

Archaeological Investigations at Burrough Green Primary School, Cambridgeshire



Evaluation Report



September 2008

Client: Capita Symonds

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**Archaeological Investigations at Burrough Green Primary School,
Cambridgeshire**

Archaeological Evaluation

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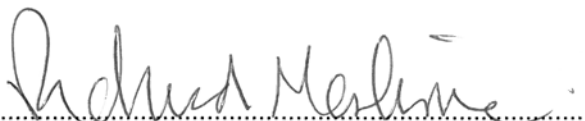
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Summary

OA East (formerly Cambridgeshire County Council's CAM ARC) conducted an archaeological evaluation on land at Burrough Green Primary School, Cambridgeshire in late July 2008. The investigation consisted of 6 trenches, 30m in total length, within the proposed redevelopment area of the school which is to include the construction of new buildings followed by the demolition of the modern buildings.

This evaluation occurred at the pre-planning stage of the proposed development. The site lies within an area of archaeological sensitivity next to a known moat which is a scheduled ancient monument (SM 33588)

Trench 2, directly in front of the Primary School, picked up the southeast corner of the moat, where it turns to the northwest. This has previously only been a projected location. This investigation, supported by evidence provided by aerial photographs, geophysical survey and historical maps enables us to more closely and confidently locate the exact position of the moat.

Other archaeological features present included a linear rubble-constructed feature recorded along the length of Trench 4 which may represent a 19th century farm track visible on early OS maps, a boundary ditch dated to the 19th century was recorded in Trench 5.

1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 An archaeological evaluation was conducted at Burrough Green Primary School, Cambridgeshire.
- 1.1.2 This archaeological evaluation was undertaken in accordance with a Brief issued by Andy Thomas of the Cambridgeshire Archaeology, Planning and Countryside Advice team (CAPCA; Planning Application TBA), supplemented by a Specification prepared by OA East (formerly Cambridgeshire County Council's CAM ARC).
- 1.1.3 The work was designed to assist in defining the character and extent of any archaeological remains within the proposed redevelopment area, in accordance with the guidelines set out in *Planning and Policy Guidance 16 - Archaeology and Planning* (Department of the Environment 1990). The results will enable decisions to be made by CAPCA, on behalf of the Local Planning Authority, with regard to the treatment of any archaeological remains found.
- 1.1.4 The site archive is currently held by OA East and will be deposited with the appropriate county stores in due course.

1.2 Geology and topography

- 1.2.1 The site is located on an area of glacial silt overlying till, both of Lowestoft formation. The site lies at the northern limit of the historic core of the village.

1.3 Archaeological and historical background

- 1.3.1 The site is situated to the north of the historic core of the village, on and adjacent to the site of a medieval moat (Historic Environment Record number 01161). The moat is considered to be of national importance and is a Scheduled Ancient Monument (SM33588). The schedule was complete after the construction of the modern school building, which encroaches on the south-east corner of the moat (Thomas 2008).

- 1.3.2 The HER description of the moat is as follows:

“Rectangular moated area 300 by 200 ft. Surrounded by earthwork 6 ft wide and 1 ft high, with outer dry ditch 12 ft wide, 2 ft deep. There is no sign of an original entrance or of any structural remains in the enclosed area. This is a later site of the manor house.”

“An orchard was planted here which has since been neglected. The site is now very overgrown. It is fenced, inaccessible and appears to be still as described above.”

“In flat country, on chalky boulder clay in village.”

“Earthworks in field north of Church Lane, and to rear of church (i.e. west) where there is also a hollow way.”

“The moat is associated with the manor of Burgh or Burrough, which took its name from Thomas de Burgh which was granted the honour of Richmond during the 12th century. A substantial moat ditch up to 17m wide surrounds a rectangular island measuring approximately 95m by 64m. The ditch has been in filled on two sides, although to the

south-east its line is still visible as a slight depression. A trackway survives along the north section of the north-east moat arm and may date to the 16th century. Following its period of occupation, the moat was turned into a garden feature associated with The Hall. Remains of the planting layout of the orchard still survive in the centre of the island.”

- 1.3.3 The original school, located to the south, was constructed in 1714, with 19th and 20th century alterations and is Listed (Grade II).

1.4 Acknowledgements

- 1.4.1 The author would like to thank Adam Garner of Capita Symonds/Cambridgeshire County Council Schools who commissioned and funded the work. Thanks are due to Andy Thomas of CAPCA for his ongoing input and involvement in the project, to Eliza Gore who monitored the evaluation in his absence and to Dave Kenny of English Heritage for his continuing work and assistance. Acknowledgements also go to the school and school governors and to Mark of Lattenbury's who excavated and backfilled the trenches. The site was excavated and surveyed by the author and managed by Richard Mortimer.

2 AIMS AND METHODOLOGY

2.1 Aims

- 2.1.1 The objective of this evaluation was to determine as far as reasonably possible the presence/absence, location, nature, extent, date, quality, condition and significance of any surviving archaeological deposits within the development area.

2.2 Methodology

- 2.2.1 The location of the trenches was agreed with CAPCA prior to work commencing, with the approval of a trench design.
- 2.2.2 Machine excavation was carried out under constant archaeological supervision with a 13ton rubber-tracked 360^o excavator using a 1.80m wide toothless ditching bucket.
- 2.2.3 Spoil, exposed surfaces and features were scanned with a metal detector. All metal-detected and hand-collected finds were retained for inspection, other than those which were obviously modern.
- 2.2.4 All archaeological features and deposits were recorded using OA East's *pro-forma* sheets. Trench locations, plans and sections were recorded at appropriate scales and colour, monochrome and supplementary digital photographs were taken of all relevant features and deposits.
- 2.2.5 All trenches were surveyed using a Leica GPS which is located on the Ordnance Survey grid. Levels were also recorded on the top and bottom of each trench with the GPS.
- 2.2.6 Drawn plans were incorporated with the survey data to accurately plot the position of the trenches.
- 2.2.7 Weather conditions were good, with constant sunshine and no rain.
- 2.2.8 Although service plans were consulted and the area was scanned using a CAT scanner, services were encountered in two trenches resulting in restricted machining in trenches 3 and 5.

3 RESULTS

The results will be presented below, trench by trench. Cut numbers will be displayed in **bold** text, all other context in normal text. In the first four trenches to be excavated (Trenches 1-4) the machined level was taken down through a relatively clean 'subsoil', between 0.60 and 1.00m deep, that proved to be a natural glacial silt layer that underlay the whole site, overlying the solid clay till. The full depths of these trenches were recorded and appear on the sections (Fig. 2), however, in the Results section below the true depth of the trenches to 'natural' is presented.

3.1 Trench 1

- 3.1.1 Trench 1 measured 4m in length and was oriented northeast to southwest.
- 3.1.2 This trench was located at the rear of the school, in the playing field (Figure 1). This trench was specifically located, in consultation with the geophysics results, to avoid any part of the scheduled monument which may have continued into this area.
- 3.1.3 The trench was machined to a depth of 0.60m where natural clay and silt was encountered.
- 3.1.4 Directly beneath the topsoil (100), a layer of white chalky rubble mix was encountered. This layer (101) had a maximum thickness of 0.10m and was recorded within both sections of the trench (Figure 2, section 1). This layer may represent activity associated with the construction of the school in the 1960s, which was located approximately 10m to the north-east of the trench. Alternatively, it could be the remains of a path or trackway seen on the early OS maps.
- 3.1.5 A single posthole was recorded in this trench (**105**). It was observed in the north-west facing section (Figure 2 Section 1) and despite slow and careful machining, was not visible during initial stripping. This suggests that the remainder of the feature continues beyond the trench edge. This posthole measured 0.23m in width and was 0.46m deep, cut from beneath the subsoil level. No associated features were present in this trench and no dating evidence was retrieved. The environmental sample (sample 1) proved sterile.

