GEOPHYSICAL SURVEY OF LAND AT 27 ST HELENS ROAD YORK

A PROGRAMME OF RESEARCH CARRIED OUT
ON BEHALF OF

DAVID SPENCER PARTNERSHIP

By

GeoQuest Associates

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INTRODUCTION

This report presents the results of a geophysical survey of land adjoining 27 St Helens Road, Dringhouses, York, where it is proposed to construct an Abbeyfield House, access road and parking (Figure 1). The site is close to the findspot of five Neolithic greenstone handaxes and to a small Roman cemetary near the junction of St Helens Road and Tadcaster Road. In the Medieval period the site consisted of a series of strip holdings extending from Tadcaster Road, on the east, to Chaloner's Whin Drain on the west. It is therefore apparent from the history of the area that this site has strong archaeological potential.

An archaeological geophysical survey of the proposed development site was carried out in accordance with a Brief supplied by the David Spencer Partnership. The aims of the survey were as follows:

1 Detect subsoil features which might provide evidence for Roman occupation.

2 Locate additional features of archaeological interest in the area of proposed development.

3 Map the positions of buried services and other zones of possible engineering hazard.

LOCATION, GEOLOGY AND LANDUSE

The study area comprises several grassed lawns adjoining 27 St Helens Road, which extend NW from Tadcaster Road to Chaloner's Whin Drain (SE58604970). In the 1920's and 1930's the ground was terraced for use as a tennis and bowling club and hardcourts remain buried beneath 10-20cm of soil and turf in the southern part of the site (owner, *pers. comm.*). The subsoil is glacial moraine and there are no rock outcrops.

The entire study area was under grass at the time of survey (April 1994). Approximately 3 horses and 6 large dogs are known to have been buried in the area of survey (owner, *pers. comm.*) which also includes the footings of a demolished sports pavilion, several drains, sewers and inspection covers (Figure 1).

THE GEOPHYSICAL SURVEY

Geophysical surveying provides a rapid method for the detection of subsoil features within archaeological landscapes. Two methods are most frequently used. *Geomagnetic* surveying employs a portable magnetometer to detect small perturbations in the Earth's magnetic field caused by changes in soil magnetic susceptibility or

permanent magnetisation. The *resistivity* method, on the other hand, maps differences in soil electrical resistance which mainly reflect variations in water content.

The primary aim of the geophysical surveys at 27 St Helens Road was to prospect for structural remains of possible Roman or Medieval date and associated features, such as field systems. Archaeological remains of these periods might include stone and timber buildings, enclosure ditches and fired structures. Owing to the presence of buildings and buried iron pipes, it was considered that an electrical resistivity survey would be the most suitable texhnique for site evaluation.

Measurements of subsoil electrical resistivity were made at 1.0x0.5m gridded intervals using a Geoscan RM15 meter in 'twin-electrode' configuration, with 0.5m spacing of the mobile probes. This measurement scheme will detect geophysical anomalies on a scale of 1.0-2.0m and this approximately equates to the archaeological resolution. Both parallel and zig-zag traverse modes were employed to gather the data in blocks of 20x20m. Appendix **A** provides more information about this method of archaeological geophysical surveying.

The geophysical results were processed into grey-scale images showing the measured resistance anomalies and these are presented in Figure 2. Appendix **B** describes the computer processing of the field data in more detail.

DISCUSSION

General

The study areas were found to be characterised by strong resistance anomalies, particularly on the old tennis court areas and terraced slopes. In order to optimise the visibility of geophysical anomalies, greyscale images for individual 20x20m blocks have been processed independently (Figure 2).

As a first stage in the interpretation, the resistance map has been classified into characteristic styles of geophysical terrain (Figure 3) as follows:

1 Significant regions of anomalously *high resistivity* which might be associated with a more stoney subsoil indicating features such as *stone drains or wall footings.*

2 Areas of anomalously *low resistivity*, corresponding to a more moist subsoil such as that occuring within *pits and ditches.*

3 Areas of geophysical disturbance probably reflecting *demolition rubble* or *made ground.*

The key in Figure 3 defines the colour used for each class of anomaly. A physical interpretation of the survey is shown in Figure 4.

NW Part of Development Area (Abbeyfield House Site)

Here, the majority of the lawned area is characterised by a NW-SE-aligned geophysical texture which almost certainly provides evidence for a phase of ploughing in this direction. This texture is truncated approximately 15m from the Chaloner's Whin Drain by a series of high resistivity lobes, aligned parallel with the stream, which probably reflect the remains of flood banks. Several compact, very high resistance anomalies radiating from the burn are almost certainly due to drains or dumps of stoney material possibly associated with the early 20th century sports facilities.

An area of high electrical resistance has been detected on the known site of the pavilion (Figures 1 & 2).

No geophysical anomalies of archaeological interest were detected in this part of the Development Area.

SE & NE Part of Development Area (Access Road & Parking)

Geophysical mapping of this area was partly obscured by an existing garage, hardstanding and woodshed, and around which survey would have produced unusable data. The principal geophysical feature comprises a 5m wide band of very high resistivity which traverses the centre of the terraced lawns SW of the house: this probably reflects a buried tennis court surface (supported by the fact that the electrodes were difficult to insert here).

Subcircular zones of high resistivity south of the house may represent the reported animal burials. A drain has also possibly been detected NW of the high resistivity (tennis court) zone, as indicated in Figure 4.

No geophysical anomalies of archaeological interest were detected in this part of the Development Area.

CONFIDENCE RATINGS

The percentage levels of confidence which we assign to the features conjectured above are as follows:

Abbeyfield Site: Ploughing 80%; Flood banks 50%; Drains/stone dumps 50%; Pavilion 80%.

Access & Parking: Tennis court 75%; Burials 50%; Drain 50%.

SUMMARY AND CONCLUSIONS

The results of this study can be summarised as follows:

1 Electrical resistivity anomalies within the study area were found to be strong. No conclusive evidence was found for buried archaeological features.

2 The site of the **proposed dwelling** is characterised by several zones of high resistivity which are thought to reflect dumps of stoney material or drains. Evidence for a phase of ploughing was detected.

3 The area of proposed **access and parking** correlates with several high resistivity anomalies which almost certainly reflect a tennis court and buried services.

RECOMMENDATIONS

In order to verify the findings of this study, the following programme of trial trenching is recommended:

1 6x1m trial trench in area of access and parking to investigate the high resistivity anomaly thought to reflect a buried hard tennis court.

2 2x1m test pit to investigate the curvilinear, high resistivity anomaly ~10m NW of the 'tennis court' feature in 1 above (conjectured as drain).

3 2, 2x1m test pits immediately SE of Chaloner's Whin Burn to investigate the very high resistivity anomalies thought to represent dumps of stoney material.

Credits *Field survey*: M. J. Noel, C. Lambert
Report: M.J. Noel
Date: 17/4/94

Note Whilst every effort has been taken in the preparation and submission of this report in order to provide as complete an assessment as possible within the terms of the brief, GeoQuest Associates cannot accept any responsibility for consequences arising as a result of unknown and undiscovered sites or artifacts.

FIGURE 1

Map showing the location of geophysical survey areas at 27 St Helens Road, York (in yellow). Note the positions of animal burials and drains.

27 St HELENS ROAD, YORK

LOCATION OF GEOPHYSICAL SURVEY

0 30m 1:500

SURVEY BY GeoQuest ASSOCIATES

FOR David Spencer Partnership Architects

19 20 21 22 23 24 25 26

27

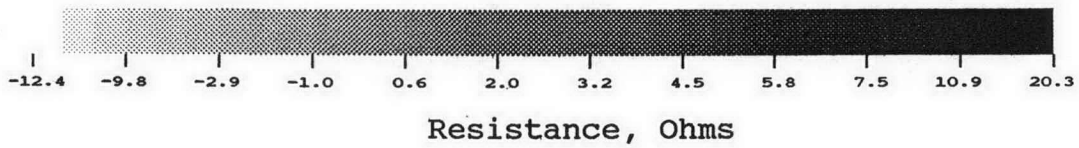
Site of pavilion

Horse burials

N

FIGURE 2

Results of the resistivity survey at 27 St Helens Road, York. Refer to the scale below for absolute values.




27 St HELENS ROAD, YORK
RESULTS OF GEOPHYSICAL SURVEY
0
30m
1:740
SURVEY BY
GeoQuest
FOR
David Spencer Partnership
Architects
19
20
21
22
23
24
25
26
27
N

FIGURE 3

Geophysical interpretation of the survey results obtained at St Helens Road. Refer to the key for an explanation of the colours used.

