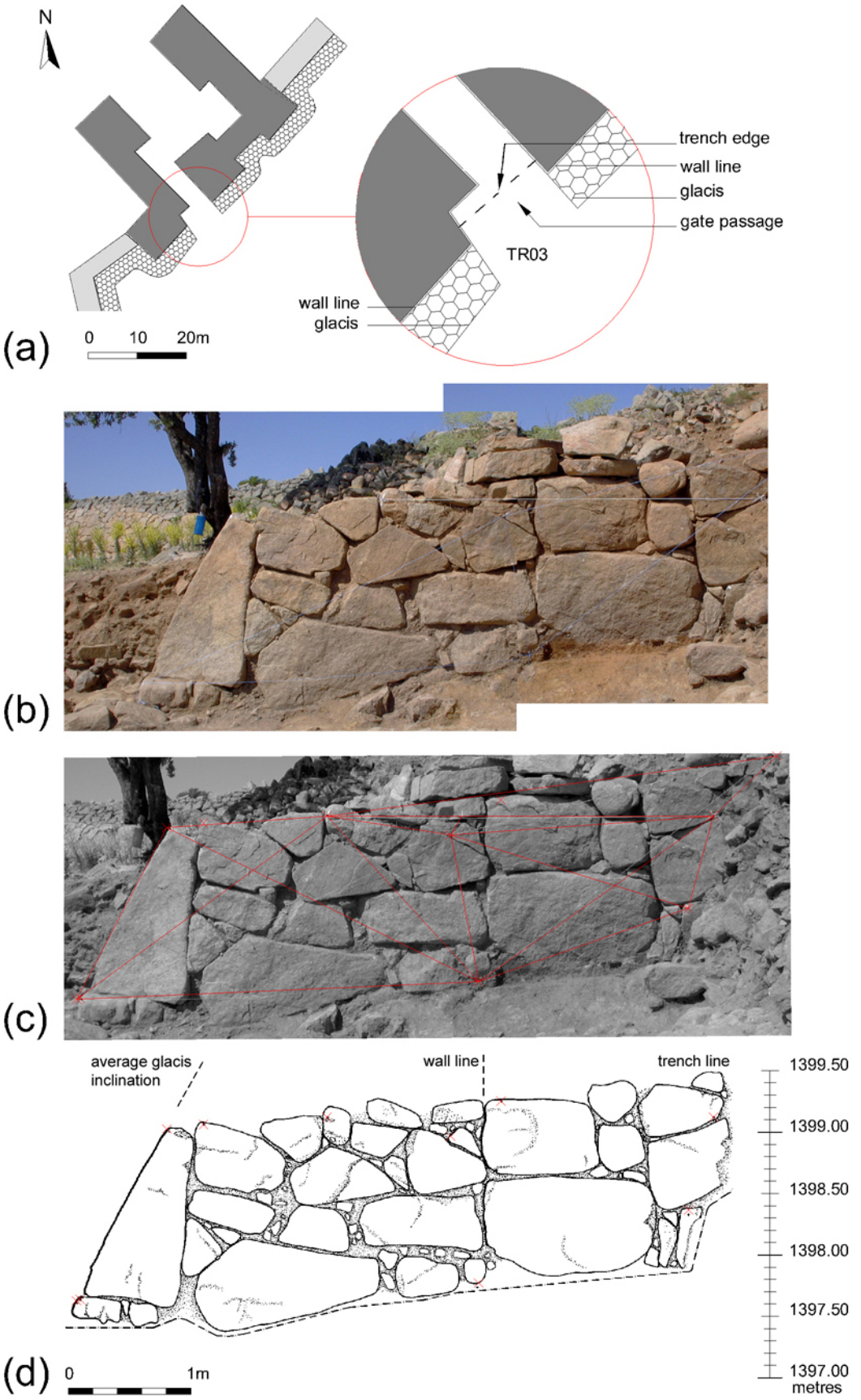
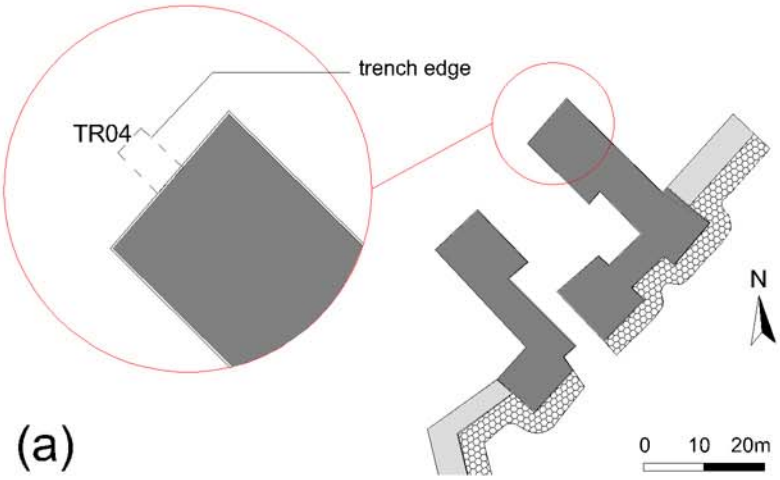