3.2 Trench 2

- 3.2.1 Trench 2 measured 4m in length and was orientated north-west to south-east.
- 3.2.2 This trench was located at the front entrance to the school, between a path and a road leading to the car park (Figure 1).
- 3.2.3 This trench was machined to a depth of 0.65m where natural silt and gravel was encountered on the eastern side of the trench.
- 3.2.4 The corner of the moat (SM3358) was recorded along the western section of the trench (**204**). It had gradual sloping edges and sloped up again in the section at the north-west trench end (Figure 2, section 2). This represents the eastern corner of the moat as seen on the 1886-87 Ordnance Survey map (Figure 4).
- 3.2.5 The fill of the moat (203) was a dark greyish brown, silty clay, which contained shards of 19th century glass, likely to represent the very latest backfill.

3.3 Trench 3

- 3.3.1 Trench 3 measured 4m in length and was oriented northeast to southwest.

3.3.2 This trench was located at the front of the school, between the school building, a path and a road to the car park (Figure 1).

3.3.3 This trench was machined to a depth of 0.7m where natural silt and gravel was encountered, however, service pipes were encountered at the eastern end of the trench, including a main drain where machining to full depth could not be completed. No archaeological features were observed in the 2m of the trench excavated.

3.4 Trench 4

3.4.1 Trench 4 measured 8.20m in length and was oriented north-west to south-east.

3.4.2 This trench was located approximately 15m from the front of the school building (Figure 1).

3.4.3 This trench was machined to a depth of 1.20m, where natural sand and clay was encountered.

3.4.4 A layer of un-worked, natural limestone chippings in loose sandy white mortar (404) was recorded at a depth of 0.14m, immediately below the topsoil (Figure 2, Section 4). This layer only existed along the eastern side of the trench and was recorded in section only. It ran approximately parallel to the trench (Plate 2).

3.4.5 Although no dating evidence was retrieved from this feature, it corresponds with the location of a trackway visible on the 1886-7 Ordnance Survey map (Figure 4).

3.5 Trench 5

3.5.1 Trench 5 measured 8m in length and was oriented northwest to southeast.

3.5.2 This trench was located to the immediate east of the school building, north of the hard-standing play area (Figure 1).

3.5.3 The trench was machined to a depth of 0.64m where natural bright orange silt was encountered below layers of topsoil and subsoil (Figure 2, section 5).

3.5.4 An electricity service cable and a service trench backfilled with gravel were both encountered in the middle of the trench (Figure 3). These were carefully machined around, however, this limited the exposed area within the trench base (Plate 3).

3.5.5 A large ditch running on an approximate north to south orientation (**504**) was recorded, the narrow, shallow upper fill of which (503) contained fragments of iron, a single piece of animal bone and pottery dating the the 19th century. This ditch is in the same location and has the same orientation as a boundary ditch shown on the 1886-87 Ordnance Survey map (Figure 4). The full dimensions of the ditch were not recorded as it ran beneath the edge of excavation to the north and was heavily truncated by modern service trenches to the south. A sondage was excavated to establish the depth of the feature, revealing it to be 0.55m deep and with a relatively flat base. An environmental sample was taken in an effort to retrieve further information about the function or date of this feature, however no dating evidence was found and the soil sample proved sterile.

3.6 Trench 6

3.6.1 Trench 6 measured 3m in length and was orientated north to south.

3.6.2 This trench was located against the boundary hedge of the school, close to Bradley Road, the main road which runs through Burrough Green (Figure 1).

3.6.3 During machining, a layer of late 19th-early 20th century demolition rubble was encountered with a maximum thickness of 0.50m. This was carefully removed and the trench was excavated to the natural orange silts at a depth of 0.56m

3.6.4 No archaeological features were recorded within this trench.

3.7 Finds Summary

3.7.1 This investigation produced a very small assemblage of archaeological finds. No datable Medieval material of any kind was recovered, neither were there any earlier finds (prehistoric, Roman or Saxon). The very small finds assemblage dates to the 19th century. No faunal material was recovered.

3.7.2 Finds retrieved from the upper fill of ditch **504** in Trench 5 included several sherds of glazed Staffordshire pottery, pieces of a chamber pot of post-1820 date. Fragments of an iron object and well-fired red brick fragments (noted, but not retained) were also present.

3.7.3 The post-medieval backfill of the moat (203) contained fragments of late 19th/early 20th century bottle glass.

3.7.4 No finds were retrieved from any of the environmental soil samples.

3.8 Environmental Summary

3.8.1 Two soil samples were taken for analysis: one from the upper fill of the moat (**204**) in Trench 2 and one from ditch (**504**) in Trench 5. Both samples proved sterile and no artefacts or ecofacts were retrieved from either sample.

4 DISCUSSION

4.1 Discussion

- 4.1.1 Investigations at Burrough Green Primary School have provided evidence of surviving archaeological features within the grounds of the school.
- 4.1.2 Although undated, a single posthole feature recorded within Trench 5 provides evidence of surviving archaeology, other than the moat itself, that may be earlier than the 19th century.
- 4.1.3 Paths and boundary ditches recorded within Trenches 4 and 5, can be identified on the 1st edition Ordnance Survey, suggesting they were in existence in the late 19th century.
- 4.1.4 The most significant discovery was the confirmation of the location of the corner of the moat. The location of the moat has been previously plotted on the 1st edition Ordnance Survey map of 1886-7 (Figure 4), however, the inaccuracy of a historical map cannot be used to precisely plot its current location. This evaluation has enabled the precise location of the turn of the moat to be located.
- 4.1.5 Aerial photographs taken in 1997 (Cambridgeshire County Council) give the best visual representation of the location of the moat and how the building construction of the current school has impacted upon it (Figure 5).
- 4.1.6 By combining the geophysics results with the aerial photograph of the site and the evaluation results (Figure 6) we can confidently predict the location of the moat and the precise location of where it turns. This will inform planners and archaeologists who will be involved in future design and investigations as the project continues on the site into the planning stages.
- 4.1.7 Interestingly, comparing the location of the moat from the geophysics plot compared with that of the current Ordnance Survey (Figure 6) there is a suggestion of a possible inner bank. Investigations at any further stage (beneath the school building itself) may confirm this suggestion.

4.2 Significance

- 4.2.1 The discovery of archaeological features, in particular the location of the continuation of the moat will inform CAPCA and the planners in defining their strategy of further work as the development of the school buildings takes place within close to proximity to the scheduled monument.

4.3 Recommendations

- 4.3.1 Recommendations for any future work based upon this report will be made by the County Archaeology Office.

APPENDIX A. TRENCH DESCRIPTIONS AND CONTEXT INVENTORY

Trench 1						
General description					Orientation	NE-SW
This trench contained an undated posthole and a layer associated with a path/trackway or the construction of the school in the 1960s. Consists of topsoil and subsoil overlying a natural of silty clay with chalk flecks.					Avg. depth (m)	1.20
					Width (m)	1.90
					Length (m)	4
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
100	Layer	2.0	0.18	Topsoil	-	Modern
101	Layer	2.0	0.22	Subsoil	-	Med. to post-med.
102	Layer	2.0	0.10	Construction?	-	Post-med.
103	Layer	2.0	0.64	Natural	-	n/a
104	Fill	0.25	0.46	Fill of Posthole 105 .	-	unknown
105	Cut	0.25	0.46	Posthole	-	unknown
Trench 2						
General description					Orientation	NW-SE
This trench revealed the eastern corner of the known moat at the point it turns from a SW-NE to a NW-SE orientation. Finds consisted of C19th glass. Consists of topsoil and subsoil overlying a natural of silty clay with chalk flecks.					Avg. depth (m)	1.6
					Width (m)	1.9
					Length (m)	4
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
200	Layer	2.0	0.24	Topsoil	-	Modern
201	Layer	2.0	0.24	Subsoil	-	Med. to post-med.
202	Layer	2.0	1.06	Natural	-	n/a
203	Fill	4.0m+	0.48	Post-Med backfill of 204	C19 th glass	Post-med.
204	Cut	4.0m+	0.48	Corner of Moat	-	?Medieval
Trench 3						
General description					Orientation	NE-SW
This trench was not fully excavated due to the presence of modern drainage services. Consists of topsoil and subsoil overlying natural silty sand.					Avg. depth (m)	1.7
					Width (m)	1.9
					Length (m)	4
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
300	Layer	2.0	0.24	Topsoil	-	Modern