27 St HELENS ROAD, YORK

GEOPHYSICAL INTERPRETATION

0 30m 1:500

SURVEY BY GeoQuest ASSOCIATES FOR David Spencer Partnership Architects

High Resistivity Low Resistivity

19 20 21 22 23 24 25 26

27

Disturbed

N

FIGURE 4

A physical interpretation of the geophysical survey results from St Helens Road.

27 St HELENS ROAD, YORK

PHYSICAL INTERPRETATION

0 30m 1:500

SURVEY BY GeoQuest ASSOCIATES

FOR David Spencer Partnership Architects

19 20 21 22 23 24 25 26

27

Plough texture

Levees?

Disturbed

Remains of pavilion

Drains?

Burial

Burial

Tennis court

N

APPENDIX A

Principles of Electrical Resistivity Surveying

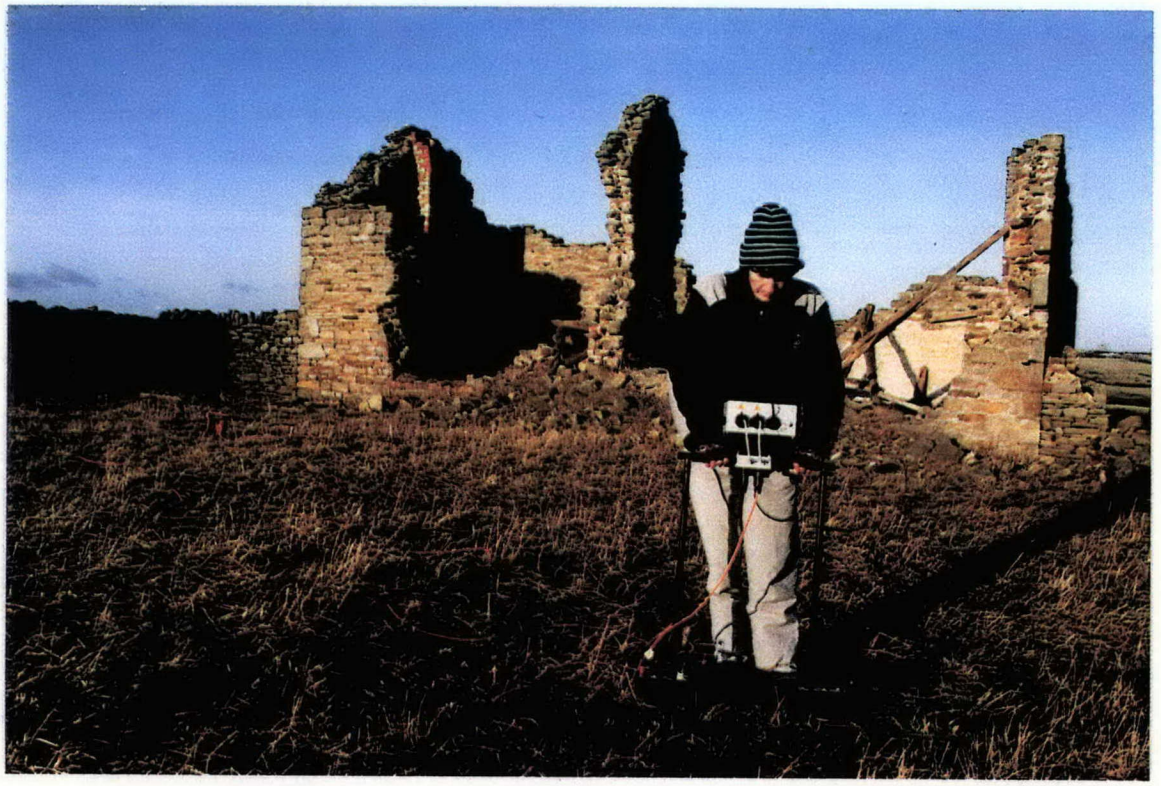
This is an *active* geophysical prospecting technique which detects subsurface features in terms of the resistance they present to the passage of an artificially induced electric current. In the dry state, most soils and rocks are insulators but, when they become moist, electric currents are able to flow through the movement of ions which are always dissolved in the porewater. As the soil or rock absorbs more water the conductivity increases since more ions become available for conduction and their mobility is enhanced. Hence electrical resistivity surveying primarily maps the volume concentration of ground moisture which varies according to lithology, porosity and time of year. Temperature fluctuations can also be important although in mid-latitudes this effect is insignificant.

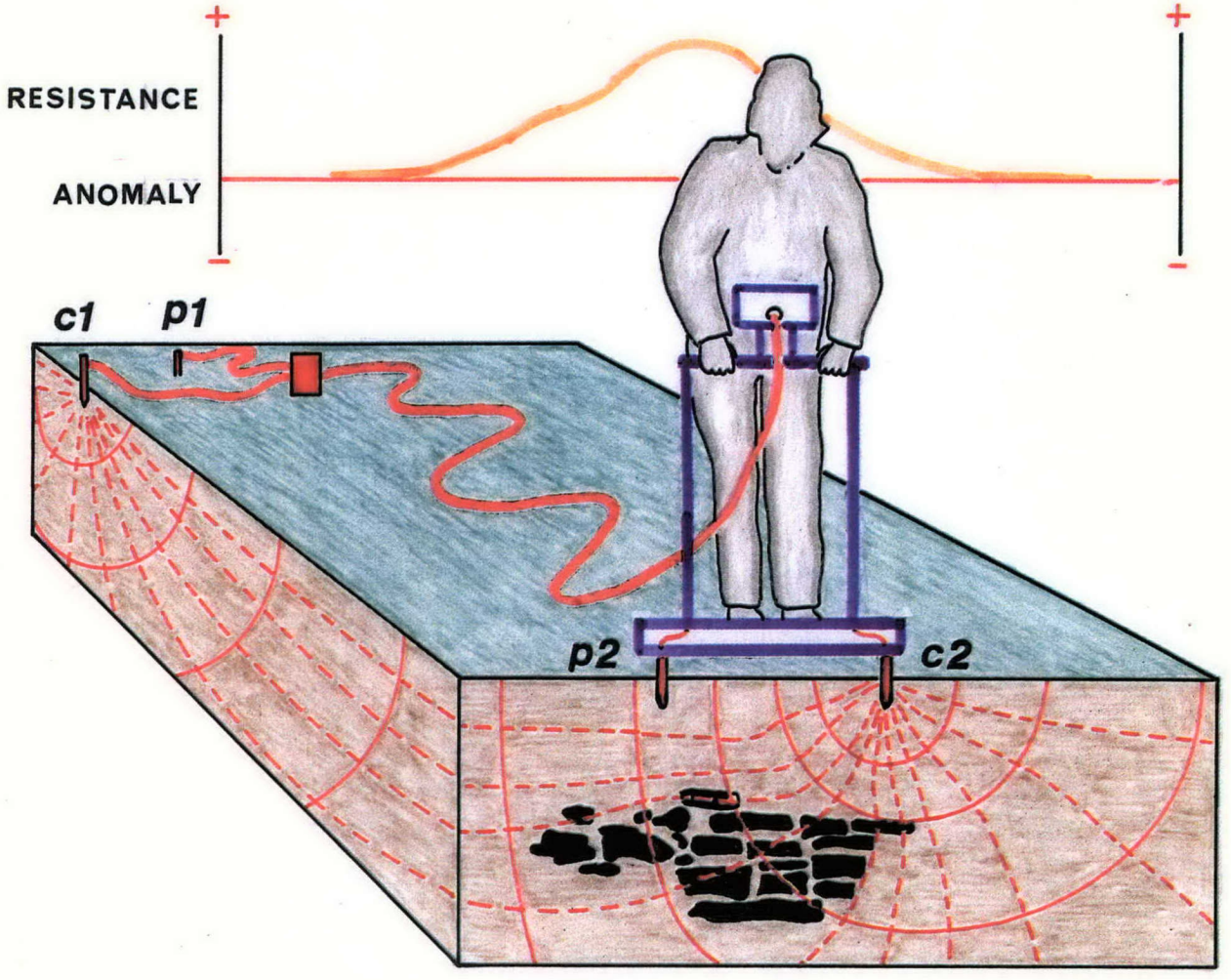
To record the soil electrical resistivity an alternating current is injected into the ground through a pair of metal electrodes and the surface potential detected between a second pair. This arrangement is needed to minimise errors arising from contact effects, earth currents (usually of mains origin) and polarisation potentials. Several configurations have been evaluated for archaeological use but the 'twin electrode' scheme shown overleaf has proved popular for this purpose. A mobile frame is used to carry one potential and one current electrode (**p2** and **c2**) which are connected, via the meter, to their respective **p1** and **c1** soil electrodes. Alternating current is passed between **c1** and **c2** and the potential measured between **p1** and **p2**. The presence of a zone of anomalous resistivity modifies the distribution of current flow (dotted streamlines) and also the contours of constant potential (curved solid lines) and is depicted for the case of a high resistivity structure such as a wall. The instrument thus senses a maximum (or minimum) in the apparent soil resistance which is centred over the feature.

