Report of the earth resistance geophysics survey of Cookham Paddock in May 2022

Authors: Keith Abbott and Andrew Hutt MCI*f*A

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Summary

From 9th to 21st August 2021, the University of Reading Department of Archaeology led a small team of staff/students with the support of volunteers from societies affiliated to the Middle Thames Archaeology Partnership (including the Berkshire Archaeological Society) in an archaeological evaluation of Cookham Paddock. This proved there was a sizeable Mid Saxon settlement with defined zones of occupation. At least one timber building was found along with evidence to suggest the presence of other buildings close by.

Based on the results of this work the University of Reading, Department of Archaeology will be undertaking a further excavation within Cookham Paddock as part of the University of Reading Field School in August 2022. To assist in the planning of the excavation, an earth resistance survey of Cookham Paddock was carried by Berkshire Archaeological Society volunteers during May 2022. This document is the survey report.

Distribution

University of Reading, Department of Archaeology: Dr Gabor Thomas

Parochial Church Council of the Ecclesiastical Parish of Holy Trinity, Cookham: Mark Stockdale

Berkshire Archaeology: Fiona MacDonald

Berkshire Archaeological Society Council:

Andrew Hutt (Chair), Alison McQuitty, Ann Griffin, Anne Harrison, Catherine Petts, Griselda Truscott Wickes, Tim Lloyd and Keith Abbott

Berkshire Archaeological Society survey team: Paul Seddon, Andrew Hutt, Nigel Spencer, Martin Labram, James Peddle, Philip Rawstron and Keith Abbott

0 Document control

0.1 Contents

0.2 Change control

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0.4 Changes forecast

None

1 This project

From 9th to 21st August 2021, the University of Reading Department of Archaeology led a small team of staff/students with the support of volunteers from societies affiliated to the Middle Thames Archaeology Partnership (including the Berkshire Archaeological Society) evaluated the potential of the Cookham Paddock through a series of test trenches. The results proved that there was a sizeable Mid Saxon settlement located within the site structured into defined zones of occupation with at least one timber building and evidence to suggest the presence of other buildings close by. The artefacts found included food remains, pottery vessels, a bronze bracelet, a bone comb and bronze pins. Other finds, including an axe, knife and smithy hearth demonstrated that the settlement also contained industrial occupations as well as farming and domestic activities.

Based on these results the University of Reading, Department of Archaeology is planning further excavations within Cookham Paddock as part of the Field School during August 2022. To assist in the planning for this, Berkshire Archaeological Society was asked to carry out an earth resistance survey of the site.

2 Site location

Cookham Paddock is located 60m from the south bank of the River Thames, to the west of Holy Trinity Church and its cemetery (grid reference SU 897 855) as shown in figure 1. The Paddock is a tree-lined grass field which is used for recreation by church groups and the public, and for seasonal camping and caravans.

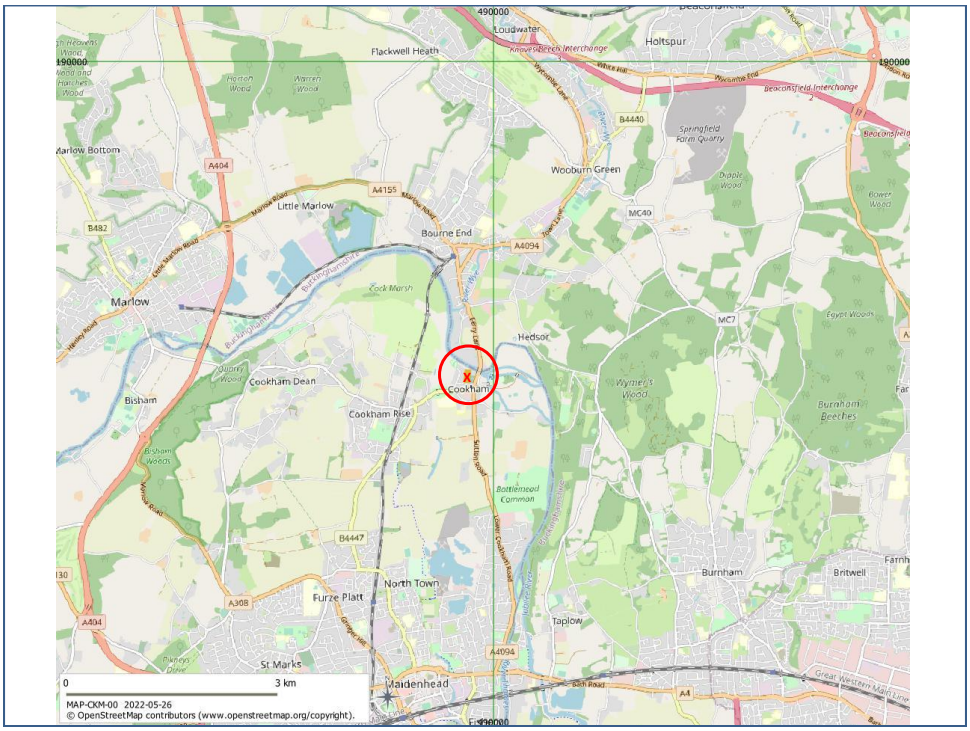

Figure 1. Location of Holy Trinity Church, Cookham (Open Steetmap 2022)

3 Geological and topographical background

Holy Trinity Church lies on the rising land of a gravel terrace, and the churchyard and the adjoining Paddock lie on alluvial sediments located on the flood plain of the River Thames. The underlying solid geology is the Cretaceous, Lewes Nodular Chalk Formation. This is overlaid with alluvium (clay, silt, sand and gravel) over the north-western half of the paddock and the Shepperton Gravel Member (sand & gravel) in the south-eastern half. All covered by approximately 1m of topsoil.