301	Layer	2.0	0.24	Subsoil	-	Med. to post-med.
302	Layer	2.0		Natural	-	n/a

Trench 4						
General description				Orientation		NW-SE
This trench contained a rubble-filled trench comprising chalk and stone, which may be associated with a trackway or the construction of the school in the 1960s. Consists of topsoil and subsoil overlying a natural of silty clay with chalk flecks.				Avg. depth (m)		1.2
				Width (m)		1.9
				Length (m)		4
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
400	Layer	2.0	0.17	Topsoil	-	Modern
401	Layer	2.0	0.16	Subsoil	-	Med. to post-med.
402	Layer	2.0	0.58	Natural	-	n/a
404	Layer?	1.4	0.34	Un-cut stone and chalky mortar mix, fill of 404 .	-	Post-med.
Trench 5						
General description				Orientation		NW-SE
This trench contained a C19th boundary ditch truncating an earlier but undated feature. Consists of topsoil and subsoil overlying a natural of silty sand. Modern services truncated 504 and restricted the excavation of this feature.				Avg. depth (m)		0.64
				Width (m)		1.9
				Length (m)		2.0
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
500	Layer	2.0	0.16	Topsoil	-	Modern
501	Layer	2.0	0.30	Subsoil	-	Med. to post-med.
502	Layer	2.0	0.18	Natural	-	n/a
503	Fill	0.18	0.12	Upper fill of ditch 504	Fe, glass, animal bone, C19 th pottery	Post 1820
504	Cut	0.18	0.12	Cut of P-Med ditch	Above	Post-med.
505	Fill	1.9+	0.55	Lower fill of 504	-	Post-med.
Trench 6						
General description				Orientation		N-S
Contained a layer of C19th/20 th building debris. Trench devoid of archaeology. Consists of topsoil over the debris, overlying a natural of silty sand.				Avg. depth (m)		0.56
				Width (m)		1.9
				Length (m)		3.0

Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
600	Layer	2.0	0.15	Topsoil	-	Modern
601	Layer	2.0	0.50	Modern building debris	Modern brick and slate – not retained.	Modern
602	Layer	2.0	0.15	Natural	-	n/a

APPENDIX B. GEOPHYSICAL SURVEY

B.1 Abstract

- B.1.1 Both gradiometer and resistivity surveys were carried out on land at Burrough Green Primary School, Cambridgeshire on behalf of OA East in July 2008 ahead of the proposed redevelopment of the school.
- B.1.2 An area covering c.0.24ha was surveyed in the area proposed for redevelopment. The site is situated on and adjacent to the remains of a scheduled medieval moat (HER 01161; SAM 33588).
- B.1.3 The geophysical survey results produced little evidence in terms of archaeological remains relating to the medieval moated site.
- B.1.4 The gradiometer survey results show the presence of a modern service running along the southern arm of the moat. The high magnetic traces in the resultant plot are due to the close proximity to the existing school buildings and the play activity area. A short linear low magnetic anomaly may possibly indicate the presence of a wall in the south-eastern corner of the survey area.
- B.1.5 The resistivity results indicate an arrangement of linear and rectilinear anomalies, which could indicate the presence of walls within the moated island.

B.2 Introduction

- B.2.1 OA East commissioned the Centre for Archaeological and Forensic Analysis, Cranfield University to undertake fluxgate gradiometer and resistivity surveys on land at Burrough Green Primary School, Burrough Green, Cambridgeshire. This work was undertaken on the 25th and 28th July 2008 as part of the pre-planning stage of the proposed redevelopment of the present school.
- B.2.2 The purpose of the survey was to assist in defining the character and extent of any archaeological remains relating to the medieval moated site.
- B.2.3 The survey methodology described in this report was based upon guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (EH 2008).

B.3 Location and Description

- B.3.1 The information contained within sections 2 and 3 of this report is based on information supplied by OA East (Fletcher 2008).
- B.3.2 The site is located to the south of Newmarket and to the east of Cambridge (Fig 1: TL 6370 5560). The proposed redevelopment site is currently a playing field to the rear of Burrough Green Primary School.
- B.3.3 The area of survey is a flat grassed field, which is bounded by residential housing and gardens to the south, earthwork remains of the moated site to the north and the present

school building to its east with a play activity area situated on the western side of the site.

- B.3.4 The underlying geology is comprised of Lowestoft Clay (Fletcher 2008, 5). The magnetic susceptibility of these types of geologies is generally good (Gaffney & Gater 2003, 78; EH 2008, 15, 10; Clark 1990, 92).

B.4 Methodology

Gradiometry

- B.4.1 Gradiometry is a non-intrusive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological as well as other detectable remains (Clark 1990)
- B.4.2 The use of gradiometry is used to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features.
- B.4.3 The area survey was conducted using a Bartington Grad 601 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 20m x 20m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.
- B.4.4 The data was processed using *Archeosurveyor v.1.3.2.8*. The results are plotted as greyscale and trace plot images (Figs. 7-8).
- B.4.5 The enhanced data was processed by using zero-mean functions to correct the unevenness of the image in order to produce a smoother graphical appearance. It was also processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings caused by stray iron fragments and spurious effects due to the inherent magnetism of soils. The data was also clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous metal.

Resistivity

- B.4.6 Resistivity survey measures the electrical resistance of the earth's soil moisture content. A twin probe configuration is normally used, which involves the pairing of electrodes (one current and one potential), with one pair remaining in a fixed position (remote probes), whilst the mobile probes measure resistivity variations across the survey grids. Resistance is measured in ohms, and this method is generally effective to a depth of 1m.
- B.4.7 Features such as wall foundations are usually identified as high resistance anomalies, as well as rubble spreads, made surfaces (i.e. yards and paths) and metalled roads and track ways. In contrast, low resistance values are normally associated with water-retentive features such as large pits, graves, ditches, drains and gulleys.

- B.4.8 The resistivity survey was carried out using a Geoscan RM15 Resistance Meter with a twin probe array configuration in mobile probe spacing of 0.5m. The zigzag traverse method of survey was used, with 1m wide traverses across a 20m x 20m grid.
- B.4.9 The data was processed using *Archeosurveyor v.1.3.2.8*. It was despiked to remove extremely high readings caused by bad contact with the ground surface. The enhanced data was high and low passed filtered in order to remove near surface geology and other trends as well as give it a smoother appearance. The results are plotted as greyscale and trace plot images (Figs. 6 and 8).

B.5 Interpretation and Analysis of Results

- B.5.1 About 0.24ha were surveyed using gradiometry and resistivity techniques in order to locate any related features pertaining to the moated manor site such as walls of the former manor house and a possible gatehouse.