Through good instrument design, resistivity surveying is now a rapid technique although the need for soil contact and cables makes this a slower method than magnetometry. Our surveys employed a Geoscan RM15 instrument with variable spacing between the mobile electrodes which enables the sensing depth to be optimised.

Measurements are generally taken at regular intervals on a grid. Both parallel and zig-zag traverse schemes are used; the first method is slower but minimises systematic errors in the resulting data.

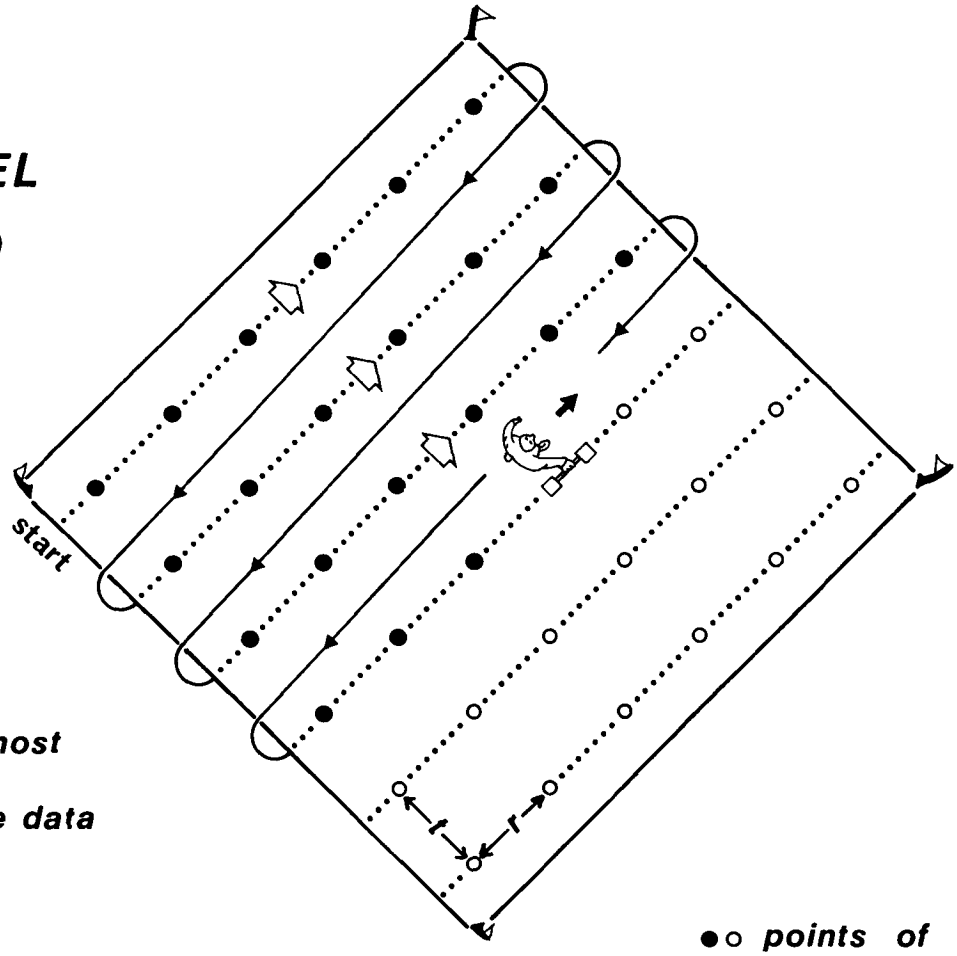
RESISTIVITY SURVEYING





SURVEY SCHEMES

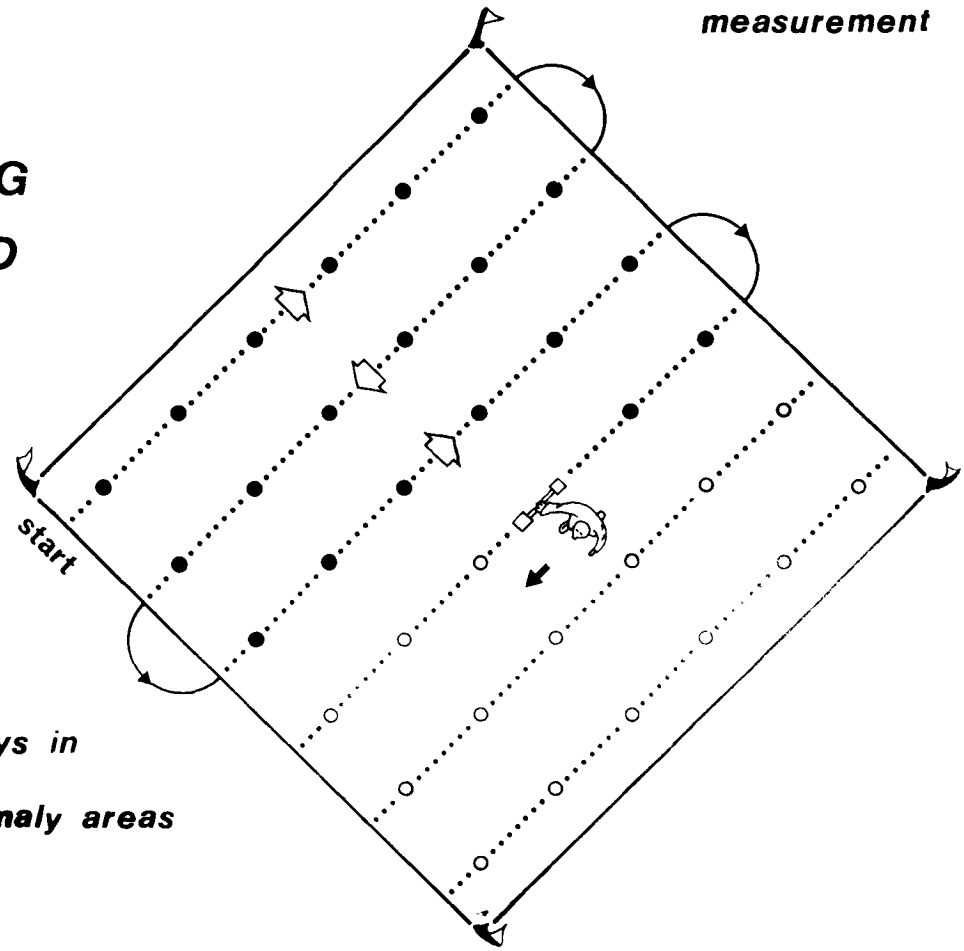
PARALLEL METHOD



slower but minimises most errors in the data

●○ *points of measurement*

ZIG-ZAG METHOD



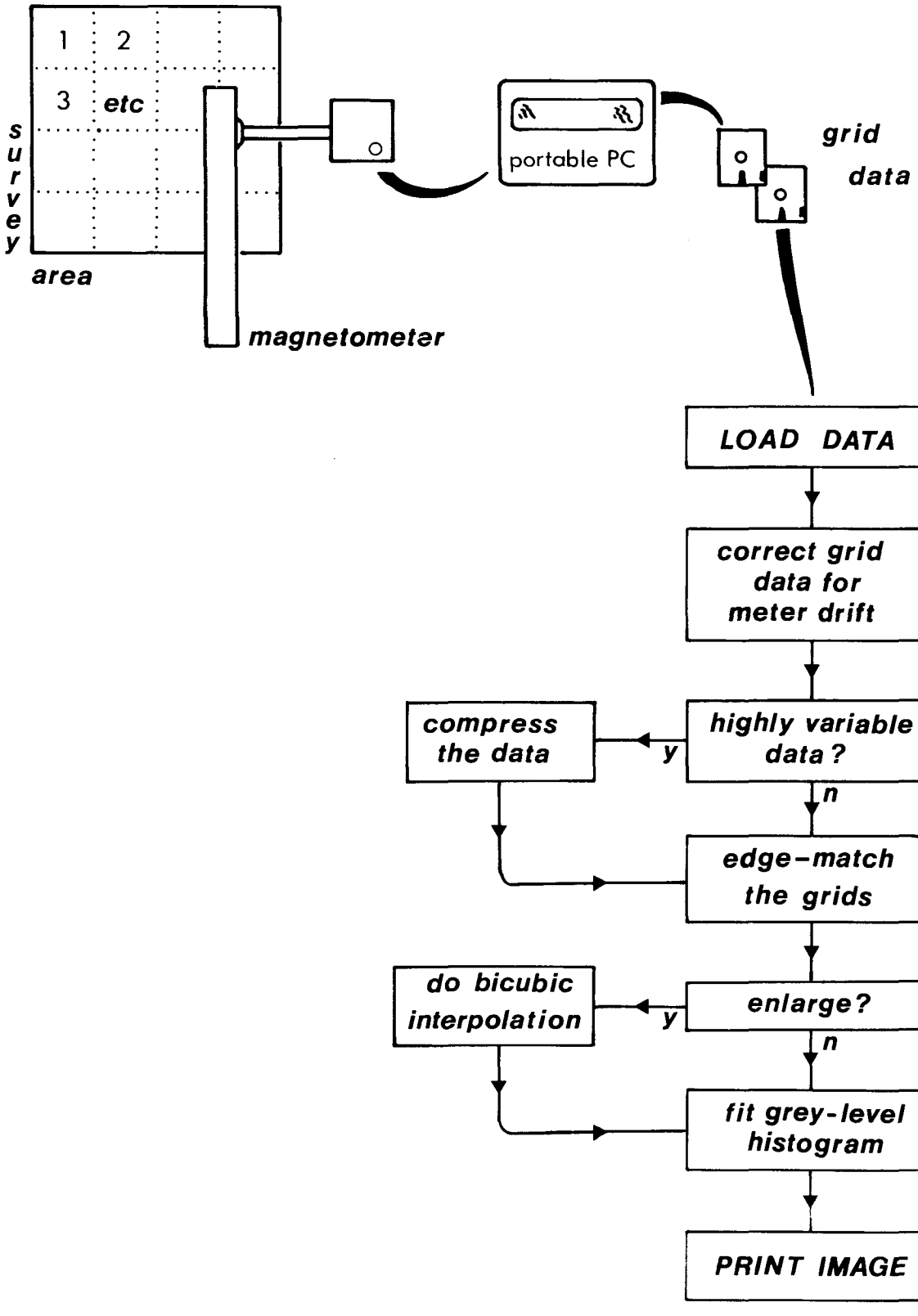
suitable for rapid surveys in strong anomaly areas

APPENDIX B

Data Processing Procedure

The various stages involved in gathering and manipulating the field measurements are summarised in the flow diagram overleaf. Data are downloaded from the magnetometer or resistivity meter to a portable computer, via a serial cable, inspected graphically and then stored on disc. Once the survey is completed, the data from individual grids are corrected for instrument drift (typically a few % per hour for the magnetometer) and then their dynamic range reduced if they contain highly variable values. This is often necessary where an area contains strong dipole sources if one is to make the best use of the grey scales available from the printer. Next, the area image is constructed by 'tiling' together adjacent grids. To achieve this, a special graphical technique is applied that minimises 'seams' in the image which would otherwise mask the anomalies of archaeological interest. If enlargement of a selected area is required, then this is achieved by expanding the data with bicubic splines; an approach which helps to reduce blurring. Finally, the data are numerically mapped to a set of 33 grey levels (true half tones) which are programmed to have a normal distribution in the printed image. From experience, it has been found that such a distribution is pleasing to the eye and by adjusting the mean density and variance the appearance of the anomalies can be optimised. All processing is carried out by proprietary GeoQuest software.

DATA PROCESSING



NOTES

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ARCHAEOLOGICAL EVALUATION AT 27 ST HELENS ROAD YORK

A PROGRAMME OF RESEARCH CARRIED OUT
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INTRODUCTION

This is the report of an archaeological evaluation undertaken, between the 9th and 12th May, 1994, by GeoQuest Associates at 27 St. Helens Road, York. The archaeological evaluation was conducted, on behalf of the David Spencer Partnership, in anticipation of a proposed sheltered housing development.

St. Helens Road is situated in the Dringhouses area of the City of York at NGR 586497 (Figure 1). The proposed development site, located within the grounds of 27 St. Helens Road, is an L-shaped area some 4720 square metres in size (Figure 2). Prior to the construction of the present house during the 1930s, the entire area formed public tennis courts. The terracing visible in the garden today dates from this period.

During the evaluation GeoQuest Associates implemented a structured programme of investigative archaeological techniques. An initial geophysical survey of the entire area threatened by the proposed development project (GeoQuest, 1994) was followed by a series of targeted small-scale excavations. It was hoped that the information retrieved during the evaluation could be used as the basis of an assessment of the archaeological potential of the site.

SUMMARY OF THE ARCHAEOLOGY OF YORK

