



Report of the geophysics survey of Council Meadow, Runnymede 2022

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Summary

It is believed that Council Meadow, Runnymede is the field where in 1215 the Barons camped while they were negotiating Magna Carta with King John. In 2021, a geophysics training event on Council Meadow, found anomalies.

This is a report of work undertaken by the Berkshire Archaeological Society in partnership with Surrey County Archaeological Unit and the National Trust to carry out a geophysics survey of the Council Meadow at Runnymede to gain more insights into the use of the Meadow.

The survey found a number of features which include: evidence of ploughing, a trackway, WWII anti-aircraft trenches, a large drainage ditch, several now defunct field boundaries and three areas with evidence of significant human activity. Artefacts found on the site suggest one of these areas may be Roman, the other two are at the south end of the field adjacent to the Langham Ponds.

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On site team: see Acknowledgements

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0.2 Change control

This document is controlled by the author.

0.3 Change history

Issue 0103, dated 10th July 2022, addressed some typographical corrections.

Issue 0102, dated 3rd June 2022, was the first complete issue.

Issue 0101, dated 23rd April 2022, was the first issue. This was a preliminary document released so people can see some of what was found during the survey.

0.4 Changes forecast

More work is required to create a comprehensive understanding of the evidence found on Council Field.

0.5 Acknowledgements

This work was undertaken by a team of people drawn from several different groups.

Hannah Potter of the Surrey Council Archaeological Unit (SCAU) and James Brown and Harry Farmer of the National Trust helped get us organised and on site. Harry also worked on the survey.

The members of the Berkshire Archaeological Society (BAS) who worked on the site included: Andrew Hutt Keith Abbott, Martin Labram, Nigel Spencer, Philip Rawstron, Stuart Montgomery, James Peddle, William Jefferies, and Tim Lloyd.

The Surrey County Archaeological Unit Volunteers who worked on the site were: Sue and Gemma Cooles, Peter Clifford, Paul Hodgson, Sue Webb, Rosemary Wailes and Gordon Robinson.

Mercedes Planas of Souterrain Archaeological Services laid out the survey grid of 40m x 40m squares. Thereafter, those named above, carried equipment on site, subdivided the 40m x 40m squares into 20m x 20m squares and collected data from over 12ha.

Many thanks are due to everybody who was involved.

Thanks, are also due to Mairi Sargent and Stuart Burgess who shared some of their metal detecting finds with us.

Anne Harrison kindly proof read the final report. Thank you.

Andrew Hutt

1 This project

In 2021, the Berkshire Archaeological Society and the Surrey County Archaeological Unit ran a geophysics training event on Council Meadow, Runnymede. Some 29 people enjoyed the training; the results of their work gave insights into the past use of the meadow (Hutt and Potter 2021). Their report recommended that a fuller geophysics survey be carried out to gain more evidence.

This project was undertaken in three weeks from Monday 28th March 2022 until 13th April 2022.

2 Site location

The National Trust owns land on both sides of the River Thames at Runnymede. Council Meadow is to the south of the River Thames and the A308 road (Figure 1.1).



Council Meadow

Figure 1.1. The National Trust's lands at Runnymede

The purple lines mark the Trust's boundary (National Trust Heritage Records)

3 Geological and topographical background

This site is on the flood plain alongside the River Thames. The fields are bounded by A308, ditches and woodland.

The underlying solid geology of these fields is the London Clay Formation, a sedimentary bedrock of clay, silt and sand. This is overlaid with alluvium (clay, silt, sand and gravel).

4 The historical and archaeological background

4.1 Early map evidence

Not a lot of time has been spent finding historical evidence of the use of Council Meadow because one of the aims of this work (see section 5) was to gather evidence to support excavations in summer 2022.

The earliest map that has come to hand dates from 1805 (Figure 4.1). This shows field boundaries along the edge and across the field. The First edition Ordnance Survey map (Figure 4.2) shows the use of Council Meadow in 1881 to 1887. A comparison of the maps suggests that the field boundary across the meadow had been removed by 1887.

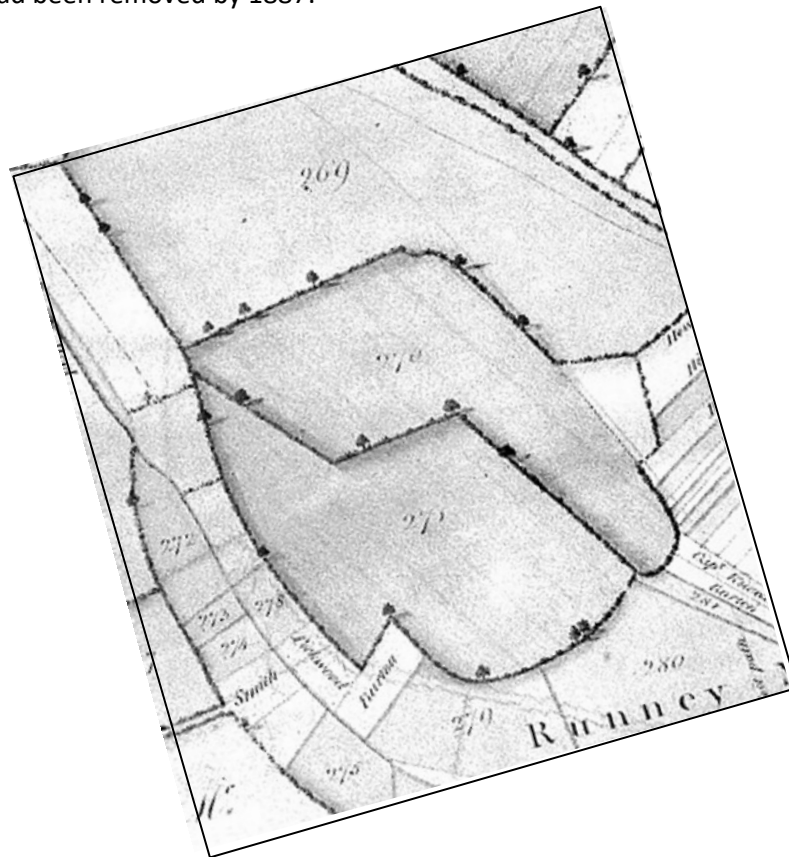


Figure 4.1. Portion of a map dating to 1805 (provenance unknown)

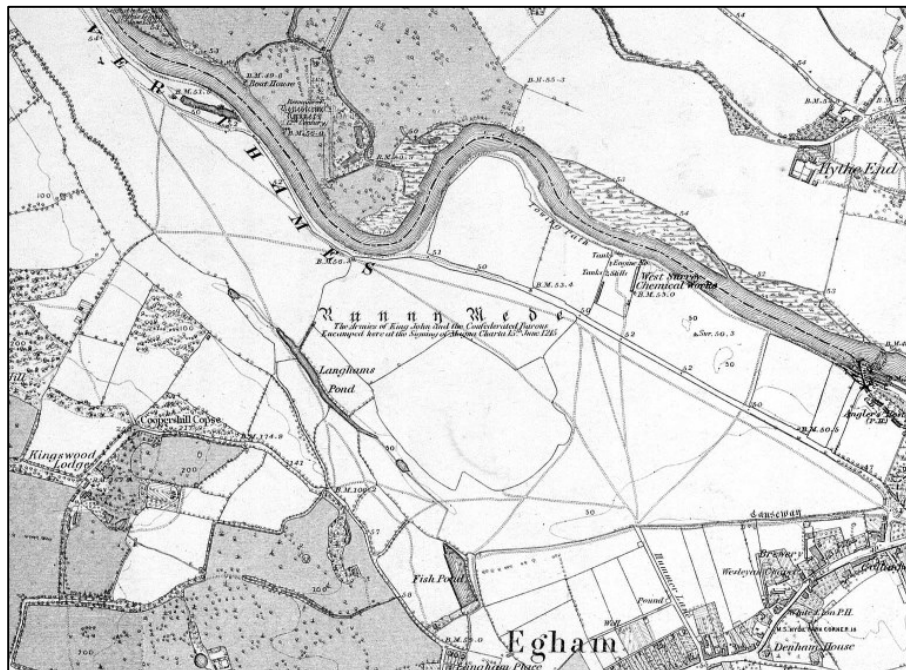


Figure 4.2. First Edition Ordnance Survey map of Council Meadow, Runnymede (Berkshire Family History and Berkshire Record Office 2004, published with their permission)

4.2 The National Trust Historical Environment Record (HER)

The National Trust Historic Environment Record (HER) records a number of sites in and around Council Meadow (Figure 1.1). The following lists each of these sites in terms of its National Trust HER identifier, Name, British National Grid Reference (BNGR) and details. From north to south, they are:

- MNA147355 The Council Meadow, Runnymede at TQ 00699 72000: which establishes a field name but records no archaeologically significant evidence
- MNA147362: Egham Racecourse, Runnymede. It is likely that all that the remains of the Runnymede race course across the north side of Council Meadow are the small post holes of the course boundary fence and a grass sward of the race circuit.
- MNA147376: Anti-aircraft Trenches, Runnymede TQ 01039 71930. These are shown in a definite pattern across Council Meadow

4.3 MNA147355 Council Meadow, Runnymede

BNGR TQ 00699 72000 (point) (Eastings/Northings 500699 172000)

This site is an area of higher ground on the flood plain. This is widely regarded as a possible location where King John and the Barons may have met to negotiate and seal the first Magna Carta (Figures 4.3 and 4.4)



Figure 4.3. Location of MNA147355

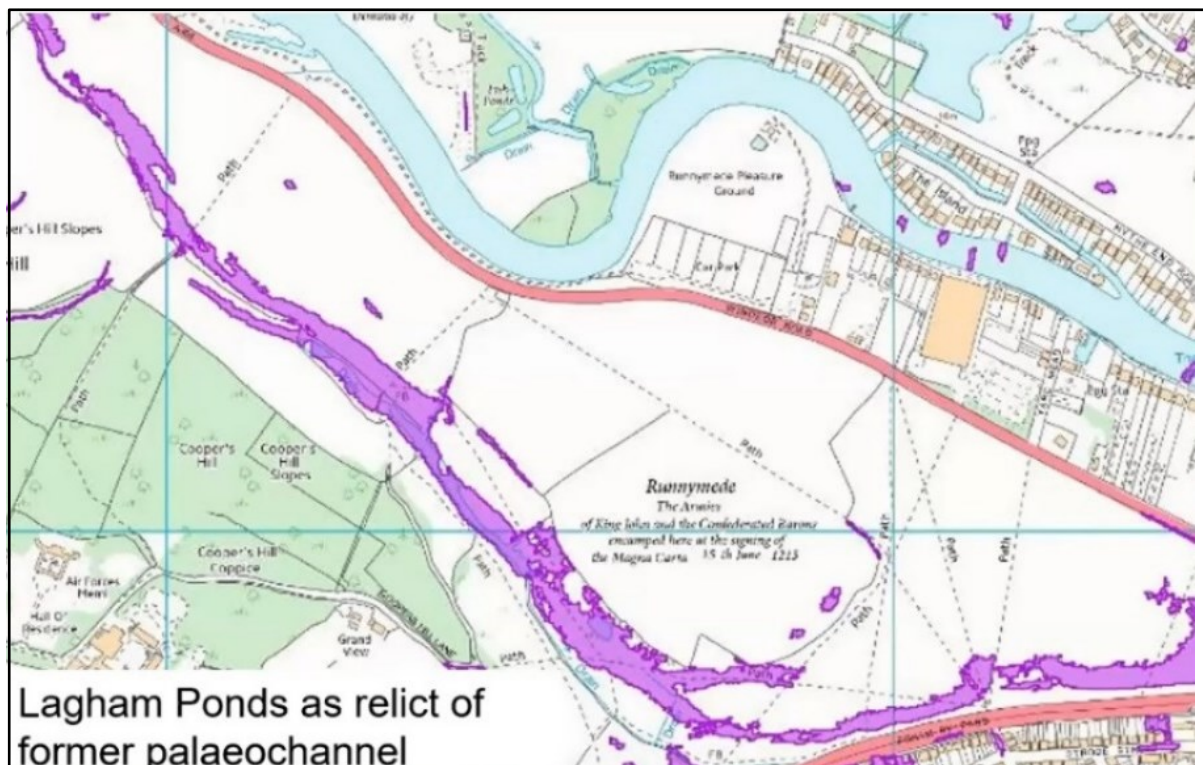


Figure 4.4. Map showing a former paleochannel

The text records this as the site where the Barons camped in 1215 while signing Magna Carta

4.4 The results of the 2020 geophysics training event

A survey grid was laid out across Council Meadow and two areas were surveyed.

The survey of Area 1 was a north-south traverse across the Meadow (Figure 4.5). It revealed anomalies at the north end of the traverse where there were the remains of a ditch but very little further evidence of activity to the south. An earth resistance survey of a north south traverse 20m to the east produced similar results which are not repeated here.

Area 2 was a small area on the edge of a ditch along the north west edge of the Meadow. The gradiometer survey results (Figure 4.6) revealed a series of anomalies. Again, the earth resistance survey found evidence of the same anomalies and are not repeated here.