Gradiometry

- B.5.2 The gradiometer survey has detected a number of anomalies majority of which are of non archaeological value.
- B.5.3 Zones of high magnetic variation (Fig. 8, pink line/circled pink) have been recorded adjacent to the existing school building, play activity area and along the northern boundary. These reflect modern magnetic disturbances caused by being in close proximity to the building, gas bottles, and a chain linked fence and buried modern ferrous remains.
- B.5.4 A dipolar linear anomaly (Fig. 8, light blue line) was detected running adjacent to the length of the southern arm of the moat, aligned in an east to west direction, which denotes the presence of a service trench containing a pipe or cable.
- B.5.5 A short negative linear anomaly (Fig. 8, 1) was detected in the south-east corner of the survey area. The strong negative magnetic response may indicate the presence of a wall type feature or is more likely reflect modern disturbance.
- B.5.6 No further anomalies were recorded of an archaeological nature.

Resistivity

- B.5.7 A series of earth resistance anomalies were detected within the survey area and most of these appear to denote near surface compaction or geological variation.
- B.5.8 Along the northern edge, the south-east and south-west corners of the survey area, high resistance was recorded in the resultant plot (Fig. 9, pink line/circled pink). These probably reflect the compacted ground as well as dry soil surrounding the trees and bushes.
- B.5.9 A low resistance rectilinear anomaly (Fig. 9, 1) was detected in the south-east corner of the survey. This may indicate the presence of a ditch-like feature, although its relationship to the monument is uncertain.
- B.5.10 The southern arm of the moat running east to west was not clearly recorded and is shown as an ephemeral low resistance anomaly in the resultant plot (Fig. 9, **green line**).

- B.5.11 A series of linear and rectilinear high resistance anomalies (Fig. 9, **dashed red lines**) were detected within the island of the moat. These could reflect the presence of wall foundations although their outlines are not that clearly defined.
- B.5.12 In the south-west corner of the survey area, two individual low resistance anomalies (Fig. 9. 2) were recorded indicating pit-like features. These may reflect the presence of former tree boles.
- B.5.13 No other anomalies of archaeological significance were detected.

B.6 Conclusions

- B.6.1 The survey has identified relatively few significant anomalies and the majority appear to be of an ephemeral nature. In particular, those relating to the interior of the medieval moated site. The anomalies that appear to indicate the outlines of wall alignments and ditch like features remain inconclusive.
- B.6.2 Based on the survey results, it is concluded that the site may still possess archaeological potential and further archaeological investigation maybe required to resolve some of these more significant anomalies.

B.7 Acknowledgements

- B.7.1 Cranfield University, Centre for Archaeological and Forensic Analysis (CAFA) would like to thank Richard Mortimer, Project Manager (OA East) for this commissions.

APPENDIX C. BIBLIOGRAPHY

- | | | |
|--------------------------|------|---|
| Clark, A. J. | 1990 | 1990 <i>Seeing Beneath the Soil</i> London, Batsford |
| English Heritage | 2008 | Geophysical Survey in Archaeological field Evaluation |
| Gaffney, C and Gater, J. | 2003 | Revealing the Buried Past-Geophysics for the Archaeologist, Tempus Publishing |
| Mortimer, R | 2008 | Specification for Archaeological Evaluation : Burrough Green Primary School, Cambridgeshire |
| Thomas, A | 2008 | Brief for Archaeological Evaluation: Burrough Green Primary School, Cambridgeshire |

APPENDIX D. OASIS REPORT FORM

All fields are required unless they are not applicable.

Project Details

OASIS Number	oxfordar3-47081		
Project Name	Evaluation at Burrough Green Primary School, Cambridgeshire		
Project Dates (fieldwork) Start	29-07-2008	Finish	30-07-2008
Previous Work (by OA East)	No	Future Work	

Project Reference Codes

Site Code	BUGPYS08	Planning App. No.	n/a (pre-planning stage)
HER No.	2896	Related HER/OASIS No.	

Type of Project/Techniques Used

Prompt	Planning condition
Development Type	Public Building

Please select all techniques used:

<input type="checkbox"/> Aerial Photography - interpretation	<input type="checkbox"/> Grab-Sampling	<input type="checkbox"/> Remote Operated Vehicle Survey
<input type="checkbox"/> Aerial Photography - new	<input type="checkbox"/> Gravity-Core	<input checked="" type="checkbox"/> Sample Trenches
<input type="checkbox"/> Annotated Sketch	<input type="checkbox"/> Laser Scanning	<input type="checkbox"/> Survey/Recording Of Fabric/Structure
<input type="checkbox"/> Augering	<input type="checkbox"/> Measured Survey	<input type="checkbox"/> Targeted Trenches
<input type="checkbox"/> Dendrochronological Survey	<input type="checkbox"/> Metal Detectors	<input type="checkbox"/> Test Pits
<input checked="" type="checkbox"/> Documentary Search	<input type="checkbox"/> Phosphate Survey	<input type="checkbox"/> Topographic Survey
<input type="checkbox"/> Environmental Sampling	<input type="checkbox"/> Photogrammetric Survey	<input type="checkbox"/> Vibro-core
<input type="checkbox"/> Fieldwalking	<input type="checkbox"/> Photographic Survey	<input type="checkbox"/> Visual Inspection (Initial Site Visit)
<input checked="" type="checkbox"/> Geophysical Survey	<input type="checkbox"/> Rectified Photography	

Monument Types/Significant Finds & Their Periods

List feature types using the [NMR Monument Type Thesaurus](#) and significant finds using the [MDA Object type Thesaurus](#) together with their respective periods. If no features/finds were found, please state "none".

Monument	Period	Object	Period
boundary ditch	Post Medieval 1540 to 1901		Select period...
moat	Medieval 1066 to 1540		Select period...
	Select period...		Select period...

Project Location

County	Cambridgeshire	Site Address (including postcode if possible)
District	East Cambridgeshire	Burrough Green C of E Primary School Burrough Green, Newmarket Cams, CB8 9NH
Parish	Burrough Green	
HER	2896	
Study Area	1162.5m sq.	National Grid Reference TL 6375 5580

Project Originators

Organisation	OA EAST
Project Brief Originator	Andy Thomas
Project Design Originator	Richard Mortimer
Project Manager	Richard Mortimer
Supervisor	Taleyna Fletcher

Project Archives

Physical Archive	Digital Archive	Paper Archive
Cambs County Store	OA East	Cambs County Store
BUGPYS08	BUGPYS08	BUGPYS08

Archive Contents/Media




	Physical Contents	Digital Contents	Paper Contents
Animal Bones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceramics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human Bones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stratigraphic		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Survey		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Textiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Bone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Stone/Lithic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Digital Media	Paper Media
<input type="checkbox"/> Database	<input type="checkbox"/> Aerial Photos
<input type="checkbox"/> GIS	<input checked="" type="checkbox"/> Context Sheet
<input checked="" type="checkbox"/> Geophysics	<input checked="" type="checkbox"/> Correspondence
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	<input checked="" type="checkbox"/> Photos
	<input checked="" type="checkbox"/> Plans
	<input checked="" type="checkbox"/> Report
	<input checked="" type="checkbox"/> Sections
	<input type="checkbox"/> Survey


Notes:

