Waddon Hill, Stoke Knapp Farm
Stoke Abbott, Dorset
Geophysical Survey
September 2023 - February 2024

GeoFlo

Southwest Geophysical and Flotation Services

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Contents

Figures:

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Waddon Hill, Stoke Knapp Farm, Stoke Abbot, Dorset
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1.0 Introduction

The geophysical survey was carried out at Stoke Knapp Farm (NGR 344500 101550) as part of a Research Project for Bournemouth University Archaeological Research Consultancy (Milward 2023). Stoke Knapp Farm is located approximately 2.5km from the town of Beaminster in Dorset (fig 1).

The survey area includes Waddon Hill, the site of a Roman Fort excavated by Graham Webster between 1959 and 1969 (Webster 1060, 1964 & 1979). One of the primary aims of the survey was to supplement Webster's excavation records and to locate any previously undiscovered, possibly Iron Age, archaeological features on the hilltop.

The survey also covered ten other Areas on and around the hill (fig 2) to assess the surrounding landscape for archaeological activity which could be associated with occupation of the hilltop.

Both gradiometry and resistivity were carried out on the hilltop (Area A) which is a Scheduled Ancient Monument (National Heritage List for England ref 1002410). The two survey methods were used to maximise data retrieval in the scheduled area. Areas B - K were covered by gradiometry. Survey of the scheduled area was permitted under a Section 42 Licence from Historic England.

All survey areas are currently pasture fields for sheep grazing. The geology of the hilltop is Inferior Oolite Group – Limestone, ooidal, and in the past this site has suffered from extensive quarrying rendering a large part of the hilltop unsurveyable. The bedrock geology of the other ten areas is a combination of Fullers Earth Formation – Mudstone, and calcareous and Bridport Sand Formation – Sandstone (BGS website). All of these are suitable for gradiometry surveying.

The survey work, particularly on the hilltop, included participation from local volunteers who were instructed in setting up the survey grid and use of the equipment,

The work was carried out by GeoFlo – Southwest Geophysical and Flotation Services.

1.1 Equipment

Fluxgate gradiometer – Bartington Grad 601-2

The Bartington Grad 601-2 is a dual system gradiometer, a form of magnetometer. It comprises two sensor rods carried on a rigid frame, each sensor including two fluxgates aligned at 90° to each other, one set 1m above the other. It measures variations in the magnetic field between the two fluxgates, recorded in *nanoTesla* (nT) at each sampling point within a grid. The manufacturer claims a depth range of approximately three metres. The instrument is most effective when carried at a consistent height, not exceeding 0.3m above the ground.

Magnetometers are especially effective for discovering thoroughly decayed organic materials, such as those which accumulate in ditches and pits, and matter exposed to intensive firing, including industrial areas, hearths and larger ceramics. All of these are likely to give a positive magnetic response, sometimes with a negative halo, giving a dipolar effect. Non-igneous stone features, such as walls and banks, are usually perceived as negative anomalies against a background enhanced by decayed organics.

Resistivity meter – TR/CIA Resistance Meter

A twin probe array was used, with mobile probes at a fixed separation of 500mm and two remote probes of variable spacing. The meter range was 200 Ohm, and minimal filtration was employed to remove any effects of mains electrical earth currents.

Resistivity meters work by measuring the resistance to the passing of an electrical current through the ground from one probe to another. Different buried components in the ground have different degrees of conductivity or resistance. Water is the best conductor in the soil so in effect the method is also dependent on the amount of moisture present. As a consequence it can be susceptible to geological and seasonal variations. It is effective in the identification of stone structural remains, organically rich deposits and cut linear features or large pits, where there is sufficient contrast between features and the surrounding buried environment.

Software – Geoscan Geoplot 4.00

Geoplot 4.00 allows the presentation of data in four graphical forms: dot-density, grey scale, pattern and X-Y (or *trace*) plots. The latter are particularly effective when used in conjunction with other graphical modes to emphasise ferrous magnetic anomalies or other distortions which show as accentuated peaks or troughs. The programme supports statistical analysis and filtering of data.

1.2 Field method

All survey areas were divided into 20m squares and geolocated using the Reach RS2 RTK GNSS Receiver. (Locations of the GPS points are listed in figs A6 and A10).

For the gradiometry surveys in all eleven Areas readings were logged at 0.25m intervals set 1m apart in a zig zag pattern.

For the resistivity survey of Area A readings were logged at 1m intervals set 1m apart in a zig zag pattern.

1.3 Gradiometry processing method

Preliminary processing revealed most areas included some amount of interference from modern ferrous magnetic features, usually caused by metal fencing and water troughs. This is characterised by sharp dipolar fluctuations ranging from 10nT – 30nT to over 3000nT. The first two processing sequences were carried out to mitigate the impact of modern ironwork.

1. Readings exceeding 10nT, 15nT or 30nT either side of 0 were replaced by null (dummy) entries, depending on the extent of the interference in each individual area.
2. Any anomalous isolated readings were similarly replaced.
3. The background mean of each grid was reset to 0.
4. The mean reading for every traverse was reset to 0.
5. Typical regular error due to the zig zag operation of the gradiometer was removed.
6. The asymmetric data collection pattern was mitigated by the positive interpolation of data points along the Y axis using the calculation of sin(x)/x.

1.4 Resistivity processing method

1. Isolated high or low readings (noise spikes) were replaced by the mean reading.
2. The impact of geological variation was reduced by the application of a uniform high pass filter with a radius of 8 readings in the X and Y directions.
3. Data were smoothed and weak anomalies highlighted by the application of a low pass filter with a radius of 1 reading in the X and Y directions.
4. Grid edge discontinuities were removed by adding a positive or negative value to grids where a background shift was introduced caused by relocation of the static probes due to insufficient cable length.
5. Further smoothing was achieved by the positive interpolation of data points along the Y and X axes, using the calculation of sin(x)/x.

Fig 1: Location of survey

Fig 2: Map of survey areas

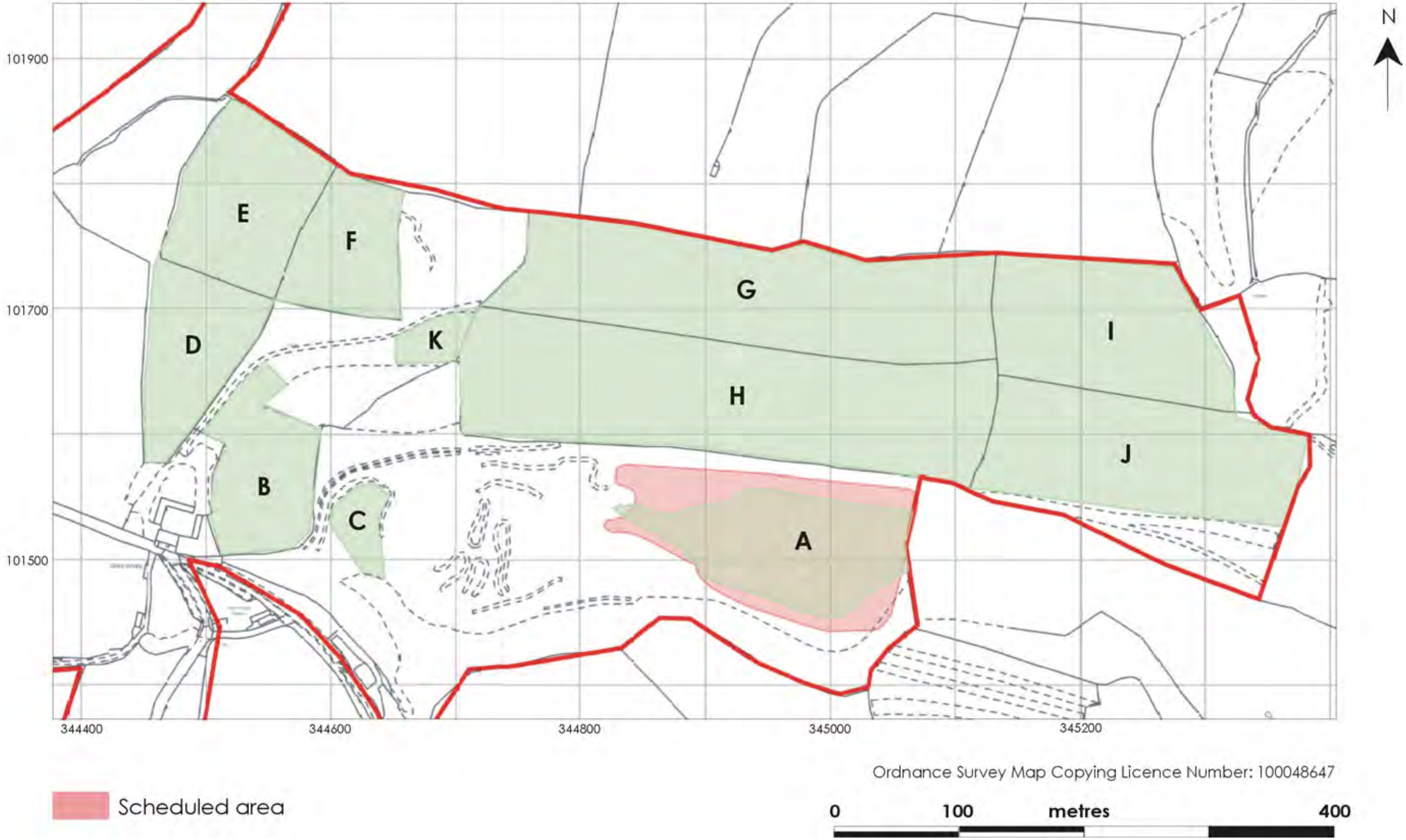


Fig 3: Map of gradiometry survey results

Area A Waddon Hill
Gradiometry and Resistivity Surveys Preliminary Report

A1.0 The survey area *(figs A1, A2 & A3)*

A1.1 Gradiometry

The grid comprises 38 contiguous whole and partial 20m squares covering the plateau on the hilltop which had not been subjected to quarrying. The traverse direction was east – west.