4 The historical and archaeological background

Situated south of the River Thames, Cookham was at one time part of the Kingdom of Wessex fortified by one of Alfred the Great's burhs. Being located close to the much contested boundary between Wessex and Mercia and near to a Roman crossing of the River Thames, which would both have been major arteries for trade, Cookham was a strategic centre for religious, political and commercial activity throughout the Early Medieval period. Historical records show that there was an abbey in Cookham which was captured in AD 733 by Æthelbald of Mercia. Cynewulf of Wessex took possession of the abbey around AD 760, and Offa retook the abbey for Mercia in AD 779 as the result of his victory at the Battle of Bensington. After Offa's death in AD 796, his widow Cynethryth became the abbess at Cookham until her death sometime after AD 798.

Figure 2. Holy Trinity Church, and excavations in Cookham Paddock (University of Reading, 2021)

A number of previous archaeological investigations have been carried out in the area close to Cookham Paddock yielding results suggestive of an Early Medieval settlement in the area:

- A trial excavation to the south of the church revealed undated courses of chalk rubble thought to pre-date two ditches containing post-Medieval tile and pottery (Collard, 1986)
- An archaeological assessment to the north of the church revealed finds of Early Medieval pottery, suggesting the presence of an Early Medieval settlement in the near vicinity (Mudd & Burrow, 1987).
- Trial trenches on Sashes Island failed to find evidence of the expected Saxon burh (Hill, Beard and Robinson, 2000).
- Excavations carried out by the Marlow Archaeological Society in Cookham Paddock revealed pottery sherds dating from the Late Iron Age and Late Roman periods, a metalled track way constructed from re-used Roman building material running parallel to the river, deposits of animal bone and pottery sherds dating to AD450-AD850 suggesting the presence of a nearby Early Medieval settlement (Griffin, 2005).

The archaeological evaluation carried out in August 2021 opened six trenches from which strong evidence was revealed of a sizeable Mid Saxon settlement located within Cookham Paddock. The pottery finds in particular were almost exclusively from the Mid Saxon period. The numerous parallel running ditches suggest the settlement was structured into defined zones of occupation, and the postholes have shown the presence of at least one timber building that would have housed the inhabitants of the settlement and further suggest the presence of other buildings close by. The artefacts found across the site include food remains, pottery vessels used for cooking and eating; and the bronze bracelet, bone comb, bronze pins and an iron axe head (Thomas and Mudd, 2022). The position of the trenches excavated during the archaeological evaluation carried out in August 2021can be seen in figures 3 and 4.

5 General and specific aims of the project

This project had the following objective:

1) To provide the University of Reading Department of Archaeology with an earth resistance survey of Cookham Paddock to facilitate planning of the 2022 Field School; and
2) To provide earth resistance survey data to be used by the University of Reading Department of Archaeology to identify anomalies of interest on Cookham Paddock for further investigation before, during or after the 2022 Field School.

6 The geophysics survey

6.1 The survey grid and survey area

An aerial view of Cookham Paddock to be surveyed is shown in figure 3 along with the positions of each of the evaluation trenches excavated in August 2021. The earth resistance geophysics survey was carried out using a Frobisher TAR3 earth resistance meter using 20m x 20m grids with a 1.0m survey resolution across the entire field, and using 10m x 10m grids with a 0.5m survey resolution in areas suggested by the University of Reading Department of Archaeology as being of particular interest.

Figure 3. Aerial view of Cookham Paddock (University of Reading 2021)

A survey grid of 20m x 20m squares was established by the BAS survey team as shown in figure 4 and marked with canes. Steel 6” pins wrapped with red tape were placed within the ground at the SW corners of grid #3, grid #5 and grid #13 and the +/- 2m GPS position of each pin was recorded. The three metallic markers can be easily located using a metal detector by the University of Reading Department of Archaeology in the week(s) following this survey if a more accurate location of the survey grid is needed. This method of relocation of the marker pins was “blind tested” successfully at the end of the survey.

An east-west baseline was defined from the SW corner of grid #3 to the SW corner of grid #13. A north-south baseline was defined from the SW corner of grid #3 to the SW corner of grid #5.

During the survey, these 20m x 20m grids were subdivided into 10m x 10m grids using tape measures and marked with canes.

It should be noted that there has been significant ingress of undergrowth and foliage over the years since the OS map of Cookham Paddock was last surveyed. The survey grid was positioned to enable the maximum feasible coverage of the open area of Cookham Paddock by the 1.0m earth resistance survey. The survey area could be extended in future if required by the removal of the undergrowth and foliage with the permission of the landowner.