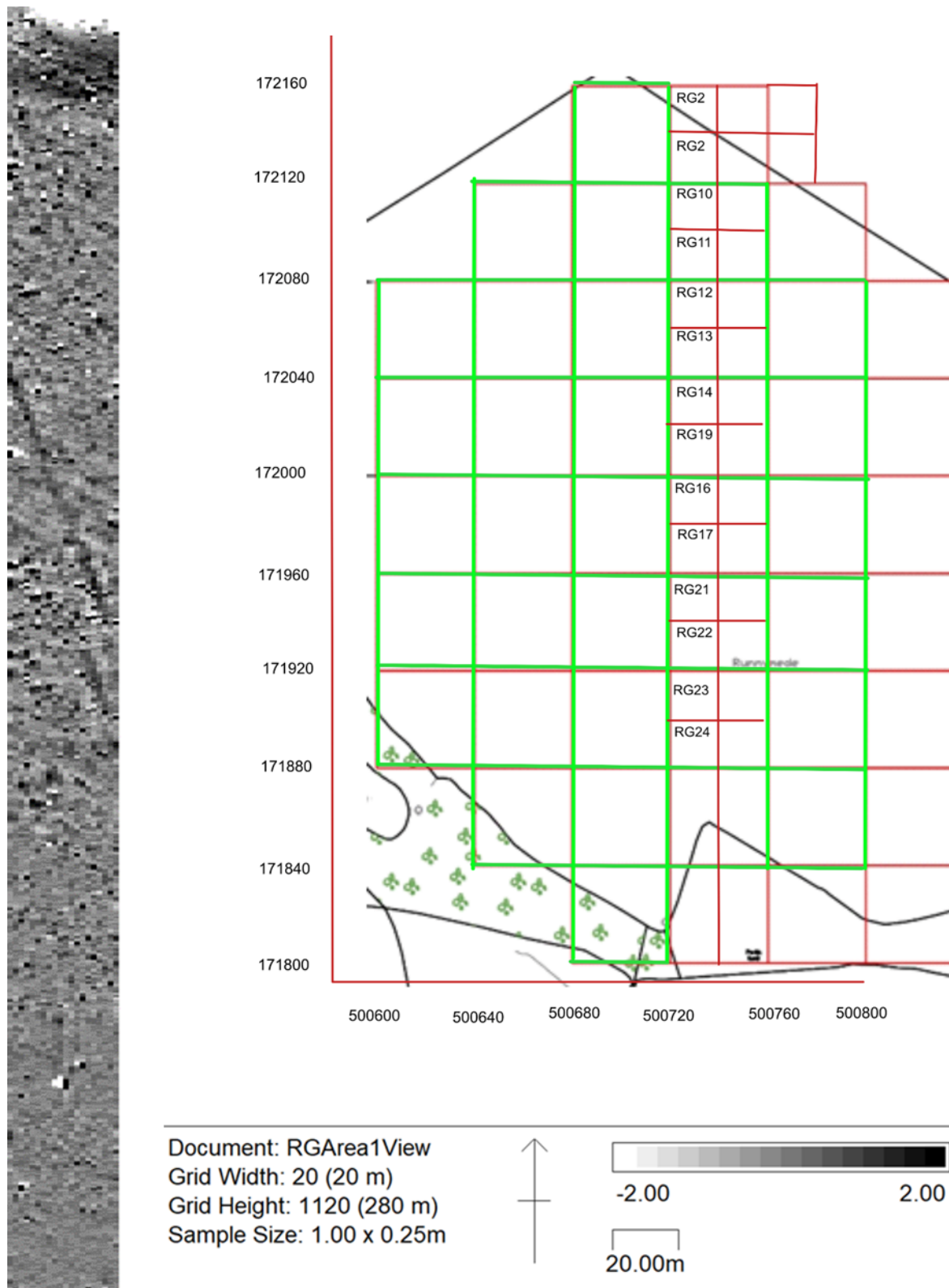


Figure 4.5. Runnymede 2020, Council Meadow Area 1 gradiometer survey results
LHS Gradiometer geophysics plot (Scale 15mm to 20m)
RHS its position in the meadow (Scale 16mm to 40m) and data file names

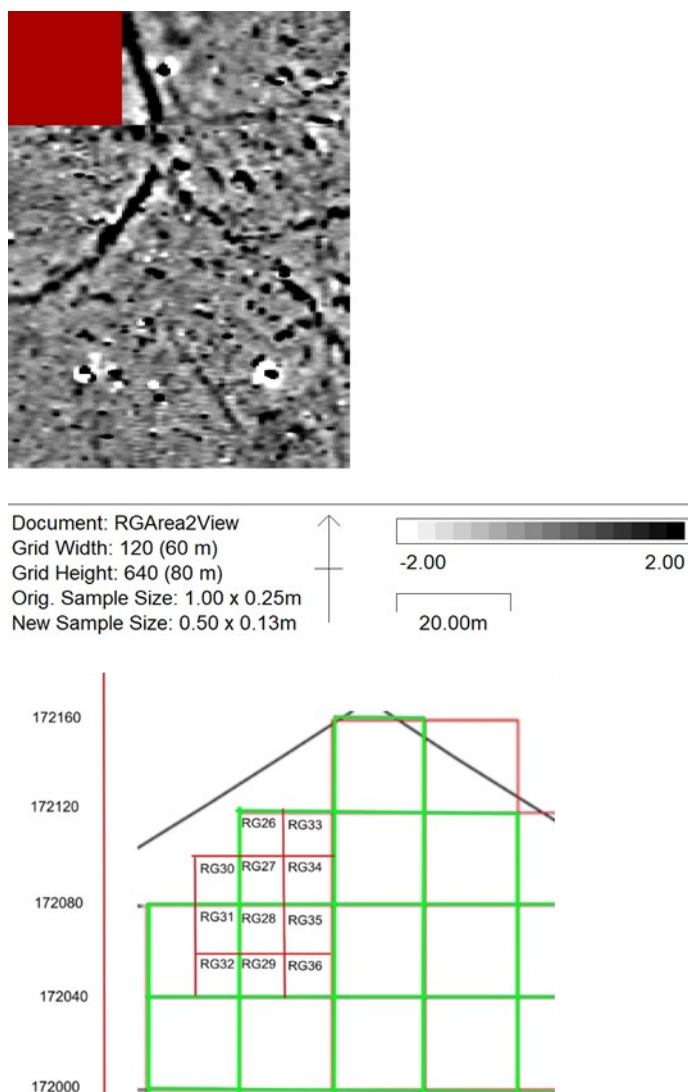


Figure 4.6. Runnymede 2020, Council Meadow Area 2 gradiometer results
top: gradiometer geophysics plot (Scale 15mm to 20m)
bottom: its position in the meadow and data file names (Scale 16mm to 40m)

5 This project

5.1 Project objectives

This project had two objectives:

- To survey all of County Meadow with a gradiometer
- To identify anomalies which SCAU could excavate as part of a community excavation in 2022

The gradiometer survey was chosen because the results of the 2020 survey showed that almost all the anomalies found in the earth resistance survey results also appeared in the gradiometer survey results. Given the size of the Meadow it is proposed to survey the Meadow with a gradiometer and, if time allowed, to survey some of the major anomalies with an earth resistance meter.

The work was carried out in accordance with the guidelines laid down by ClfA, Historic England and others (Gaffney *et al.* 2002, David *et al.* 2008 and Schmidt *et al.* 2014).

5.2 The work of the project

Work started on Monday 28th March with Mercedes Planas of Souterrain Archaeological Services laying out the survey grid of 40m x 40m squares (Figure 5.1).

Thereafter, a team from the Berkshire Archaeological Society with help from Harry Farmer of the National Trust and volunteers who attended the 2020 geophysics training carried out a gradiometer survey. Over time they subdivided the 40m x 40m squares into 20m x 20m squares and then surveyed them with a Bartington 601 gradiometer with 2 sensors. One of the challenges of surveying the Meadow was its size. Every day, the data from the gradiometer was downloaded into file names of the form R22Xnn where X was an alphabetic character and nn was the number of the square surveyed that day (Table 5.1). Figure 5.2 shows Xnn component of each data file.

The 2020 training event found anomalies at the north west corner of the surveyor's grid. The data collected during this survey confirmed their existence so an extra area of 2 lines of 7 20m x 20m squares was laid out so we could survey the full extent of the anomalies.

Every day, the collected data was downloaded into Snuffler, a software package for processing geophysics data to create a plot (Sussex 2006). Again, this imposed size limitations on the amount of data that could be processed in a plot so the results were subdivided into 4 plots (Table 5.1).

Lastly, all the evidence from the site was processed using Affinity Designer (Affinity Designer nd). This manages layers of data. In this case, the lowest layers included the surveyor's plot (Figure 5.1), and the 4 geophysics plots (Figure 5.4, 5.5, 5.6 and 5.7). The higher levels included the interpretations of this evidence.

The initial interpretations showed three areas of human activity. To gain more evidence of the use of these areas, the original data for each of the areas was reprocessed using Snuffler and Affinity Designer.

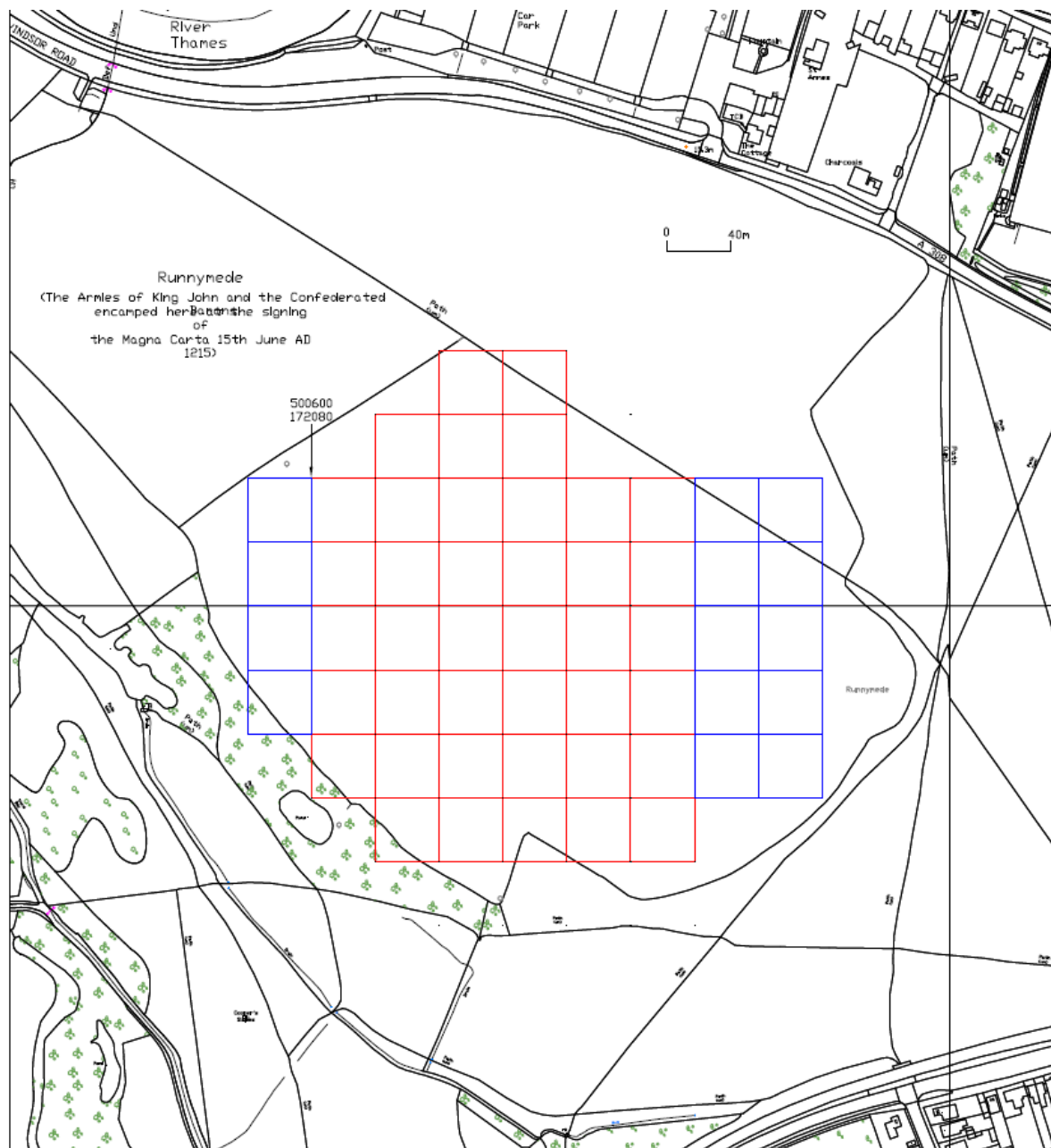


Figure 5.1. The survey grid established by the surveyor
The red lines represent the 2021 survey grid
The blue lines are additions made for the 2022 survey