A1.2 Resistivity

The grid comprises 31 contiguous whole and partial 20m squares coving the plateau on the hilltop which had not been subjected to quarrying. The traverse direction was north – south.

Note: The GPS location points for both survey grids are listed in figs A6 and A10.

A2.0 Gradiometry survey results *(figs A4, A5 & A6)*

The survey results reveal a series of parallel and rectilinear anomalies in an east – west linear pattern with a coaxial north – south alignment. The greater part of these are positive magnetic anomalies within the range for ditches/cut features containing thermo remanent material. There are also a number of more amorphous negatively magnetic anomalies generally located along the site boundaries.

The majority of the linears correspond with features on Webster's excavation plan (fig A7). There are, however, a very small number of linears on a different alignment to the dominant east – west trend which could suggest an earlier or later activity phase. These are discussed in more detail in ***A2.1*** and ***A2.2*** below.

The results also show a general scatter of dipolar non-linear anomalies across the whole survey area. These are generally within a range of 5 to 15nT which is within the range for cut features/pits containing thermo remanent material. A clipped colour plot (fig A5) shows the nature of this material, where readings higher than 5nT are included in the maximum red colour band. It is possible that in some areas the strength of these anomalies could have masked any linears with a weaker magnetic signature. The frequency of these anomalies suggest at least one intensive period of occupation on the hilltop.

An overlay of the survey results on Webster's excavation plan (fig A7) reveals some of these non linears correspond with features recorded and numbered on the plan. These are also highlighted in fig A6.

The survey has detected a number of linear and non-linear negative anomalies with readings within the range for possible walls and banks containing non-igneous stone or stone with a low metallic oxide content. These are perceived as negative magnetic anomalies against a background enhanced by decayed organics.

Visible modern ferrous disturbance was provided by a metal gate at the eastern end of the field (**Z**, fig A6).

A2.1 Positive magnetic anomalies *(fig A6)*

1 & 2 Two short parallel linear anomalies generally within a range of 2 to 3nT, although **2** rises to 5nT in places. Within normal range for ditches containing thermo remanent deposits.

3 Generally weak L-shaped anomalies within a range of 0.5 to 3nT. Would appear to form a possible small enclosure. Does not align with the dominant north – south/east –west linear trend.

4 & 5 Two magnetically weak linears, apparently intersecting to possibly form part of an enclosure. Readings are within a range of 1 to 3nT. Within the range for ditches containing organic and weakly thermo remanent material. Does not align with the dominant linear trend.

6 Short linear within a range of 1.5 to 6.5nT. Within normal range for a ditch containing thermo remanent deposits.

7 Parallel linears generally within a range of 2 to 5nT. Within normal range for ditches. Correspond with features on Webster's excavation plan.

8 & 9 Short weak parallel linears within a range of 1 to 3nT. Correspond with features on Webster's excavation plan.

10 Strong linear generally within a range of 5 to 11nT. Within normal range for a ditch containing thermo remanent deposits. Corresponds with major linear on Webster's excavation plan.

11 Linear anomaly within a range of 3 to 6nT but peaking at 22nT about half way along. Within normal range for a ditch containing strongly thermo remanent localised deposits. Corresponds with Webster's excavation plan.

12 Weak, intermittent linear trend within a range of 0.5 to 2nT. Partially corresponds with Webster's excavation plan.

13 Weak linear within a range of 1 to 3nT. Appears to terminate at **11** and aligns with the dominant linear trend. Within normal range for a ditch/gully.

14 Short, irregular linear truncated by the survey limit. Within a range of 3 to 7nT. Position suggests an association with similar anomalies situated along the boundary of the site.

15 Long linear within a range of 2.5 to 5nT. Within normal range for a ditch. Corresponds with a long linear feature on Webster's excavation plan.

16 Weak linear within a range of 0.5 to 2nT. Within normal range for a shallow ditch/gully.

17 L-shaped linear increasing in strength as it heads east. Within a range of 1 to 4.5nT. Corresponds with Webster's excavation plan.

18 Weak intermittent linear anomaly within a range of 1.3 to 2nT. Within the range for a shallow ditch/gully. Aligns with negative linear anomaly **38** (see ***A2.2*** below) which lends confidence to its integrity.

19 Long linear generally within a range of 2 to 3nT but rising to 7nT as it heads east. Corresponds with a long linear feature on Webster's plan.

20 Irregular linear truncated by the survey limit. Generally within a range of 3 to 6nT but rising to 21nT at one point suggesting strongly thermo remanent localised deposit. Position suggests an association with similar anomalies situated along the boundary of the site.

21 Short weak linear within a range of 0.6 to 2nT. Partially corresponds with Webster's excavation plan.

22 Long intermittent linear trend within a range of 1 to 2.8nT. Within normal range for a ditch. Corresponds with what could be part of an enclosure on Webster's excavation plan.

23 Short, weak linear within a range of 0.5 to 1nT. Although extremely weak, runs parallel with **21** and **22** lending confidence to its integrity.

24 Irregular linear within a range of 0.5 to 2nT. Location and alignment could suggest a possible association with the ramparts.

25 Linear anomaly within a range of 2 to 6nT. Runs adjacent to a linear feature on Webster's excavation plan. From its location could be associated with an entrance through the ramparts.

26 Strong linear anomaly running along the limit of the survey area and earthworks recorded on Webster's excavation plan. Generally within a range of 5 to 8nT but rising up to 19nT in places. Within the range for a ditch containing strongly thermo remanent deposits.

27 Series of irregular anomalies, ranging from 4 to 14nT. Within the range for pits/cut features containing strongly thermo remanent deposits. Location suggests an association with earthworks on the periphery of the hilltop.

28 Major irregular linears, generally within a range of 5 to 12 nT but rising to above 20nT in places. Within the range for strongly thermo remanent deposits. Aligns with earthworks at the eastern end of the hilltop

29 Parallel irregular linears within a range of 3 to 6nT. Within the range for ditches containing thermo remanent residues. Alignment and location suggests a possible association with eastern earthwork defences.

30 Intermittent linear within a range of 4 to 8nT. Aligns with the existing earthworks and the linears in **28** although the readings are generally not so strong.

31 Linear groupings of irregular anomalies along the eastern earthworks and the southern periphery of the hilltop. Readings are generally within a range of 6 to 15nT which is within the range for pits/cut features containing thermo remanent material.

A2.2 Negative magnetic anomalies *(fig A6)*

32 Two short parallel linears within a range of -3.5 to -5.5nT. Within normal range for linear features with some stone content. The southern part of **32** is truncated by the edge of the survey grid limiting confidence in interpretation,

33 Two amorphous anomalies within a range of -3.5 to -6nT. Although some negative anomalies appear as a dipolar affect caused by a strong positive, the two areas in **33** would appear to be negative in their own right and are within the range for deposits of stone. Would appear to be associated with the linear grouping of irregular anomalies in **27**.

34 Short, irregular linear within a range of -3 to -4nT. Within normal range for a linear feature which includes some stone content. Runs parallel with the dominant east – west linear trend which lends confidence to interpretation.

35 Amorphous linear trend running parallel with **28**. Within a range of -3.5 to -6.5nT. Location suggests an association with rampart material.

36 Narrow, irregular linear within a range of -2.5 to -4nT. Alignment and location suggests an association with the rampart construction. It is possible that **36** could partially be due to a dipolar response to adjacent strongly positive anomalies but this is not the case along the length of the linear as a whole.

37 Short linear within a range of -2.6 to -4nT. Runs parallel with **35** and appears to be associated with what Webster recorded as an entrance through the ramparts. Readings are within the range for a linear feature with stone content.