York has been occupied by man at least since the arrival of the Romans in the late first century AD. During much of the last 2000 years, settlements on the site of York have been important centres of power, trade, religion and culture.

York is widely regarded as one of the most important archaeological sites in Europe. The city's documentary history, and the extent of surviving archaeological deposits bearing rich remains of past occupation, have largely accounted for this high status. Designation of the city's historic core as an area of Archaeological Importance is a measure of the national importance of York's archaeological heritage.

The proposed development site at 27 St. Helens Road lies some 2.5km to the south-west of the location where, in AD 71, *Petrilius Cerialis* established a legionary fortress upon an area of slightly raised ground between the rivers Foss and Ouse (Figure 1). By the mid second century a civilian settlement was developing on the south west side of the Ouse and, by 213, *Eboracum* had acquired *colonia* status - a town of the highest rank equivalent to Gloucester, Colchester and Lincoln (Ottaway, 1992).

Little is known of the plan of the Roman city during its heyday, the late second and early third centuries. The main areas of settlement were probably the fortress, colonia and an industrial/commercial area (*Canabae*) which developed on the west bank of the Foss. Some evidence suggests that suburbs developed to the north-east and north (Ove Arup and Partners, 1991).

During the fourth century *Eboracum* was an important city in the new Christian Empire and this was a period of major prosperity and change (Ove Arup and Partners, 1991).

Although it is known that York was a royal and ecclesiastical centre from the early seventh century, there is little evidence for activity in York between 400 and 700. A short-lived planned settlement of buildings and property boundaries, dated 700 to 740, was discovered at Fishergate, on the north-east bank of the Foss near the junction with the Ouse, and identified as *Eoforwic*, the wic or trading settlement of Anglian York (Ottaway, 1992). Other sub-Roman and Anglian settlement is predicted in the fortress, in suburbs and on the waterfront (Ove Arup and Partners, 1991).

Following the Viking attack, in 867, York, or *Jorvik* as it was known, was ruled by kings of Scandinavian origin for some sixty years and, after a period of English rule, they briefly regained control from 940 to 954 (Ottaway, 1992).

The Anglo-Scandinavian period saw the re-emergence of York as a major urban centre with much replanning giving the city a new shape and plan which has largely endured to the present. The Fishergate wic was abandoned and the centre of commercial life was resited close to the walls of the former Roman fortress in the promontory between the rivers Foss and Ouse. The colonia area was probably substantially developed to create a residential and industrial planned layout on the west bank of the Ouse (Ove Arup and Partners, 1991).

The Medieval period witnessed several major topographical changes to the landscape of the Anglo-Scandinavian city. Large scale projects included the construction of the Norman Minster (probably upon the site of the Anglo-Saxon Minster Church), and of Baile Hill Castle (west) and York Castle (east) either side of the Ouse. The River Foss was dammed and Kings Fish Pool created in combination with York Castle water defences (Ove Arup and Partners, 1991).

The revival of monasticism across Norman England saw an incursion of major monastic houses into many towns. In York, for example, St. Mary's Abbey, with its great walled precinct, was founded on the west side of the city in 1088-89 (Ottaway, 1992).

