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Research Report Series 42/2024

Wroxeter Farm, Wroxeter and Uppington, Shropshire

Report on Geophysical Surveys, April and May 2024

Megan Clements, Neil Linford and Andrew Payne

Geophysics

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Wroxeter Farm
Wroxeter, Shrewsbury
Shropshire, SY 5 6PH

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Summary

Ground Penetrating Radar (GPR), magnetometer and earth resistance surveys were conducted over accessible areas of the farmyard and an adjacent paddock at Wroxeter Farm, Wroxeter and Uppingham, Shropshire, following a request from the English Heritage Trust. The aim of the survey was to determine the location of any archaeological remains within the farmyard and extend previous geophysical coverage within the adjacent paddock in advance of a possible excavation. The GPR survey (0.8ha) responded to known recent agricultural structures within the farmyard, although the results from the paddock provided further detail of remains possibly associated with the forum to the south, and a walled enclosure and buildings to the north of the field. Magnetometer (0.5ha) and earth resistance (0.5ha) surveys were conducted over the paddock and detected structural remains that correlate with the GPR results and possibly suggest the presence of thermoremanent magnetic anomalies.

Contributors

The geophysical fieldwork was conducted by Megan Clements, Neil Linford and Andrew Payne.

Acknowledgements

The authors are grateful for the assistance of colleagues from the English Heritage Trust and tenant farmer for allowing access for the survey to be conducted. The cover image shows the vehicle towed GPR array in the foreground during the survey of the paddock with the earth resistance survey in the distance towards the north of the field (photograph taken by N Linford).

Archive location

Historic England, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth, PO4 9LD

Date of survey

The fieldwork was conducted between the 29th April and 2nd May 2024. The report was completed on the 19th June 2024.

Contact details

Dr Neil Linford, Geophysics Team, Historic England, Fort Cumberland, Fort Cumberland Road, Southsea, Portsmouth, PO4 9LD. Tel: 02392 856761. Email: neil.linford@historicengland.org.uk.

Contents

Introduction

Ground Penetrating Radar (GPR), magnetometer and earth resistance surveys were conducted at Wroxeter Farm, Wroxeter, Shropshire following a request from the English Heritage Trust. The aim of the survey was to investigate the accessible areas of the farmyard and adjacent paddocks to determine the presence of significant archaeological remains in advance of possible excavation. The work was agreed under the Shared Services agreement and addresses Historic England Corporate Plan Activity “5.2 Work with English Heritage Trust to support the National Collection”.

The Roman city of Viroconium Cornoviorum (Wroxeter, National Heritage List for England: 1003705), was first established as a military base in the 1st century AD, and grew to become the fourth largest Roman settlement in Britain, continuing to be a centre of importance after the fall of the Roman empire in Britain. Following the visit of the Emperor Hadrian to Britain in AD122, it was much increased in size offering one of the largest and finest civic centres in the country occupying two complete insulae with a sizeable forum and extensive public baths (White and Barker 1998; Buteux *et al.* 2000). Periods of growth, relative decline and later resurgence ensued with elements of the later "Sub-Roman" town continuing to the mid-6th century.

Geophysical survey over the whole Roman city was conducted in partnership with English Heritage during the 1990s (Gaffney *et al.* 2000). However, the farmyard and adjacent paddock were not included within the original programme of geophysical survey, although a partial GPR survey of the farmyard and Victorian barns including a sample area of the paddock was conducted in 2002 (GSB Prospection 2002). A magnetometer survey of the paddock was conducted in July 2004 (White 2005) with subsequent GPR coverage extending mapping of the southern half of the field (Linford and Linford 2015). The paddock has proven relatively unproductive in terms of aerial photography compared to the surrounding fields (White and Barker 1998, Figure 12).

The site lies over Permian Bridgnorth Sandstone with superficial river terrace deposits of sand and gravel (Geological Survey of Great Britain 1996; British Geological Survey 2024), over which freely draining, slightly acidic and loamy soils of the Wick 1 (541r) association have developed (Soil Survey of England and Wales 1983; Soilscapes 2024). The farmyard contains areas of hard standing, concrete and Victorian agricultural buildings with a small grass paddock to the east over the site of a previous building. The large paddock to the south-west of the farm was under short grass for grazing with some slight topographic undulations (Figure 16). The weather was dry and sunny throughout the survey.

Method

Ground Penetrating Radar

A 3d-Radar (Kontur) MkIV GeoScope Continuous Wave Step Frequency (CWSF) Ground Penetrating Radar (GPR) system was used to conduct the survey collecting data with a multi-element DXG1820 vehicle towed, ground coupled antenna array (Linford *et al.* 2010; Eide *et al.* 2018). A roving Trimble R8s Global Navigation Satellite System (GNSS) receiver was mounted on the GPR antenna array, that together with a second R8s base station was used to provide continuous positional control for the survey collected along the instrument swaths shown on Figure 1. The GNSS base station receiver was adjusted to the National Grid Transformation OSTN15 using the Trimble VRS Now Network RTK delivery service. This uses the Ordnance Survey's GNSS correction network (OSNet) and gives a stated accuracy of 0.01-0.015m per point with vertical accuracy being half as precise.

Data were acquired at a 0.075m x 0.075m sample interval across a continuous wave stepped frequency range from 40MHz to 2.99GHz in 4MHz increments using a dwell time of 2ms. A single antenna element was monitored continuously to ensure data quality during acquisition together with automated processing software to produce real time amplitude time slice representations of the data as each successive instrument swath was recorded in the field (Linford 2013).

Post-acquisition processing involved conversion of the raw data to time-domain profiles through a time window of 0 to 75ns, adjustment of time-zero to coincide with the true ground surface, background and noise removal, and the application of a suitable gain function to enhance late arrivals. Representative profiles from the full GPR survey data set are shown on Figure 6. To aid visualisation amplitude time slices were created from the entire data set by averaging data within successive 2.5ns (two-way travel time) windows (e.g. Linford 2004). An average sub-surface velocity of 0.0977m/ns was assumed following constant velocity tests on the data and was used as the velocity field for 2D Kirchoff migration of the data set and time to estimated depth conversion. Each of the resulting time slices therefore represents the variation of reflection strength through successive ~0.12m intervals from the ground surface, shown as individual greyscale images in Figure 3 and Figures 7 to 10. Further details of both the frequency and time domain algorithms developed for processing this data can be found in Sala and Linford (2012).

Due to the size of the resultant data set a semi-automated algorithm has been employed to extract the vector outline of significant anomalies shown on Figure 13. The algorithm uses edge detection to identify bounded regions followed by a morphological classification

based on the size and shape of the extracted anomalies. For example, the location of possible pits is made by selecting small, sub circular anomalies from the data set (Linford and Linford 2017).

Magnetometer survey

Measurements were recorded over a series of 30m grids (Figure 2) established with a Trimble R8s GNSS using a Bartington Grad 601 dual fluxgate gradiometer. Readings were taken at 0.25 m intervals along parallel traverses separated by 1.0 m. Post-acquisition, the median value of each traverse was subtracted from all measurements on that traverse (Zero Median Traverse) to correct for heading errors and instrument drift. A linear greyscale image of the magnetometer data is presented in Figure 4 superimposed on the Ordnance Survey (OS) base mapping. Figure 11 shows a trace plot and linear greyscale image of the minimally processed data.

Earth Resistance

Measurements were recorded over a series of 30m grids established with a Trimble R8s GNSS (Figure 2) using a Geoscan RM85 earth resistance meter, internal multiplexer, and a PA5 electrode frame in the Twin-Electrode configuration, to allow two separate surveys, with mobile electrode separations of 0.5m and 1.0m, to be collected simultaneously. The 0.5m mobile electrode separation coverage was designed to detect near-surface anomalies in the upper 0.5m of the subsurface whilst the 1.0m separation survey allowed anomalies to a depth of about 1-1.25m to be detected. For the 0.5m mobile electrode separation survey readings were taken at a density of 0.5m x 1.0m whilst for the 1.0m separation survey they were taken at a density of 1.0m x 1.0m.

Extreme values caused by high contact resistance were suppressed using an adaptive thresholding median filter with radius 1m (Scollar *et al.* 1990). The results for the near-surface 0.5m mobile electrode separation survey are depicted as a linear greyscale image in Figure 5 superimposed on the base OS mapping data. Figure 12 shows the minimally processed data from both the 0.5m and 1.0m mobile electrode separation surveys, presented as trace plots, linear and histogram equalised images of the minimally processed datasets following the application of extreme value noise reduction. Also shown on Figure 12 are greyscale plots of the same datasets after further application of a high-pass Gaussian filter to enhance the visualisation of linear anomalies.

Results

Ground Penetrating Radar Survey

A graphical summary of the significant GPR anomalies, [**gpr1-33**] discussed in the following text, superimposed on the base OS map data, is provided in Figure 13.

Reflections have been recorded throughout the 75ns two-way travel time window, although there are few significant responses beyond a two-way travel time of ~60.0ns (2.93m) where the signal is more heavily attenuated. Near-surface responses between 0.0 and 5.0ns (0.0 to 0.24m) are found from mole runs [**gpr1**] and over the concrete base of the former agricultural buildings [**gpr2**] shown on the historic mapping to the north of the farmyard (OS Historic County Mapping Series: Herefordshire 1904-1939 Epoch 3). There does not appear to be any direct response to the former building shown on historic mapping to the east of the farmyard beyond a small rectangular anomaly [**gpr3**] to the south and a possibly unrelated linear service [**gpr4**] perhaps with a spur from the road (OS Historic County Mapping Series: Herefordshire 1891-1939 Epochs 2 and 3).

Some anomalies due to surface irregularities [**gpr5**] are found in the paddock together with vehicle tracks [**gpr6**] between the two main field gates. A series of discrete anomalies [**gpr7**] are found from 7.5ns (0.37m) onwards with a diameter of approximately 0.5m and seem most likely to be associated with the sand and gravel deposits. There is also a low amplitude anomaly [**gpr8**] between 7.5 and 20.0ns (0.37 to 0.98m) to the south of the paddock that appears to be a recent, non-ferrous service trench from the utility cover close to the education building.

As revealed in the previous GPR survey there is a wall-type response [**gpr9**] found from 15.0ns (0.73m) onwards to the south of the paddock with a series of 1m square plinths similar to those excavated along the eastern wall visible in the open trench adjacent to the reconstructed town house (Linford and Linford 2015). It is possible that [**gpr9**] defines the south wall of insula 1, with more fragmented structural remains [**gpr10**] to the south along the principal east-west street of the city (decumanus), corresponding with narrow linear anomaly [**gpr11**] to the north of a broader, more diffuse response [**gpr12**] (Peter Guest and Roger White *pers comm*). An approximately square anomaly [**gpr13**] is found to the north of [**gpr9**] between 20.0 and 45.0ns (0.98m to 2.2m) and was previously interpreted as either a small shrine or cistern due to the depth of burial.