38 Weakly negative anomaly aligning with **18**. Within a range of -1 to -2nT. Within the range for a linear feature with some stone content.

39 Groupings of irregular anomalies along the eastern earthworks and the southern periphery of the hilltop. Proximity to anomalies in **31** would suggest an association. Generally within a range of -4 to -6nT.

A3.0 Resistivity survey results *(figs A8, A9 & A10)*

The survey results reveal a series of high and low resistance linear anomalies on varying alignments, some of which correspond with the gradiometry survey results and features on Webster's excavation plan (fig A11). A comparison between the gradiometry and resistivity results can be seen in fig A12 and any correlation noted in ***A3.1*** and ***A3.2*** below.

The results also show a weak northwest – southeast linear trend plus a number of curvilinear anomalies towards the western end of the hilltop. All identified linears are discussed in ***A3.1*** and ***A3.2*** below.

The survey has also detected a number of roughly circular and ovoid low resistance anomalies suggestive of pits/cut features, highlighted in fig A10. Some of these correspond with numbered features on Webster's excavation plan (fig A11). There are also more amorphous areas of high and low resistance which could possibly be due to disturbance resulting from the excavations. Webster's trenches are recorded as being in a herringbone pattern (Webster 1964). Fig A9, which highlights areas of higher and lower resistance in the graduated colour bands, may suggest this arrangement in the roughly rectilinear low resistance areas east of the centre of the plot. These areas are also highlighted in Fig A10.

Areas of high and low resistance are highlighted in fig A9. Fig A10 shows anomalies where the degree of confidence in readings relating to archaeological features is higher. These anomalies are discussed in ***A3.1*** and A***3.2***.

The readings below are after the use of a high pass filter enabling high and low resistance data to be expressed in a bipolar form.

A3.1 Lower resistivity anomalies *(fig A10)*

1 & 2 Three short curvilinear anomalies truncated by the limit of the survey. Readings range from -3 to -6 ohms. Within normal range for shallow ditches/gullies.

3 Linear anomaly with readings ranging from -0.3 to -2.3 ohms. Linear has been truncated by the survey limits but is within the range for a shallow ditch/gully. Corresponds with positive magnetic anomaly **2** (fig A12).

4, 5, 6 & 7 Slight linear trend ranging from -0.8 to -2.9 ohms. Although weak, the parallel alignment lends confidence to their integrity. Alignment corresponds to the herringbone pattern of Webster's excavation trenches (Webster 1964).

8 & 9 Two linears ranging from -1.5 to -4.3 ohms. On a coaxial alignment with **4 – 7** (see above).

10 Diffuse curvilinear anomaly with readings ranging from -4.6 to -8.3nT. Within normal range for a ditch/cut feature. Readings suggest that although apparently bisected by **10**, anomaly **9** may continue to the southeast.

11 L-shaped linear with reading ranging from -0.7 to -2.3 ohms. Location suggests an association with high resistance anomaly **29** (see below).

12 Rectilinear anomaly with readings ranging from -2.3 to -6.6 ohms. Appearance and location suggests an association with high resistance anomaly **30** and could possibly indicate some sort of structure (see ***A3.2*** **30** below).

13 Long linear anomaly generally ranging from -4 to -8 ohms. Within normal range for a ditch. Corresponds with a linear feature on Webster's plan and positive magnetic anomaly **11** (fig A12).

14 Long linear anomaly generally within a range of -6 to -11 ohms. Within normal range for a ditch. Corresponds to Webster's excavation plan and positive magnetic anomaly **10** (fig A12).

15 Short linear apparently intersecting with **14**. Readings range from -4.3 to -5.4 ohms. Partially corresponds with Webster's excavation plan.

16 Linear anomaly with readings ranging from -6 to -9 ohms. Corresponds with linear feature on Webster's excavation plan and positive magnetic anomaly **19** (fig A12).

17 Three amorphous anomalies with readings generally ranging from -6 to -15 ohms. Within normal range for pits/cut features. Corresponds with grouping of positive magnetic anomalies **27** (fig A12).

18 Linear anomaly ranging from -7 to -11 ohms. Within normal range for a ditch. Location and alignment suggests an association with positive magnetic anomaly **25** and negative magnetic anomaly **37** (fig A12).

19 & 20 Amorphous linear anomalies generally ranging from -6 to -9 ohms. Within normal range for ditches most likely associated with the ramparts in this locations. Corresponds with positive magnetic anomalies **28** and **30**, and negative magnetic anomaly **36** (fig A12).

21 Irregular linear with readings ranging from -4.2 to -8 ohms. Within normal range for a ditch. Location suggests association with the nearby ramparts. Partially corresponds with positive magnetic anomalies in **29** (fig A12).

A3.2 Higher resistivity anomalies *(fig A10)*

22 Linear anomaly ranging from 7.4 to 12.3 ohms. Anomaly is truncated by the extent of the survey grid limiting confidence in interpretation.

23 Short linear ranging from 7.4 to 12.3 ohms. Anomaly is truncated by the limit of survey.

24 & 25 Two somewhat amorphous linears generally within a range of 6 to 8 ohms. Within normal range for linear features with stone content.

26 Two amorphous areas of high resistance with readings generally ranging from 12 to 24 ohms. Within the range for substantial stone deposits.

27 Short linear with readings ranging from 7 to 13 ohms. Partially corresponds with features on Webster's excavation plan,

28 Short linear ranging from 9.3 to 10.3 ohms. Aligns with a linear feature on Webster's excavation plan.

29 & 30 Series of parallel and intersecting linears, generally within a range of 8 to 11 ohms. Within the range for structures/cut features with stone content. Partially corresponds with features on Webster's excavation plan and positive magnetic anomaly **7** (fig A12).

31 Linear anomaly with reading ranging from around 3.5 to 8.3 ohms. Within normal range for a cut feature with some stone content. Aligns with positive magnetic anomaly **16** (fig A12).

32 Long, rather weak and intermittent linear trend with readings generally ranging from 4 to 7 ohms. Possible ditch with some stone content but confidence in interpretation is limited due to its generally weak and irregular nature.

33 Amorphous areas of high resistance with readings generally ranging from 14 to 21 ohms. Within the range for substantial stone deposits. Proximity to positive and negative magnetic anomalies (**27** and **33**, fig A12) suggests a possible association.

34 Irregular high resistance anomaly, generally ranging from 14 to 18 ohms. Within the range for a substantial stone deposit. Location could suggest an association with rampart structures, however quarrying activity in this area could possibly also account for this anomaly**.**

35 Irregular linear trend, generally ranging between 3 and 9 ohms. Location suggests bank material associated with surviving ramparts.

36 Amorphous and diffuse area of high resistance anomalies, generally ranging between 5 and 20 ohms. Within the range for a stone rubble spread.

37 Linear trend generally ranging from 6.3 to 12 ohms. Partially corresponds with a linear feature along the periphery of the hilltop on Webster's excavation plan.

38 Two amorphous areas of high resistance with readings generally ranging from 17 to 27 ohms. Within the range for substantial deposits of stone. Proximity to positive and negative magnetic anomalies (**31** and **39,** fig A12) suggests an association.

A4.0 Area A conclusion

The degree of confidence in identified anomalies is generally high. Both the gradiometry and resistivity surveys have detected major linear anomalies corresponding to Webster's excavation plan. A comparison between the two surveys (fig A12) demonstrates that although in some instances the different techniques have recorded the same major linears, both have also picked up different anomalies which when put together help to complete the overall picture of the archaeology on the hilltop. The results for both surveys appear to confirm Webster's excavation plan.

It is likely that a significant proportion of the non-linears belong to the same activity phase as the dominant linear trend. This is supported by the fact that some of the stronger dipolar anomalies directly correspond with numbered features on Webster's plan. However, the frequency and strength of the non-linear spread would suggest more than one occupation period.

Both surveys have also detected a small number of linears on differing alignments not recorded by Webster which could suggest different activity phases to the Roman occupation of the hilltop. It is also possible that some of the archaeological features, particularly the defensive earthworks, could have already been in existence before the Roman fort was constructed and re-modelled during the Roman occupation.

The primary aims of the hilltop survey were to corroborate Webster's excavation records and to locate any previously undiscovered, possibly Iron Age, archaeological features on the hilltop. Both gradiometry and resistivity surveys have detected demonstrable archaeological features which support both these objectives.