Throughout the Medieval period there was suburban expansion in several areas of the city, and this development continued throughout the post-Medieval and modern periods (Ove Arup and Partners, 1991).

AIMS AND OBJECTIVES

The overall aim of the evaluation was to establish the presence or absence of archaeological deposits within the proposed development area and, in the case of their presence, gain an idea of the range of date and the density of the material. Trial trenches were deliberately sited to enable characterisation of anomalies identified in the

previous geophysical investigation. It was hoped that the information retrieved during the evaluation would form the basis of any decisions, made by the curator (in this case the City Archaeologist for York), regarding the need to mitigate the impact of the proposed development upon the archaeological resource.

Although the site lies beyond the limits of York's historic core, it is fair to say, as highlighted above, that the extent of settlement during the Roman, Anglian, Anglo-Scandinavian and Medieval periods remains uncertain. It was not inconceivable, therefore, that the results of the archaeological evaluation of the proposed development area could make a considerable contribution to our understanding of the topography, nature and economy of sub-urban York during some or all of these archaeological periods.

METHODS OF INVESTIGATION

Geophysical Survey

An electrical resistivity survey of the site carried out by GeoQuest Associates identified several compact areas of high electrical resistivity in the subsoil which were interpreted as representing burials and stoney debris of tennis courts (GeoQuest, 1994). A number of low resistivity lineations in the western quarter of the site were considered to reflect a plough texture or sedimentary structures. Thus one of the aims of the present evaluation was to characterise these geophysical anomalies and establish their possible archaeological significance.

Trial trenches

A backacting JCB fitted with a toothless bucket was used to excavate seven trenches within the proposed development area (Figure 2). Three of these trenches (A, B and C) were located within the limits of the foundations for the proposed sheltered care building. The remaining four trenches (D, E, F and G) were excavated along the line of the proposed access road.

All trenches were machined, under the direct instruction of the supervising archaeologist to the top of the natural sub-stratum or until significant archaeological features became evident. Trenches A, B and C were excavated to a depth of 1.30m and trenches D, E, F and G were excavated to a depth of 0.5m. All subsequent excavation was performed by hand using a team of experienced archaeological excavators.

At least one section within all seven trial trenches was carefully cleaned, photographed, then drawn accurately and to scale. Archaeological features revealed 'in plan', in the base of trenches, were examined in further detail by hand excavation. Material culture was carefully retrieved from excavated features and the fills of

significant features were sampled to determine their potential for providing environmental evidence.

The GeoQuest-modified version of the Museum of London's recording system (Spence, 1990) for archaeological deposits was employed during the evaluation. Discrete stratigraphic entities (e.g. a cut, a fill, a layer) were assigned individual context numbers (e.g. **01**, **02** etc. in the text). The site archive, which comprises context description sheets, plans, sections and photographs, is currently held by GeoQuest Associates (Site code: SHR 94).

RESULTS

Trench A (2.0m x 2.0m)

This trench was located at the northern end of the proposed development area (Figure 2). Beneath a layer, up to 0.06m thick, of friable dark grey topsoil (**01**) was a layer, up to 0.10m thick, of loosely compacted black cinders and gravel (**02**) (Figure 4). The latter deposit, which contained several 20th century sherds of pottery, was evidently the surface of one of the pre-War tennis courts. Below this was a layer, up to 0.45m thick, of friable reddish brown silt (**03**) and, beneath that, was a layer, up to 0.50m thick, of soft yellowish brown silt clay (**04**). Part of a Roman (1st-2nd century) flagon handle was recovered from the context **04**.

Sealed beneath layer **04** were two cut features, **07** and **09** (Figure 3). Feature **07** was apparently a north-south aligned ditch or gully, some 0.30m deep, and filled by a sticky greyish brown clay (**06**). Only the southern edge of the feature was revealed. A small quantity of animal bone was recovered from context **06** during its excavation.

Environmental analysis of a 1 kg sample of context **06** revealed the presence of charcoal flecks, fragments of rootlet and a small quantity of other, well-rotted plant detritus. In addition, a single *cladoceran* and two poorly preserved tibiae of an unidentifiable weevil were present (EAU, 1994).

Feature **09** was a ditch or gully, some 0.30m wide and 0.20m deep, aligned roughly north-east to south-west, and filled by a sticky greyish brown clay (**08**). To the north, feature **09** had clearly been truncated by feature **07**. Both features were cut into what was apparently natural sub-strata, a layer, up to 0.15m thick, of sticky greyish brown clay (**05**) overlying a layer of soft orange sand (**10**) (Figure 4). Although the extent of horizontal truncation suffered by features **07** and **09** is uncertain, it may well have been considerable given that both features were rather shallow.

Trench B (2.0m x 2.0m)

This trench was located at the southern end of the proposed development area (Figure 2). A layer of soft dark greyish brown topsoil (**01**), up to 0.22m thick, was revealed. Sealed by the topsoil was a cut feature (**05**), 0.30m deep, which was filled by a hard brown clay, mottled with patches of orange sand (**02**). This feature was observed only in the west facing section of the trench, at its northern limit (Figure 5). It is highly probable that the feature represents part of the foundation trench for the pavilion associated with the pre-War tennis courts. The ground plan of these foundation trenches was revealed clearly by the geophysical survey (GeoQuest, 1994).

Feature **05** cut into a layer, up to 0.40m thick, of greyish brown clayey sand (**03**). Sealed beneath this layer was a cut feature (**06**), revealed in the west facing section of the trench (Figure 5) and also 'in plan' along the northern edge of the trench. This feature, which may have been the edge of a pit or ditch, was c.0.5m deep and was filled by a soft grey sandy clay (**04**). The fill, which contained one fragment of unidentifiable brick or tile, was waterlogged and a small sample of root wood (the largest fragment about 100 by 10mm), not identifiable to species, was recovered.

Environmental analysis of a 1 kg sample of context **04** revealed the presence of plant detritus (mainly rootlet fragments), some charcoal flecks and an assortment of poorly preserved plant macrofossils. Identifiable amongst these were several duckweed seeds and stinging nettle achenes, together with traces of elderberry seeds and purple deadnettle nutlets. Such an assemblage is of little interpretative value although the presence of duckweed seeds may point to the presence of standing water in the feature for at least a season or two (EAU, 1994).

Feature **06** was cut into what appeared to be the natural sub-strata, a thin band of clay, only visible towards the east, overlying an extensive layer of soft orange sand. Further excavation within the base of Trench B was undertaken, upon completion of the archaeological investigation, by the engineer associated with the proposed development project. The soft orange sand was observed to continue to at least a depth of 2.0m below the ground surface.

Trench C (12.0m x 1.60m)

This trench was oriented east-west across the centre of the proposed development area (Figure 2). A layer, up to 0.15m thick, of friable dark grey topsoil (**01**) overlay a layer, up to 0.15m thick, of loosely compacted black cinders and gravel (**02**), similar to that observed in Trench A, and apparently representing the surface of the pre-War tennis courts. Sealed beneath layer **02** was a layer, up to 0.25m thick, of friable dark grey silt loam (**03**), almost identical in appearance to layer **01** (Figure 6). This layer may well represent the topsoil which existed prior to the utilisation of the site as tennis courts.

Sealed beneath layer **03** were three cut features, all of which appeared to be of relatively modern origin. An almost vertical cut (**05**), filled by a firm dark brown clay

(**04**), was revealed at the western end of the trench. This feature probably represents the cut for a sewerage pipe known to cross the site approximately at this location. However, as the trench was only excavated, at its western end, to a maximum depth of c. 1.80m (at which point no pipe had been revealed), this assertion could not be proved. Two narrow cut features (**07** and **16**), both oriented north-south, were observed in the sections of the trench (Figure 6). Both features were filled by firm yellowish brown clays (**06** and **15** respectively). Although feature **07** was considerably deeper than feature 16, 0.85m compared to 0.20m, both appeared to be post-Medieval land drains.

Features **05**, **07** and **16** all cut through a layer of friable reddish brown silt (08) (Figure 6). This layer varied in thickness from c.0.15m in the east to c.0.60m in the west. This variation, coupled with the fact that the upper interface of the deposit was level, appears to suggest that some horizontal truncation has occurred, perhaps in relation to the construction of the pre-War tennis courts. An incomplete green-glazed ware jug handle, dating from the 13th-15th century, was recovered from layer 08.