More detail is found to the south of roadway at [**gpr12**] than was identified in the 2015 GPR survey, including rectilinear structural remains [**gpr14**], possibly suggesting the north range of the forum, and a low-amplitude anomaly [**gpr15**]. Wall-type anomalies at [**gpr16**]

extend south beyond the field boundary and are more difficult to fully interpret. It is possible that soil conditions in March 2015 were less favourable for GPR survey, perhaps reflected in the slightly lower velocity of 0.0866m/ns, although the current survey has also been conducted with an orthogonal acquisition (Figure 1).

There are further wall-type anomalies [**gpr17**] to the west beyond the 2015 radar coverage and deeper wall-footings of a rectilinear building [**gpr18**], with dimensions of 9m x 4m, between 30.0 and 37.5ns (1.47 to 1.83m). Fragmented structural remains [**gpr19**] continue to extend north and appear within an approximately 15m square building complex at [**gpr20**] found between 7.5 and 57.5ns (0.37 to 2.81m), possibly a town house. There are a number of internal wall divisions [**gpr21-23**] within [**gpr20**] and a planar reflector [**gpr24**], possibly a compacted floor or rubble layer, deeper wall foundations to support a more extensive upper storey or, perhaps, a hypocaust.

A small rectilinear anomaly [**gpr25**], approximately 3m square, of more fragmented response is found to the west of [**gpr20**] between 30.0 and 35.0ns (1.47 to 1.7m) and is difficult to interpret but may represent more ephemeral structural remains. Wall-type anomalies [**gpr26**] are found in the north-west corner of the paddock and again seem likely to represent a building extending into the neighbouring field.

The right-angled section of wall [**gpr27**] known from the 2015 survey is replicated with some additional detail in the current data set and could, perhaps, suggest a rectilinear enclosure when considered together with [**gpr9**] to the south. It is unclear whether linear high-amplitude anomalies [**gpr28**] and [**gpr29**] in the vicinity of the farm buildings are associated with [**gpr27**] or, possibly, a confluence of more recent services [**gpr8**] in this area. Anomalies [**gpr9**] and [**gpr27**] may be associated with the temple precinct, approximately 60m x 20m wide internally, with external fragmented building ranges to the south [**gpr10**], west [**gpr19**], and possibly to the north at [**gpr31**] and [**gpr32**] (Roger White *pers comm*, White and Barker 1998, Figure 39; White 2012).

Other more fragmented linear responses [**gpr30**] along the access passage between the paddock and the visitor centre may also be due to services, although the previous radar survey within the farm buildings did suggest the survival of significant Roman remains (GSB Prospection 2002). Due to the limited area available for survey here it is difficult determine whether the postulated temple precinct, [**gpr9**] and [**gpr27**], might continue east to align with the full extent of insula 1 indicated by the west colonnade of the forum adjacent to the reconstructed town house. While temples tend to be located in square enclosures there are certainly examples where the surrounding precinct or temenos are rectangular (eg Magilton 2006; Historic England 2018). If the temple podium were centrally located within a rectangular enclosure [**gpr9**] and [**gpr27**], it would suggest a site in the

vicinity of either [**gpr28**] and [**gpr29**], or, perhaps, under the farm buildings if positioned closer to the east frontage.

A discrete anomaly [**gpr31**] immediately to the north of [**gpr27**], was revealed by the 2015 survey, and is present in the current dataset between 17.5 and 27.5ns (0.85 to 1.34m). This remains a rather enigmatic response with few additional anomalies revealed in the vicinity of [**gpr31**]. A very subtle linear anomaly [**gpr32**] is evident between 20.0 and 22.5ns (0.98 to 1.1m) and shares the same orientation as [**gpr27**] approximately 8m to the north but does not suggest a more definitive interpretation. While it is possible that [**gpr31**] and [**gpr32**] represent fragmentary remains of a building remains the response here is less convincing than [**gpr10**] and [**gpr19**].

A subtle more diffuse anomaly [**gpr33**] is found from 15.0ns (0.73m) onwards and could possibly represent a trackway across the field from the southern access gate, although there is no indication of this in the near-surface GPR or the topographic data (Figure 16). The most pronounced topographic variation in the paddock follows the approximate line of the east-west Roman roadway [**gpr12**] but does not fully corroborate the wider distribution of structural remains.

Magnetometer Survey

A graphical summary of significant magnetic anomalies [**m1-24**] discussed in the following text superimposed on the base OS mapping data is provided in Figure 14.

Rectilinear negative anomalies correspond with the range of buildings on the northern side of the forum [**gpr10**] and are grouped into three main sections [**m1**] and [**m2**], [**m3-5**], together with [**m6**] and [**m7**]. However, the roadway, immediately to the south of [**m1-7**], is not clearly resolved in the magnetometer data (*cf* [**gpr12**] and [**r1**]).

A weaker rectangular pattern of negative anomalies [**m8-11**] corroborates the fragmented range of structural remains found at [**gpr19**] extending to the north, with potentially significant thermoremanent responses, [**m12**] and [**m13**], suggesting the presence of a hypocaust, heated structures or evidence of other high temperature activity. There is also a fragmented positive anomaly in the vicinity of the possible hypocaust at [**gpr24**] that correlates with a similar more regular response in the previous magnetic survey of the paddock (White 2005). Some smaller high-magnitude responses [**m14**] and [**m15**] may be associated with ovens, hearths or furnaces within the building range [**m1-7**].

Weak linear negative anomalies [**m16**] in the southern part of the paddock may indicate the town street grid with positive responses [**m17-19**] possibly suggesting elements of the forum complex, more clearly defined in the radar and earth resistance data sets. In the northern part of the paddock weaker, intermittent and more vaguely defined positive linear

anomalies [**m20-22**] partially coincide with structural remains of a possible town house found in the other data sets (*cf* [**gpr19-24**] and [**r9-12**]), although the poorly defined magnetic anomalies here could also be associated with the later Victorian model farm immediately to the north-west.

A line of dipolar ferrous anomalies [**m23**] are most likely to be of more recent origin but coincidently share the same alignment as the more significant structural remains to the south-east. Ferrous disturbance [**m24**] is also evident along the south and east field boundaries of the paddock, most likely due to relatively modern activity associated with the farm buildings. Some of the discrete ferrous responses may also correlate with high-amplitude GPR anomalies ([**gpr5**] on Figure 6).

Earth Resistance Survey

A graphical summary of significant earth resistance anomalies [**r1-13**] discussed in the following text superimposed on the base OS mapping data is provided in Figure 15.

There is a linear high-resistance response [**r1**] in the paddock due to the east-west road corridor that continues towards a junction with Watling Street beyond the survey coverage to the east. A series of intermittent low-resistance linear responses are found parallel to [**r1**], both to the north [**r2**] and [**r3**] and south [**r4**], that may represent less well-preserved structural remains better defined by the magnetometer and radar data sets (*cf* [**m1-7**] and [**gpr10**]). It is possible that the low-resistance anomalies are due to the “robbing-out” of stone wall footings and no archaeological intervention is known in this area. A weakly defined rectangular low-resistance response [**r5**] immediately south of [**r1**] may also indicate poorly preserved or robbed-out structural remains (*cf* [**gpr15**], [**m18**] and [**m19**]).

The roadway [**r1**] broadens to the west at [**r6**] towards a weakly defined rectangular area of higher resistance [**r7**], possibly suggestive of buried rubble or floor surface deposits rather than wall footings. A rectilinear area of lower resistance [**r8**] to the east may represent a largely robbed-out or poorly preserved building wing extending from structural remains that appear to have survived better at [**r1-3**] and [**m1-7**].

To the north of the paddock areas of high resistance [**r9**] and [**r10**] together with more weakly defined linear anomalies [**r11**] and [**r12**], partially corroborate the structural remains over the location of the possible town house revealed by the radar survey (*cf* [**gpr20-24**]).

However, anomalies [**r9-12**] could also be associated with the Victorian model farm although no buildings are shown here on the historic mapping. A very strong localised high-resistance anomaly [**r13**] on the eastern side of the paddock may also represent more recent agricultural activity, as it appears to be a near-surface response on a different

orientation to the Roman remains. Broader patterns of more amorphous high and low resistance across the survey area are unlikely to be of archaeological significance.

Conclusions

Ground Penetrating Radar (GPR), magnetometer and earth resistance surveys have successfully responded to subsurface Roman remains found in the paddock immediately to the west of the Victorian model farm. The current survey completes coverage with all three techniques with marginally enhanced soil conditions and sample density for the GPR data. Greater detail has been revealed over the northern extent of the forum and the principal east-west roadway, although the geophysical response suggests some variation in the survival of the structural remains. Building remains in the northern part of the paddock could, possibly, represent a town house with evidence to support surviving floor layers and thermoremanent anomalies that may be associated with a hypocaust. The new GPR data has also better defined a rectilinear walled enclosure that may, possibly, suggest the location of the civic temple precinct. However, this interpretation remains tentative in advance of subsequent excavation. More limited access was available for GPR survey within open areas of the Victorian model farm where recently removed modern agricultural buildings dominated the response. Fragmented linear anomalies to the south and east of the farm buildings could possibly be more significant, although interpretation is hampered by the key-hole areas accessible for survey.