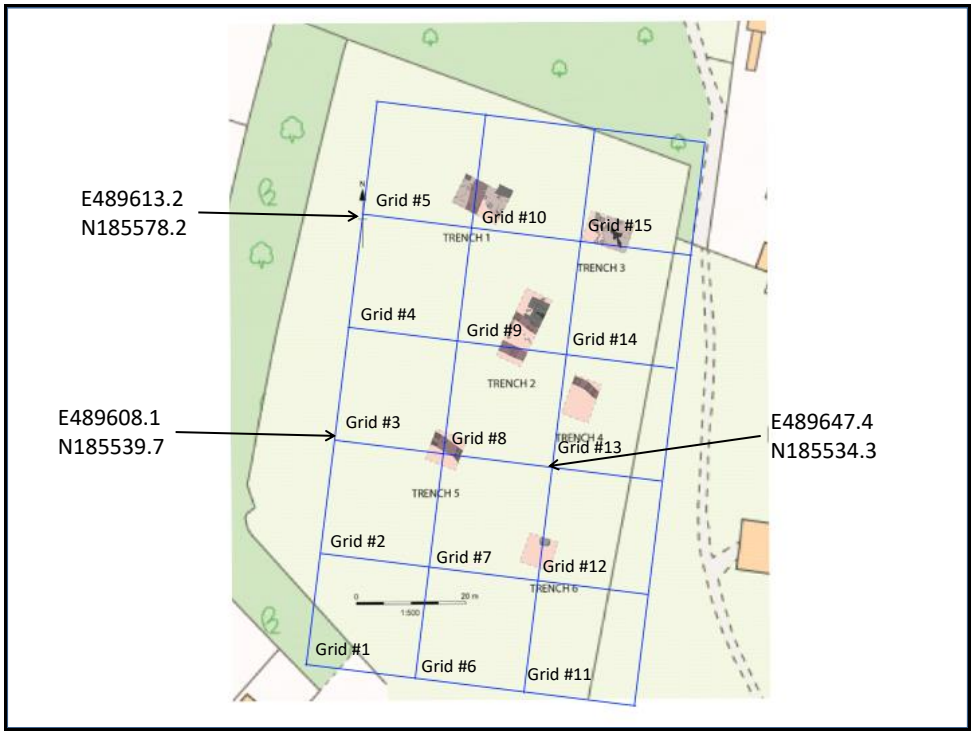

Figure 4. The 20m x 20m survey grid used at Cookham Paddock

6.2 1.0m resolution earth resistance survey and results

Figure 5 shows the 1.0m earth resistance geophysics results as processed on Snuffler, whilst figure 6 shows the 1.0m survey image and its position within Cookham Paddock. Figure 7 shows the same with the location of the 2021 Evaluation Excavation trenches overlaid.