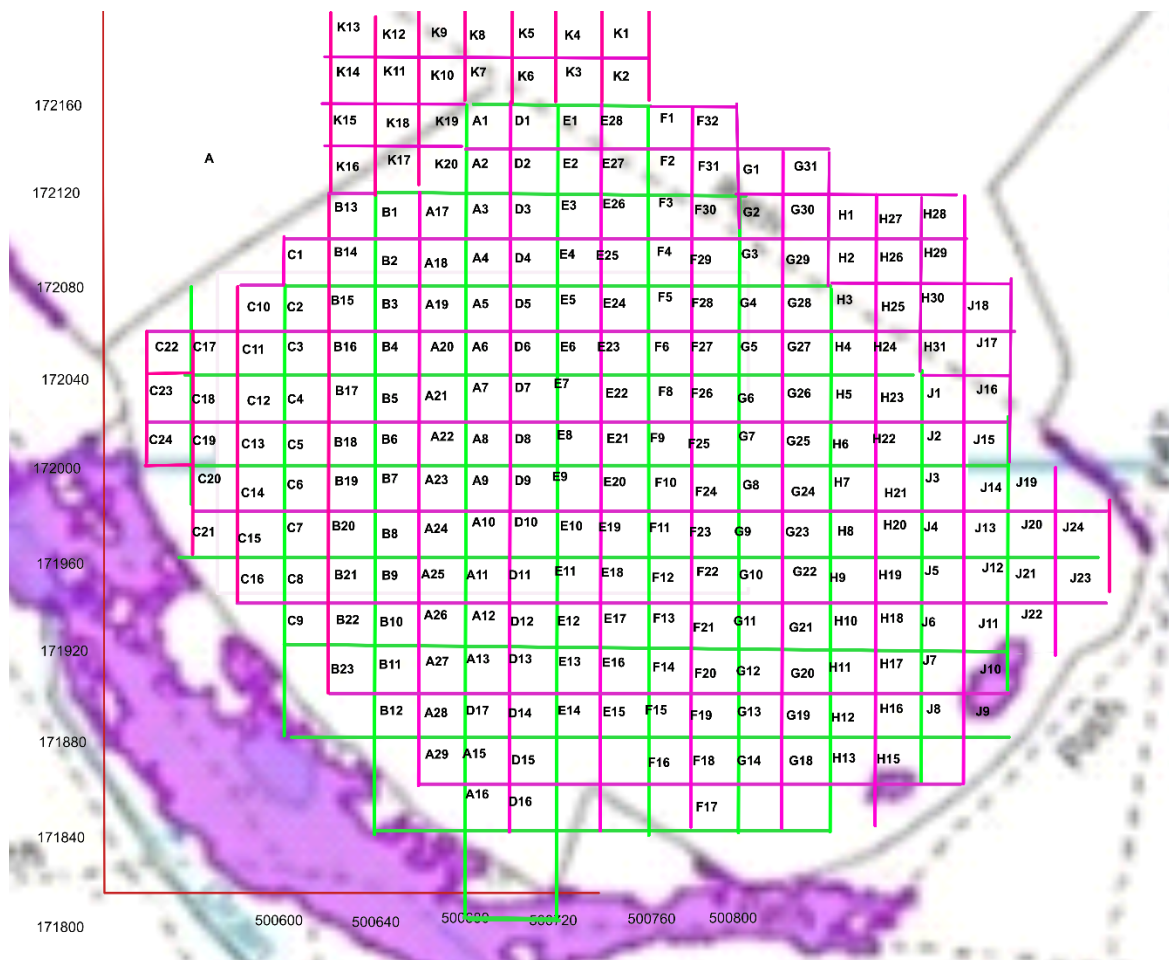
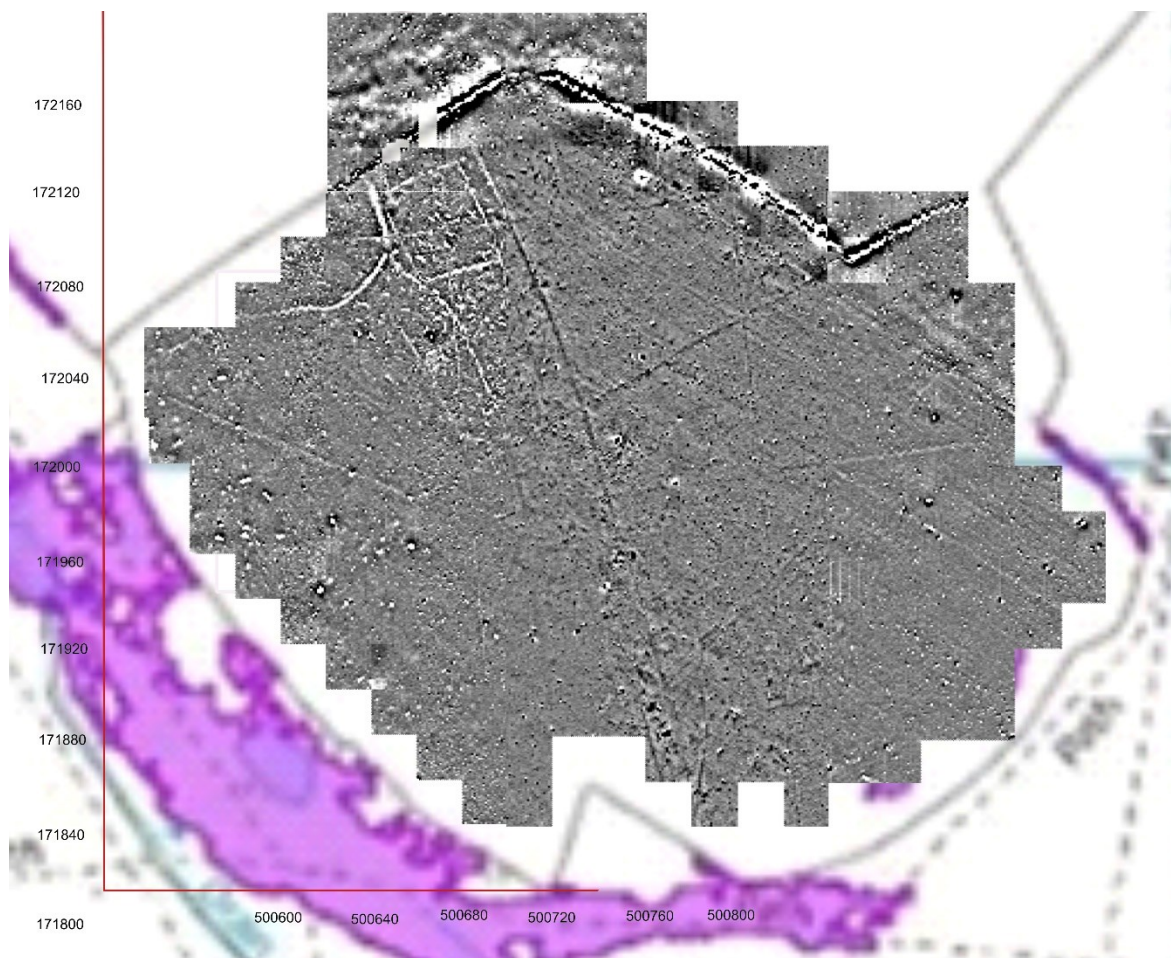


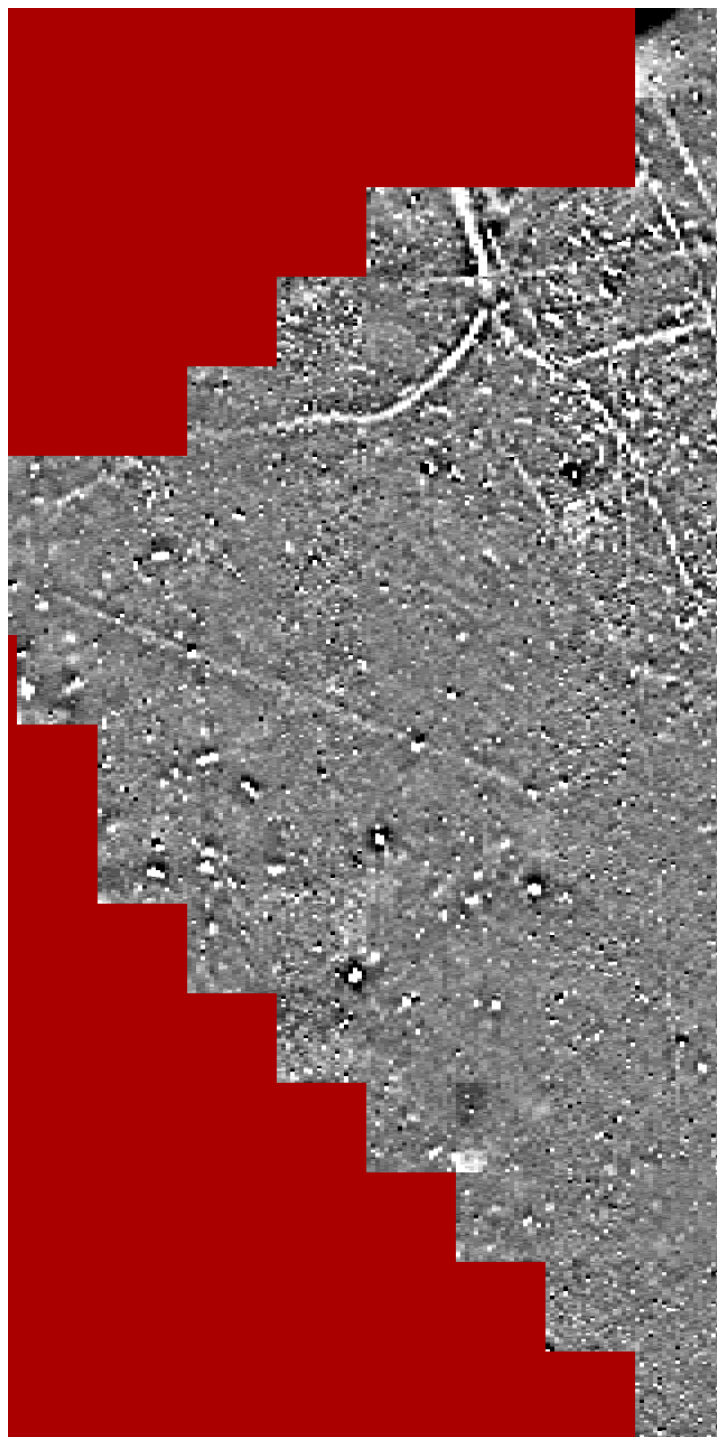
Figure 5.2. The Xnn filenames recording the data collected during the survey
The green lines are the 40m x 40m squares established by the surveyor
The red lines represent the additional 20m x 20m squares established by the survey team

Day	Date	Data files collected	Plot
1	29 th March 2002	R22A1 to R22A29	1
2	31 st March 2022	R22B1 to R22B23	1
3	1 st April 2022	R22C1 to R22C24	1
4	4 th April 2022	R22D1 to R22D16	2
5	5 th April 2022	R22E1 to R22E27	2
6	7 th April 2022	R22F1 to R22F32	2
7	8 th April 2022	R22G1 to R22G31	3
8	11 th April 2022	R22H1 to R22H31	3
9	12 th April 2022	R22J1 to R22J24	3
10	13 th April 2022	R22K1 to R22K20	4

Table 5.1. Days worked on site, data files collected and plots used to present the results



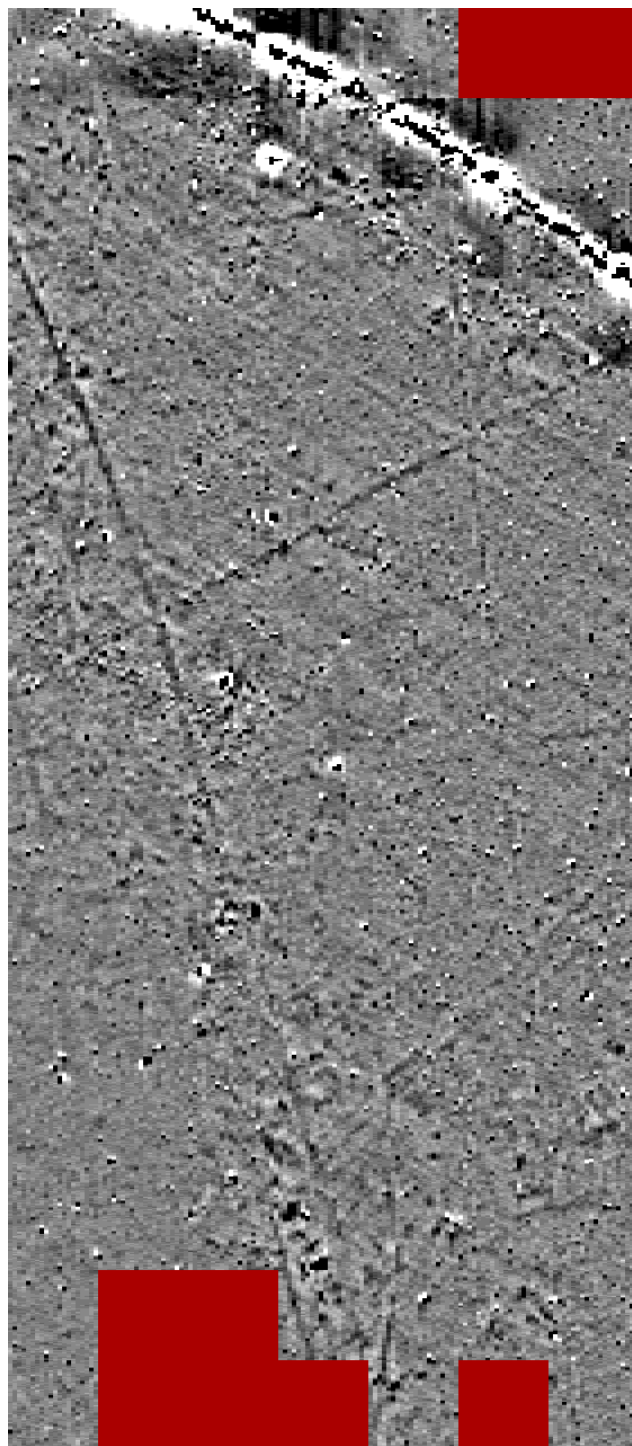
*Figure 5.3. The results of the gradiometer survey
In this image the unsurveyed areas are transparent*



Document: R22Day4View
Grid Width: 160 (160 m)
Grid Height: 1280 (320 m)
Sample Size: 1.00 x 0.25m



*Figure 5.4. Plot 1: The areas surveyed on days 1, 2 and 3 and the resurvey of A14 on day 4.
The red squares were not surveyed*



Document: R22Day7View
 Grid Width: 140 (140 m)
 Grid Height: 1280 (320 m)
 Sample Size: 1.00 x 0.25m



Figure 5.5. Plot 2: Days 4 to 7 survey results
 The red squares were not surveyed