List of Enclosed Figures

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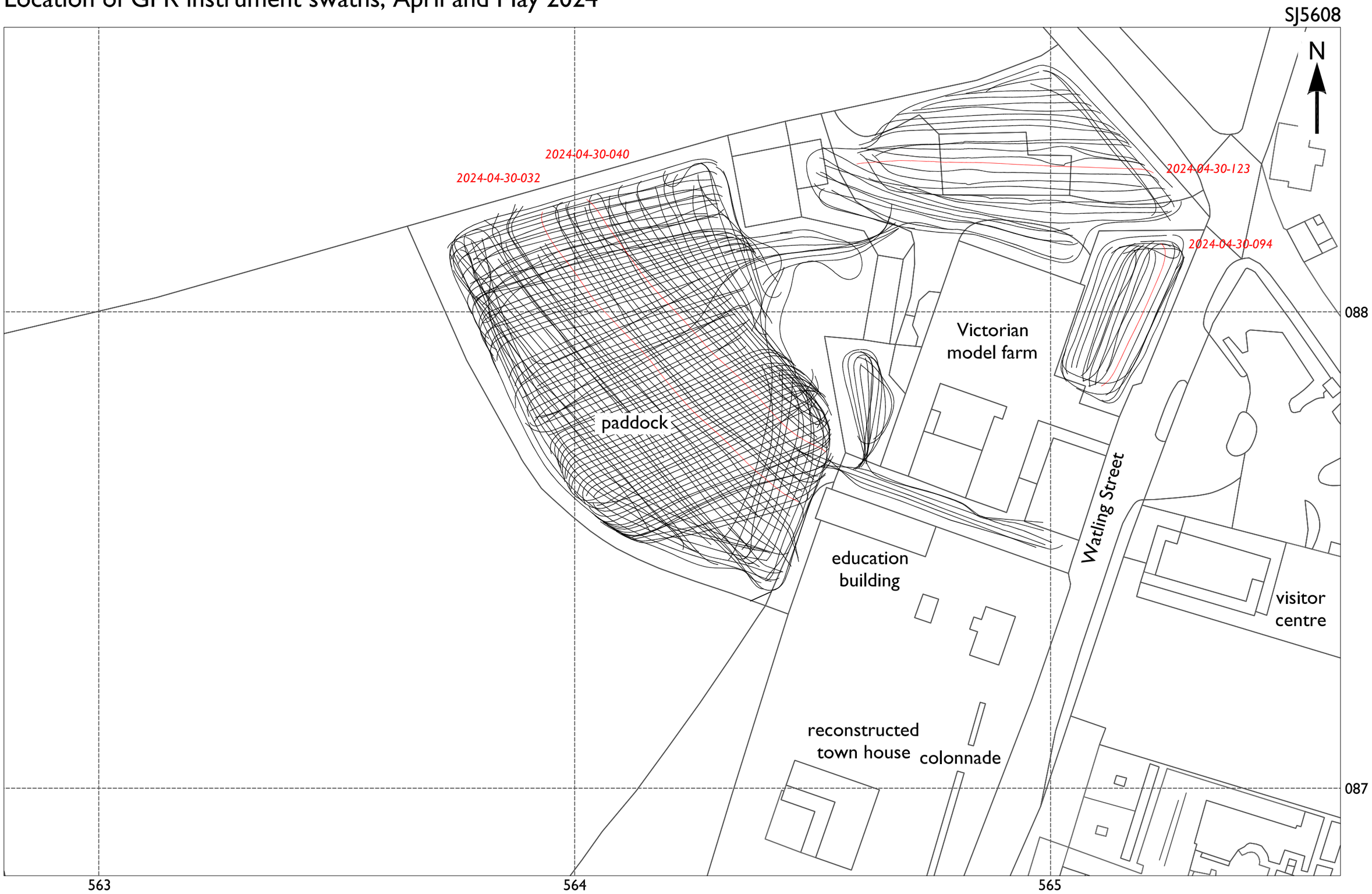
Figure 1

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Location of GPR instrument swaths, April and May 2024



0 60m

1:750

Ground Penetrating Radar survey swaths

2024-04-30-001 Location of selected GPR profiles shown on Figure 6

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Figure 2

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Location of fluxgate magnetometer and earth resistance surveys, April and May 2024

0 60m

1:750

Earth resistance survey

Magnetometer survey

Historic England

Geophysics Team 2024

Figure 3

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

GPR amplitude time slice between 22.5 and 25.0ns (1.1 to 1.22m), April and May 2024

0 60m

1:750

Low *High*
relative reflector strength

2024-04-30-001 Location of selected GPR profiles shown on Figure 6

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Figure 4

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Location of fluxgate magnetometer survey, April and May 2024

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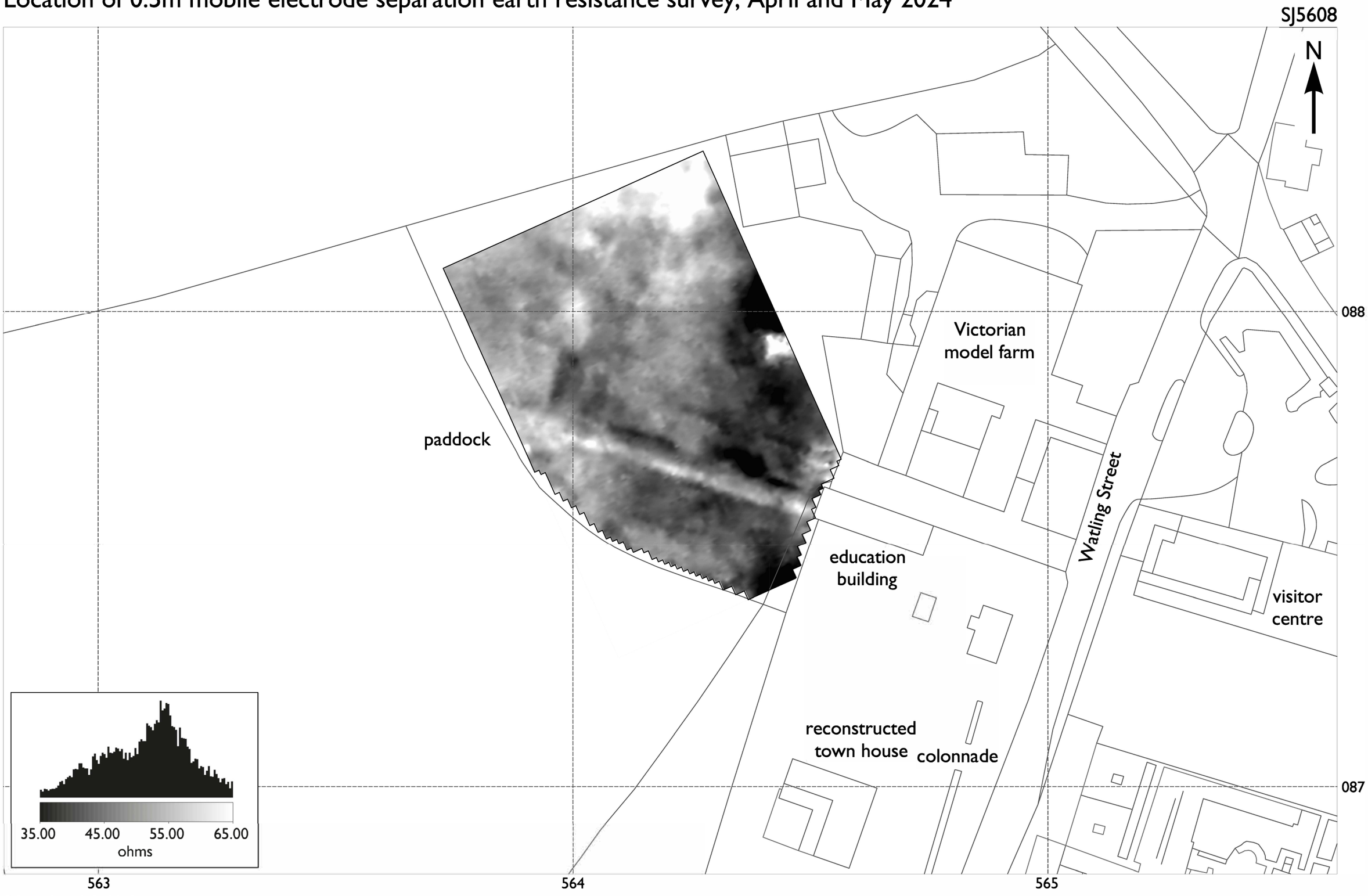
Figure 5

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Location of 0.5m mobile electrode separation earth resistance survey, April and May 2024



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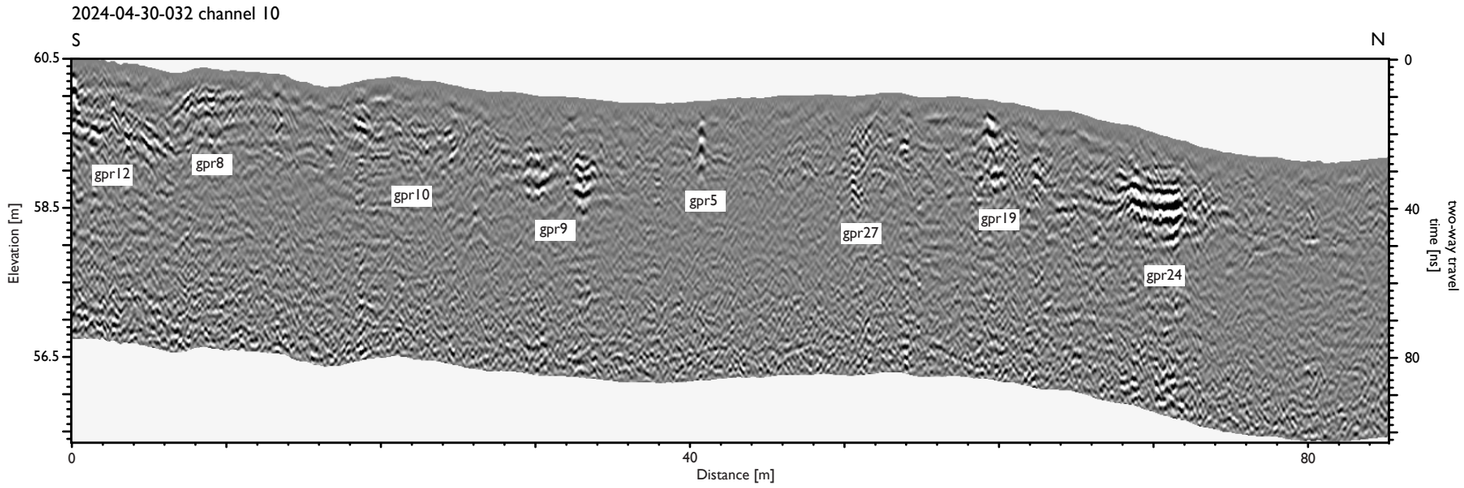
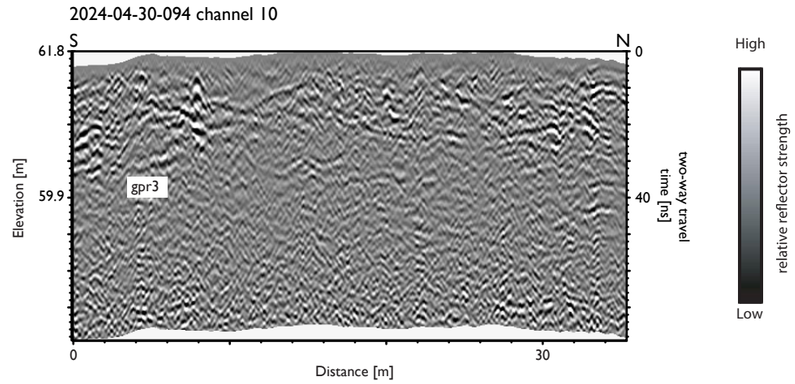
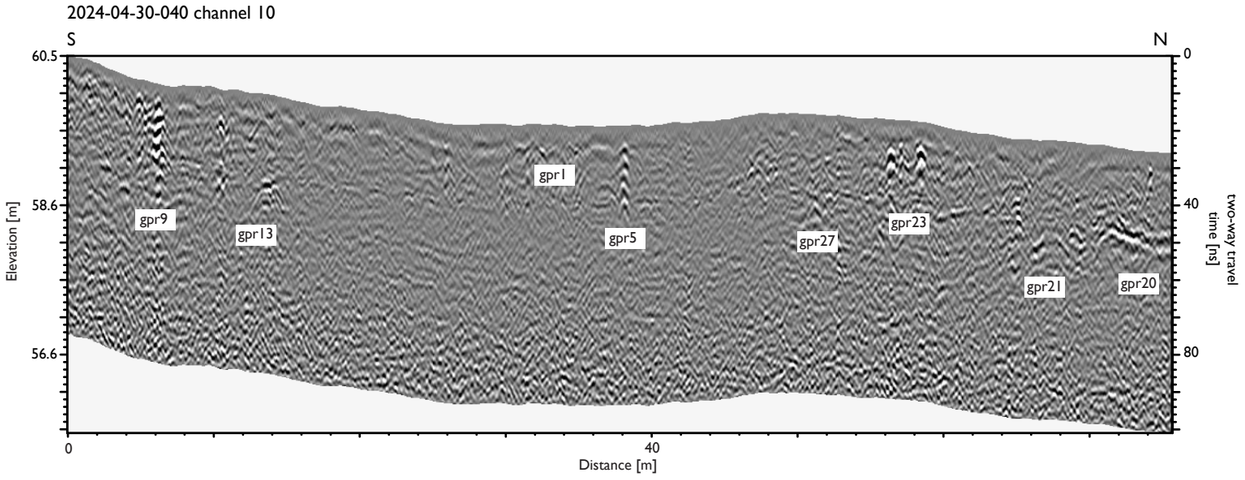
WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE
Representative topographically corrected GPR profiles, April and May 2024