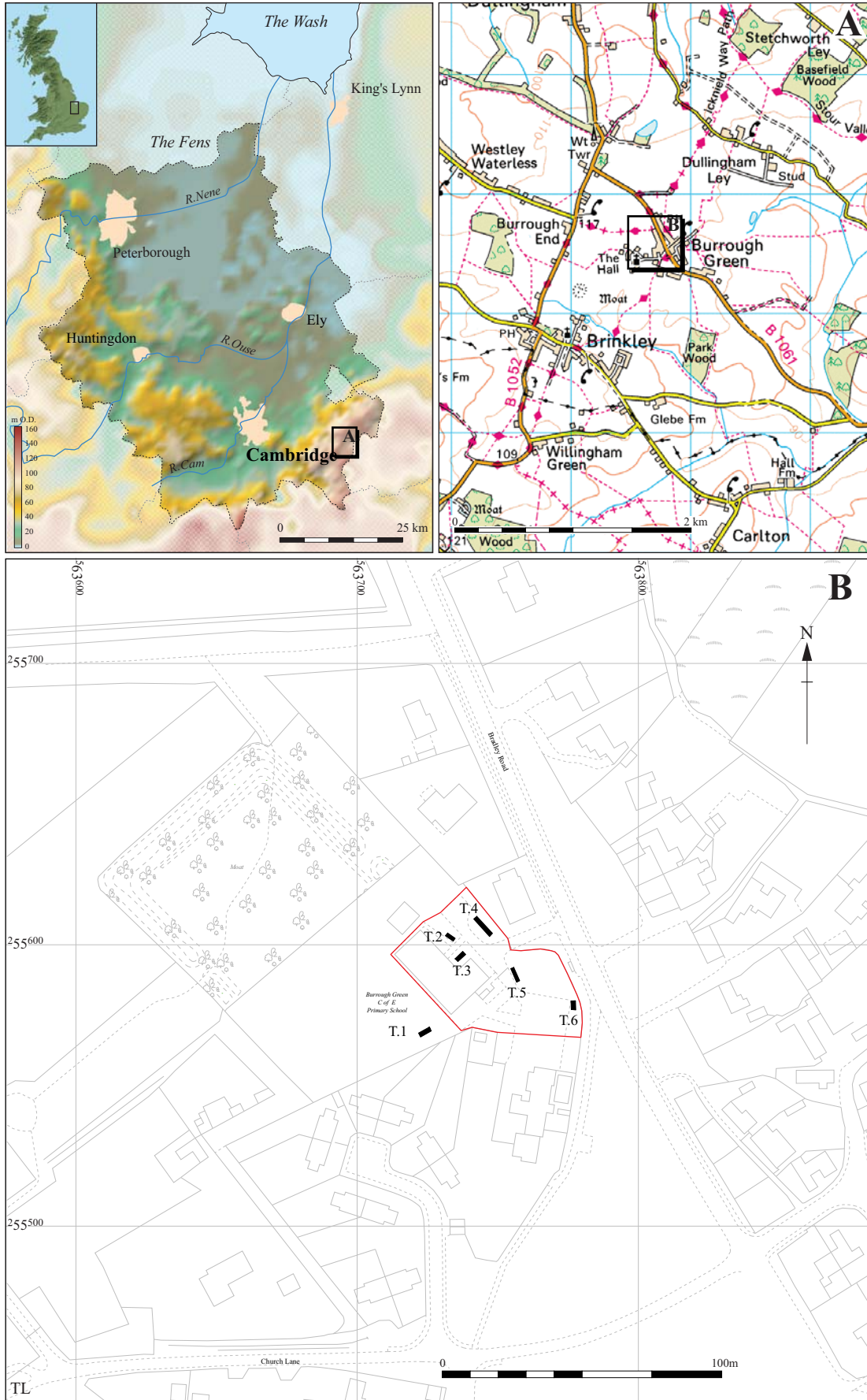
Drawing Conventions

Plans

Limit of Excavation	_____
Deposit - Conjectured	-----
Natural Features	_____
Sondages/Machine Strip	-----
Intrusion/Truncation	-----
Illustrated Section	<u> S.14 </u>
Archaeological Deposit	
Excavated Slot	
Modern Deposit	
Cut Number	118

Sections

Limit of Excavation	-----
Cut	_____
Cut-Conjectured	-----
Deposit Horizon	_____
Deposit Horizon - Conjectured	-----
Intrusion/Truncation	-----
Top Surface/Top of Natural	_____
Break in Section/ Limit of Section Drawing	-----
Cut Number	118
Deposit Number	117
Ordnance Datum	18.45m OD X
Inclusions	



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Figure 1: Location of trenches (black) with development area outlined (red)