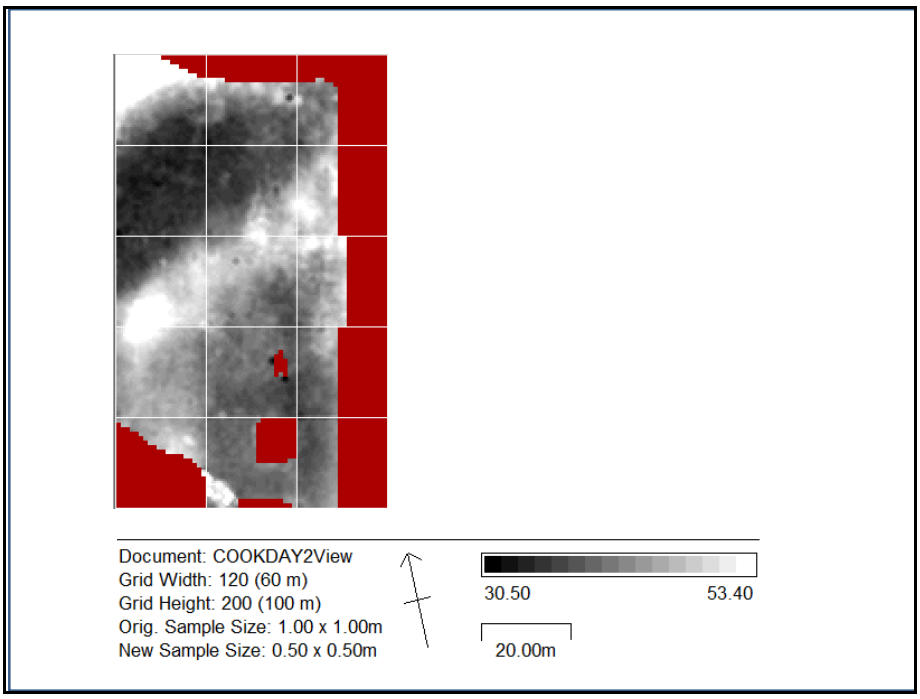

Figure 5. Results of the 1.0m earth resistance survey

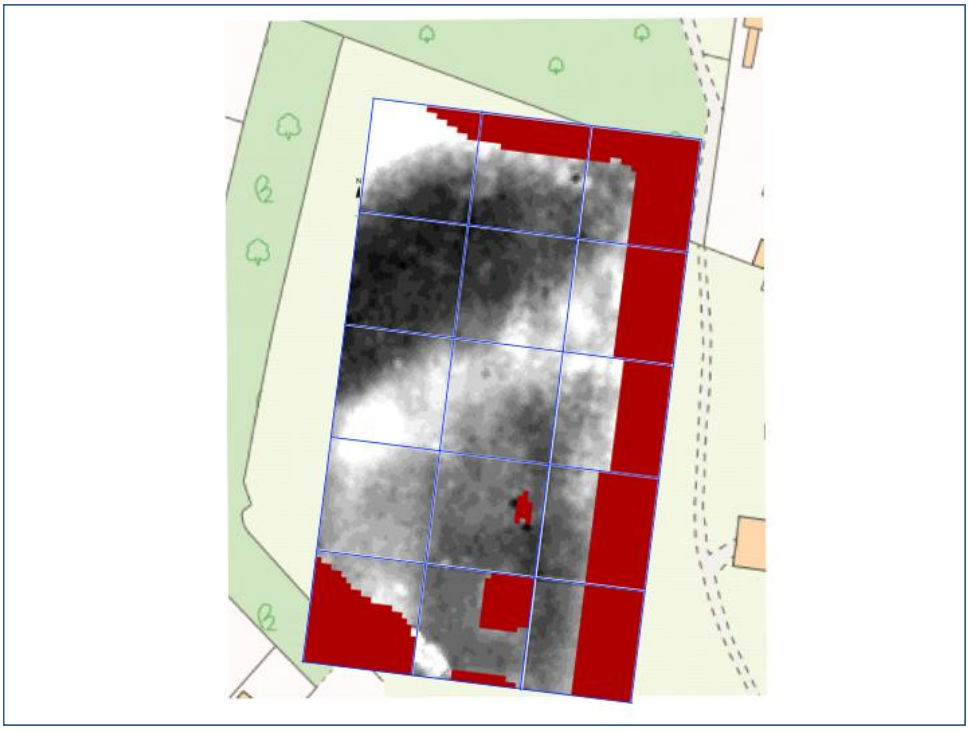

Figure 6.The 1.0m earth resistance geophysics image within Cookham Paddock

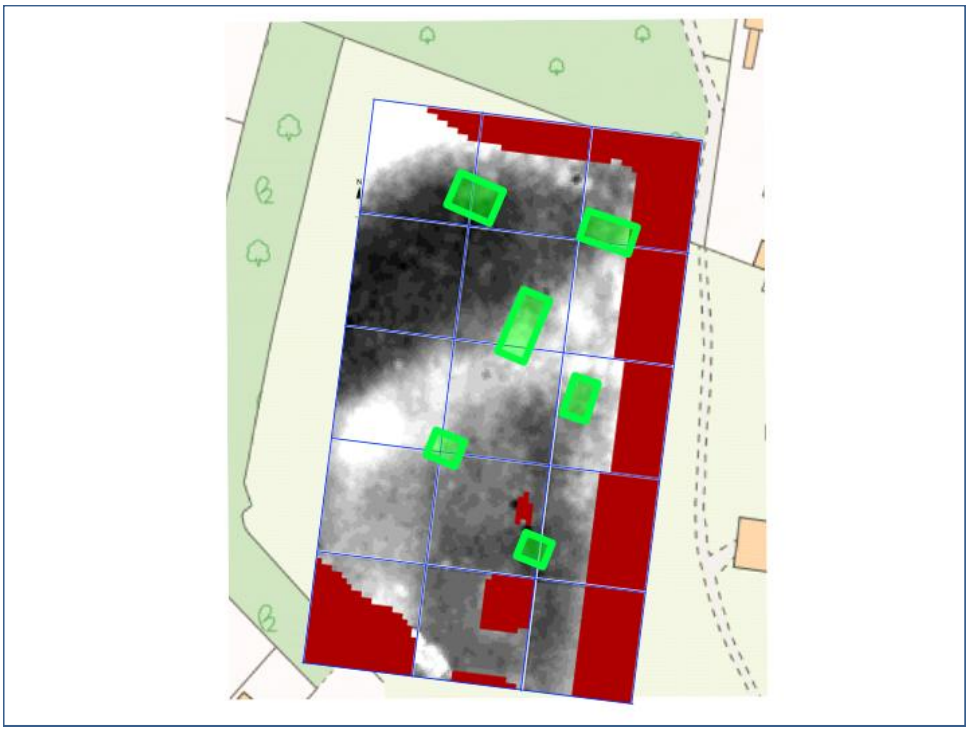

Figure 7. The 1.0m earth resistance geophysics image and the 2021 evaluation trenches

The anomalies observed in the 1.0m survey are highlighted in Figure 8. These anomalies are:

- CP1 is a ~30m wide area of low resistance anomaly which corresponds to the paleochannel thought to have extended across Cookham Paddock. This anomaly is compared to plots of coring data in section 7.
- CP2 is an irregular high resistance anomaly. This probably represents the underlying geology of the north bank of the paleochannel highlighted in CP1.
- CP3, CP4, CP5 and CP6 are also irregular high resistance anomalies. From the 1.0m resolution image these are interpreted as probably representing the underlying geology of the south bank of the paleochannel highlighted in CP1. These anomlaies are re-examined using the 0.5m survey higher resolution image.
- CP7 is an irregular high resistance anomaly at the south entrance to Cookham Paddock, and corresponds to the modern metalled driveway into the field.
- CP8 is also an irregular high resistance anomaly just to the west of CP7. This may be associated with earlier metalling at the entrance to the field or may represent the underlying geology.

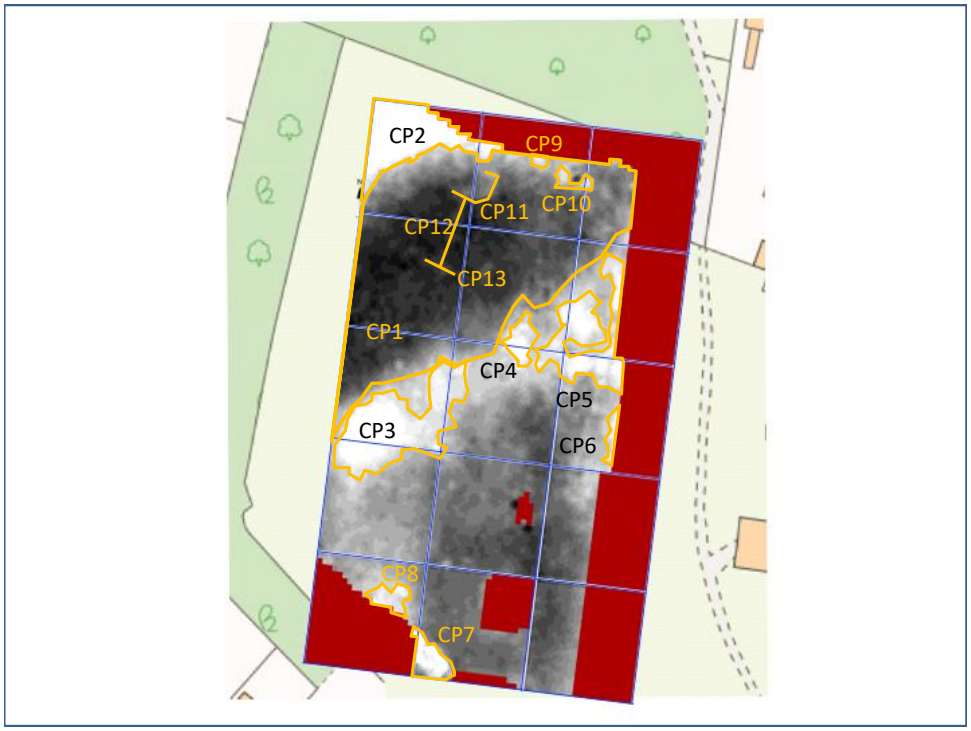

Figure 8. The 1.0m earth resistance anomalies

- CP9 and CP10 represent a linear alignment of small areas of high resistance at the very north of Cookham Paddock extending for 12m in a south-easterly direction.
- CP11 is a three sided rectilinear anomaly of moderate resistance measuring 7m x 4m that aligns with the position of trench #1 opened in the 2021 evaluation excavation. It is possible that CP11 may represent the edges of trench #1, or may be associated with archaeological features as yet unrevealed.
- CP12 is a linear anomaly of moderate resistance extending from the south of CP11 in a south-westerly direction for some 12m, and at its southerly extent is

crossed perpendicularly by CP13 (also of moderate resistance) which also a linear anomaly 5m in length. CP12 is approximately aligned to the ditch revealed in trench #1 in the 2021 evaluation excavation which if filled with gravel might explain it being visible against an otherwise low resistance background.