Sealed below layer **08** was a north east-south west oriented ditch (**10**), of maximum width c.8.75m, filled by a loosely compacted mixture of greyish blue clay and yellow sand (**09**). The nature of this fill appears to indicate that the feature had been deliberately backfilled. Furthermore, the absence of a primary silt fill within the base of the feature would appear to suggest that backfilling occurred relatively rapidly following abandonment of the feature. A single body sherd of Medieval, but otherwise undatable, pottery was recovered from context 09.

Ditch **10** was cut into a layer, up to 0.40m thick, of stiff mid greyish brown silt clay (**11**), whose upper interface dipped towards the west. Environmental analysis of a 1 kg sample of context **11** revealed evidence of slight iron panning, along with a small amount of charcoal flecks and very fine plant detritus - mainly rootlet fragments (EAU, 1994).

Two layers of firm dark brown clay (**12** and **14**), separated by a layer of loose greyish orange sand (**13**), represented the natural sub-strata in Trench C (Figure 6). Layer **12** tapered from a maximum thickness of c.0.75m, at the eastern end of the trench, to peter out completely some 5.0m to the west. Environmental analysis of a 1 kg sample of context **12** revealed the presence of some plant detritus - mainly rootlet fragments with some flecks of charcoal (EAU, 1994).

Trench D (12.0m x 1.60m)

This trench was located along the line of the proposed access road (Figure 2). For this reason it was felt appropriate that excavation should proceed only to a depth of 0.5m.

Beneath a thin topsoil (**01**) was a distinct layer (**02**),up to 0.12m thick, of loosely compacted black cinders and gravel, in which were observed several 20th century pottery sherds. This layer, also observed in Trenches A and C, evidently formed the surface of one of the pre-War tennis courts.

Sealed below layer **02** was a layer, of variable thickness, of friable reddish brown silt loam (**03**), in which were observed sherds of 20th century pottery. This deposit may have been imported to the site in order to artificially raise and, at the same time, level the existing ground surface prior to the construction of the pre-War tennis courts. Beneath layer **03**, and only exposed in a small part of the trench, was a layer of friable dark grey silt loam containing many root fibres (**04**). This deposit may represent the topsoil which existed upon the site prior to the construction of the tennis courts.

Trench E (2.0m x 2.0m)

This trench was located along the line of the proposed access road (Figure 2). Only one layer (**01**), up to 1.0m thick, was revealed and this contained several residual sherds of Roman and Medieval pottery as well as fragments of Roman box-tile. This deposit, a loosely compacted dark grey silt loam, probably represents a deliberate import of soil onto the site, during the 1930s, in order to create the garden terraces which were still evident at the time of the evaluation.

Trench F (2.0m x 2.0m)

This trench was also located along the line of the proposed access road, to the south east of Trench E (Figure 2). A layer of soft dark greyish brown topsoil (**01**) overlay a layer (**02**) which was evidently a mixture of layer 01 and the underlying natural sub-stratum, a soft orange sand. No archaeological features were observed.

Trench G (2.0m x 2.0m)

This trench was also located along the line of the proposed access road (Figure 2). A layer of soft dark greyish brown topsoil (**01**) overlay a layer of soft orange sand (**02**), the natural sub-stratum. Layer **01** contained two sherds of residual Roman pottery. No archaeological features were observed.

CONCLUSIONS

Unexpected evidence of activity apparently dating from the Roman and Medieval periods came to light following excavations within the evaluation trenches at 27 St. Helens Road.

Although the two ditches/gullies located in Trench A did not yield any datable material culture, both were sealed beneath a distinct horizon, possibly the result of a flood inundation, from which part of a 1st-2nd century flagon handle was recovered. Although it would be rather unwise to draw firm conclusions about the period of origin

of deposits based upon one, possibly residual, sherd of pottery, there are reasons to be optimistic regarding the presence of Roman activity upon the site.

From the size of the evaluation excavations it is extremely difficult to interpret the features revealed in Trench A in any wider context. The wider of the two features may have formed the boundary of a paddock, field or garden plot, while the shallow gully may have been dug for drainage. Although the possible pit or ditch in Trench B contained no dating evidence, its stratigraphic position does suggest that it may well be contemporary with the ditches/gullies in Trench A.

The north east-south west oriented ditch in Trench C apparently dates from the Medieval period and it is possible, given its width and profile, that this feature demarcated the limit of a Medieval toft. The horizon which sealed this feature (from which a sherd of 13th to 15th century pottery was recovered) may well represent arable landuse on the fringes of Medieval York. The difficulty of establishing changing landuse patterns within such small trenches cannot be too forcefully stressed. Any discrepancies or ambiguities are obviously best clarified within broader based excavation strategies.

One must conclude from the general paucity of material culture recovered during the evaluation that the presence of archaeological strata directly associated with settlement activity, from either the Roman or Medieval periods, is extremely unlikely upon the site. A significant quantity of Roman pottery and building material was recovered from the topsoil in Trench E. However, we must conclude that the soil containing this material was imported onto the site, from an unknown location, probably during the 20th century landscaping of the site.

No archaeological features were encountered in Trenches D, E, F or G, although in the latter two trenches, which contained evidence of the 20th century landscaping of the site, it is not inconceivable that archaeological deposits may be sealed beneath the more recent strata. In Trenches F and G the topsoil directly overlay the natural sub-stratum.

No features were detected to account for the east-west aligned lineation interpreted as a 'plough texture' in the geophysical survey. Also, the ditches found in this evaluation were not detected geophysically probably due to their geophysical effect being masked by the stronger influence of the overlying tennis court foundations.

RECOMMENDATIONS

Construction of the foundations of the building at the proposed depth of 1.3m would result in the destruction of archaeological remains in that area. However, it is felt that the nature of the archaeology is not such that it should impede appropriate development of the site given a suitable mitigation strategy. Such a strategy consists of two options: preservation 'by record' or 'preservation in situ'.

Preservation 'by record' would involve machine stripping of the area to be covered by foundation trenches down to the top of the archaeology (c. 0.5m) with subsequent archaeological excavation and recording.

Given the nature of the site and the potential for waterlogged deposits at the propose foundation depth, the collection of samples for post-excavation analysis would play an major part in any excavation plan. Provision should be made for this aspect of the work in drafting the excavation budget.

'Preservation in situ' would involve the adoption of a construction plan that would not necessitate that excavation of foundation trenches to a depth greater than 0.5m

There is no evidence to suggest that construction of the access road would damage any archaeological remains provided the depth of the excavation was less than 0.5m. However, in view of the quantity of Roman material found in Trench E, it is recommended that an archaeologist should be present during stripping of this area to collect any artifacts unearthed by the construction work.

ACKNOWLEDGEMENTS

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Analysis of the pottery and building material from 27 St. Helens Road was undertaken by Paul Bidwell of Arbeia Roman Fort and Museum, Baring Street, South Shields, Tyne and Wear.

Analysis of the environmental soil samples recovered from 27 St. Helens Road was undertaken by John Carrott, Alan Hall, Michael Issitt, Harry Kenward and Frances Large of the Environmental Archaeology Unit, University of York, Heslington, York.

This report was written by Mark Noel, Andrew Platell and Robin Taylor-Wilson of GeoQuest Associates.