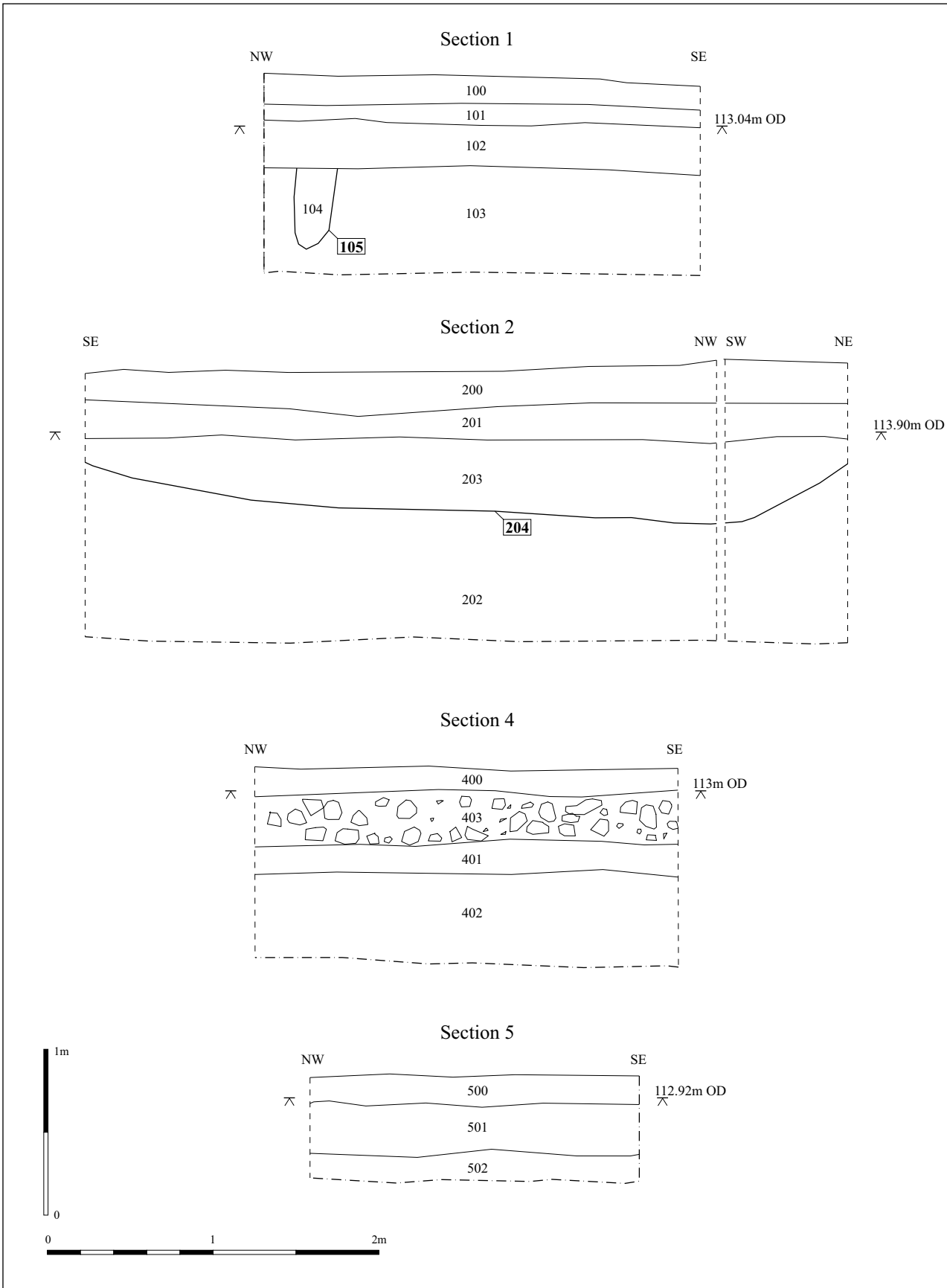


Figure 2: Section drawings

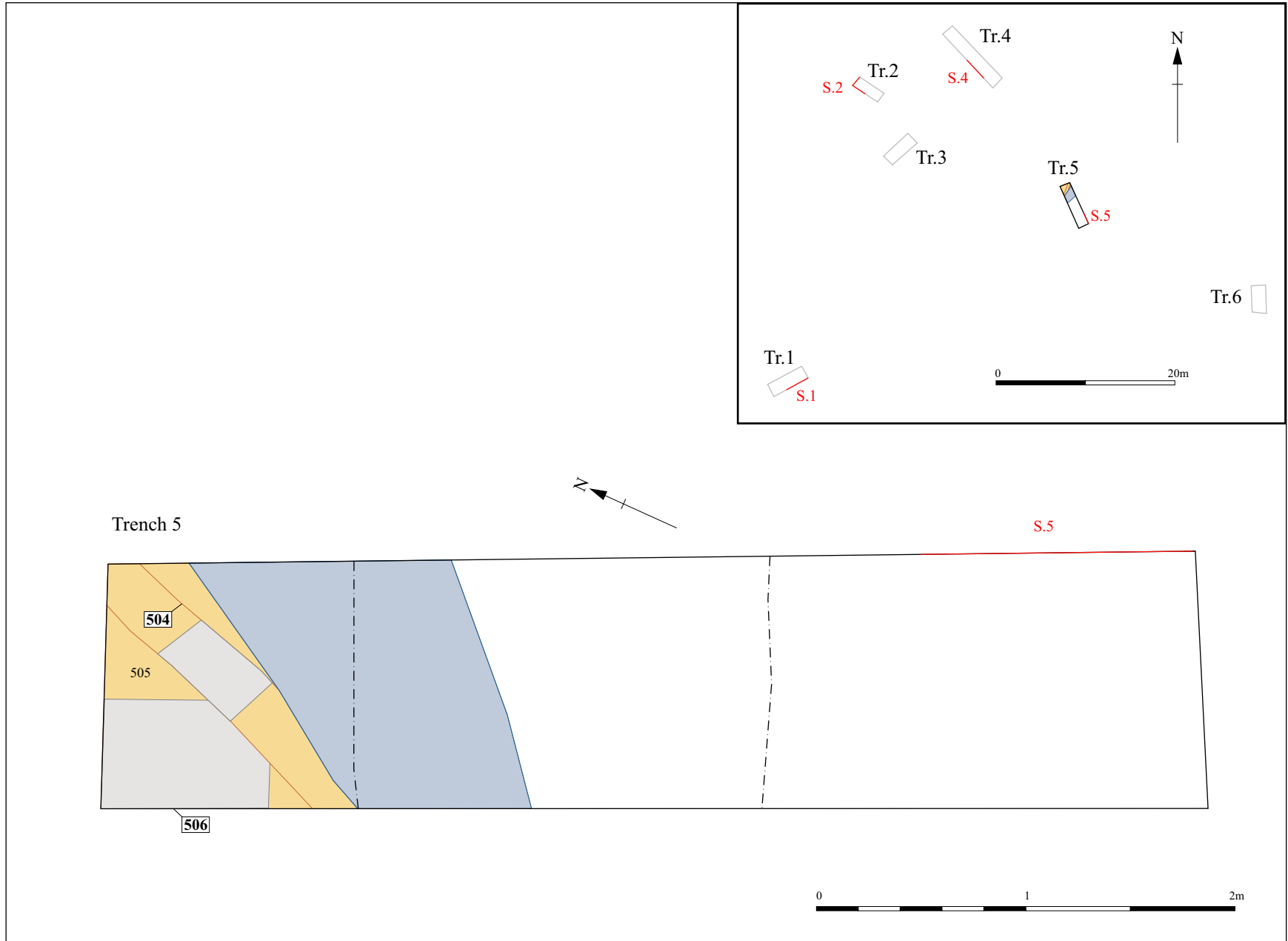