Figure 6







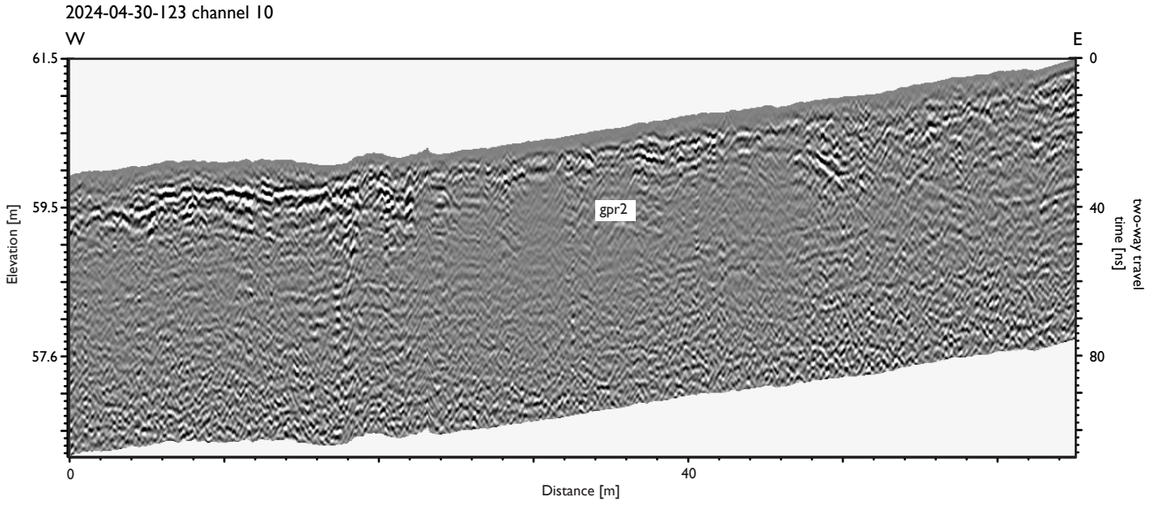


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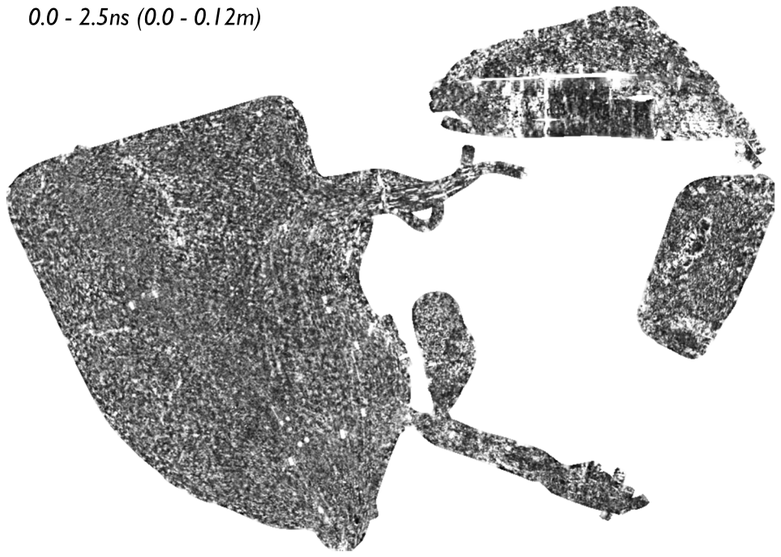
Figure 7

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

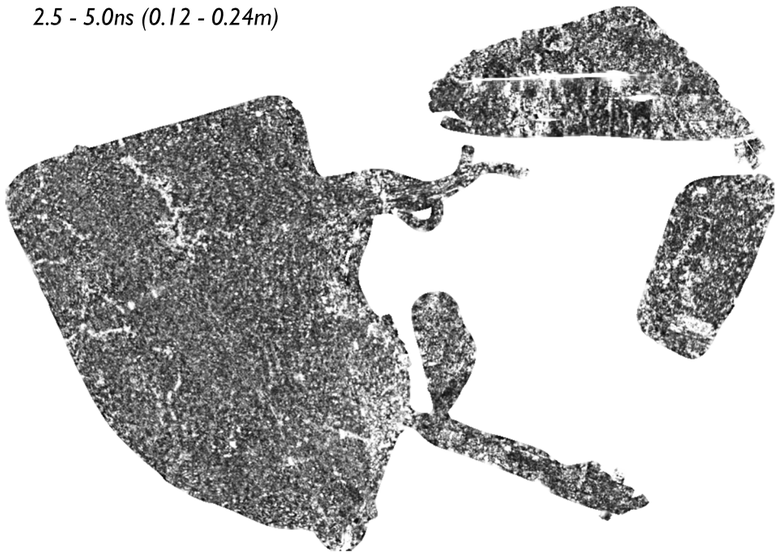
GPR amplitude time slices between 0.0 and 15.0ns (0.0 to 0.73m), April and May 2024

N

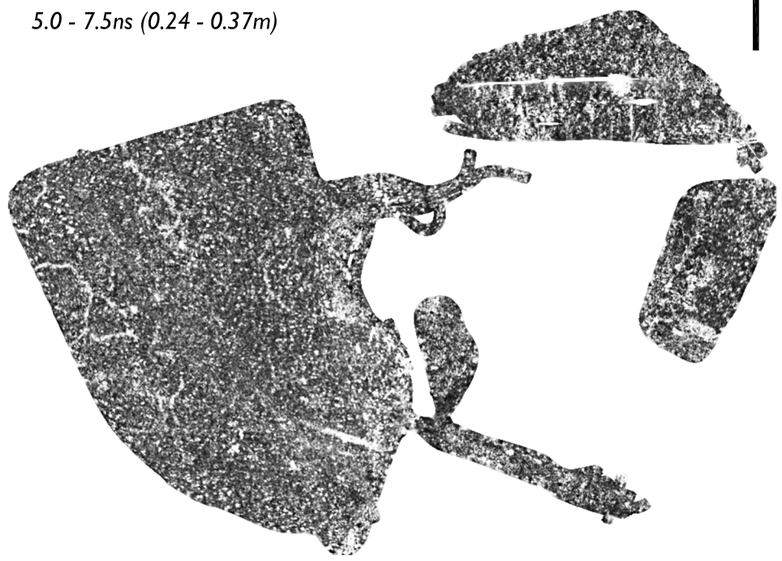
0.0 - 2.5ns (0.0 - 0.12m)



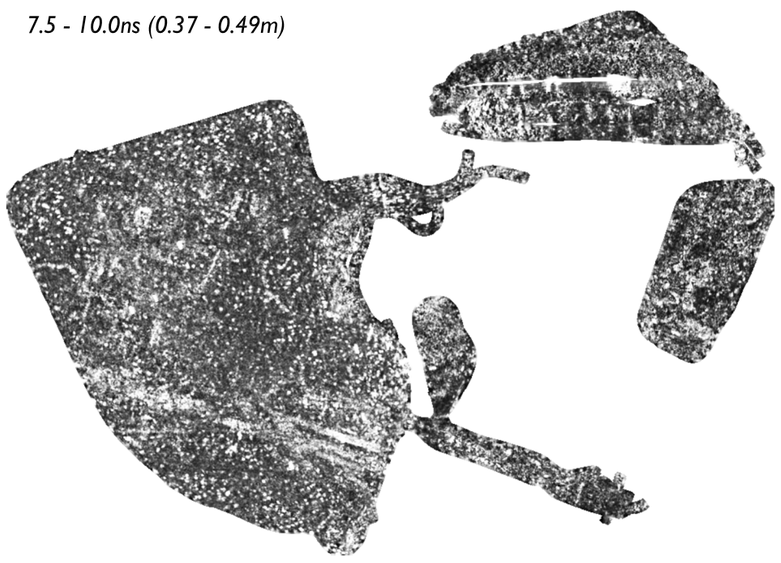
2.5 - 5.0ns (0.12 - 0.24m)