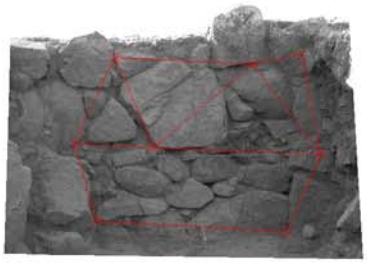
Figure 49: (a) The location of the section across the passage of the Cappadocia Gate.
(b) The south-east passage wall showing the wall and the glacis. The uppermost flat stones are not in situ.
(c) Accurately measured control points and lines are used for photo-rectification.
(d) The drawing shows the extent of the original walling and glacis.



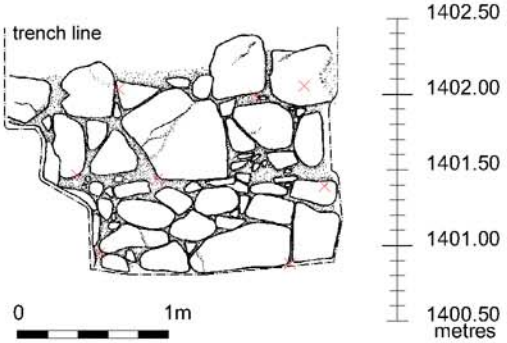
(a)

(b)

(c)



(d)



(e)

Figure 50:
(a) Trench 4 was positioned against the inner, north-east, tower in order to ascertain the extent and condition of the wall before the commencement of clearance on a larger scale.
(b) The wall face was in good condition, although stained by the fire which destroyed the city.
(c) Points and strings permit the rectification of oblique photographs where the small size of the trench was restrictive.
(d) Accurate drawings from rectified digital photographs are checked in the field before final inking.

Finds

Ceramics

Very few ceramic pieces were found in 2002. The Ashlar Building and the Audience Hall produced no more than a handful of small sherds between them, and only a few undiagnostic and abraded bits were recovered from the stone pavements. At the Cappadocia Gate, however, one reconstructable juglet (Fig. 51) was found in the erosion gully at the south-west corner of the passage. This particular vessel has a cut-away spout and a concave disc base. The surface was coated with black slip and burnished, and further embellished with panels of incised geometric patterning. Sherds from not dissimilar fine ware juglets have been noted at other parts of the site.

Figure 51: Incised, black burnished juglet from the Cappadocia Gate. (02dpjv2801)

Bronze Fibula

A typical bronze fibula (Fig. 52) was also found in the erosion gulley at the Cappadocia Gate. Although it has lost its pin this piece, like much of the metalwork at Kerkenes, is remarkably well preserved. The condition is so good that the marks of the metal-smith's file could be clearly seen once the loose dirt had been brushed away.

Figure 52: Bronze fibula from the Cappadocia Gate. (02dpjv2922)

Bronze Ibex

The lower halves of an antithetical pair of ibex (Figs 53, 54, 55 and 56) were recovered from the stone pavement in Tr 01, as described above. The pieces are very large, the complete example measuring 41cm. The height of the entire animal, including horns, would therefore have been in excess of 1.00m or perhaps as much as two-thirds life-size. The extant pieces were cut from sheet bronze. The complete example has one nail hole in each hoof and a third in the tail (but none along the top edge). Muscles and joints are very slightly embossed and emphasised by means lines and incomplete circles, these latter apparently made with a punch. Although the second animal is less well preserved than the first, it is nevertheless very substantial. It is certain that the two animals are not exactly identical, with the stance of the tail, for instance, being slightly different in each case.