Figure 3: Trench plan

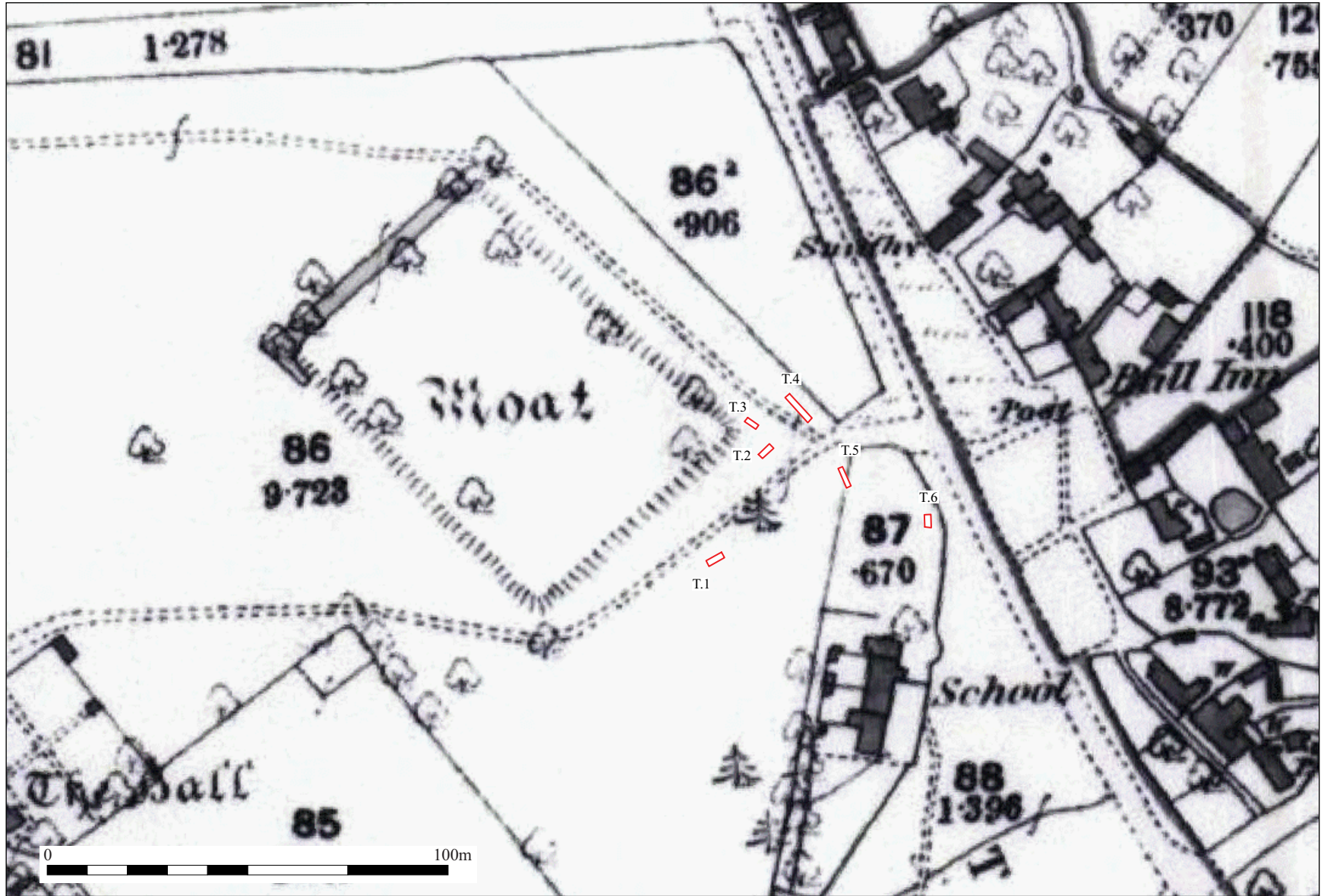
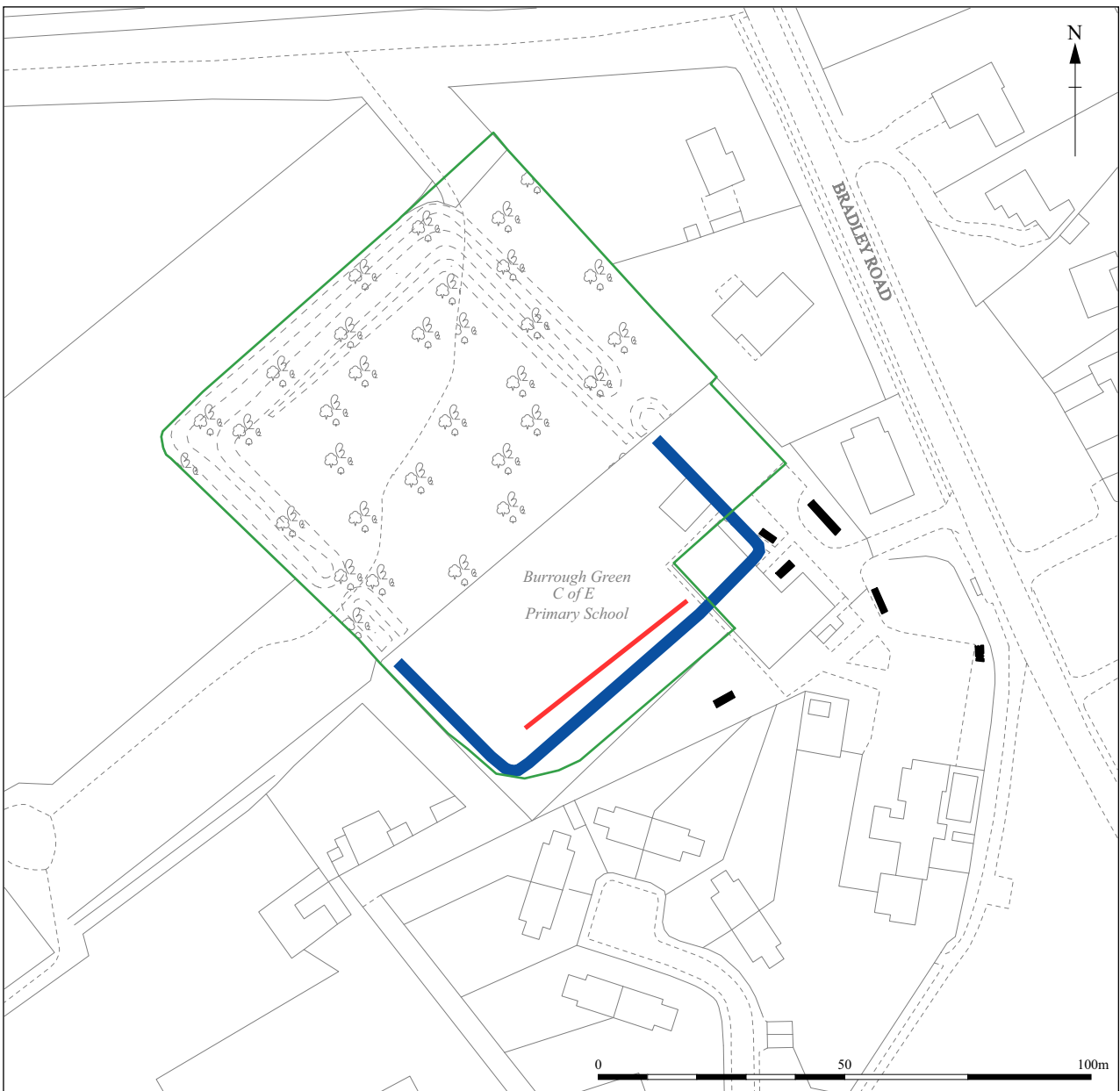