Fig A1: Location of survey Area A

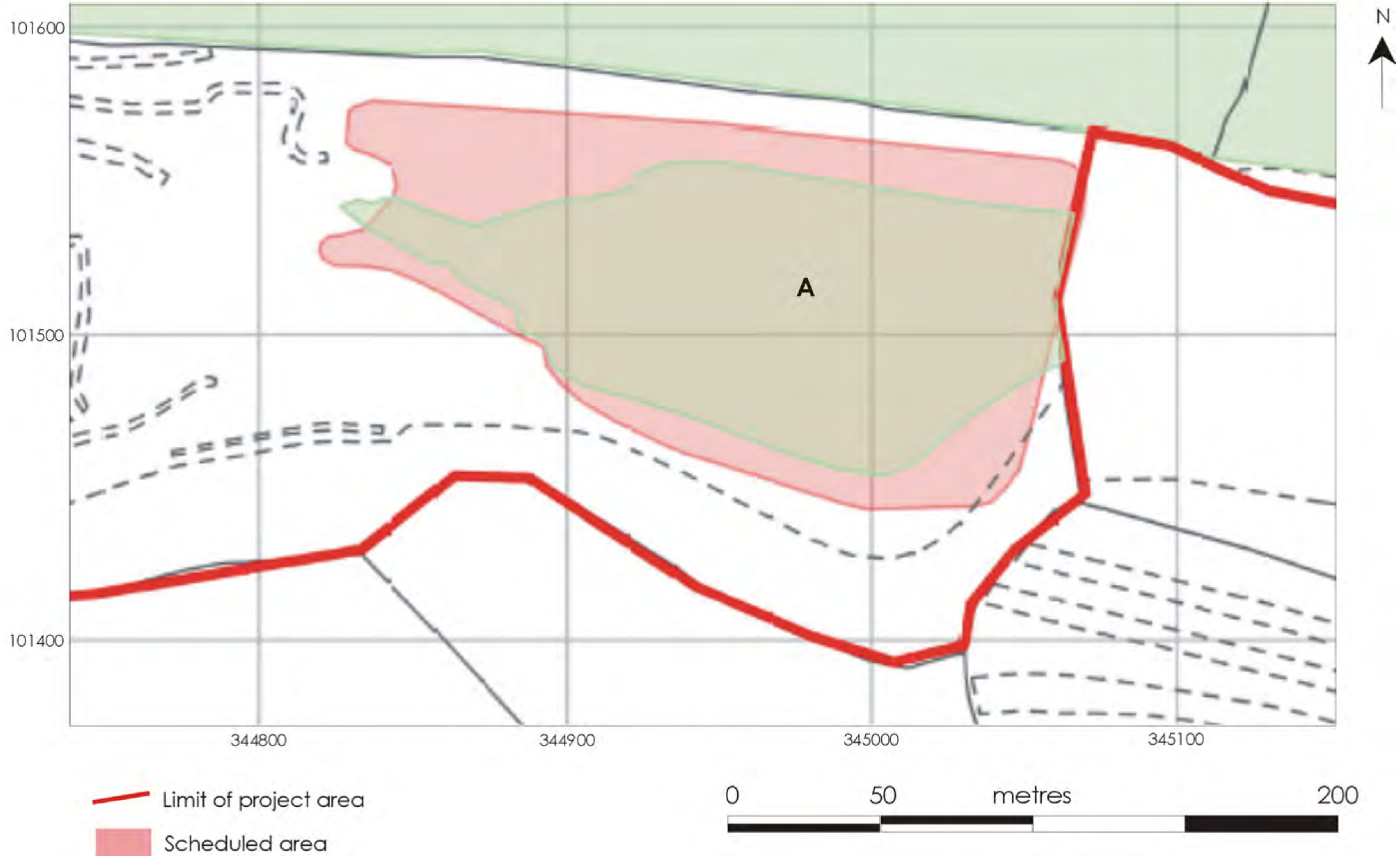


Fig A2: Location of gradiometry survey

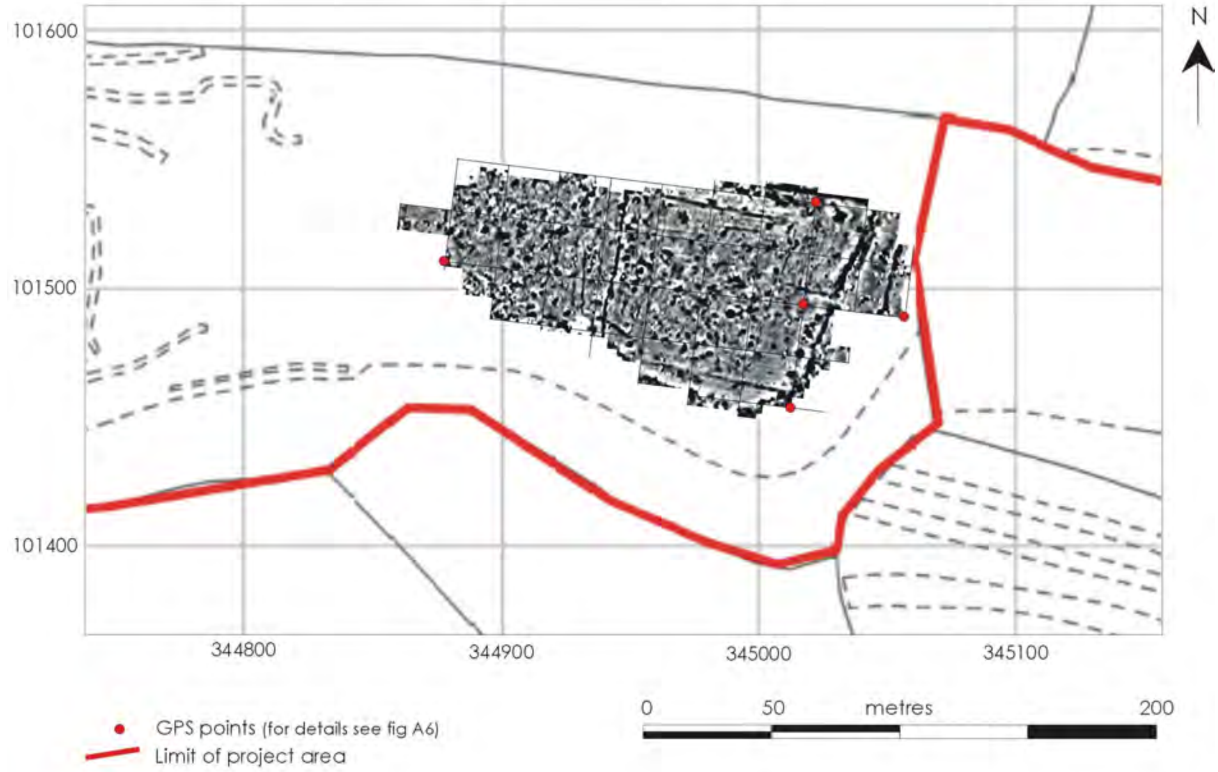


Fig A3: Location of resistivity survey