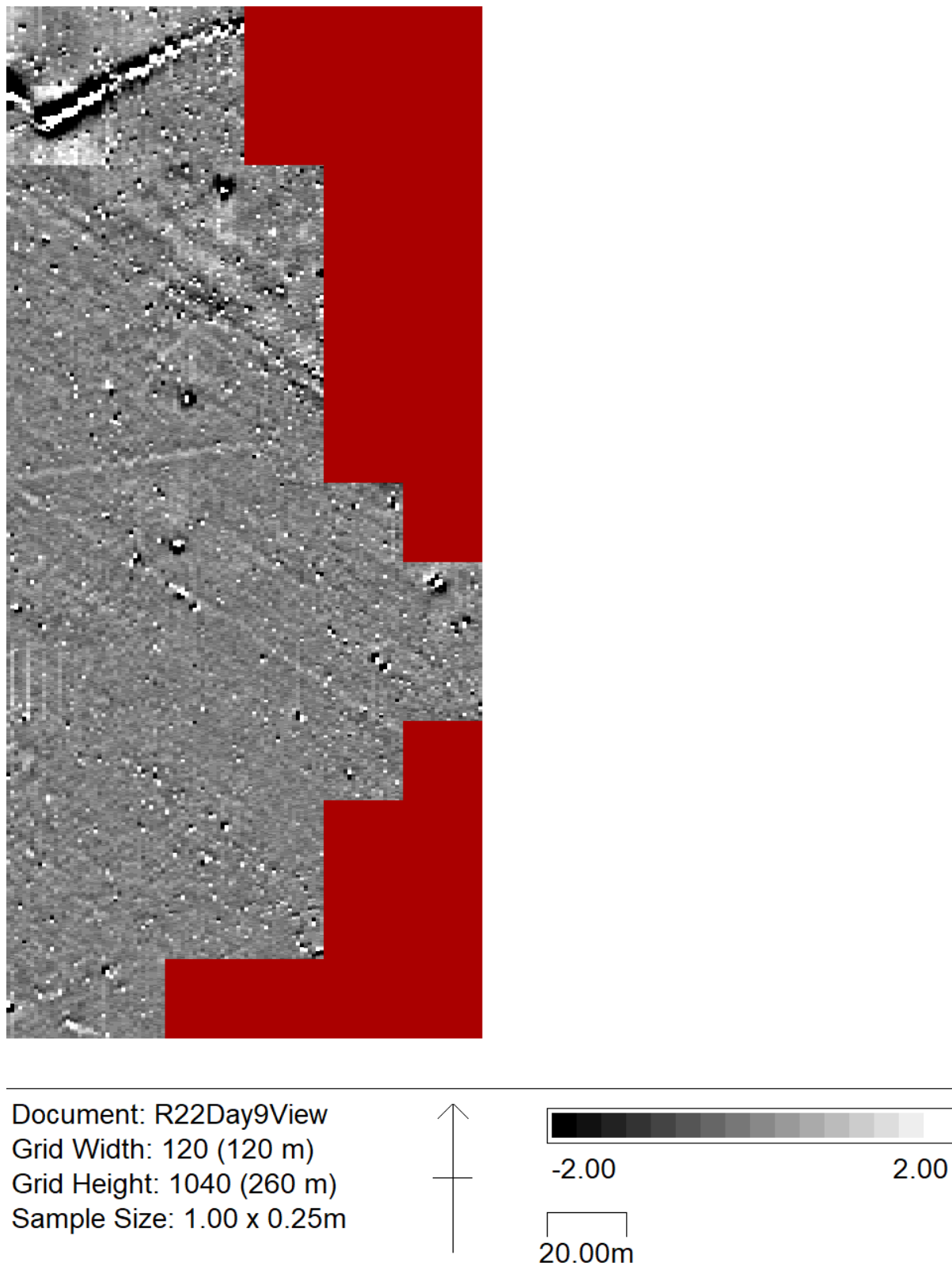
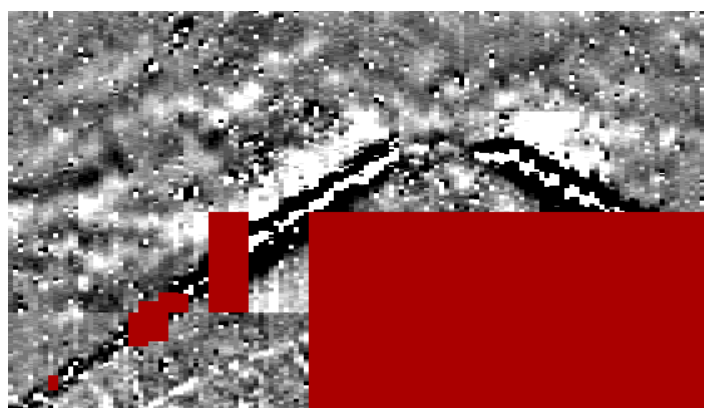


Figure 5.6. Plot 3: Results of Days 8 and 9
The red squares were not surveyed



Document: R22Day10View
Grid Width: 140 (140 m)
Grid Height: 320 (80 m)
Sample Size: 1.00 x 0.25m

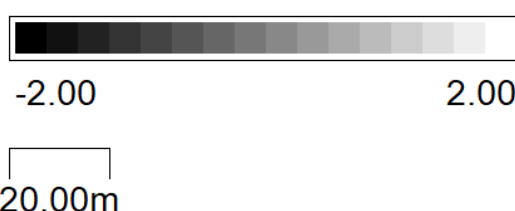


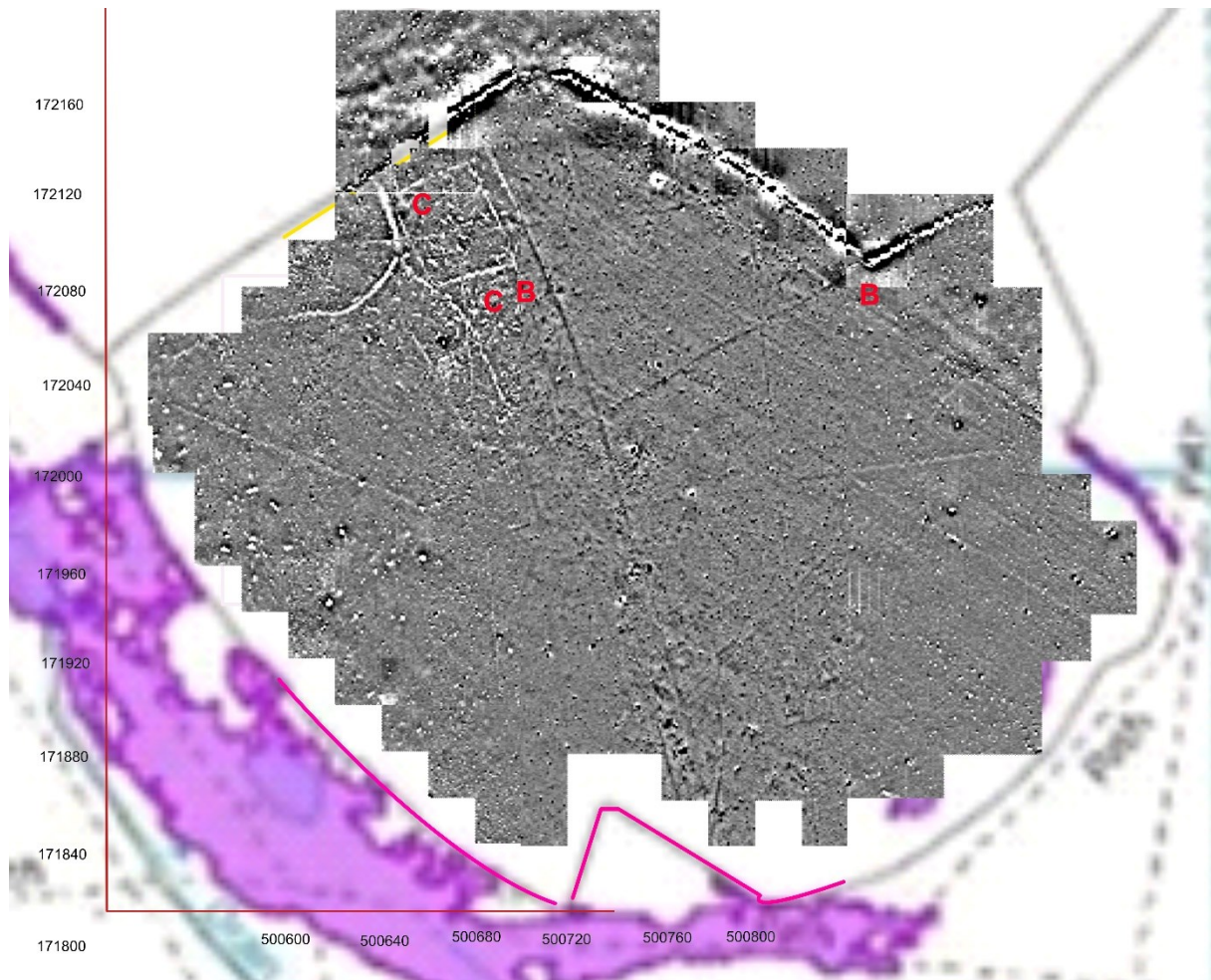
Figure 5.6. Plot 4: the results of day 10
The red squares were not surveyed

5.3 Metal detecting

In parallel with the geophysics survey outlined above, SCAU and the National Trust organised metal detectors to survey Council Meadow. Their results may be published separately but Mairi Sargent sent me a copy of her results. Table 5.2 summaries her prehistoric and Roman finds. Figure 5.6 shows their position in Council Field.

Date	Grid reference of find BNGR Easting Northing	Find
07/04/2022	TQ 00654 72117 500654 172117	Part of a Mid Bronze Age dirk or rapier
07/04/2022	TQ 00694 72059 500694 172059	Roman coin, AD 307-308 Constantine 1, TQ 00694 72059. Trier mint
07/04/2022	TQ 00704 72070 500704 172079	Roman coin - not yet ID
	TQ00925 71943 500925 712079	A scraper, 3 secondary flakes and 1 possible awl.

Table 5.2. Metal detector finds recorded in this report



*Figure 5.6. Prehistoric and Roman finds
Bs position the Bronze Age flints Cs position the Roman coins
The background is as Figure 5.3*

6 Interpreting the results

The results of the survey show a variety of landscapes with very little supporting chronological evidence. The rest of this section attempts to unpick the details.

6.1 Evidence of ploughing

Across the whole of the area there is a succession of alignments (N60°W) which are probably the results of ploughing. These alignments cross most of the other anomalies which suggests they represent late activity on the site. They align with anomaly G05 at N60°W (see section 6.3 and Figure 6.4 below).

Given the size of the anomalies this may well have been the result of steam ploughing in the late 19th/early 20th centuries.

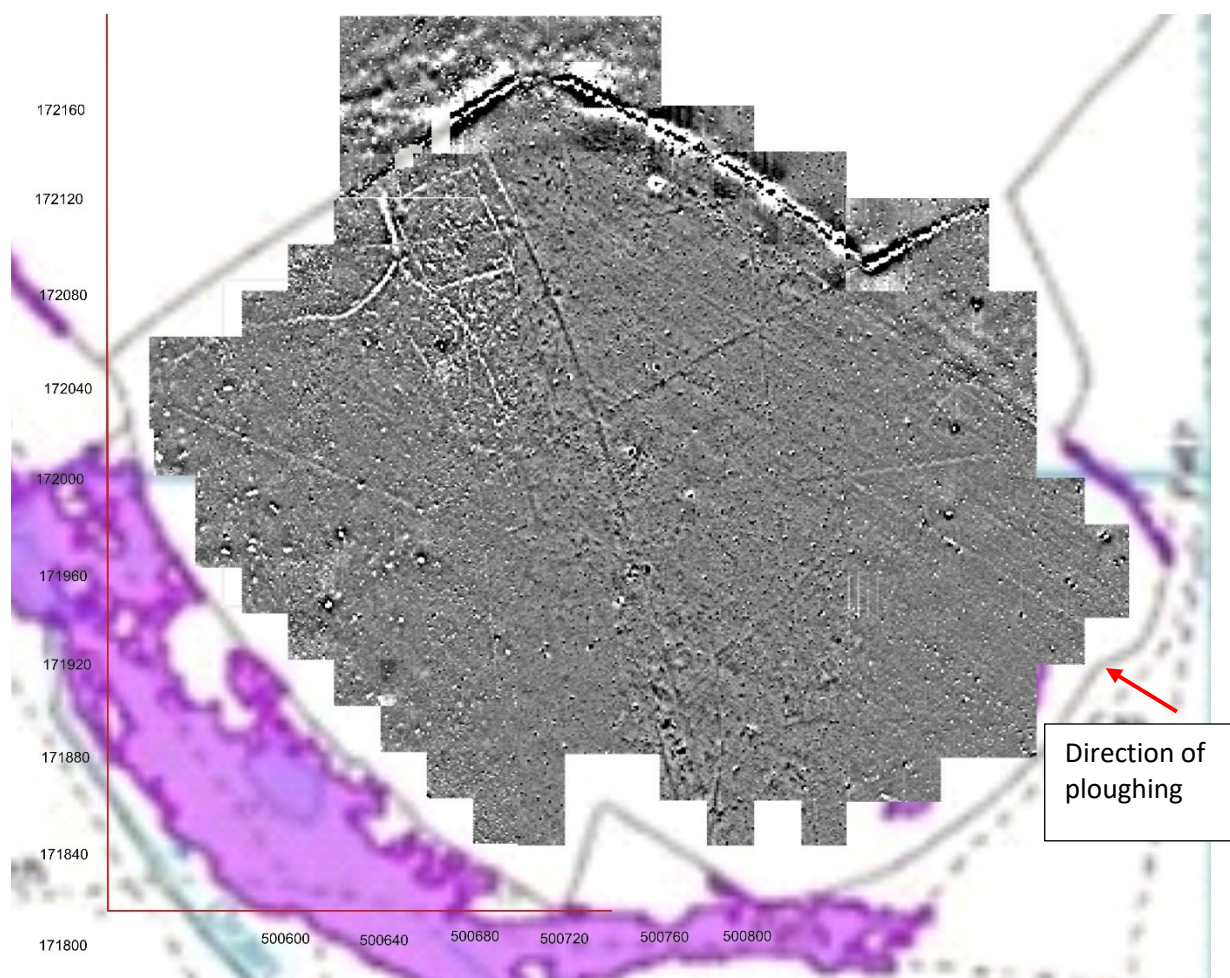


Figure 6.1. The survey results showing evidence of ploughing

6.2 A track

There is a track (G61) which is now used as both a footpath and a route for farm vehicles. This is aligned with the plough lines and, at its southern end, with the edge of the field (Figure 6.2).