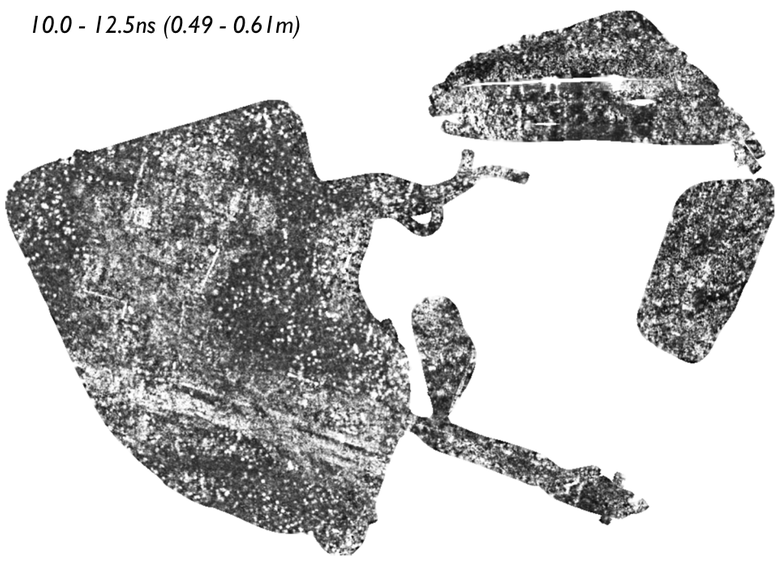
5.0 - 7.5ns (0.24 - 0.37m)



7.5 - 10.0ns (0.37 - 0.49m)



10.0 - 12.5ns (0.49 - 0.61m)



12.5 - 15.0ns (0.61 - 0.73m)

0 90m

1:1250

Low *High*

relative reflector strength

Geophysics Team 2024

Historic England

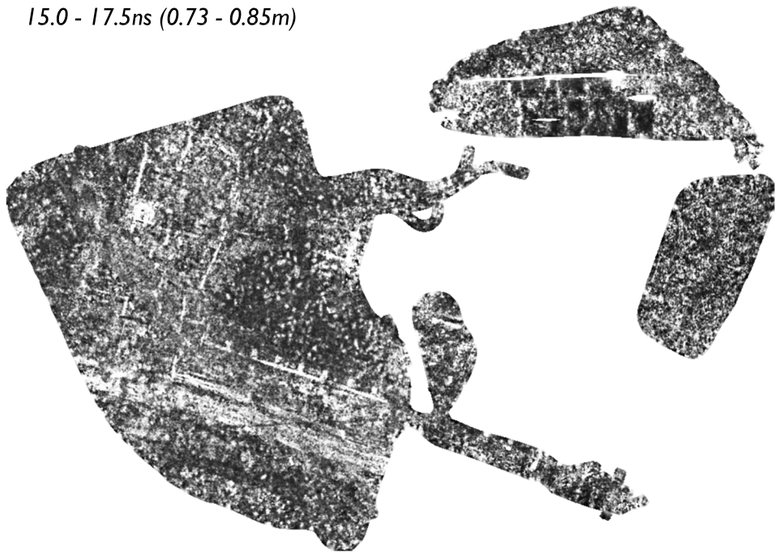
Figure 8

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

GPR amplitude time slices between 15.0 and 30.0ns (0.73 to 1.47m), April and May 2024

N

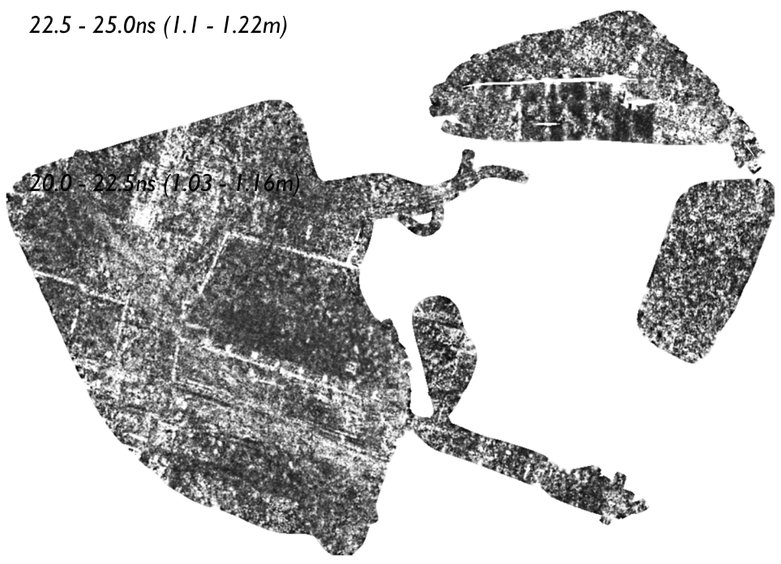
15.0 - 17.5ns (0.73 - 0.85m)



17.5 - 20.0ns (0.85 - 0.98m)

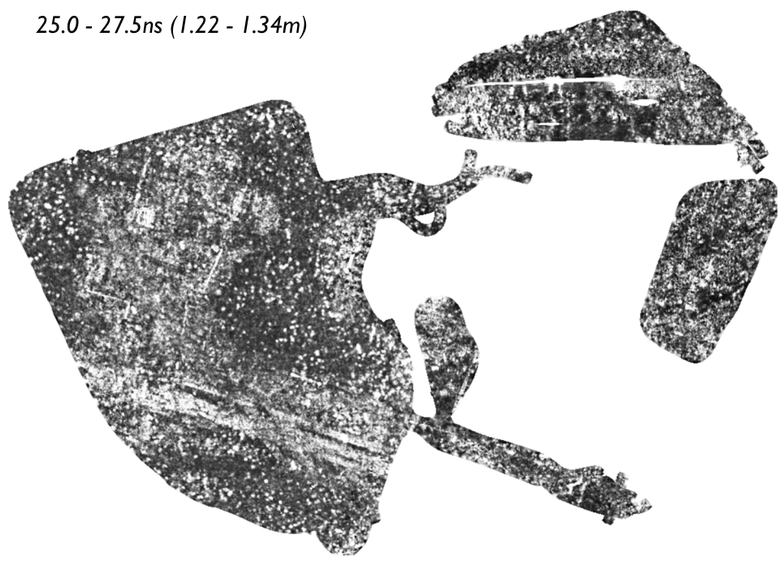
20.0 - 22.5ns (0.98 - 1.1m)

22.5 - 25.0ns (1.1 - 1.22m)

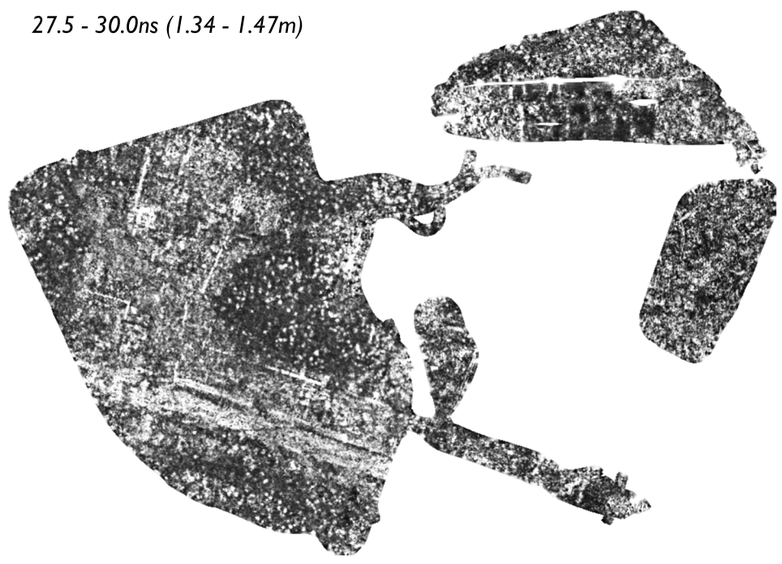


20.0 - 22.5ns (1.03 - 1.16m)

25.0 - 27.5ns (1.22 - 1.34m)



27.5 - 30.0ns (1.34 - 1.47m)



0 90m

1:1250

Low *High*

relative reflector strength

Geophysics Team 2024

Historic England

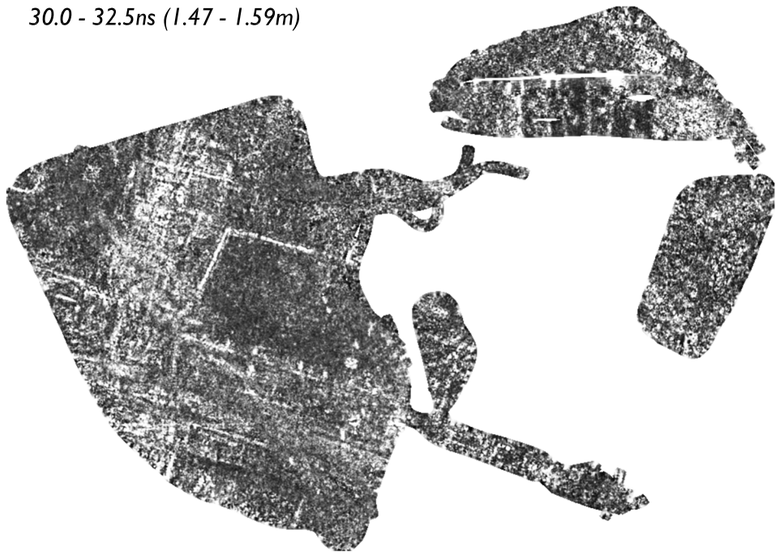
Figure 9

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

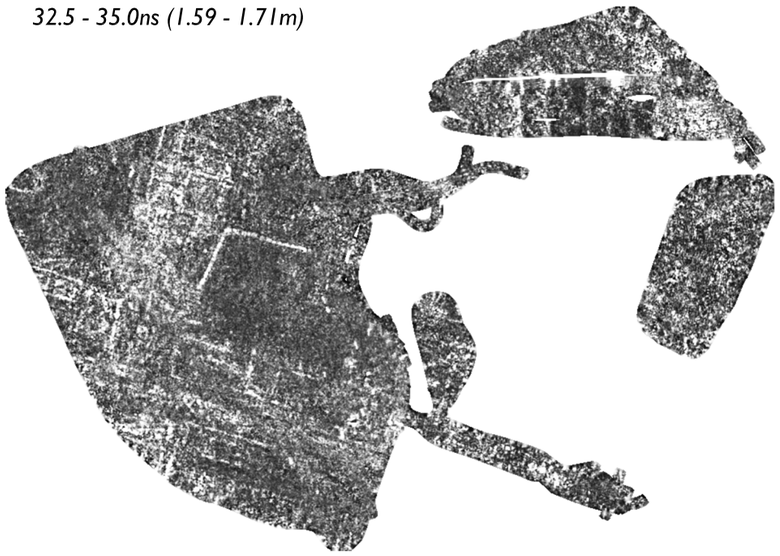
GPR amplitude time slices between 30.0 and 45.0ns (1.47 to 2.2m), April and May 2024