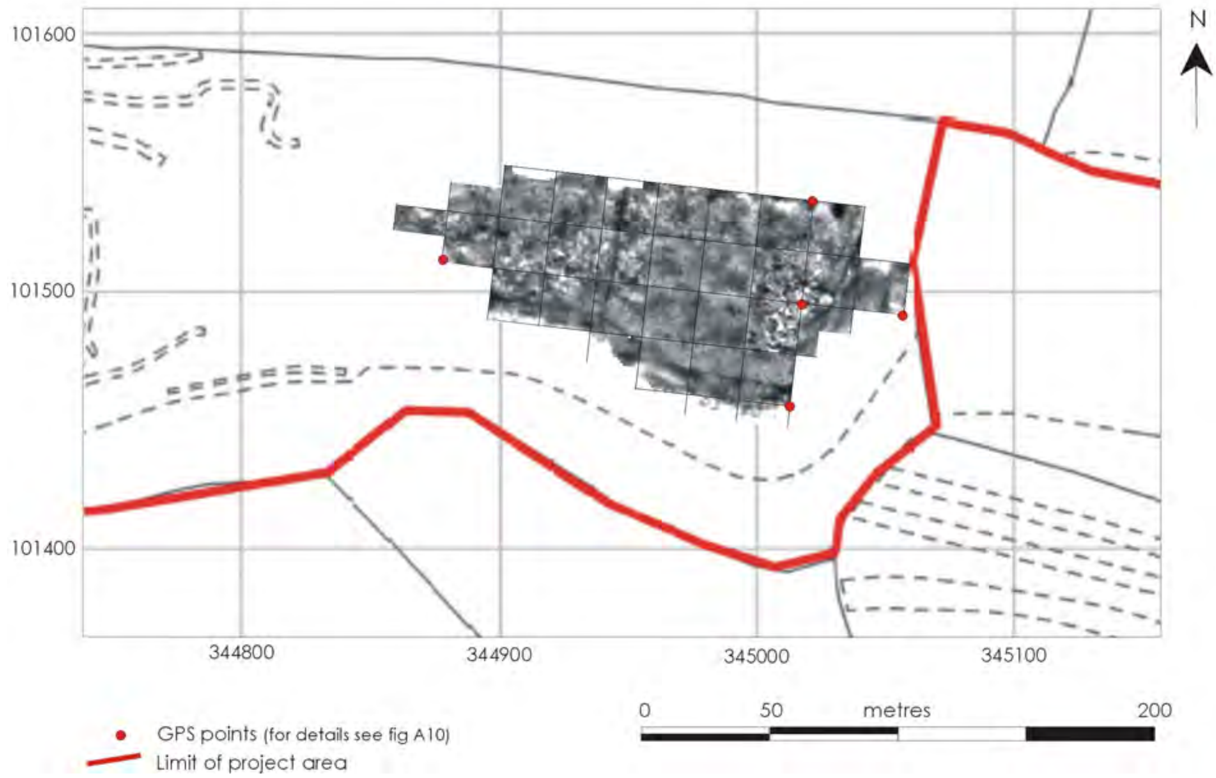


Fig A4: Gradiometry survey results

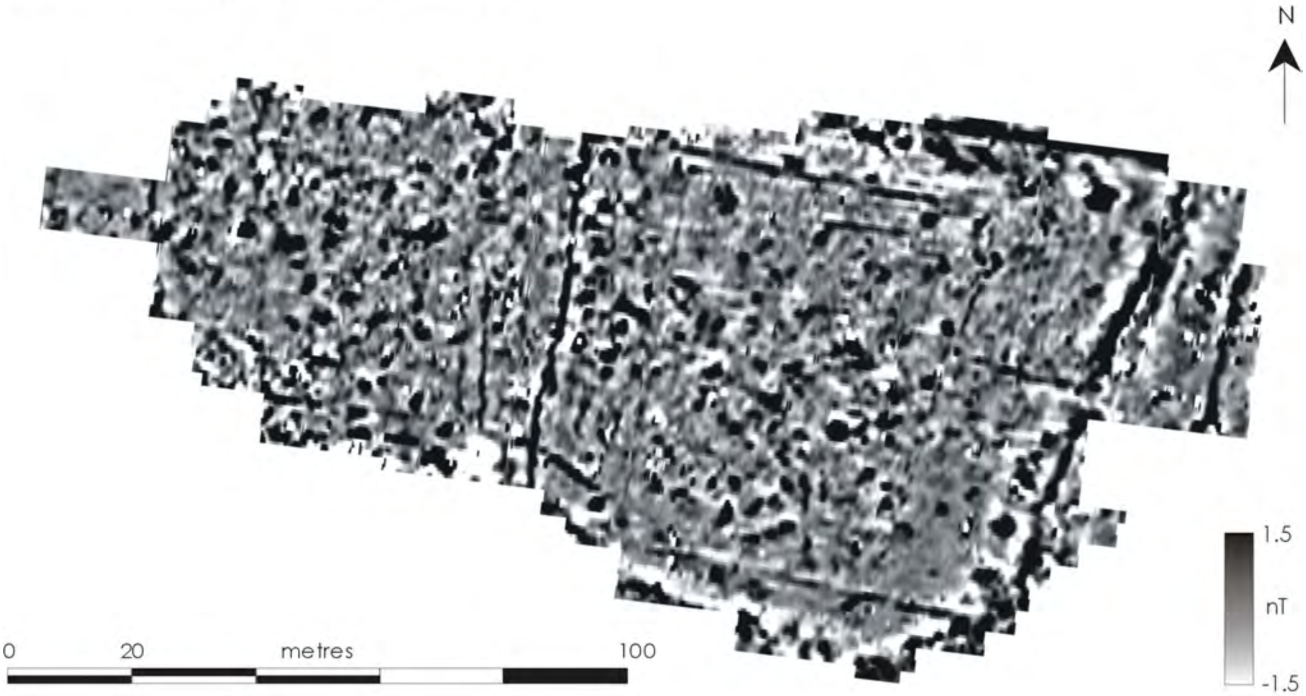


Fig A5: Highlighted gradiometry results

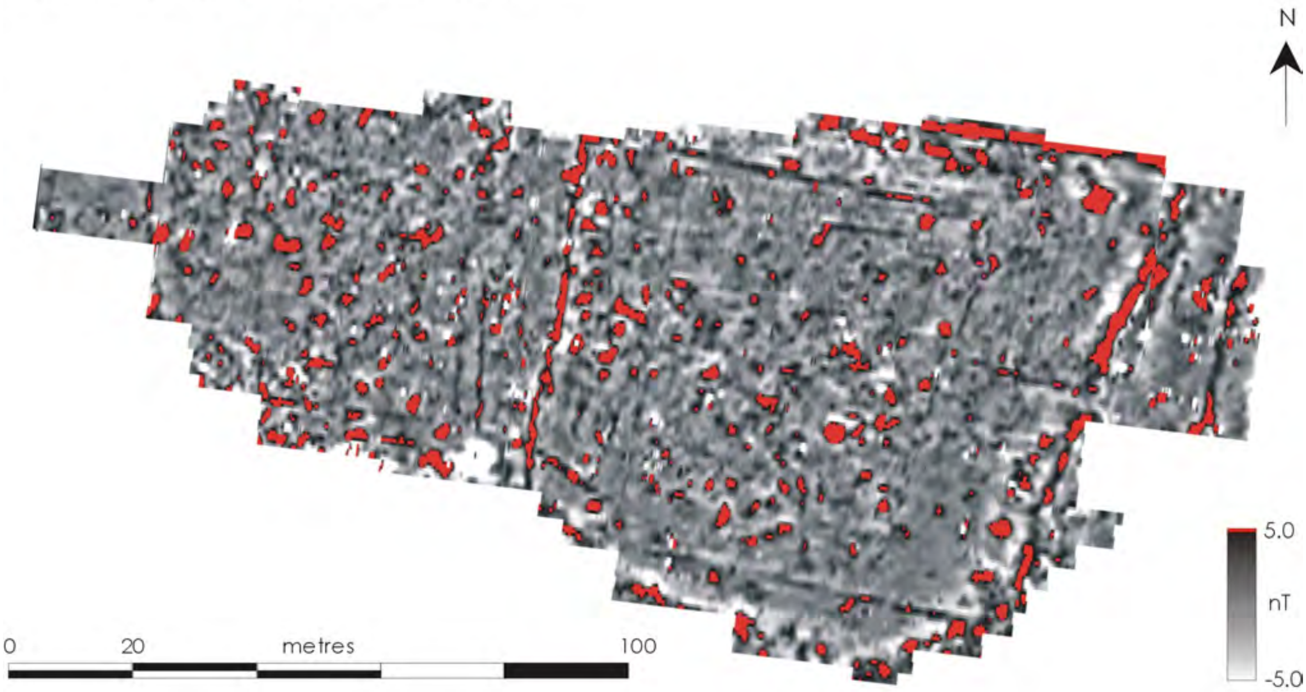


Fig A6: Gradiometry interpretation