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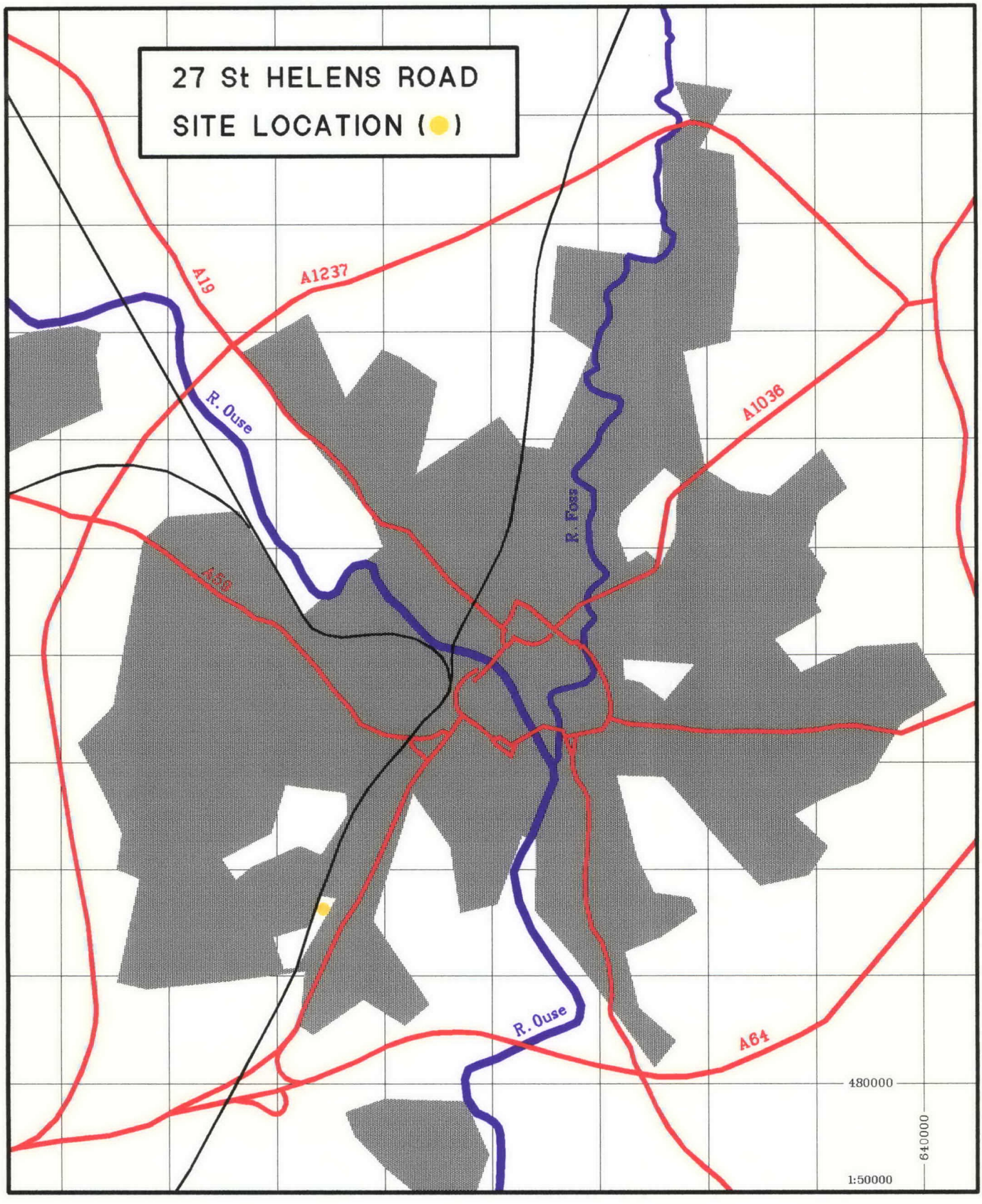

27 St HELENS ROAD
SITE LOCATION (●)
A19
A1237
A1036
A64
R. Ouse
R. Ouse
R. Ouse
480000
640000
1:50000

Figure 1

Figure 2

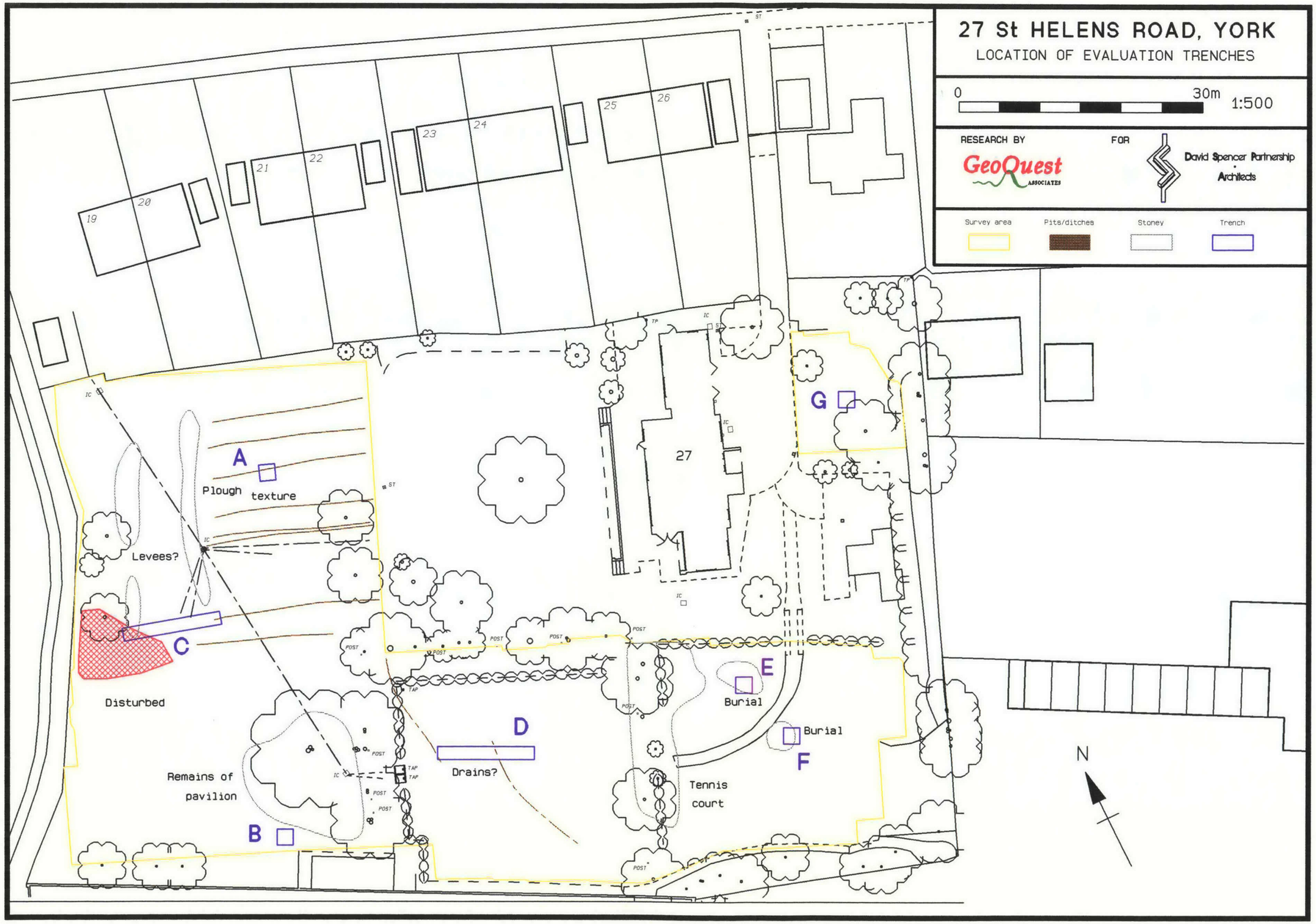

27 St HELENS ROAD, YORK
LOCATION OF EVALUATION TRENCHES
0
30m
1:500
RESEARCH BY
GeoQuest ASSOCIATES
FOR
David Spencer Partnership Architects
Survey area
Pits/ditches
Stoney
Trench
19
20
21
22
23
24
25
26
27
A
Plough texture
B
Remains of pavilion
C
Disturbed
Levees?
D
Drains?
E
Burial
F
Burial
G
Tennis court
N
ST
IC
TP
POST
TAP