The rampant pose is certain. It would seem highly probable, therefore, that the original composition included a central feature on which the raised hoof of each animal rested. This is very likely to have been a tree of life. A parallel for such a composition that is not far distant from Kerkenes, and perhaps not very much later in date, can be seen on the decorated terracotta tiles from Pazarlı near Çorum.

It is possible, but by no means certain, that the animals were winged. Such an arrangement would perhaps go some way to explaining why the extant pieces end across the middle of the torso, particularly if the wings were made of a different material. It is likewise possible, but by no means necessary, to imagine that both animals were looking back over their shoulders rather than facing forwards. Whatever the original composition, it seems more than reasonable to assume that the horns were emblazoned with gold.

Figure 53: The major fragment of one ibex just coming out of Trench 01. The second, less complete, animal was found close by. (02dpjv1203)

Figure 54: The lower half of a rampant ibex made from sheet bronze photographed after conservator Noël Siver cleaned and assembled the pieces. There are nail holes in the hooves and tail. (02dpjv2710)

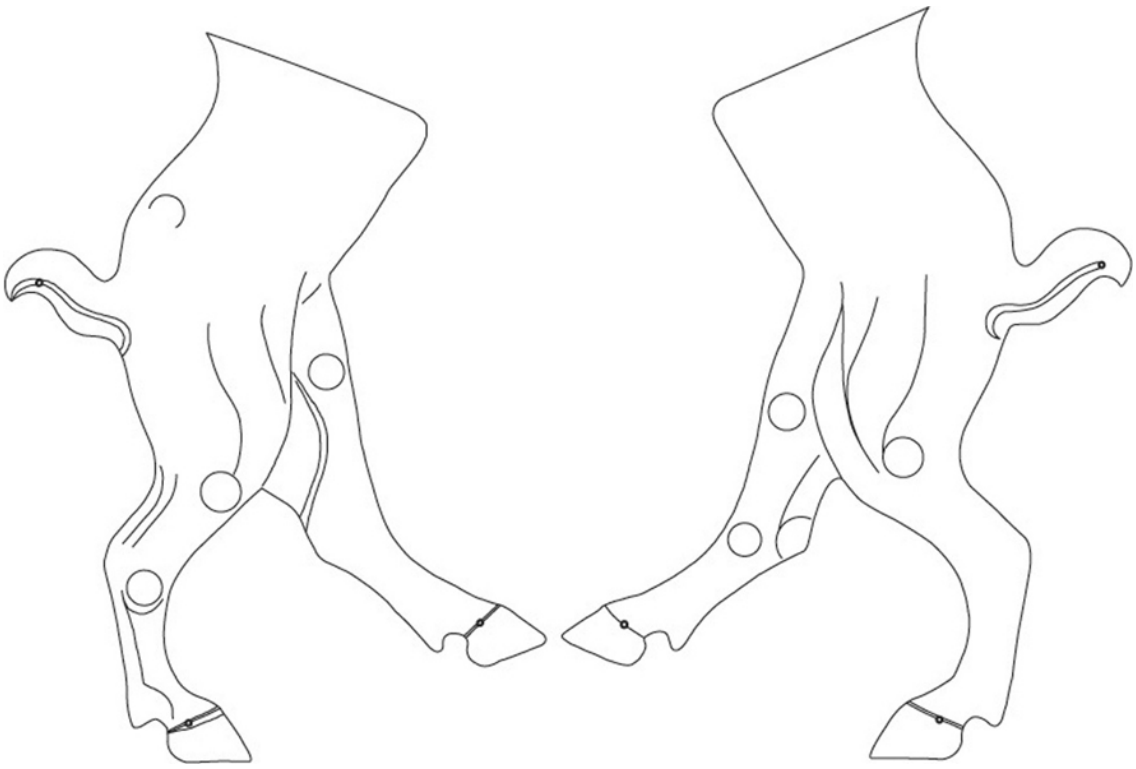


Figure 55: A reconstruction of the two pieces, which are not exactly identical.