N

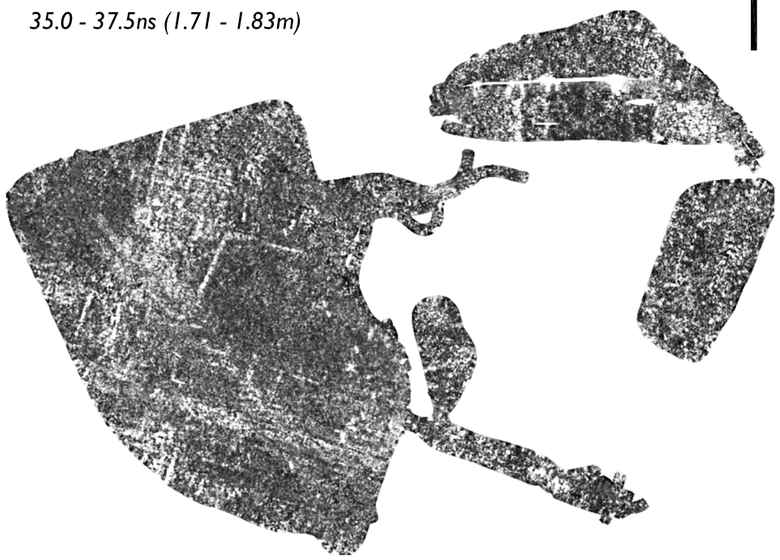
30.0 - 32.5ns (1.47 - 1.59m)



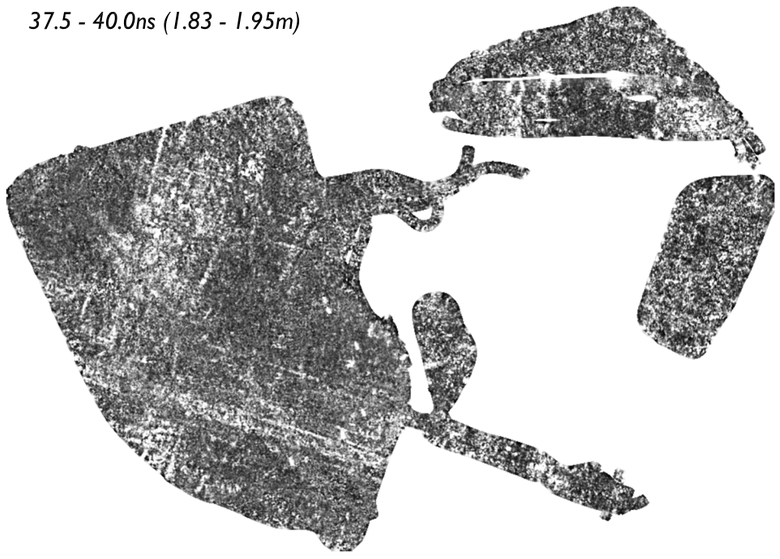
32.5 - 35.0ns (1.59 - 1.71m)



35.0 - 37.5ns (1.71 - 1.83m)



37.5 - 40.0ns (1.83 - 1.95m)



40.0 - 42.5ns (1.95 - 2.08m)

42.5 - 45.0ns (2.08 - 2.2m)

0 90m

1:1250

Low *High*

relative reflector strength

Geophysics Team 2024

Historic England

Figure 10

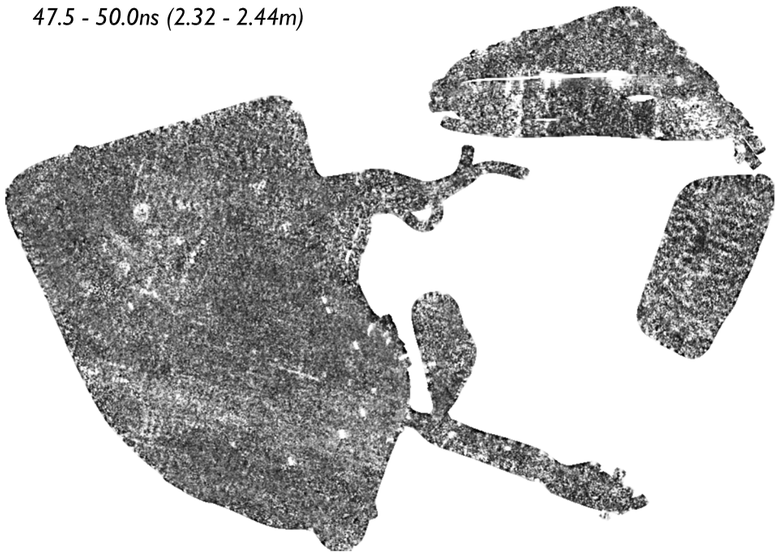
WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

GPR amplitude time slices between 45.0 and 60.0ns (2.2 to 2.93m), April and May 2024

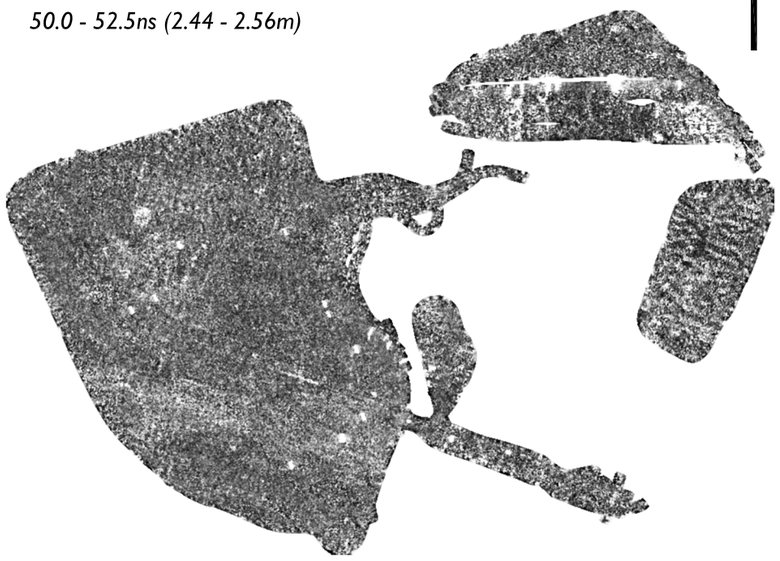
N

45.0 - 47.5ns (2.2 - 2.32m)

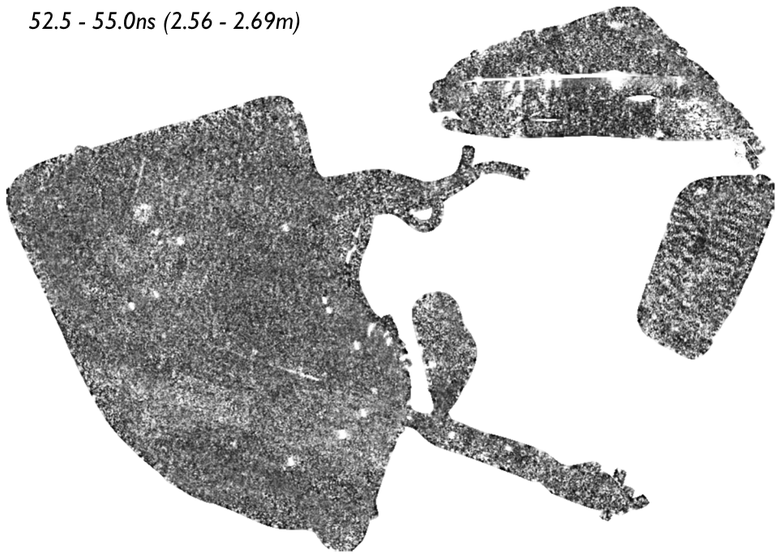
47.5 - 50.0ns (2.32 - 2.44m)



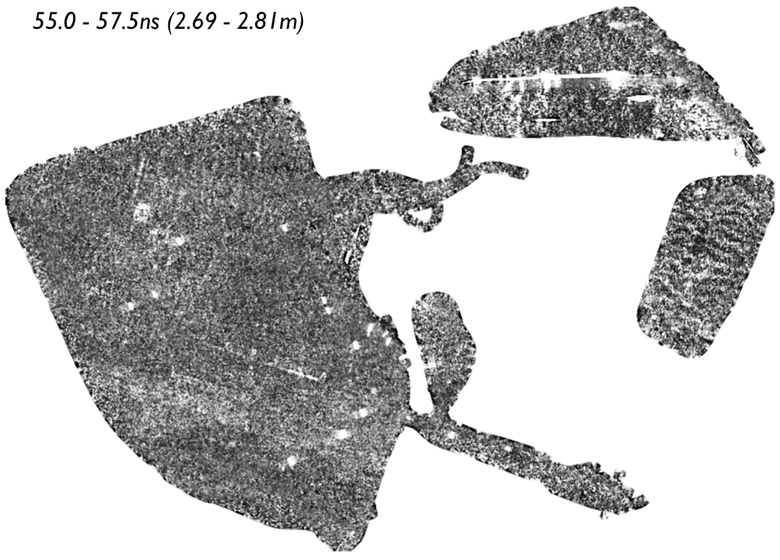
50.0 - 52.5ns (2.44 - 2.56m)



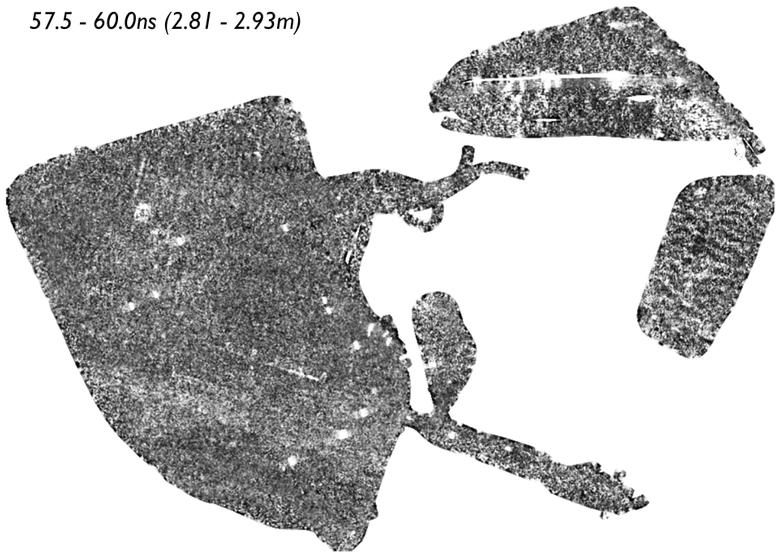
52.5 - 55.0ns (2.56 - 2.69m)