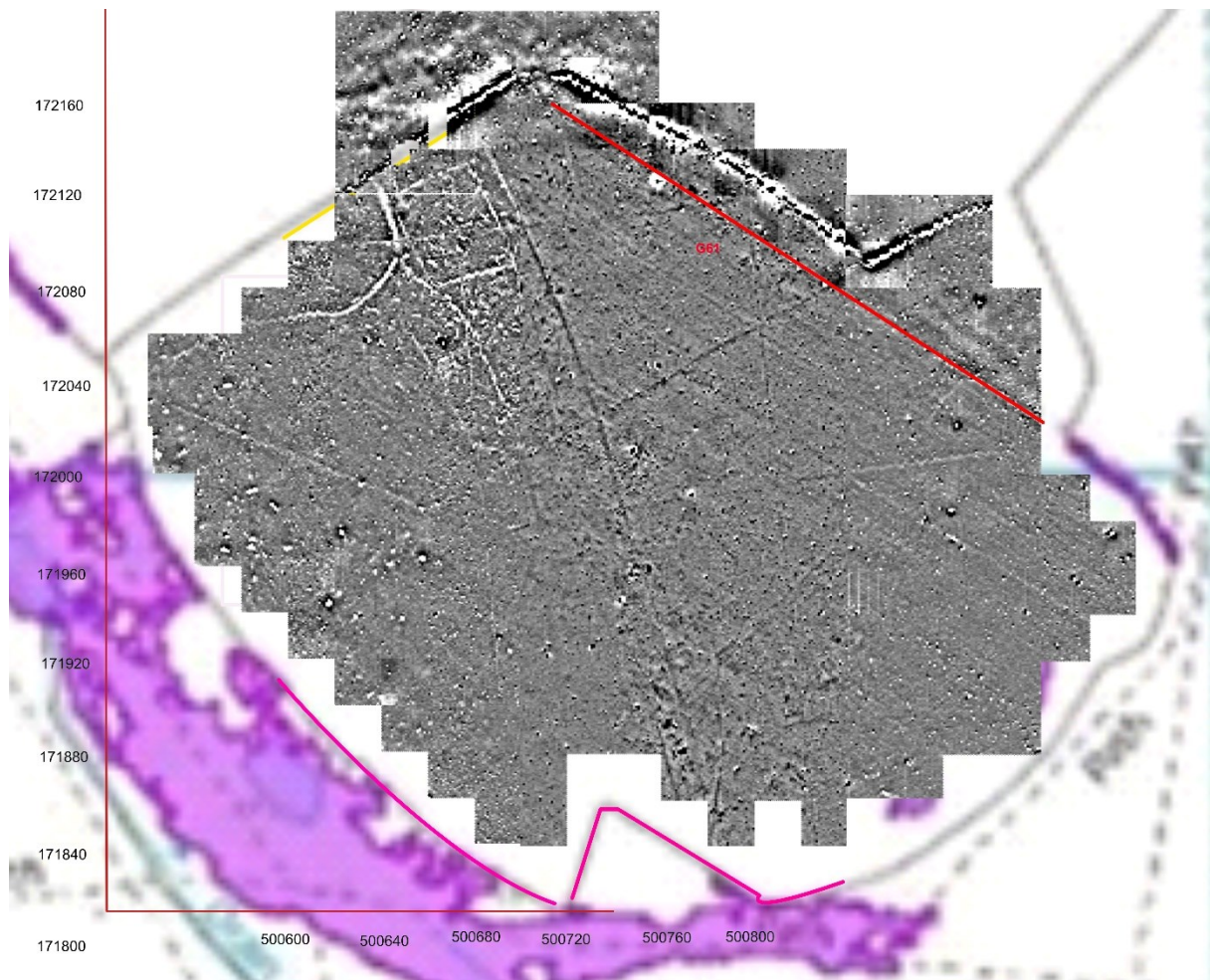


Figure 6.2. A track

6.3 WWII anti-aircraft trenches

As outlined above, the National Trust HER records evidence of WWII anti-aircraft trenches dug across the fields at Runnymede (Figure 4.1). Figure 6.3 shows evidence of long linear anomalies which roughly correspond to these trenches. To confirm this correspondence, figure 4.1 was added to the Runnymede image stack, geopositioned and the HER locations of the trenches traced. Figure 6.4 shows the correspondence between the HER and geophysics evidence.

The eastern end of geophysics anomaly G05 almost reaches a corner of the hedge to the east. This suggests that the hedge predates 1940.

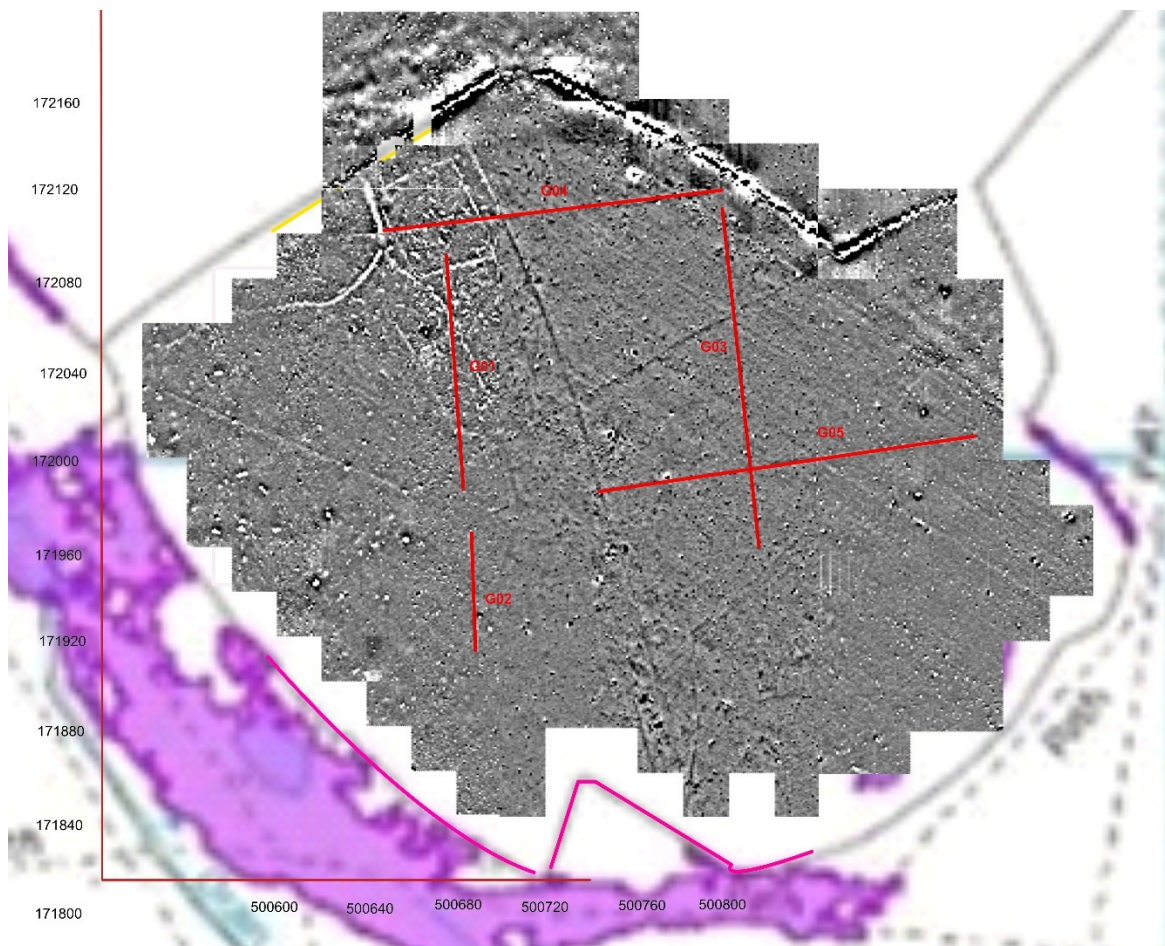


Figure 6.3. Long linear anomalies which probably represent WWII anti-aircraft trenches

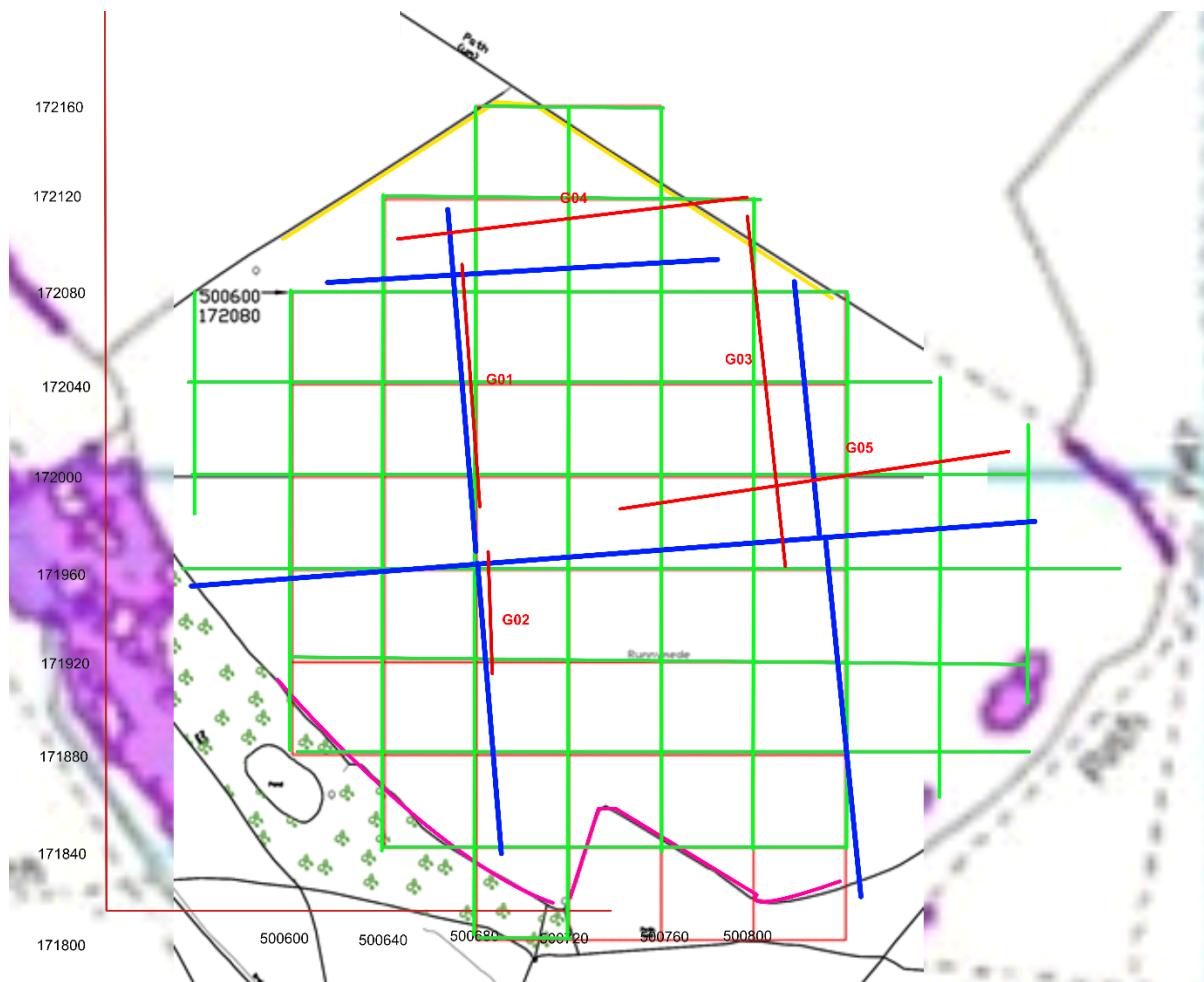


Figure 6.4. WWII trenches: correspondence between the HER and geophysics evidence
Green lines are the surveyor's grid
Blue lines are the National Trust's HER trench positions
Red lines are the geophysics anomalies which may represent the trenches

6.4 The big ditch

This feature/anomaly is in five parts G11 to G15 (Figure 6.5). G11 is marked on maps and the SCAU plan as a ditch on a N60°E alignment. This continues as an anomaly (G12) and a ditch to a corner where it bends to become anomaly G13 on a N120°E alignment. G13 is not straight, it bends slightly to the south. It later turns to a N60°E alignment which may link up to the corner of a hedge (G14). G15 is a continuation of G13 as far as the edge of the survey grid where it may link to a ditch which is liable to flooding.

The gradiometer readings along G12, G13 and G14 suggest that there is iron or steel buried in this anomaly. There are several possible interpretations of this.

When we first found it, we toyed with the idea that it may be the remains of a WWII fuel pipeline (we found two pipelines near Pangbourne with similar geophysics profiles (Hutt and Labram 2017) but the sharp bends suggests it is more likely to be a water pipeline. A request to the Surrey HER showed that they had no record of a pipeline across the Meadow. Given the above, the pipeline interpretation is unlikely to fit the evidence.