Figure 56: A simulation of two ibex using Photoshop software.

Finds from the Ashlar Building

There were no finds which might provide any hint as to the function of this special building. One fragment of silver foil (Fig. 57) and one very small frit bead (not illustrated) were recovered along with three iron nails (Fig. 58) two of which have distinctive, asymmetric, triangular heads.

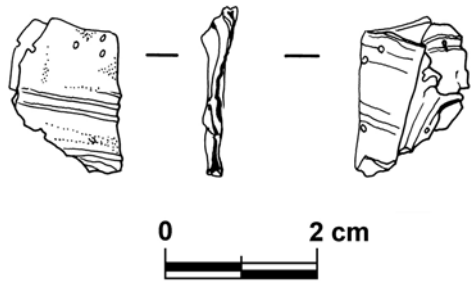


Figure 57: Silver foil with parallel ridges, broken and crumpled with, perhaps, small perforations. Maximum length 22mm.
K02.127. 02TR05U13met01

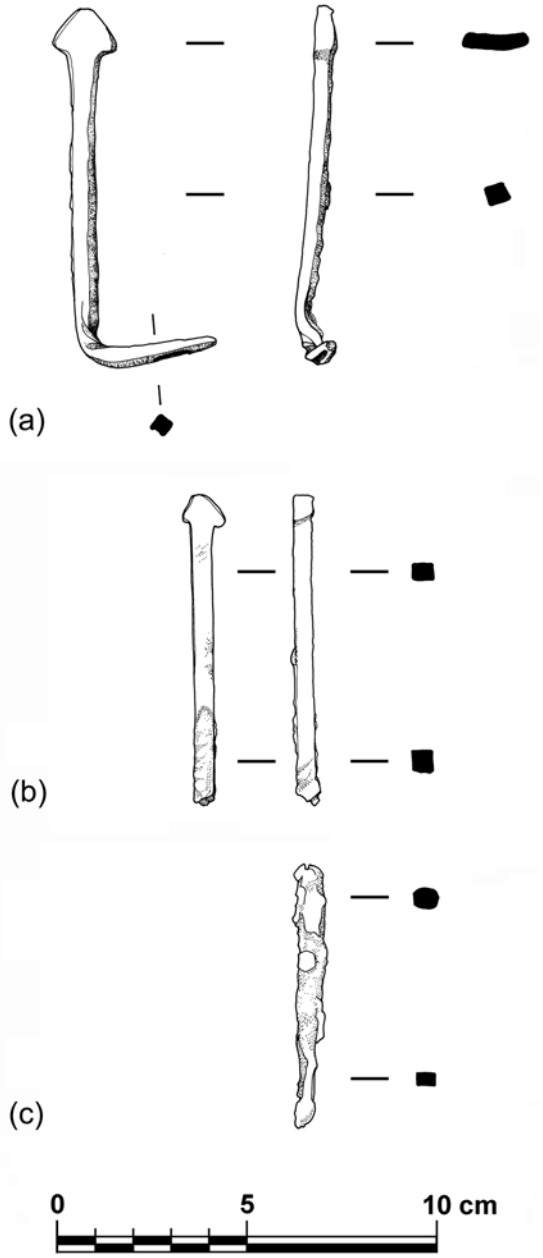


Figure 58:
(a) Iron nail with a flat triangular head and a square shank which has been twisted and bent in antiquity. The top has signs of having been hammered. Total length 130mm, width of head 13mm.
K02.126. 02TR05U03met01
(b) Iron nail with an asymmetric triangular head and square shank, tip missing. Extant length 82mm, width of head 12mm.
K02.142. 02TR05U03met03
(c) Iron nail with square shank and blunt top. Length 71mm.
02TR05U03met02

Bones

In her study of the animal bones (Fig. 59), mostly from earlier seasons, Vicky Ioannidou has discovered that wild beasts, including bear, pig and three species of deer, were prevalent in the open area in front of the Palace Complex glacis.