6.3 0.5m resolution earth resistance survey and results

Figure 9 shows the 0.5m earth resistance geophysics results as processed on Snuffler, whilst figure 10 shows the 0.5m survey image (within a green boundary) and its position within Cookham Paddock. Figure 11 shows the same with the location of the 2021 Evaluation Excavation trenches overlaid.

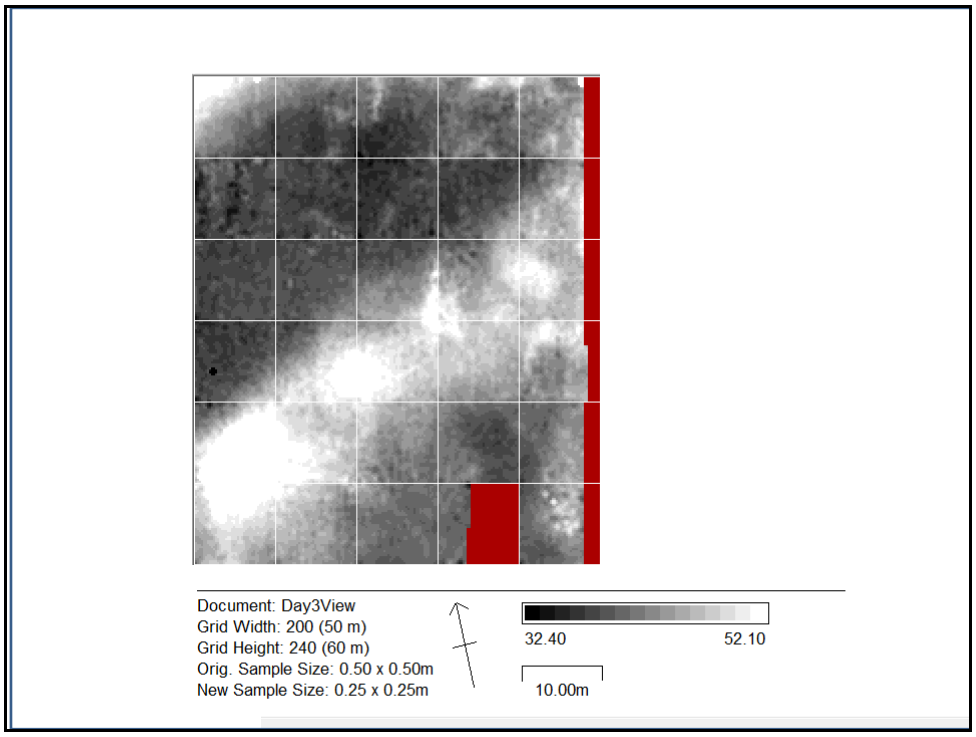

Figure 9. The results of the 0.5m earth resistance survey

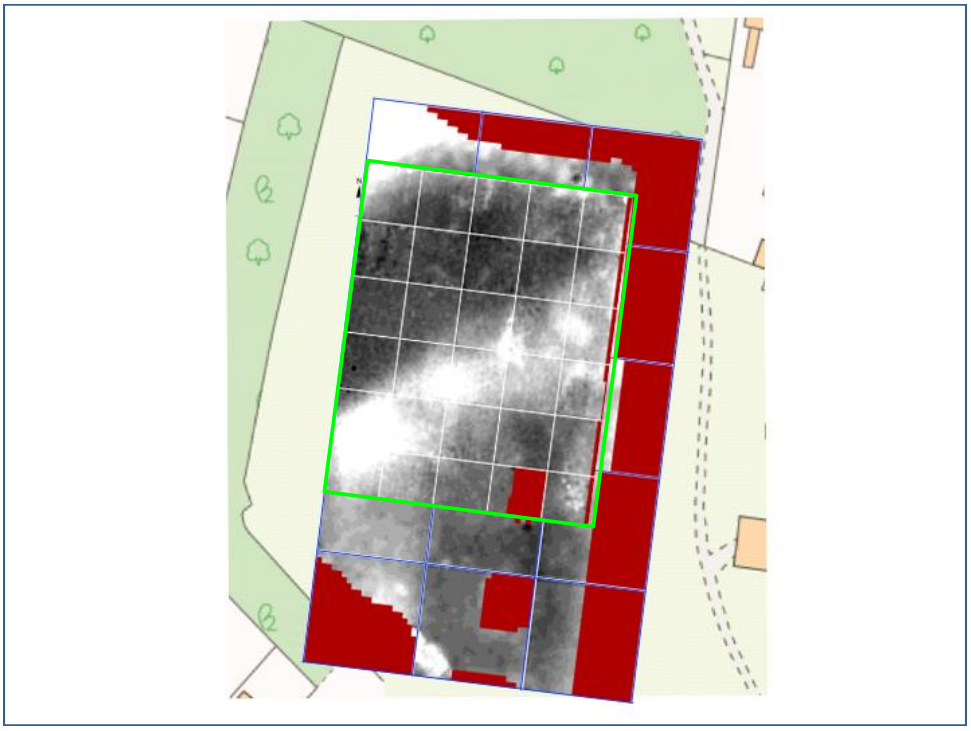

Figure 10.The 0.5m earth resistance geophysics plot within Cookham Paddock

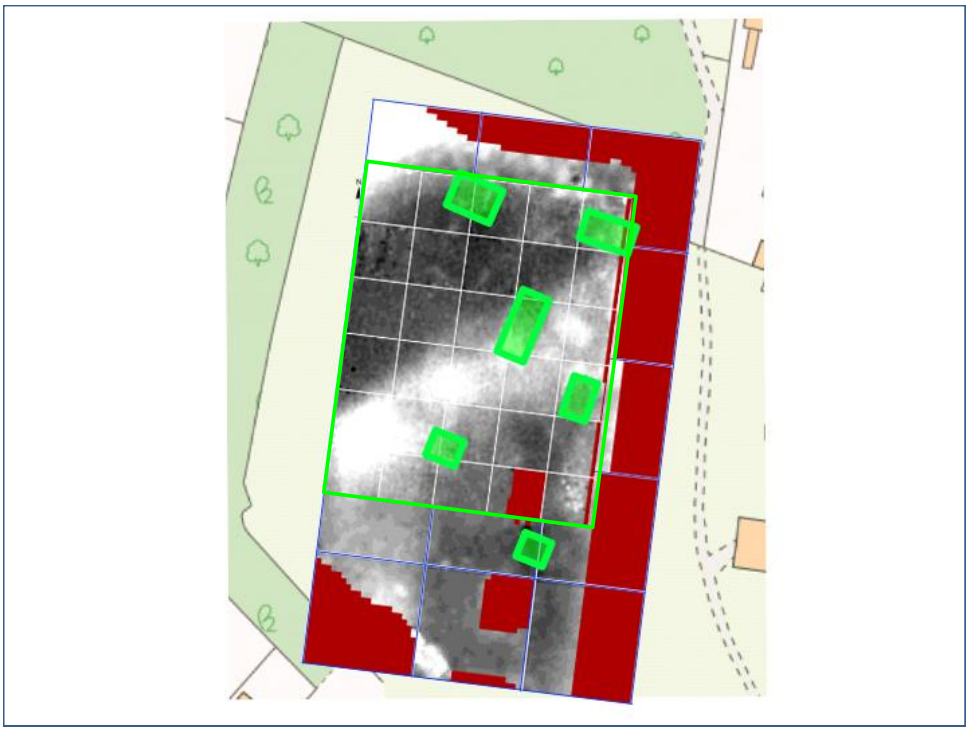

Figure 11. The 0.5m earth resistance geophysics plot and the 2021 evaluation trenches

The 0.5m earth resistance survey image shown in figure 12 shows the higher resolution image the northern part of Cookham Paddock, which both reveals additional anomalies

and sharpens the image of previously identified anomalies from the 1.0m survey to be re-examined.

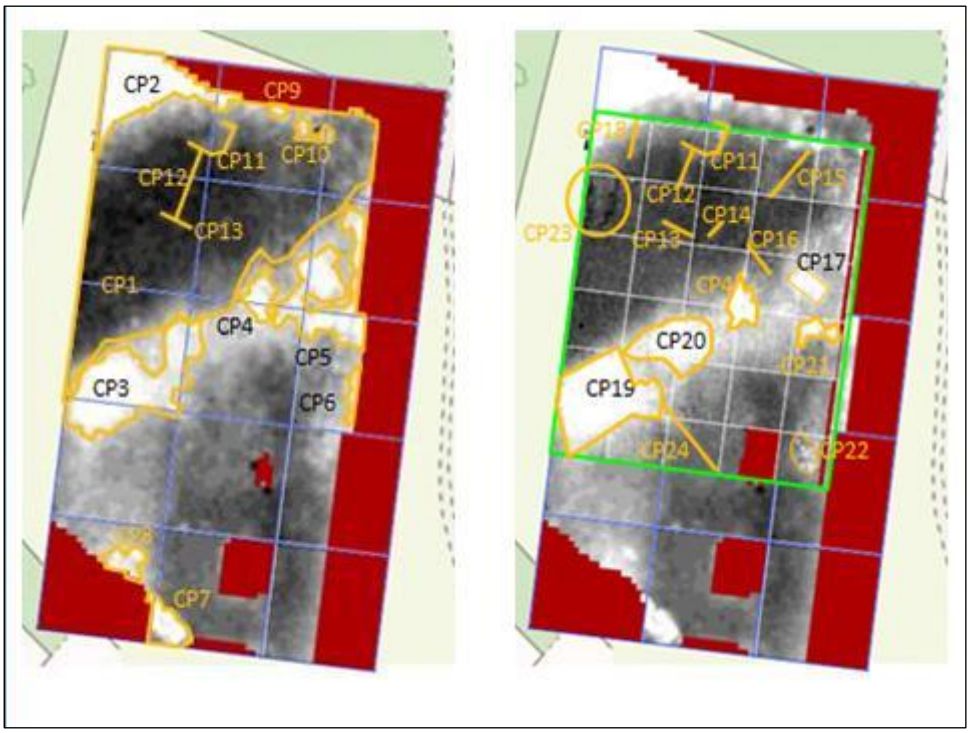

Figure 12. The 0.5m vs 1m earth resistance anomalies

The previously identified anomalies re-appraised using the 0.5m survey image are:

- CP3 is visible in the 1.0m survey as a contiguous irregular high resistance anomaly, but can be seen in the 0.5m survey as two distinct and much more angular high resistance anomalies labelled as CP19 and CP20.
- CP5 is also visible in the 1.0m survey as a contiguous irregular high resistance anomaly, but in the 0.5m survey it is seen as CP17 which is a rectangular high resistance anomaly measuring 7m x 3m, and CP21 which is a smaller irregular area of high resistance partially overlaying trench #4. A Medieval surface was revealed in trench #2 during the 2021 evaluation excavation less than 5m west of CP17, so from this image it is possible that CP17 could represent the floor surface of a building.
- CP4, which is visible in the 1.0m survey as an irregular high resistance anomaly, is seen in the 0.5m survey to be much more angular, with the edges of its south-westerly corner almost perpendicular. It can also be seen in figure 10 that CP4 overlays trench #2, and it could be that the perpendicular edges of the south-westerly corner of CP4 are associated with the remains of trench #2.
- CP11 remains unchanged in the 0.5m survey, but CP12 and CP13 are both shorter in length and less clearly defined.