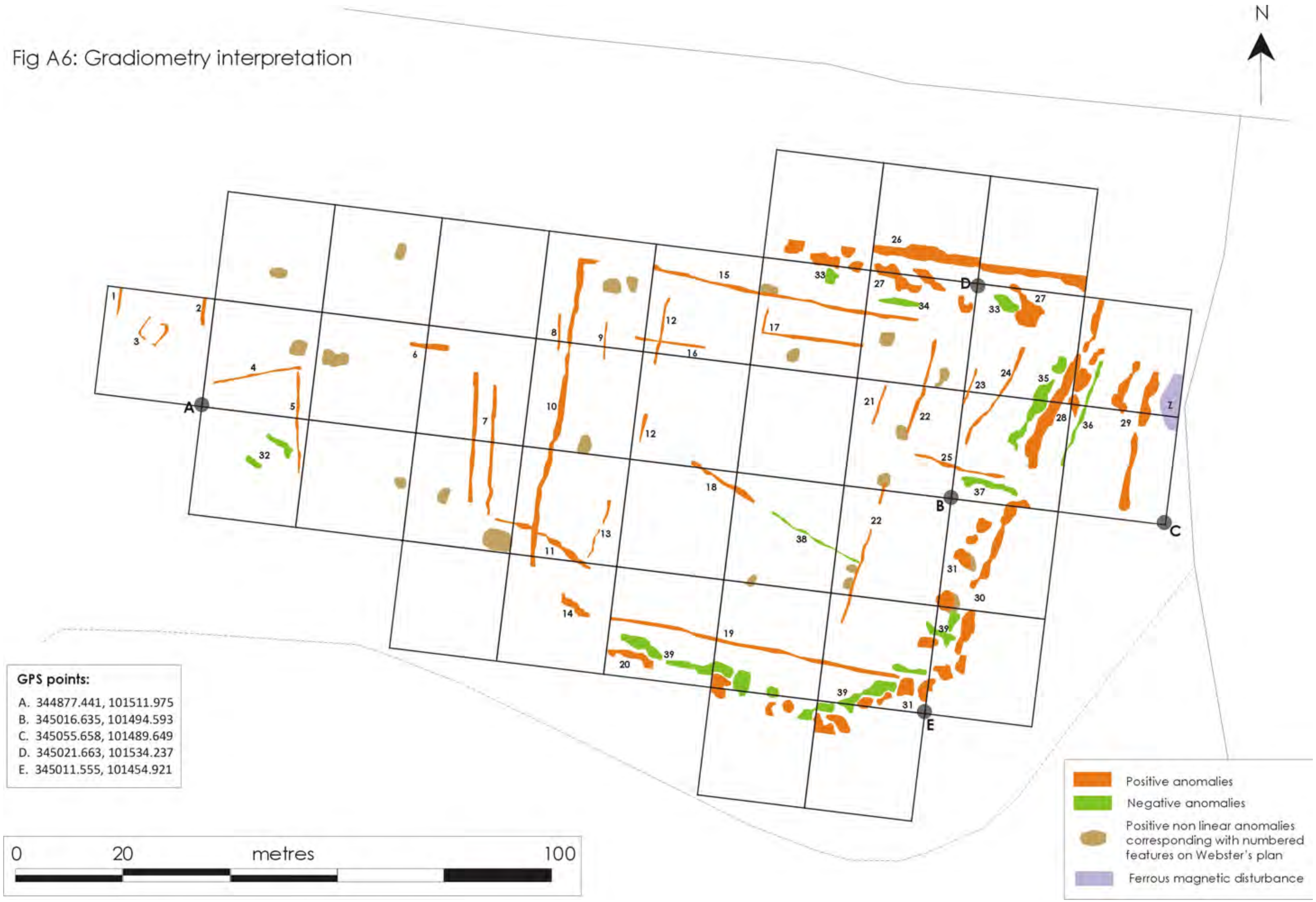


Fig A9: Gradiometry interpretation with Webster's excavation plan

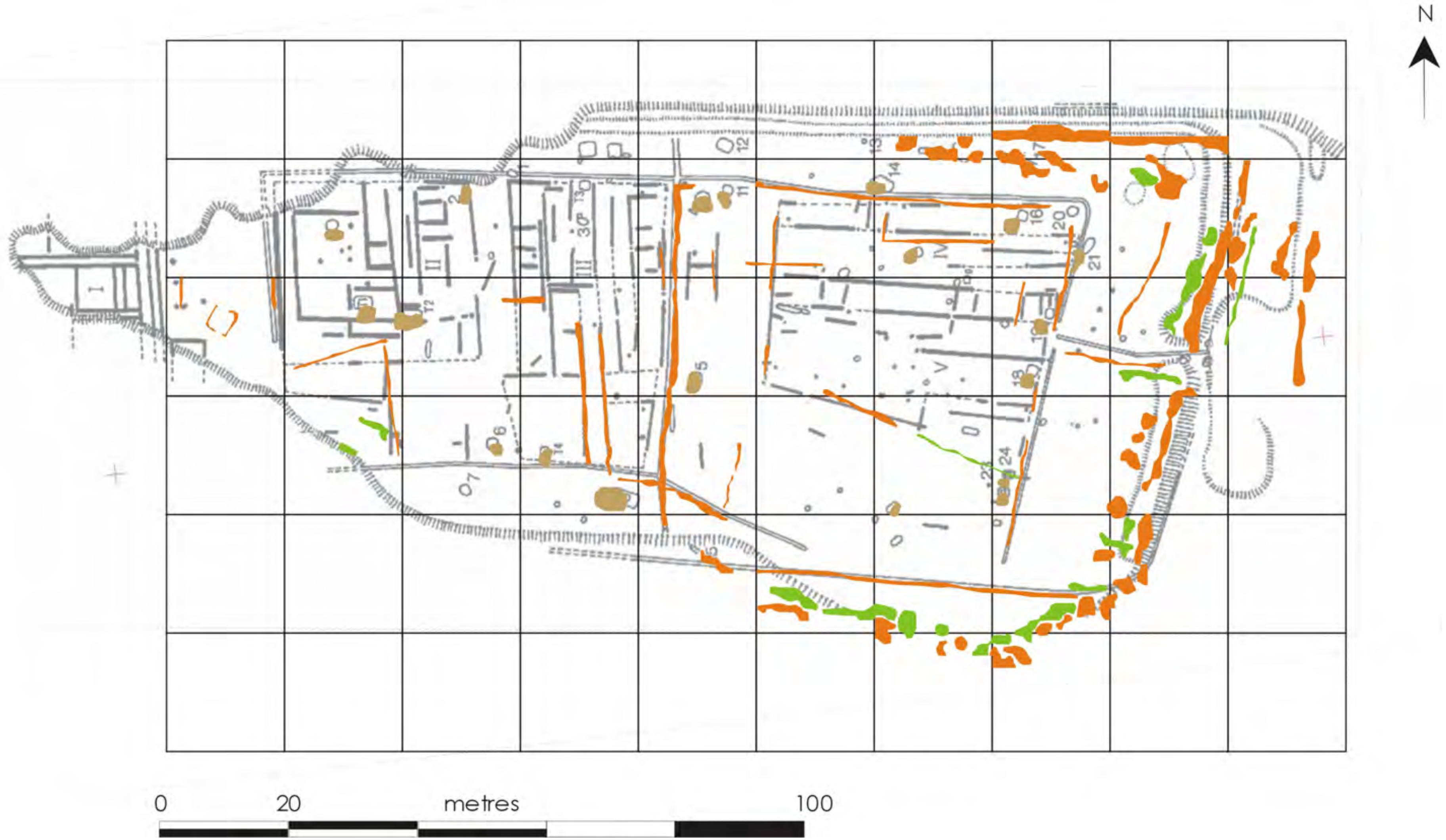


Fig A8: Resistivity survey results

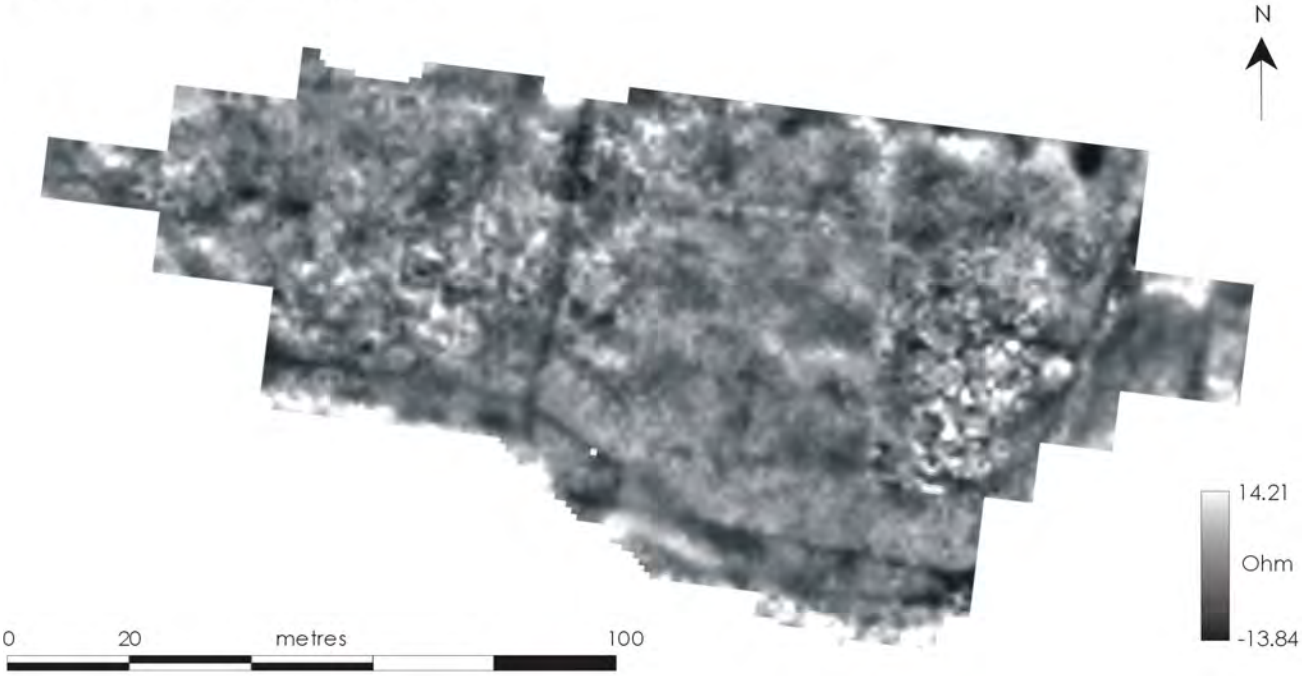