Figure 4: OS 1st edition showing moat with trench outlines (red)



Figure 5: Aerial photograph of site (source Cambridgeshire County Council 1997/98, copyright reserved) showing earthworks



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Figure 6: Plan showing location of moat as shown by Aerial photograph (blue), and Geophysical survey (red), the scheduled area (green) and trench locations (black)

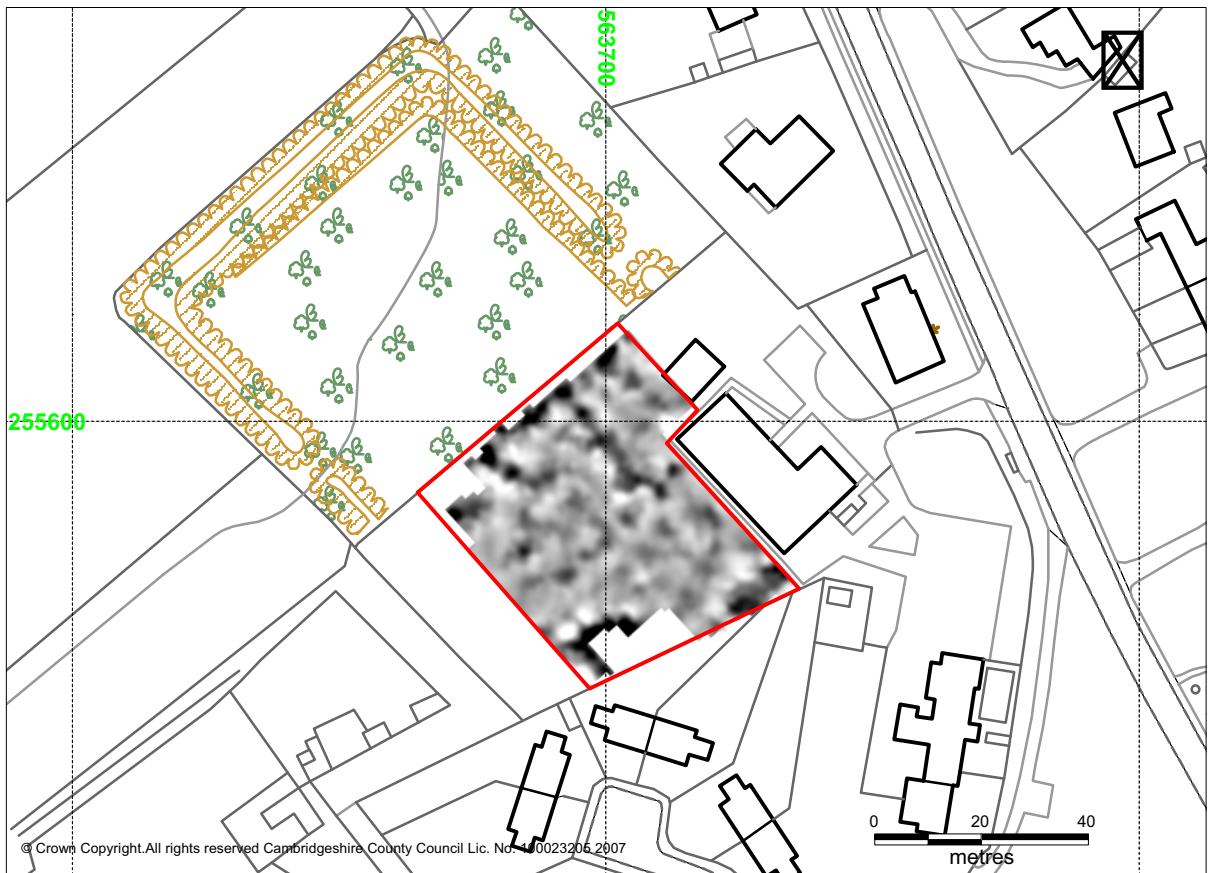


Figure 7: Location of Gradiometer and resistivity surveys

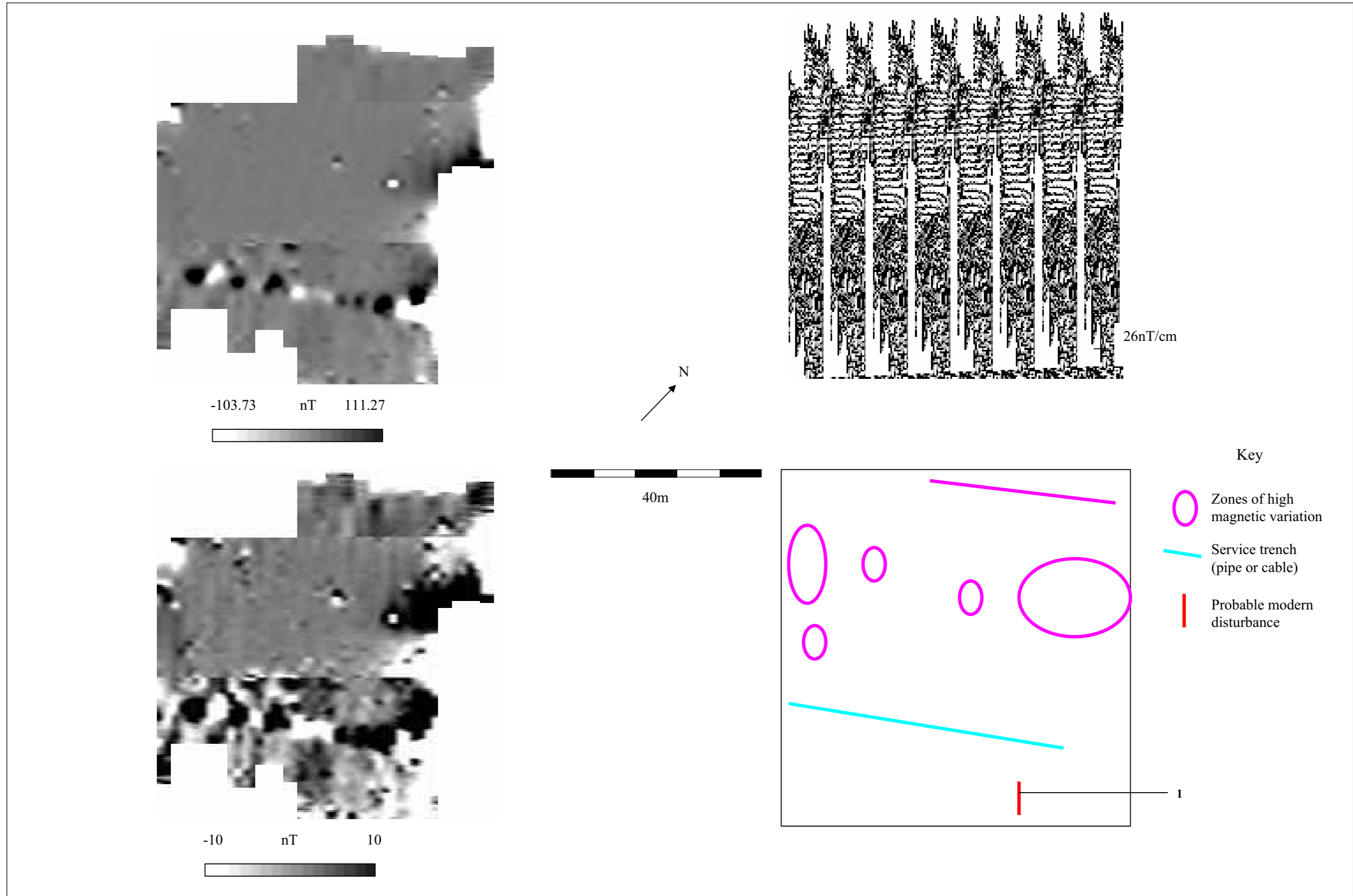


Figure 8: Gradiometer survey results with interpretive plan

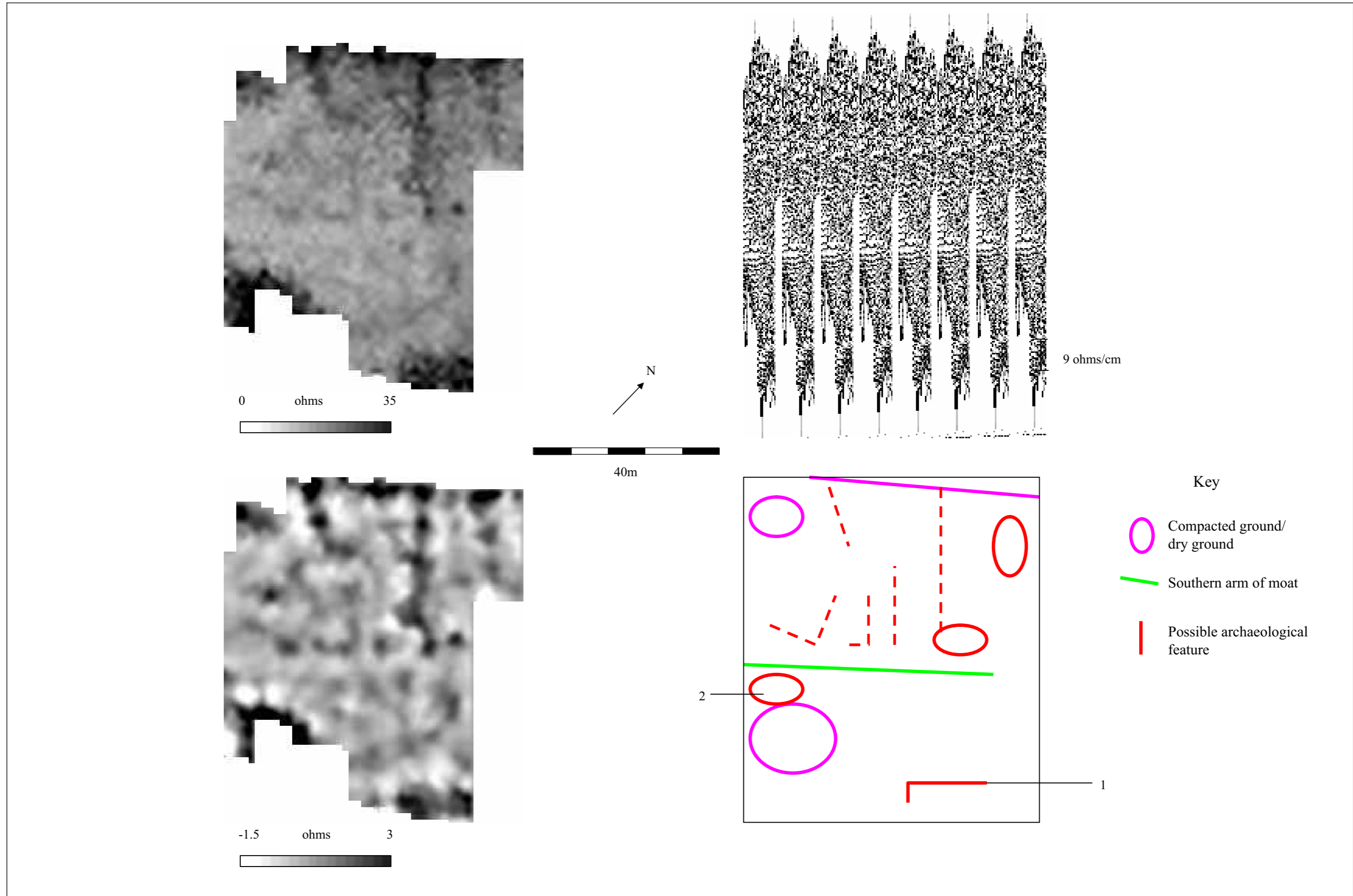


Figure 9: Resistivity survey with interpretive plan



Plate 1: Trench 2



Plate 3: Trench 5



Plate 2: Trench 4



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