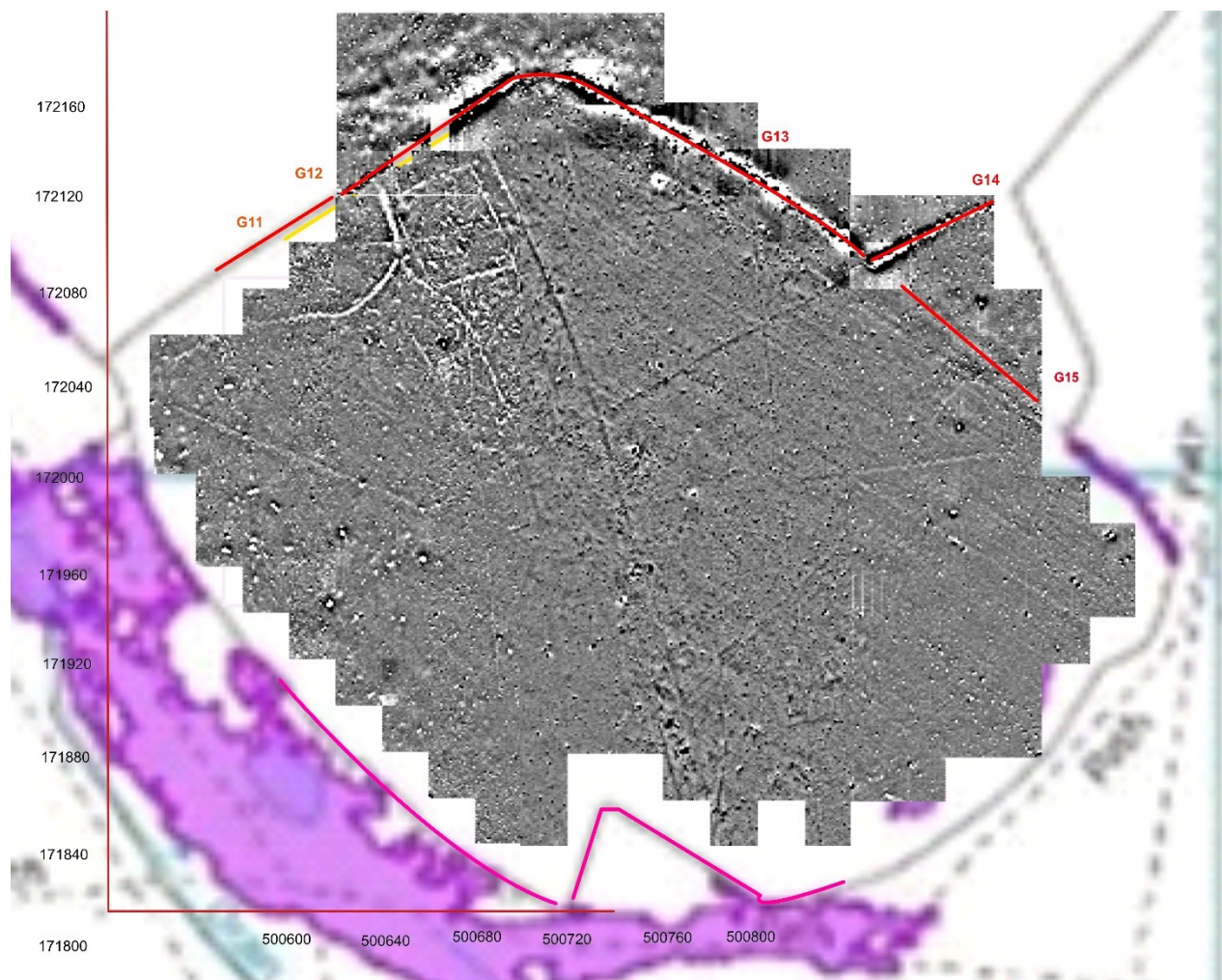


Figure 6.5. The big ditch

The purple represents low lying areas which flood or are liable to flood

The association with the ploughing (section 6.1) suggests that this anomaly existed in some form before the end of the 19th/early 20th century. The regularity of the alignment between sections G11 and G13 suggests it may have been re-dug as part of the WWII anti-aircraft trenches. The high gradiometer readings suggest that surplus metalwork (barbed-wire? etc) may have been thrown into it when it was back filled.

6.5 Other field boundaries

There are two long linear anomalies (Figure 6.8):

G31 is about 115m long

G32 is about 410m long

G33 about 200m long

A comparison of the results with the 1805 map (Figure 4.1) suggested that these anomalies may represent the remains of field boundaries shown on the 1805 map. To confirm this a copy of the 1805 map was geopositioned in the image stack. Figure 6.7. shows that given the differing quality of the maps, there is a fair correlation between them thus confirming that G31, G32 (Part) and G33 represents field boundaries shown on the 1805 map.

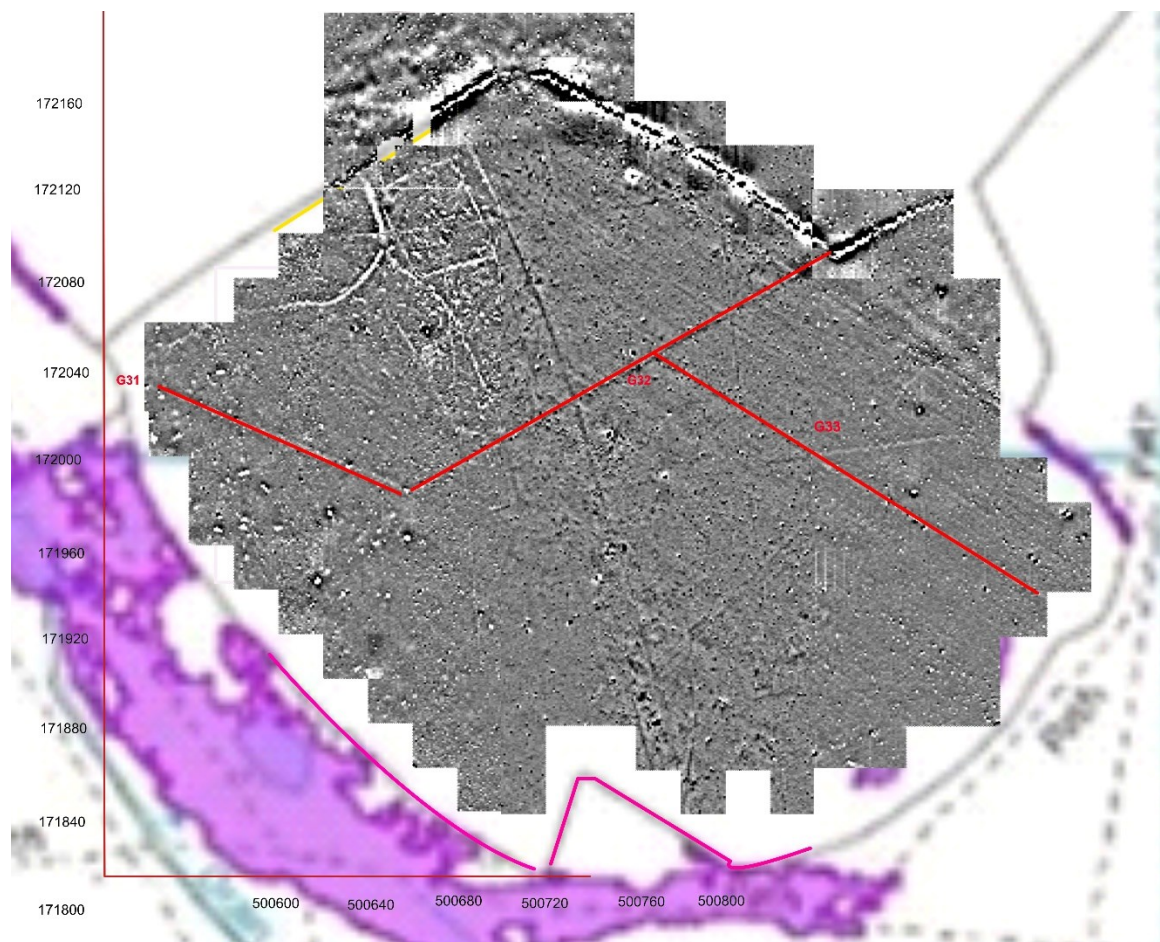


Figure 6.6. Other field boundaries



Figure 6.7. The relationships between anomalies G31 and G32 and the field boundaries shown in the 1805 map

6.6 Activity area 1

At the north north west corner of the plot is a rectangular anomaly G21 which clearly represents an enclosure. There are several other anomalies which may be related to it (Figure 6.8). These are:

G22: a curved anomaly, probably a ditch. which, were it was bounded along the north west side by ditch G11/G12, would have enclosed an area of 2ha.

G23: a slightly curved anomaly some 20m long

G24: a linear anomaly some 50m long

G25: a slightly curved and linear anomaly some 100m long. This was probably an extension of G23

G26: a linear anomaly about 170m long

G27: is about 60m long. G27 may be a continuation of G26

G28: an area of confused geophysics evidence which may indicate some intense activity. Within it is an area of high readings

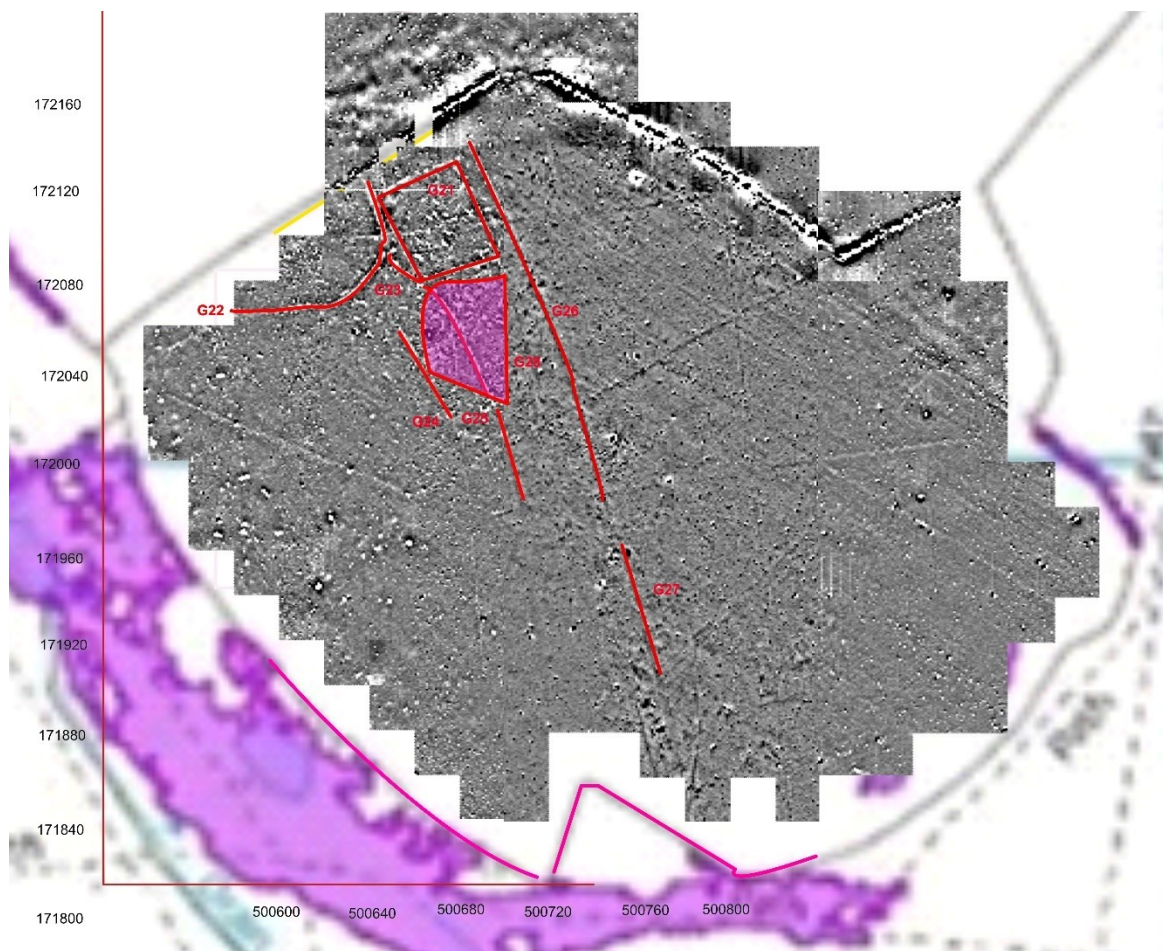
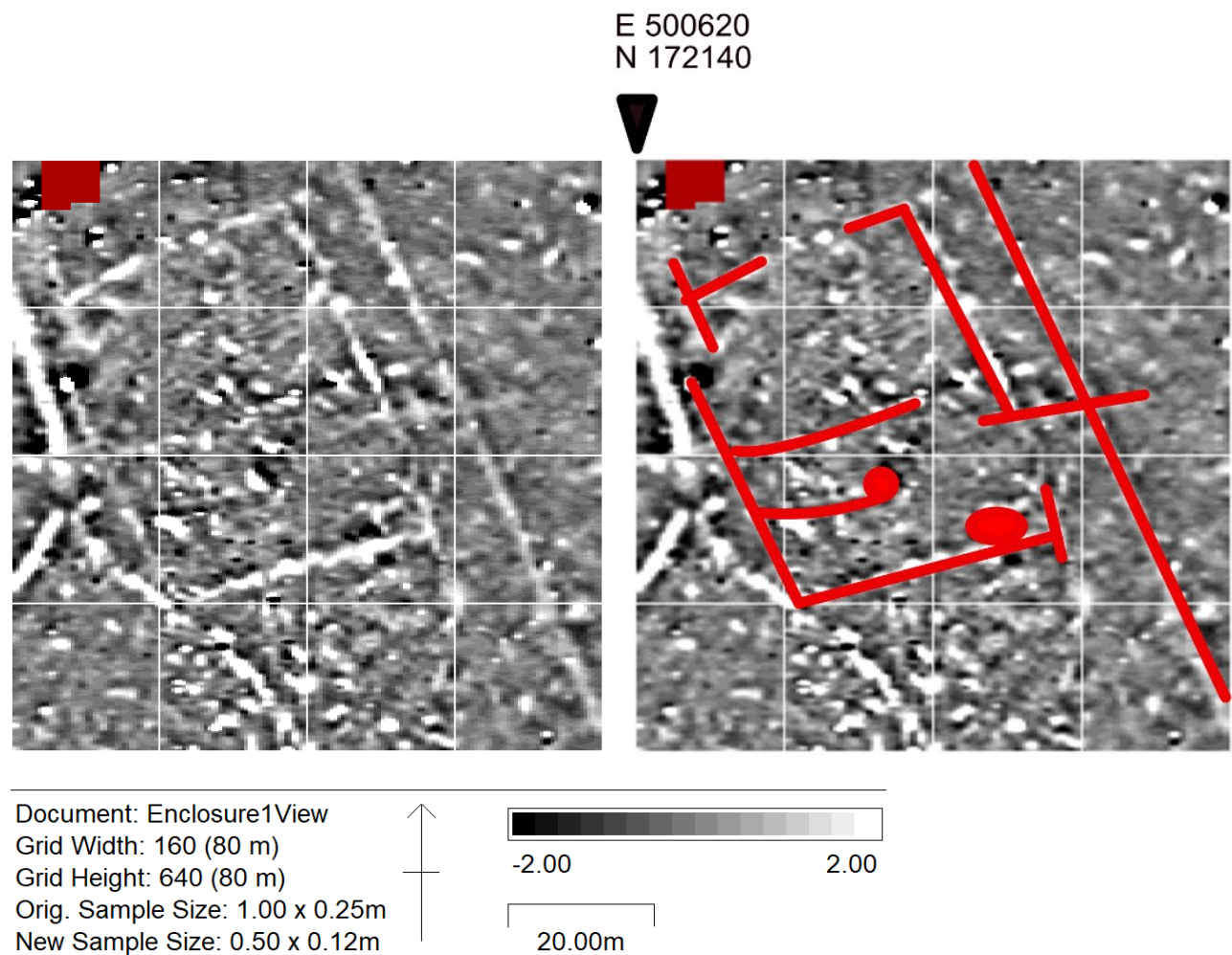