Fig A9: Highlighted resistivity results

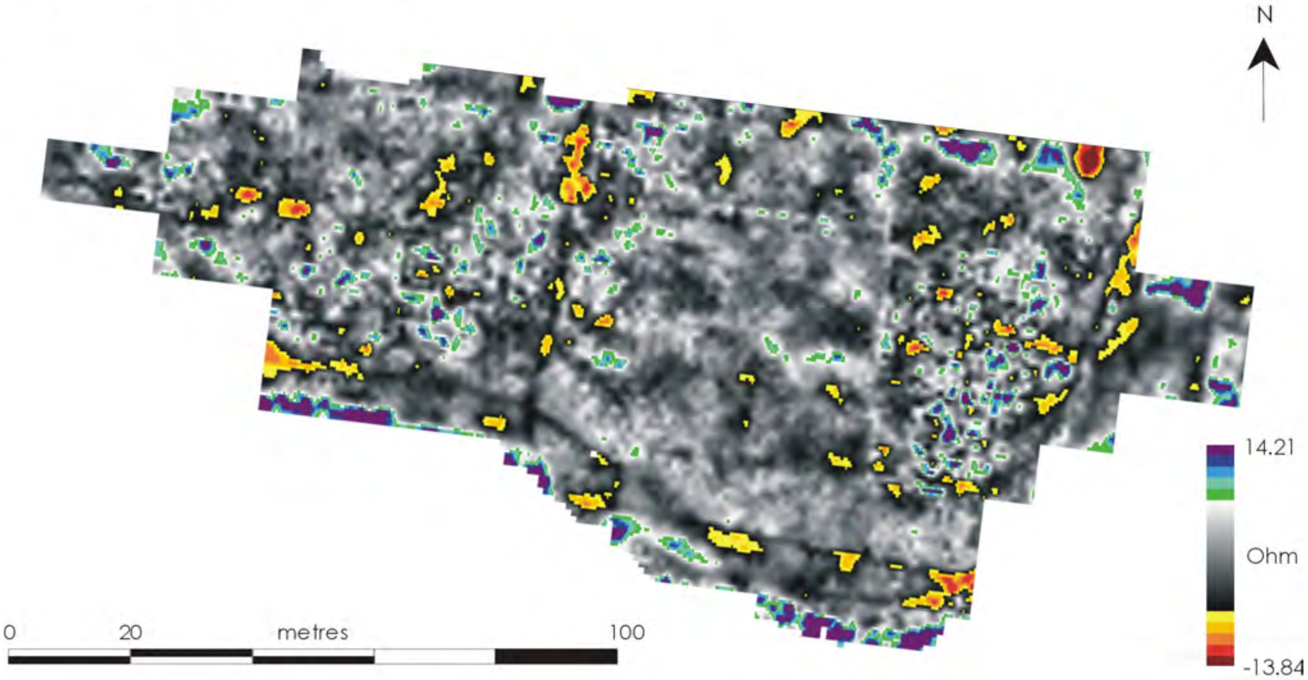


Fig A10: Resistivity interpretation

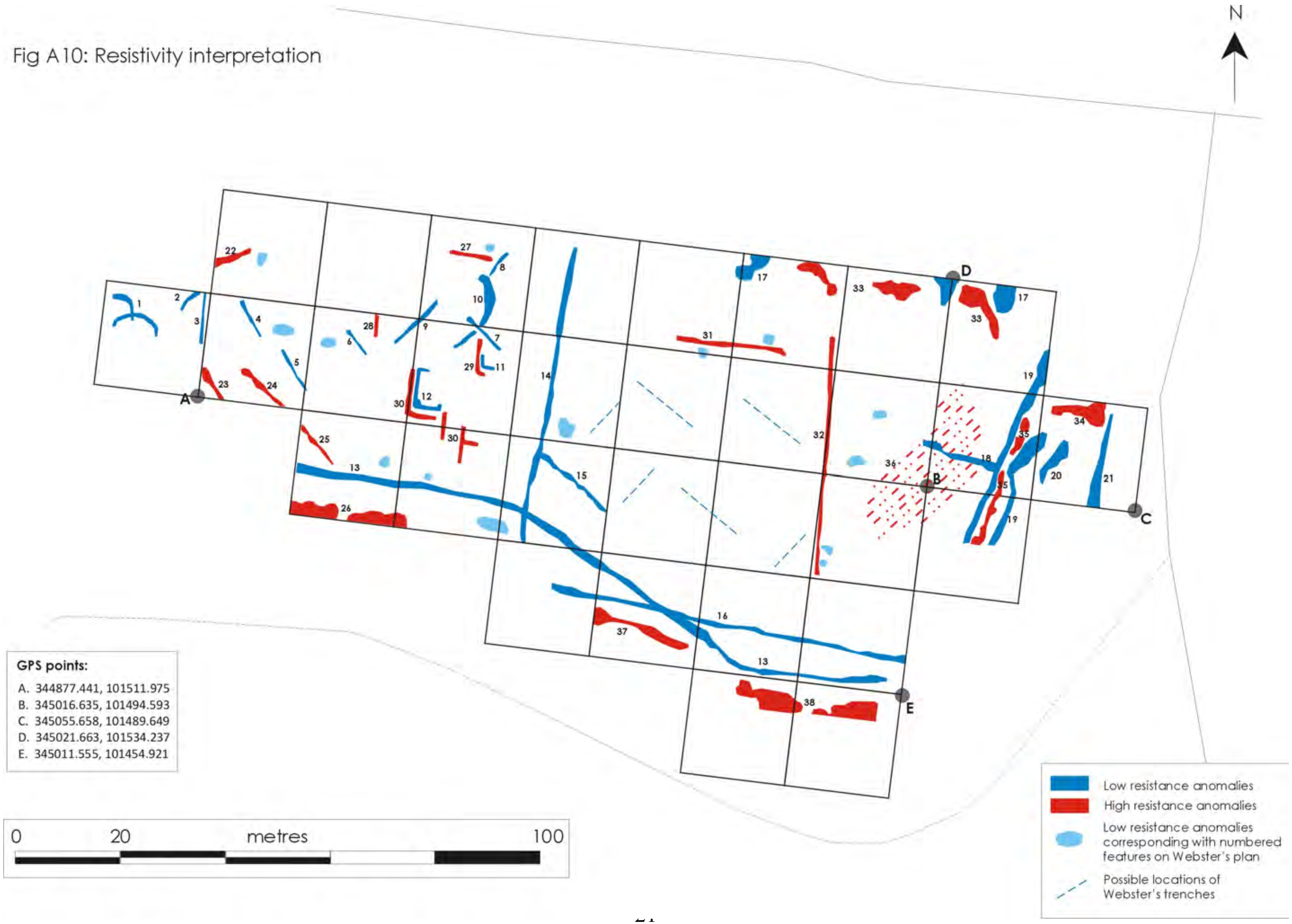
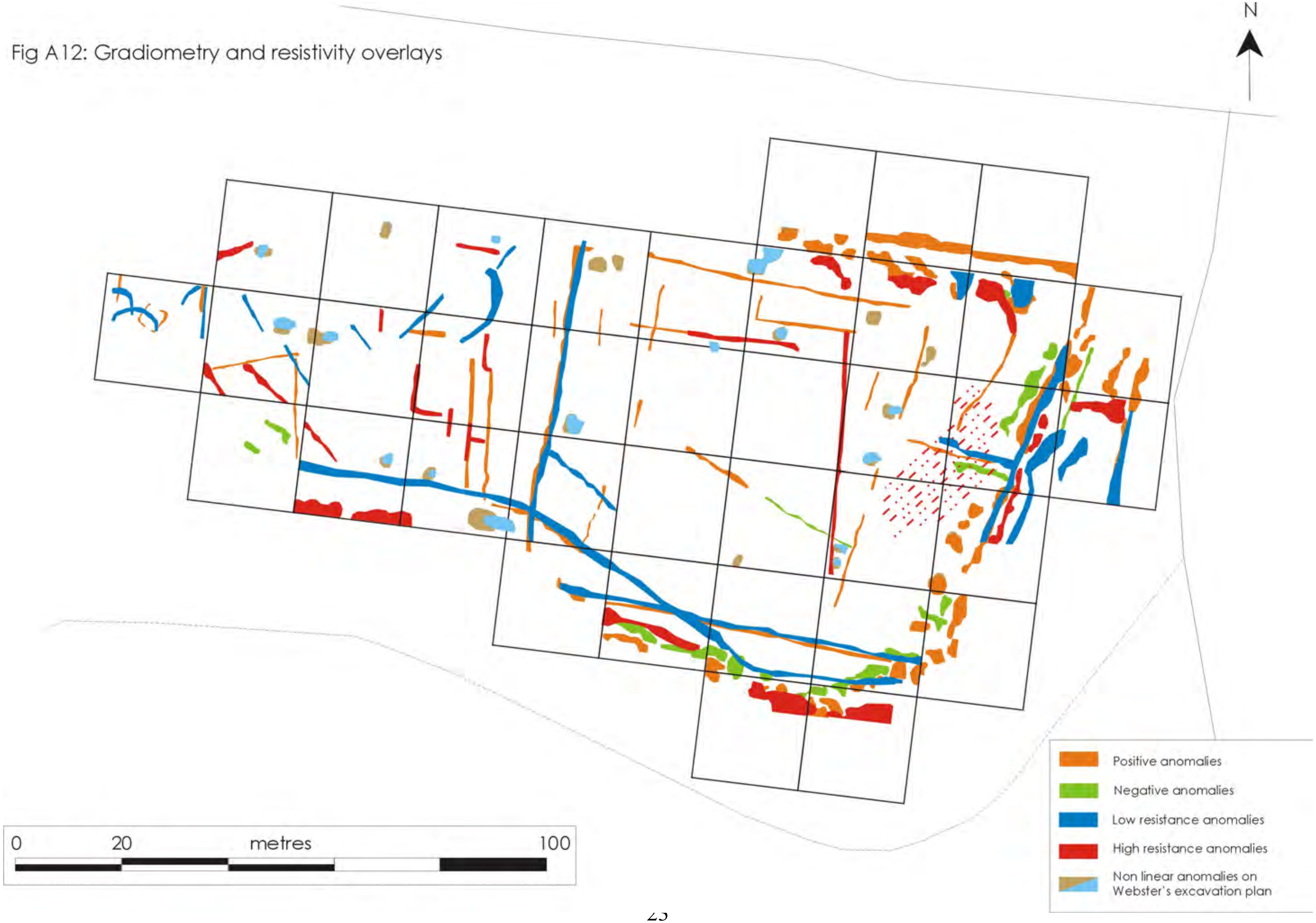