Figure 3: Plan of Trench A

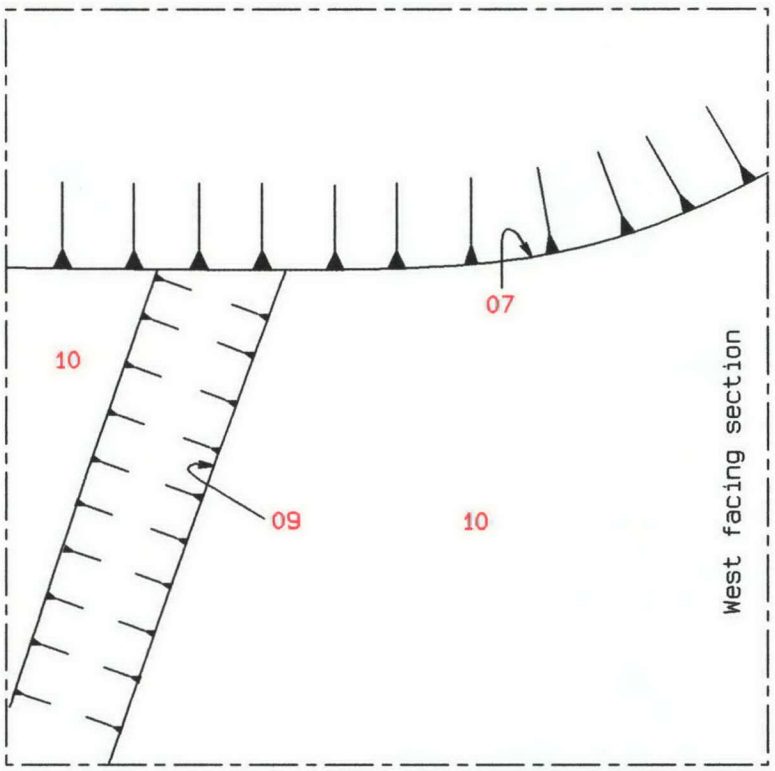


Figure 4: W facing section of Trench A

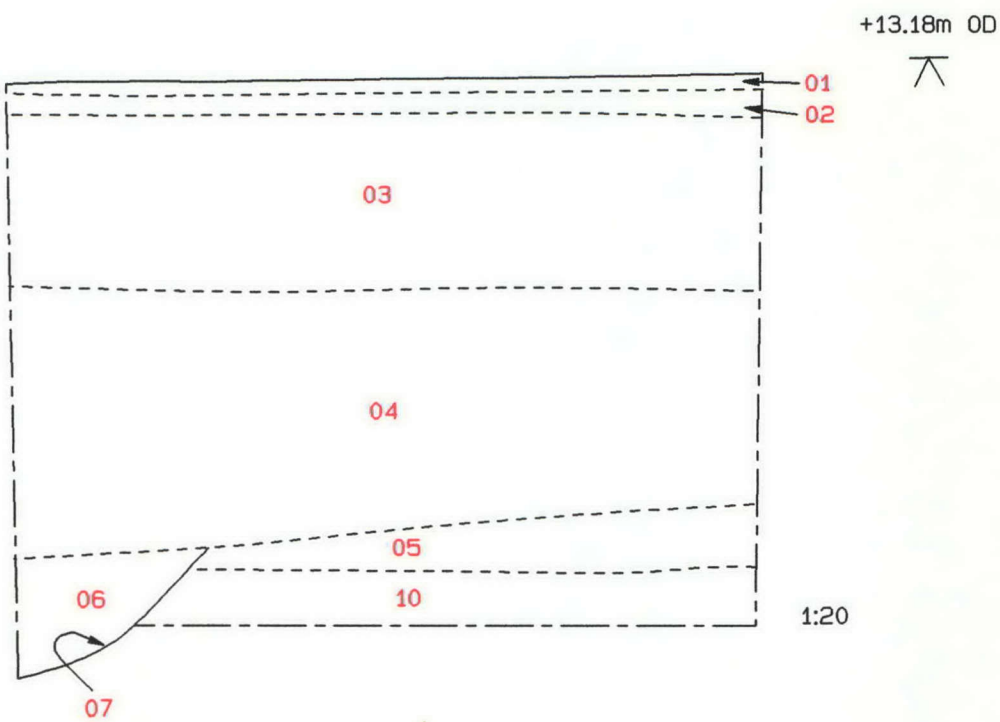


Figure 5: W facing section of Trench B

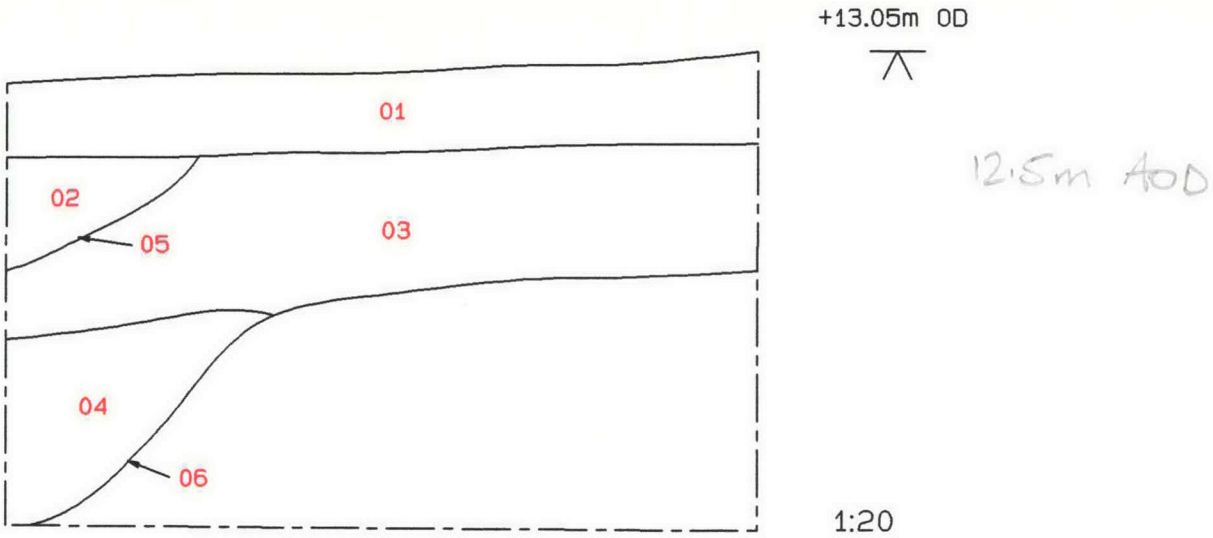
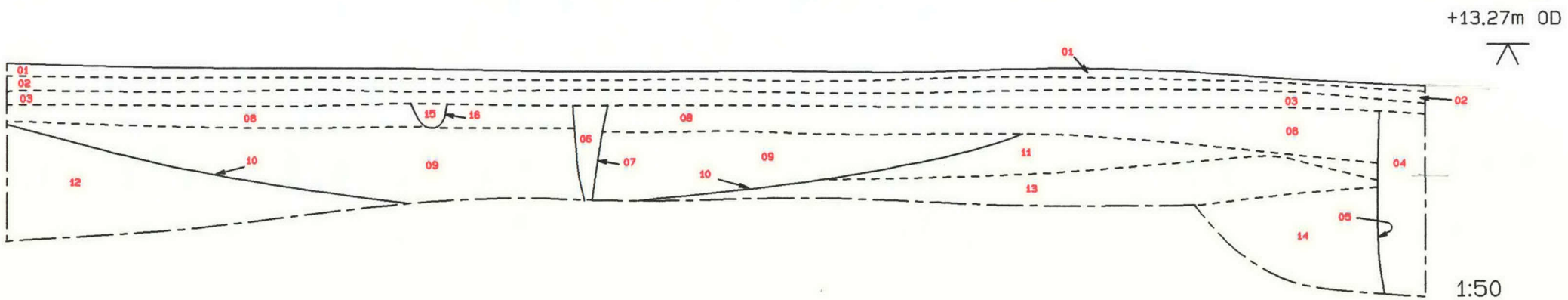


Figure 6: N facing section of Trench C



APPENDIX

Catalogue of the pottery and building material recovered from the archaeological evaluation undertaken at 27 St. Helen's Road, York.

(Paul Bidwell)

Trench	Context No.	Description and Date
Pottery		
A	04	Flagon handle, oxidized surfaces. 1st-2nd century.
C	08	Green-glazed ware jug handle. 13th-15th century.
C	09	Body sherd. Medieval.
E	01	Samian body sherd, Dr. 37. Possibly Flavian. Possibly South Gaulish.
		Samian rim, Dr. 27. 2nd century. Central Gaulish.
		Two body sherds. Probably from a flagon, oxidized. 1st-2nd century.
		Rim sherd, Dr. 37 imitation, *Eboracum* ware. Probably 2nd century.
		Two body sherds, oxidized fabrics.
		Body sherd. Medieval.
G	01	Body sherd. *Eboracum* ware.
		Base sherd cooking pot in grey ware.

Note: The Roman sherds in this small group of pottery probably fall within the date range c. AD 70 - c. AD 150.

Brick and Tile		
B	04	1 unidentifiable fragment.
E	01	2 fragments of box-tile, 1 with combed exterior.
		4 unidentifiable fragments.
Unstratified		1 fragment of tegula (flanged roofing tile).
		1 unidentifiable fragment, possibly from a hypocaust tile.

Note: These fragments are from a building with a tiled roof and a hypocaust, the existence of the latter indicated by the box-tile and possible hypocaust tile.