Additional anomalies visible in the 0.5m survey image are:

- CP14 is a 3m long linear anomaly of moderate resistance aligning with CP15, a parallel linear anomaly some 9m long. Both anomalies are aligned southwest to north east.
- CP16 is a 3m long linear anomaly running in an approximately east to west orientation overlaying trench #2.
- CP18 is a 7m long linear anomaly running in an approximately north to south orientation.
- CP22 shows an area of intermittent high resistance at the eastern edge of the Paddock. This area is corresponds with the location of a recent bonfire.
- CP23 highlights two low resistance linear features, however these are thought to have been result of a sudden downpour during the survey in an area covered with recently mowed long grass.
- CP24 is a 15m line linear anomaly of moderate resistance lying on a northwest to south east orientation.

All other anomalies identified from the 1.0m survey image are also visible in the 0.5m survey image.

7 Coring data images

This section compares the 1.0m earth resistance survey image overlaid onto the coring data survey plots (Quest 2021) to assess the alignment of the area of low resistance (ie CP1) thought to represent the paleochannel running across Cookham Paddock.

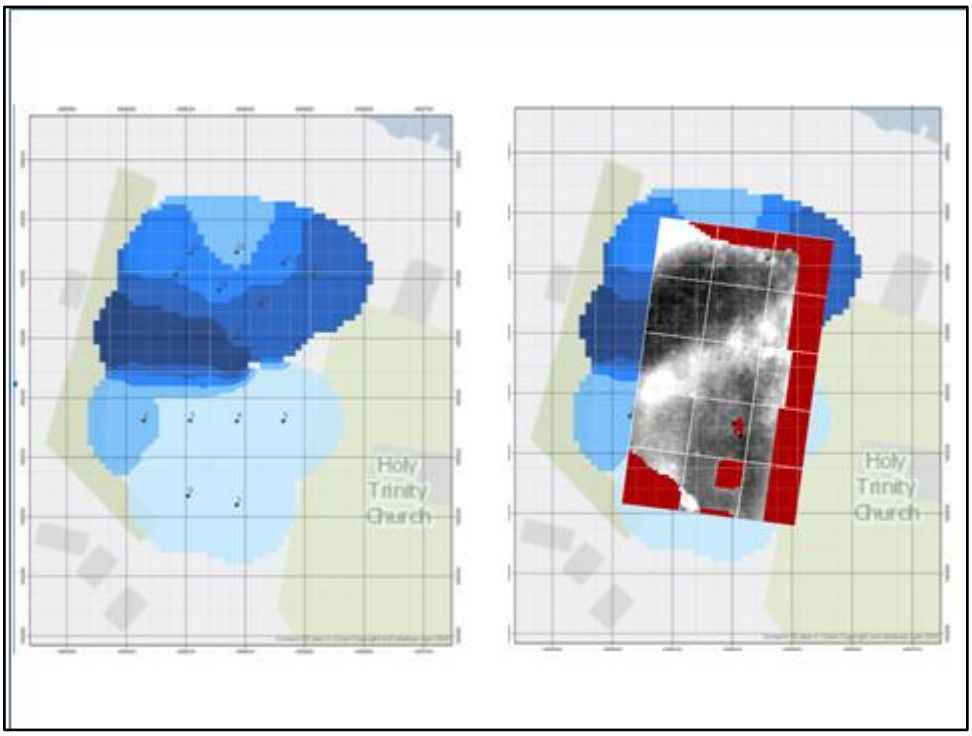

Figure 13. Thickness of alluvium within Cookham Paddock (Quest, 2021)

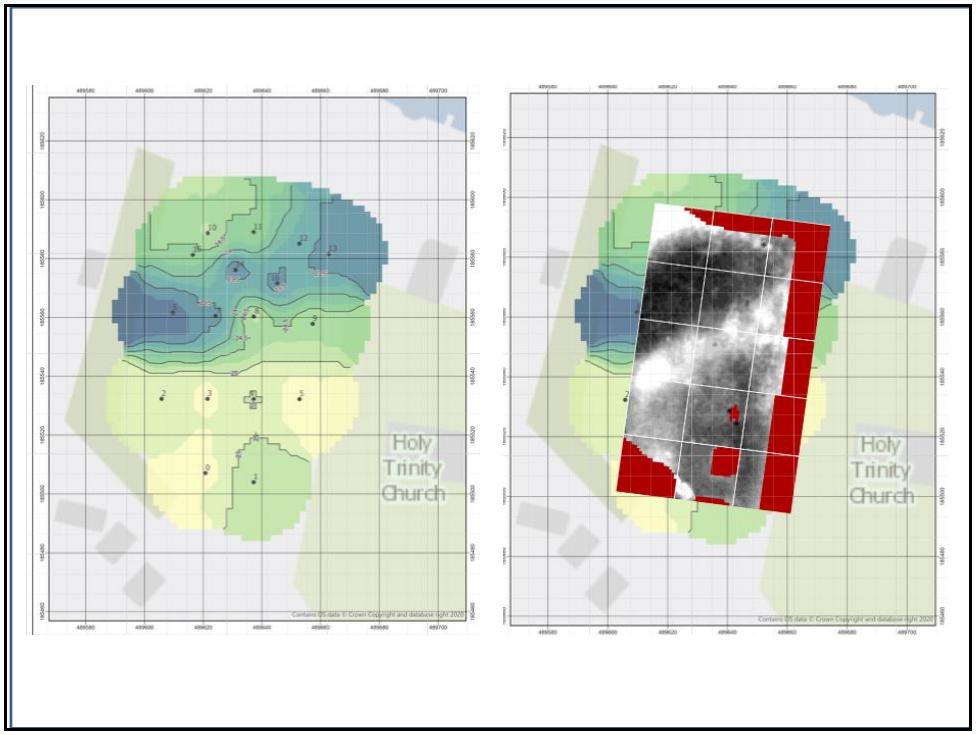

Figure 14. Thickness of gravel surface within Cookham Paddock (Quest 2021)