55.0 - 57.5ns (2.69 - 2.81m)



57.5 - 60.0ns (2.81 - 2.93m)



0 90m

1:1250

Low *High*

relative reflector strength

Geophysics Team 2024

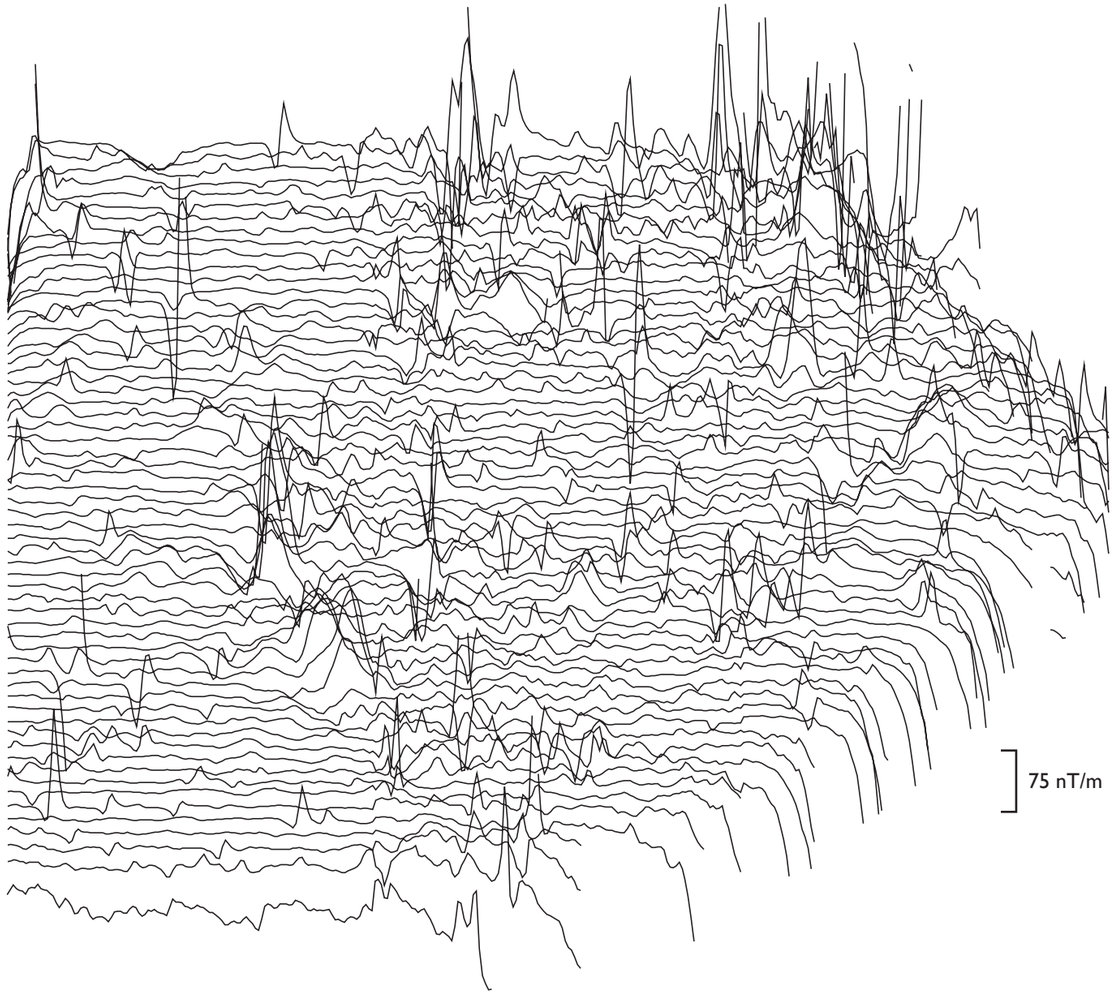
Historic England

Figure 11

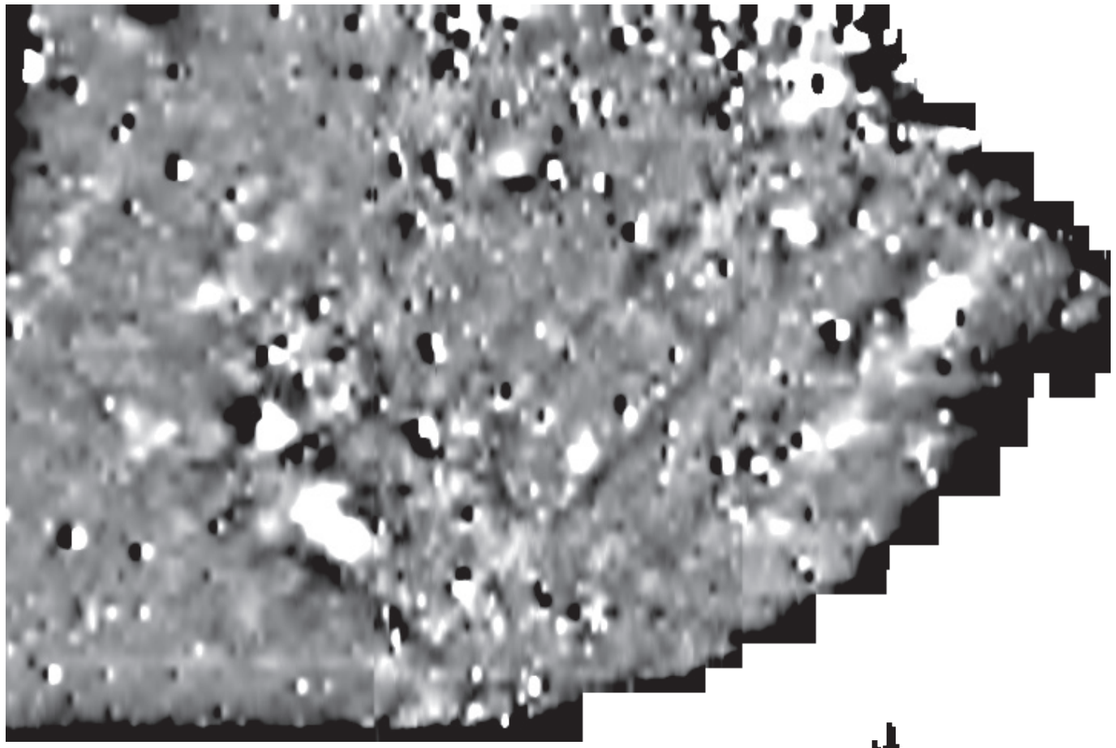
WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE
Fluxgate magnetometer survey, April and May 2024

N

(A) Trace plot of minimally processed data after initial range truncation (-150/+150 nT/m)



(B) Linear greyscale image of minimally processed data



0 60m

1:500

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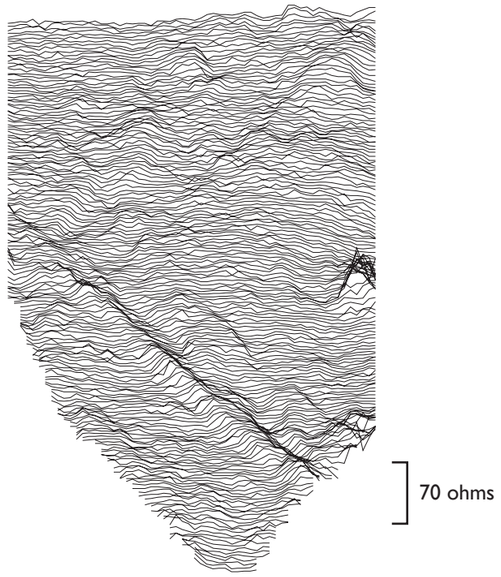
Figure 12

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE
Earth resistance survey, April and May 2024

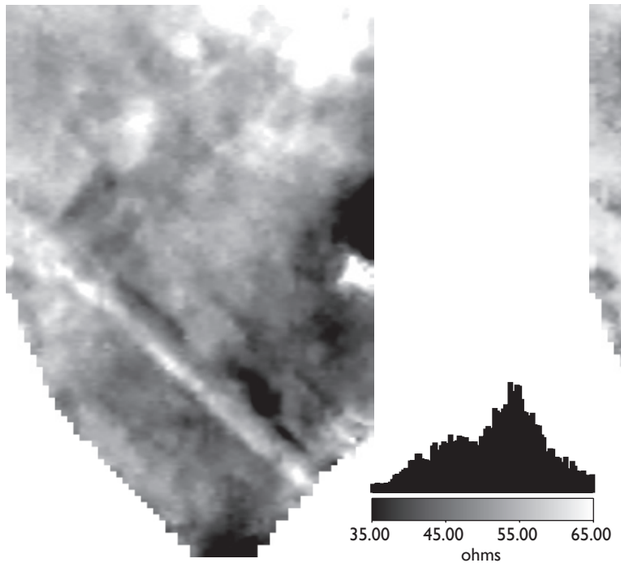
N

0.5m mobile electrode separation data

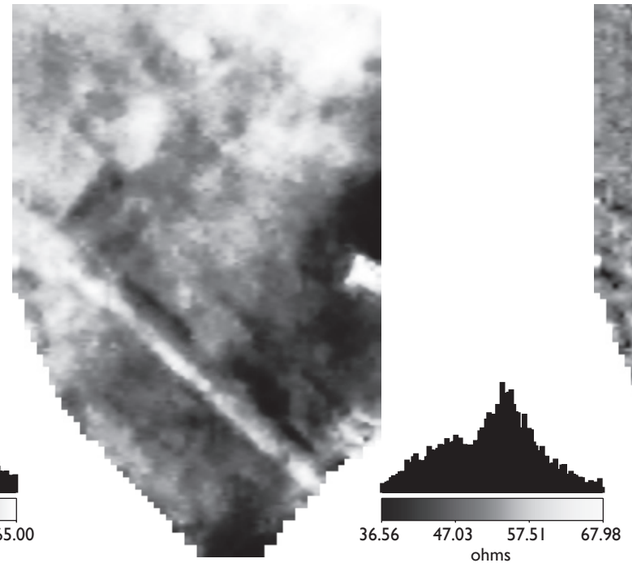
(A) Trace plot of minimally processed data