Figure 59: A selection of jaw fragments and tusks from wild pig. (02dpjv4803)

Charcoal for Dendrochronolgy

Large fragments of charcoal from burnt beams were recovered from the excavations at the "Cappadocia Gate" and from the Monumental Gateway to the Palace Complex (Fig. 60).

Figure 60: Scott Branting and Natalie Summers recovering part of a burnt beam for dendrochronology. (02dpjv2403)

OTHER STUDIES

Dendrochronology

Defne Bozkurt, a Cornell student who we were fortunate to be able to borrow for a day from Dr. Omura and the Kamankale Höyük Excavations, supervised packing of the samples from Kerkenes for shipment to The Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology at Cornell University where Peter Kuniholm and his team are counting the annual growth rings. The wood is pine and, at the time of writing, the longest sequence is 197 rings which should extend the Cornell Bronze Age/Iron Age chronology downward by at least a century.

http://www.arts.cornell.edu/dendro/

Geology, Geomorphology and Hydrology

Catherine Kuzucuoğlu, Mehmet Ekmekçi and Harun Aydın were able to identify the different types of rock, sandstones and chalk, which had been used in addition to the granite at Kerkenes (Fig. 61). Mehmet has written the draft of a detailed report on the hydrology of the Kerkenes Dağ which explains how the water table is replenished and also describes the way in which the Iron Age reservoirs were filled by seepage. 2002 was the final season of a program of geomorphlogical coring in the surrounding region that aims at providing evidence for human impact on the landscape and, in particular, at documenting the effects of both building the Iron Age city and its violent destruction. The results of their laboratory analysis are eagerly awaited.

Figure 61: Catherine Kuzucuoğlu, Mehmet Ekmekçi and Harun Aydın examining the shattered sandstone blocks that had fallen from the tower of the monumental gateway at the Palace complex. (02dpjv2608)

CONCLUSIONS

The 2002 season was a milestone for the Kerkenes Project that was crowned by the successful completion of the geomagnetic survey of the entire site. The culmination of this effort, which has resulted in a complete set of geo-magnetic maps, was marked by celebrations for our tenth anniversary. This achievement has drawn on great dedication from many and would not have been possible without the resources that the project has built up, both in Kerkenes and at the Middle East Technical University (Figs 62 and 63). Thanks are due to all of our sponsors and friends who have helped in so many different ways. In these anxious times it is particularly difficult to procure adequate funding for the maintenance of an ambitious project that seeks to attain the highest possible standard of research on a significant scale. Discovery of the Ashlar Building (Figs 64 and 65) provides just a foretaste of the many secrets still to be revealed. As the Kerkenes research design progresses towards larger scale excavation and heritage preservation, it is appropriate to make an appeal for support that will bring the past back to life through exploration of the ruins of this once great city of the Anatolian Plateau.

Figure 62: Computing facilities, most difficult to acquire and maintain, have been a key factor in completing the remote sensing geomagnetic survey. Most of the hardware is moved from Ankara to Kerkenes each summer. Here Gulnur Uçar is overlaying images. (02dpjv3022)

Figure 63: The newly appointed assistant, Hasan Şenyurt (top at right), accompanied the Yozgat Museum Director, Erol Özen (top at left), to put the first official seal to the Kerkenes Storage Building before the representative, Mevlüt Üyümez (top centre), officially closes the season. A guard from the village, Memiş Gençarslan, (bottom) is now employed throughout the year. (02dpjv6313cb15)

Figure 64: Excavation, precisely targeted on the basis of maps produced from remote sensing data, will be the chief focus of future research design. (02dpjv3020)

Figure 65: Both the local authorities and the village inhabitants have been very supportive since the very start of the project. Before protecting fragile remains with a covering of geotextile and clean earth at the end of the field season, Geoffrey Summers explained the results to several interested groups. On this occasion Mehmet Şahin, the Assistant Governor of Yozgat (at left), Erol Özen, the Yozgat Museum Director (in blue) and Ali Erciyas, the Headman of Şahmuratlı Village (at right) inspect the Ashlar Building. (02dpjv3212)

KERKENES DAĞ PROJECT PUBLICATIONS BY YEAR

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