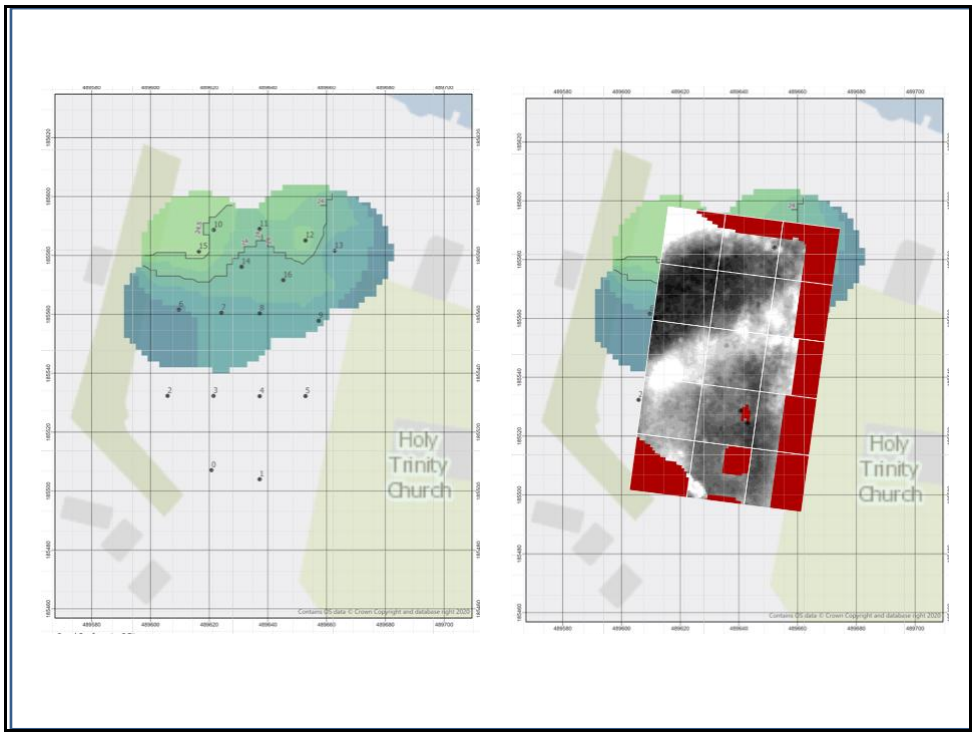

Figure 15. Thickness of sand surface within Cookham Paddock (Quest 2021)

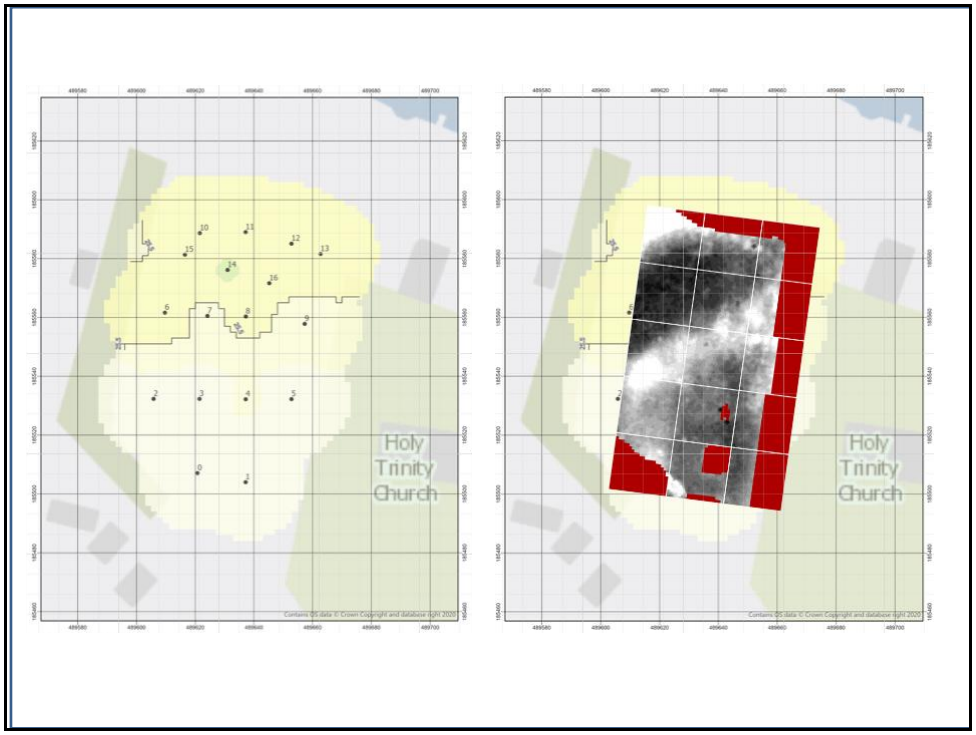

Figure 16. Thickness of subsoil surface within Cookham Paddock (Quest 2021)

Comparing the shapes of the contours with the earth resistance plot, there is a good correlation in the north of the survey, between the orientation of the low resistivity zone and the thickness of gravel and alluvium maps. This suggests that the resistivity is responding to changes in geology in that area.

The northeast to southwest high resistivity trend does correspond to the thinning of all layers, but this thinning continues to the south and yet resistivity decreases again. This suggests that this trend is being enhanced by some non-geological activity such as road or building construction.

8 Conclusions

This survey has provided the earth resistance survey data and images requested by the University of Reading Department of Archaeology to facilitate planning of the 2022 Field School, and highlighted anomalies observed. By combining layered presentation of the survey images, the location of the 2021 evaluation excavation trenches and the coring plots from earlier phases of fieldwork, the planning team are well placed to further analyse the anomalies observed.

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