Figure 6.8. Activity area 1: enclosure 1 and associated anomalies

In order to gain more information about enclosure G21, a more detailed geophysics plot and interpretation was produced (Figure 6.9). This showed that the boundary of the enclosure was not continuous, some of its internal structure with linear anomalies which may be walls or ditches and circular anomalies which may represent pits.

On the north side of enclosure G21 is a small tree with bare ground under it where a search found clay tile and pottery which may well be Roman. These artefacts were left with Harry Farmer as the on-site representative of the National Trust.

This suggests G21 is a Roman enclosure, G27 could be a work area to the south of G21 while the linear anomalies may present the remains of Roman field boundaries.



*Figure 6.9. Detail of enclosure G21
On the left the geophysics plot
On the right the interpretation
Scale 20mm to 20m*

6.7 Activity area 2

In the south west of the survey there is series of negative circular anomalies G41 to G49. These are probably pits. Adjacent to them is an "L" shaped anomaly (G50) which may represent part of another enclosure (Figure 6.10).

Figure 6.11 shows a more detailed plot of this activity area. It shows the main anomalies are:

G41: 2m x 2m irregularly shaped anomaly which may be a pit

G42: an irregular shaped anomaly some 4m x 2m

G43: an irregular shaped anomaly about 4m x 2m

G44: an almost rectangular shaped anomaly 4m x 2m

G45: a circular anomaly some 6m in diameter with two centres of positive readings

G46: a rectangular anomaly some 4m x 2m

G47: a rectangular anomaly 2m x 2m

G48: a rectangular anomaly some 5m x 4m

G49: a rectangular anomaly some 4m x 4m

G50: a linear anomaly some 45m long

G51: a linear anomaly some 57m long

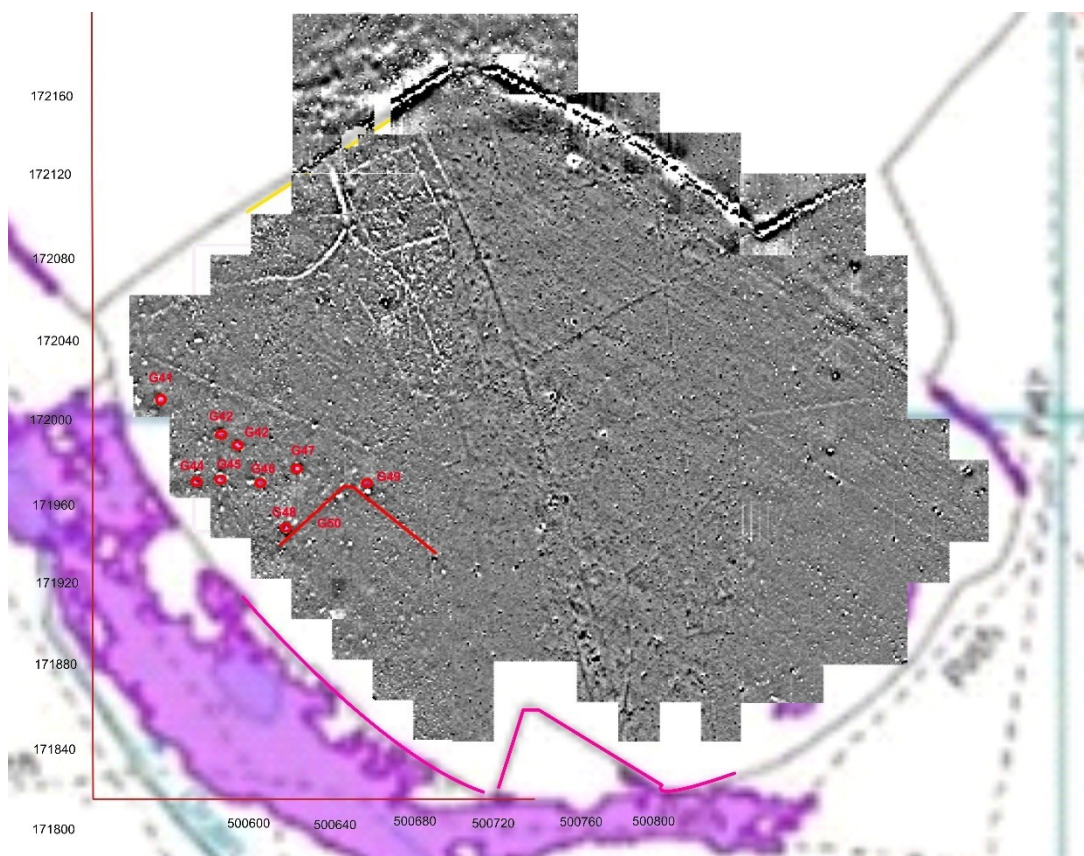
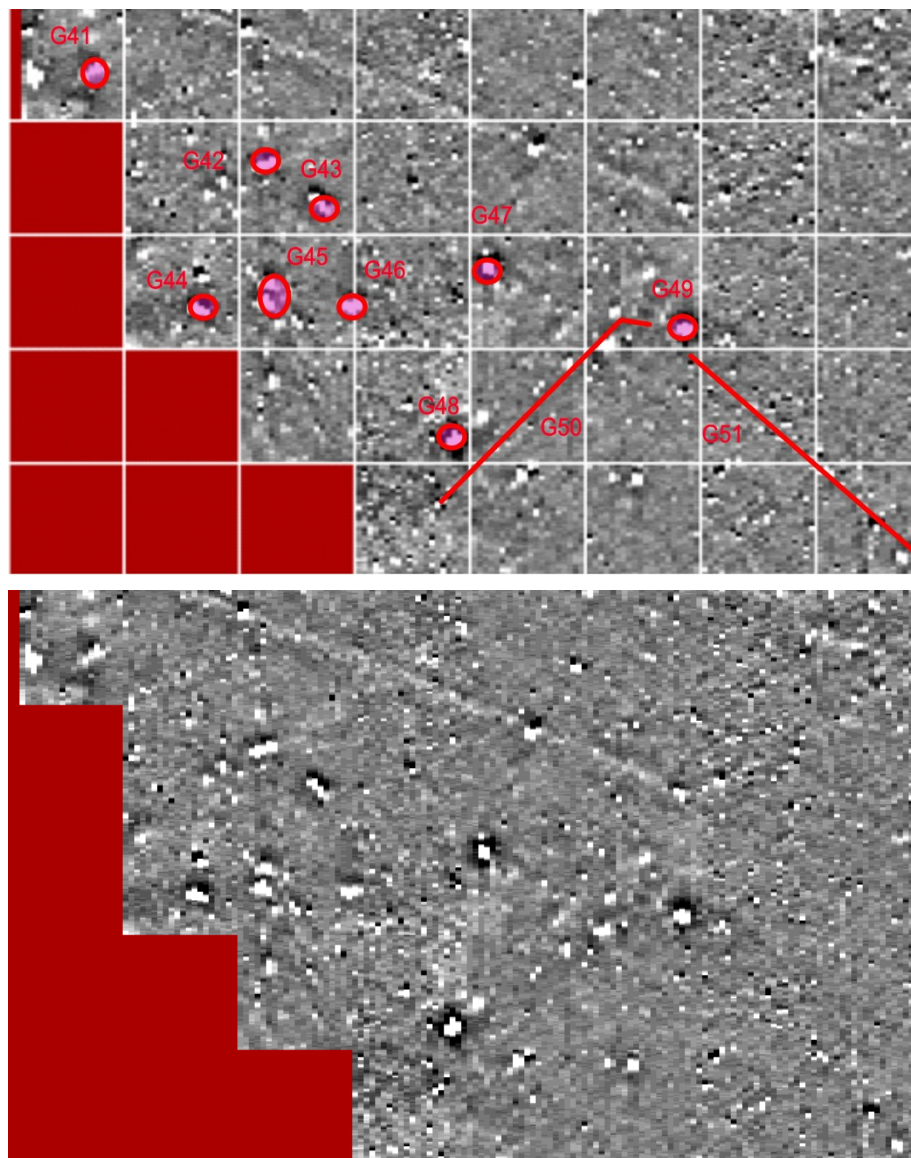


Figure 6.10. Activity area 2 anomalies

The size and representation of anomalies G41 to G49 suggest they could represent simple buildings which were burnt down. The two linear anomalies G50 and G51 may represent an enclosure.



Document: R22_ActArea2View
Grid Width: 160 (160 m)
Grid Height: 400 (100 m)
Sample Size: 1.00 x 0.25m



Figure 6.11. Activity area 2 detail

Above: the geophysics plot with highlighted and labeled anomalies with the 20m x 20m survey grid

Below: the geophysics plot

6.8 Activity area 3

At the southern edge of the plot is an area where there are circular and linear anomalies. They are:

G71: an anomaly about 12m x 4m which has a rectangular north side and an addition on the south west corner. This is probably a building. It lies across anomaly G27. This raises the question is it part of Activity area 1, for example, a gate house? For now, it is kept within Activity area 3

G72: an irregularly shaped anomaly measuring 4m x 2m

G73: a very faint ellipse shaped anomaly on a west to east alignment measuring 12m x 10m

G74: a very faint ellipse shaped anomaly on a north west alignment measuring 10m x 5