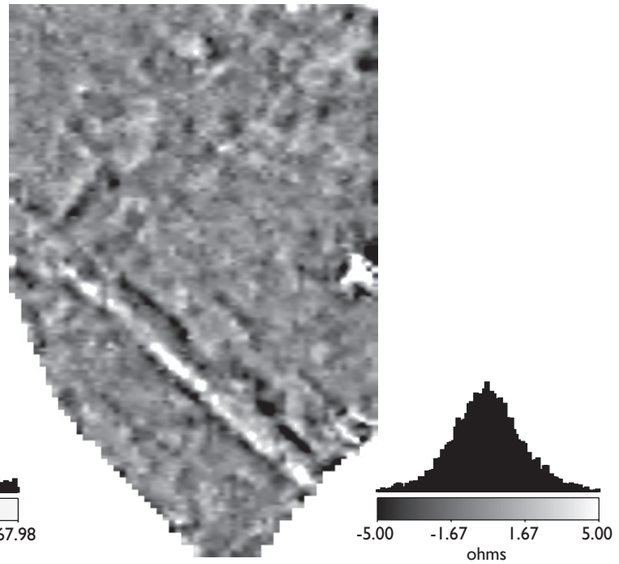
(B) Linear greyscale image of minimally processed data



(C) Histogram equalised greyscale image of minimally processed data

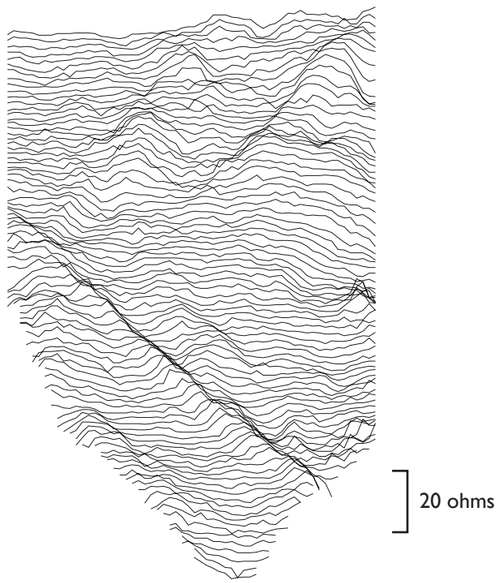


(D) Linear greyscale image of high-pass filtered data

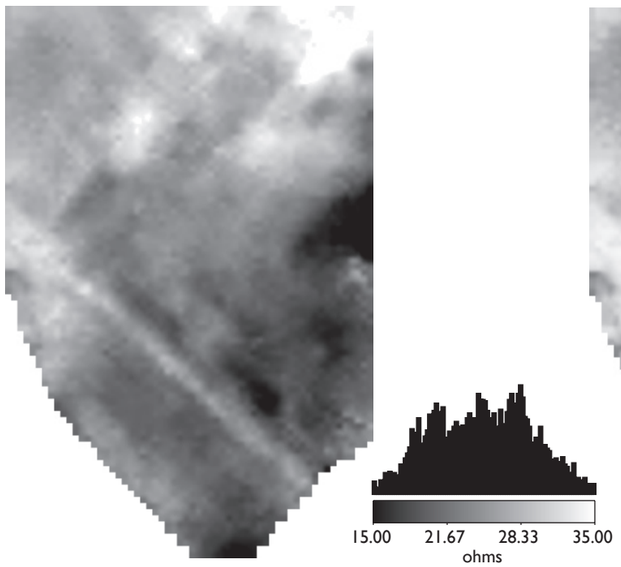


1.0m mobile electrode separation data

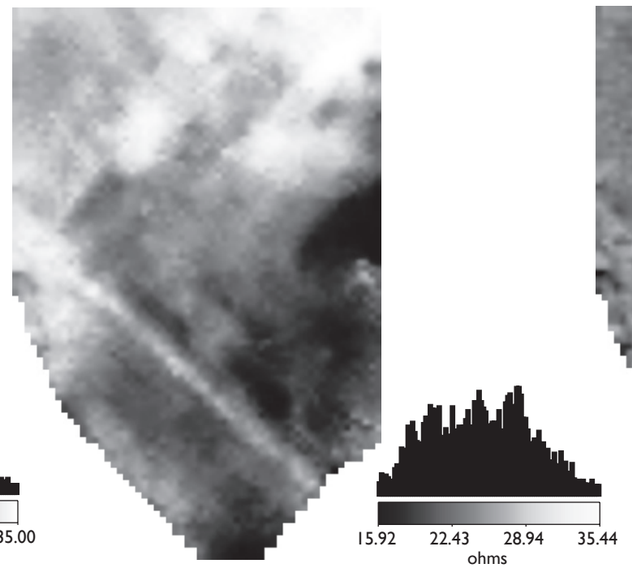
(E) Trace plot of minimally processed data



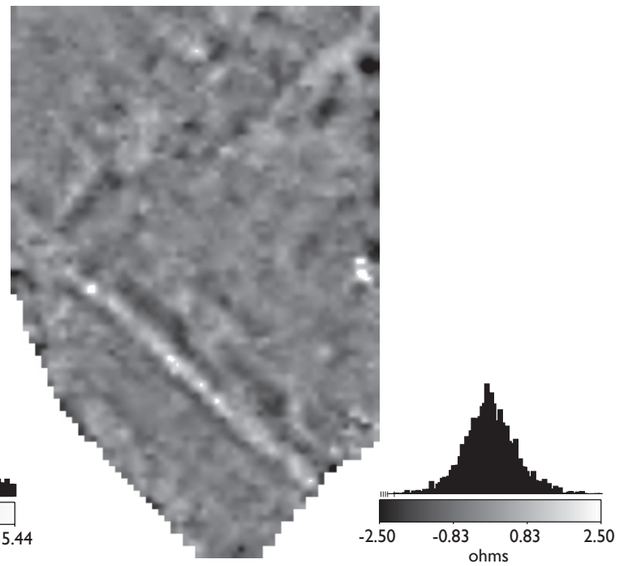
(F) Linear greyscale image of minimally processed data



(G) Histogram equalised greyscale image of minimally processed data



(H) Linear greyscale image of high-pass filtered data



0 90m

1:1000

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Figure 13

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Graphical summary of significant GPR anomalies, April and May 2024

SJ5608

N

088

087

563

564

565

2024-04-30-040

2024-04-30-032

2024-04-30-123

2024-04-30-094

gpr1

gpr2

gpr3

gpr4

gpr6

gpr7

gpr20

paddock

Victorian model farm

education building

visitor centre

reconstructed town house

colonnade

Watling Street

0 60m

1:750

low amplitude reflectors

high amplitude reflectors

anomalies of known or recent origin

2024-04-30-001 Location of selected GPR profiles shown on Figure 6

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Figure 14

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Graphical summary of significant magnetic anomalies, April and May 2024

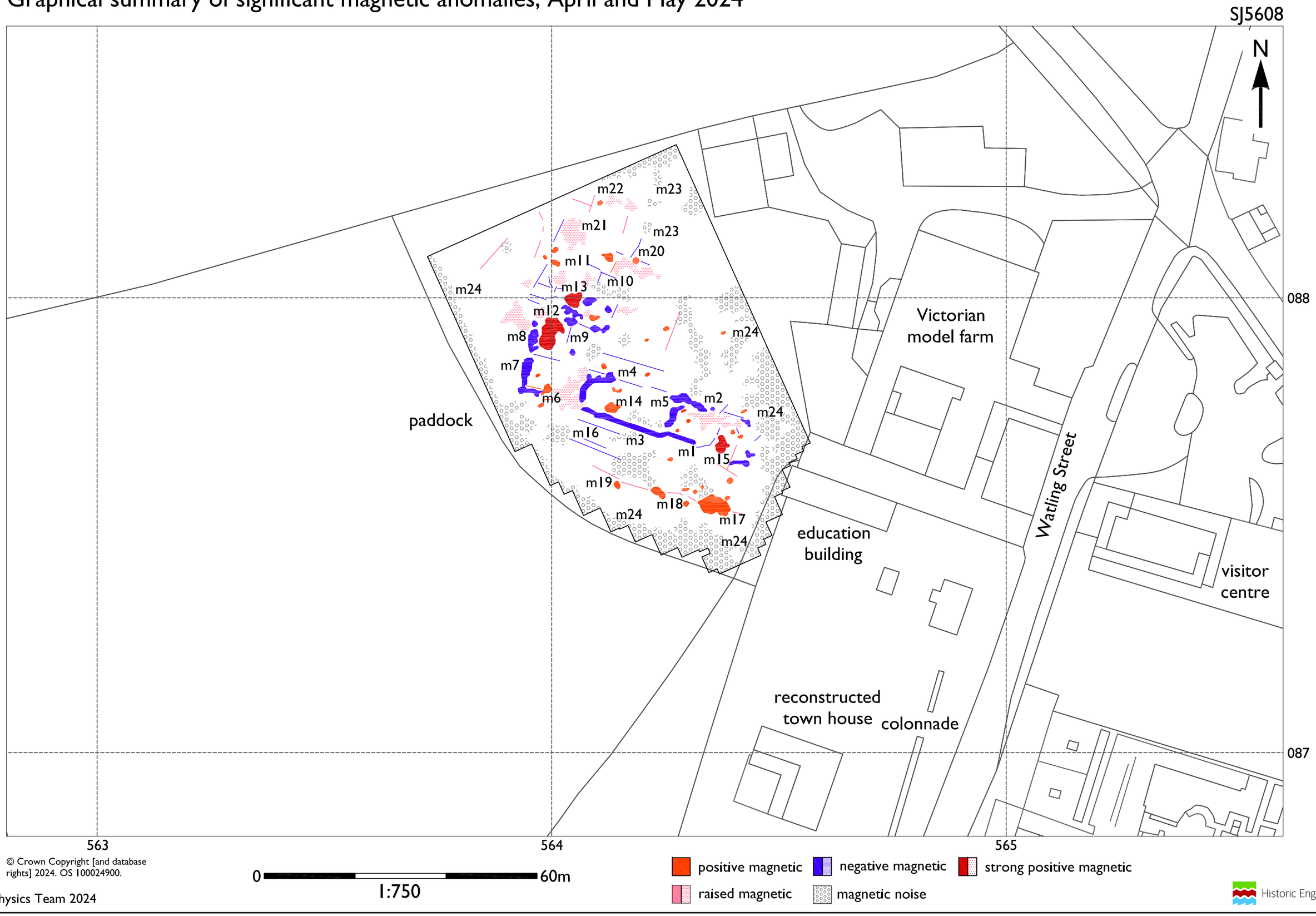

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Figure 15

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Graphical summary of significant earth resistance anomalies, April and May 2024

0 60m

1:750

very high resistance | high resistance | low resistance

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Historic England

Figure 16

WROXETER FARM, WROXETER AND UPPINGTON, SHROPSHIRE

Local variation in topography, April and May 2024

SJ5608

N

088

Victorian
model farm

paddock

Watling Street

education
building

visitor
centre

reconstructed
town house

colonnade

087

563

564

565

0 60m

1:750

58.4 62.9

elevation [m]

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