G75: a square anomaly measuring 4m x 4m

G76: a 4m x 4m rectangular anomaly on a north east alignment

G77: a rectangular 6m x 4m anomaly

G78: a linear anomaly measuring some 30m long

G79: a curved linear anomaly about 70m long on a north south alignment

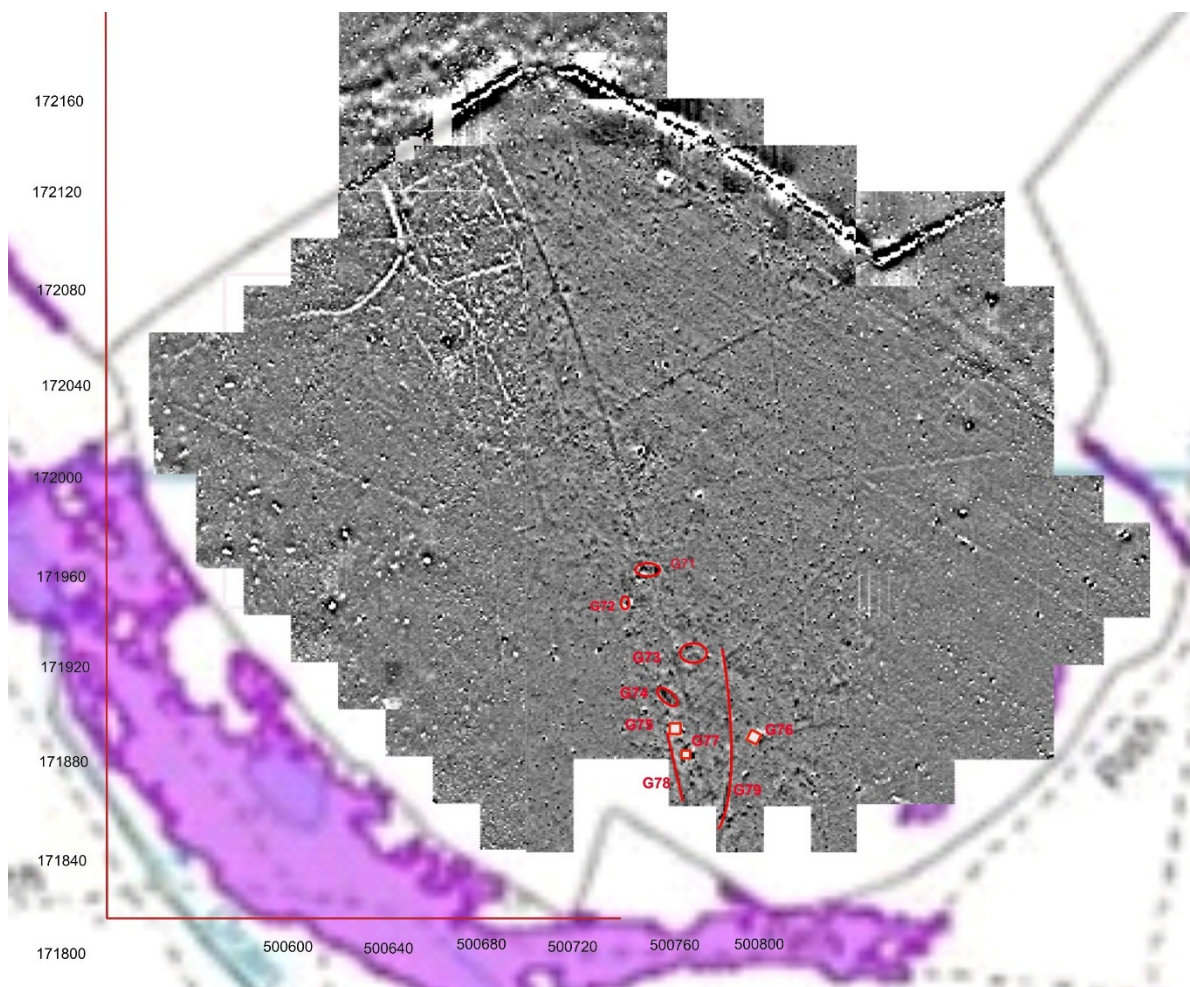


Figure 6.12. Active Area 3 anomalies

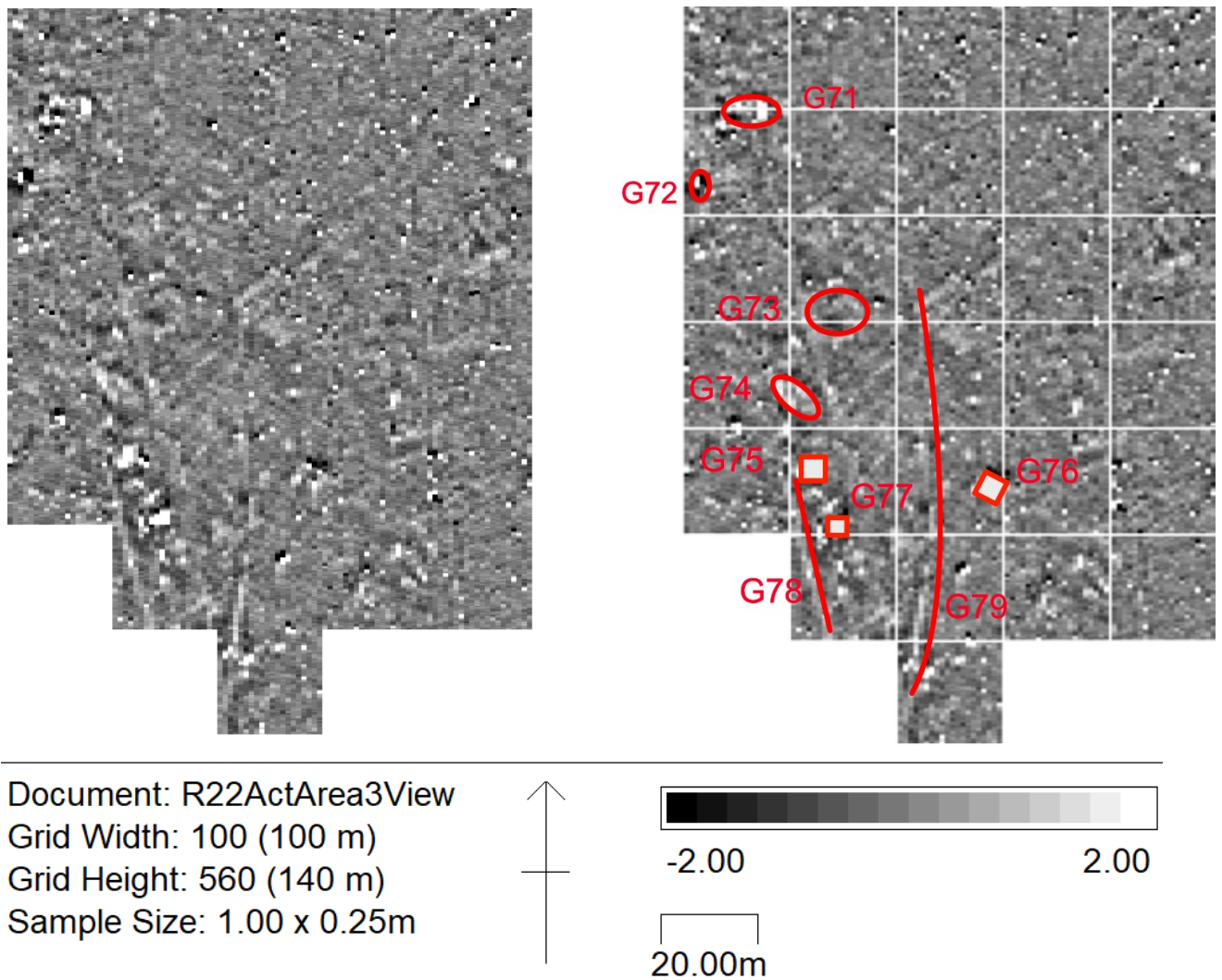


Figure 6.13. Activity area 3 detail

LHS: geophysics plot

RHS: key anomalies with geophysics plot and 20m. x 2m survey grid

7 Conclusion

Figures 7.1 and 7.2 shows all the anomalies which were highlighted in section 6.

This survey found a number of features which include: evidence of ploughing, a trackway, WWII anti-aircraft trenches, a large drainage ditch, several now defunct field boundaries and three areas with evidence of significant human activity. Artefacts found on the site suggest one of these areas may be Roman, the other two are at the south end of the field adjacent to the Langham Ponds.

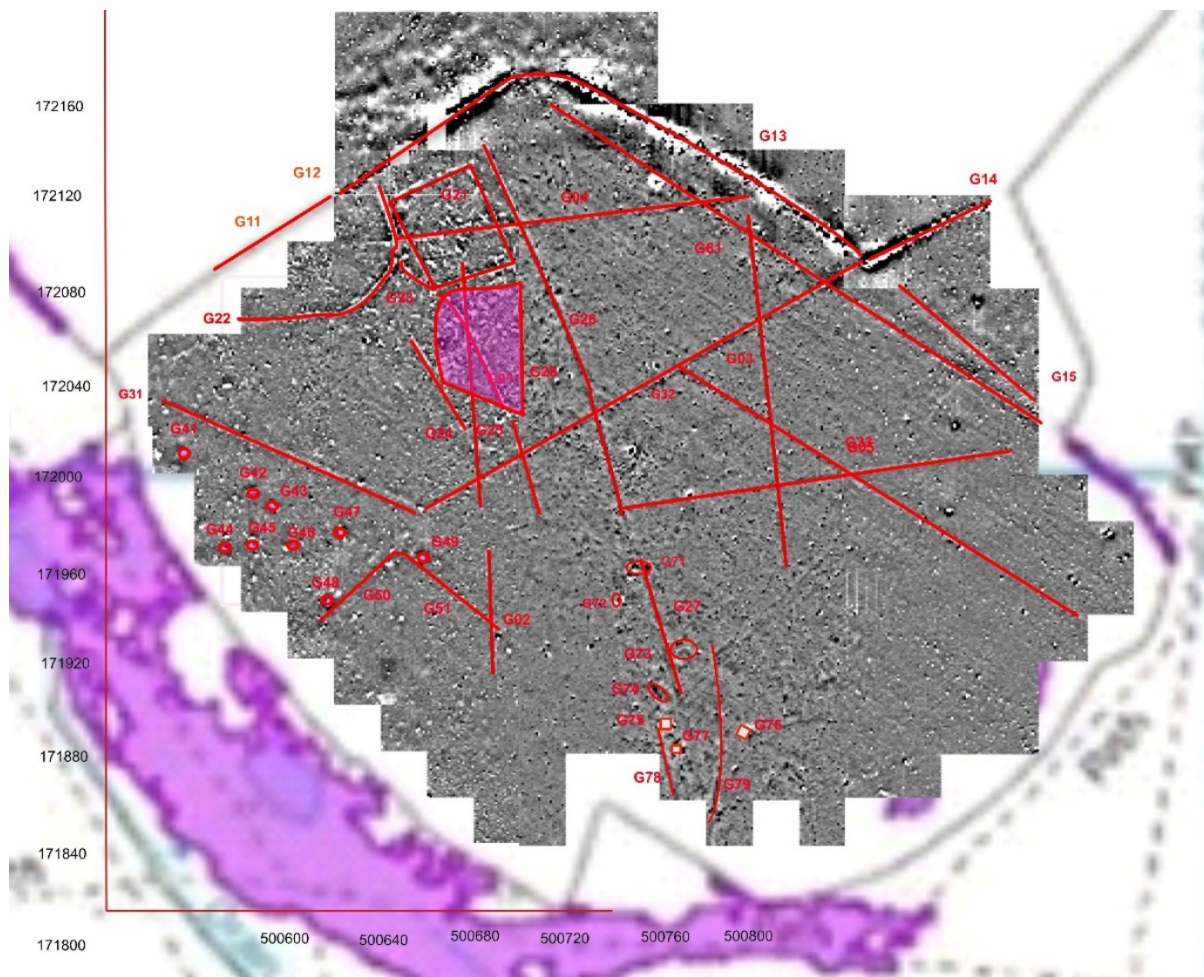


Figure 7.1. All anomalies with geophysics plots as background

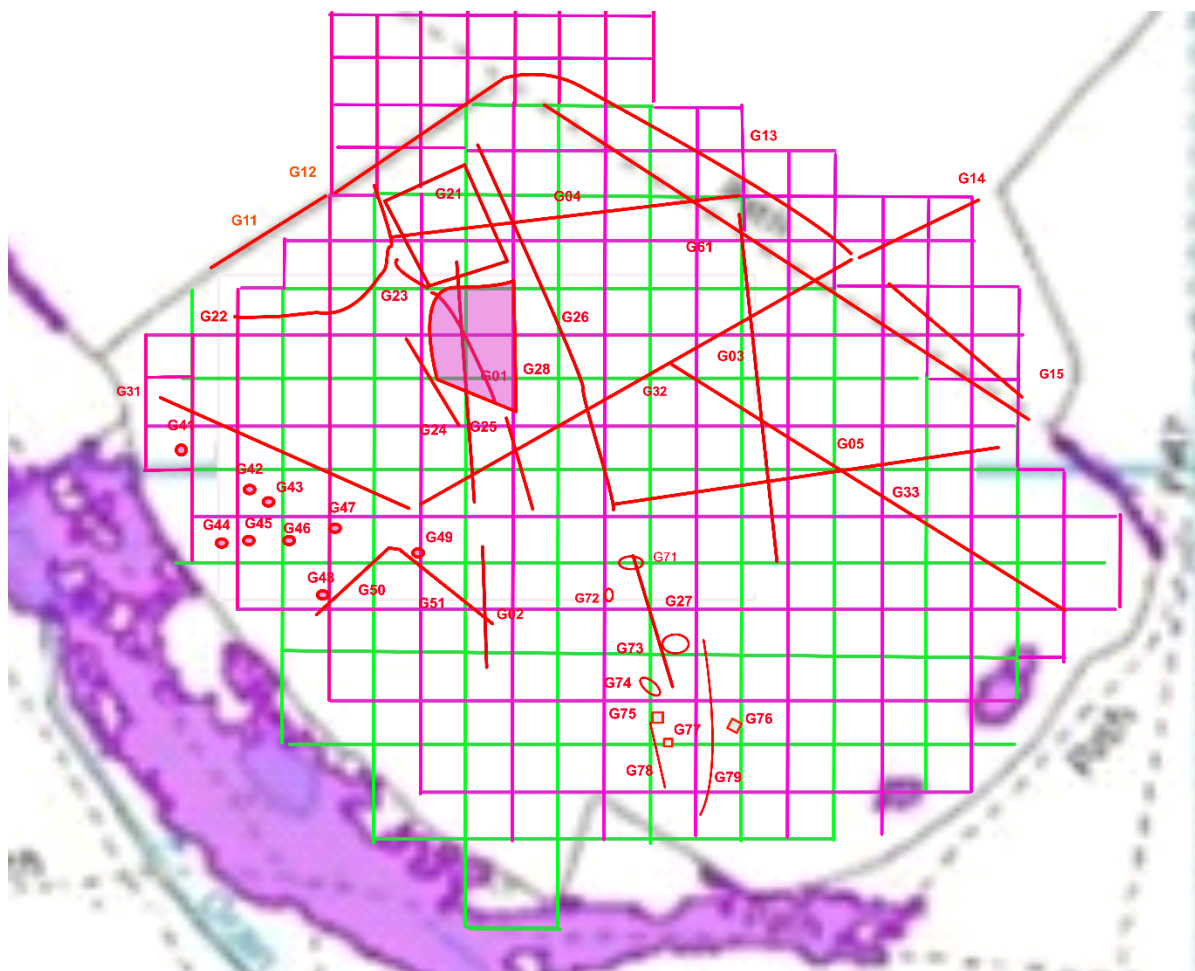


Figure 7.2. All the anomalies with survey grid as background

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