Fig A11: Resistivity interpretation with Webster's excavation plan

Fig A12: Gradiometry and resistivity overlays



Areas B and C Stoke Knapp Farm
Gradiometry Survey

B/C1.0 The survey area *(figs B/C1 & B/C2)*

Area B: The grid comprises 22 contiguous whole and partial 20m squares covering the southern part of this area which has not been disturbed by quarrying. The field slopes downhill towards Stoke Knapp Farm to the west. The traverse direction was northeast – southwest.

Area C: The grid comprises 6 contiguous whole and partial 20m squares covering a small area to the east of Area B which has not been disturbed by quarrying. This area slopes steeply downhill to the west. The traverse direction was north – south.

Note: The GPS location points for both survey grids are listed in fig B/C5.

B/C2.0 Survey results *(figs B/C3, B/C4 & B/C5)*

Area B: The results are dominated by a major ferrous magnetic linear due to a pipeline running across the field (**16**, fig 5). There are also a number of other linears of varying appearance, alignment and magnetic character, some of which could be geological. All anomalies are discussed in ***B/C2.1*** and ***B/C2.2*** below.

Apart from the linears, Area B shows very little activity. A comparison between Areas B and C in fig B/C4 demonstrates this where readings between 4 to 8nT and -4 to -8nT are highlighted in the maximum and minimum colour bands. Area B is overall much quieter magnetically than Area C.

Area C: The survey results reveal three major linear anomalies curving north – south across the hillside. Readings are consistent with major cut features/ditches. The survey has also detected a number of weaker, more amorphous linears on varying alignments.

There are also a number of roughly circular and ovoid anomalies generally within a range of 8 – 25nT which is consistent with cut features/deposits of highly thermo remanent material. A clipped colour plot (fig B/C4) shows the nature of this material, where readings higher than 8nT are included in the maximum colour band.

All major anomalies are discussed in ***B/C2.1***and ***B/C2.2*** below.

B/C2.1 Positive magnetic anomalies *(fig B/C5)*

1 Narrow linear anomaly within a range of 2.5 to 4nT. Within normal range for a ditch. **1** appears to originate/terminate at positive magnetic anomaly **4**.

2 Two adjacent circular and L-shaped anomalies generally within a range of 3 to 6nT. Within the range for deposits/cut features containing thermo remanent material. Location suggests an association with negative linear anomaly **12**. Proximity to the disturbed area to north could suggest a link with quarrying activity.

3 & 4 Two irregular, amorphous anomalies generally within a range of 4 to 7nT. These anomalies are of similar appearance and readings to others detected in survey Areas H and J and are likely to be geological in origin.

5 Very weak and intermittent trend running across the survey area. Readings are generally within a range of 0.5 to 1nT. Their parallel nature could suggest they are possibly due to former agricultural activity although the steepness of the slope could refute that.

6 Parallel linear anomalies generally within a range of 5 to 11nT. Within normal range for ditches containing deposits of thermo remanent material.

7 Amorphous linear running parallel with **6**. Generally within a range of 6 to 10nT but rising to 20+nT in places. Within the range for a ditch/cut feature containing strongly thermo remanent localised deposits. **7** follows the line of a ridge at the top of the slope and demarcates the start of the quarried out area to the east.

8 Two relatively weak irregular linear trends within a range of 3.5 to 5nT. Within normal range for ditches/gullies. Their irregular nature may suggest a geological rather than anthropogenic origin.

9 Short, weak linear within a range of 1 to 2.3nT. Within normal range for a gully.

10 Two curvilinear anomalies within a range of 2 to 3.5nT. Within normal range for ditches/gullies.

11 L-shaped linear within a range of 2 to 5nT. Within normal range for a ditch/cut feature.

B/C2.2 Negative magnetic anomalies *(fig B/C5)*

12 Linear trend within a range of -1 to -2.5nT. Corresponds with the location of a bank in the field.

13 Amorphous linear within a range of -2 to -4nT. Alignment and location suggest a possible association with positive magnetic anomaly **3**.

14 Very weak linear generally within a range of -0.3 to -0.8nT. Alignment with linear trend **5** lends confidence to the integrity of **14**.

15 Grouping of amorphous anomalies, generally within a range of -3 to -6nT. Location suggests a possible association with positive linear anomaly **6**. Within normal range for deposits/cut features with stone content.

B/C3.0 Areas B & C Conclusion

The degree of confidence in identified anomalies ranges from high in the case of Area C to fairly low in Area B. Apart from positive magnetic linear **1**, Area B does not appear to have detected much evidence for anthropogenic activity on the hillslope. In contrast, Area C has detected significant parallel linear anomalies curving north – south around the hillside. These are consistent with ditches possibly associated with a former trackway or hillfort defences.

Area C also contains a small number of other anomalies which may be associated with occupation activity in this area. However, the restricted survey area limits confidence in identification.

Fig B/C1: Location of survey Areas B and C

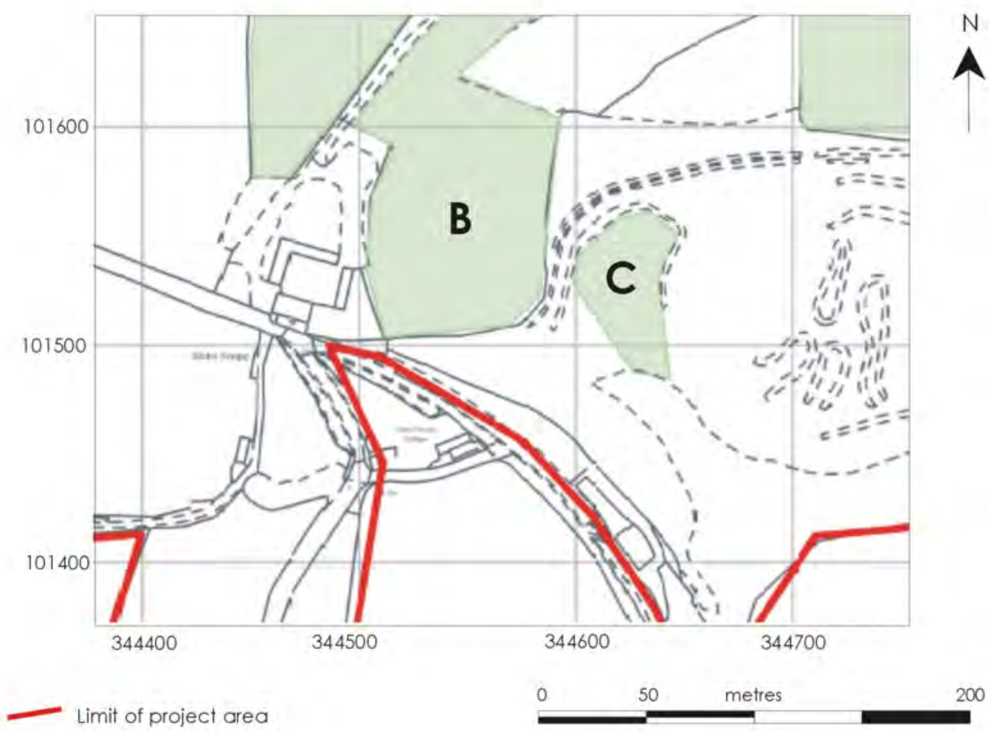


Fig B/C2: Location of surveys B and C

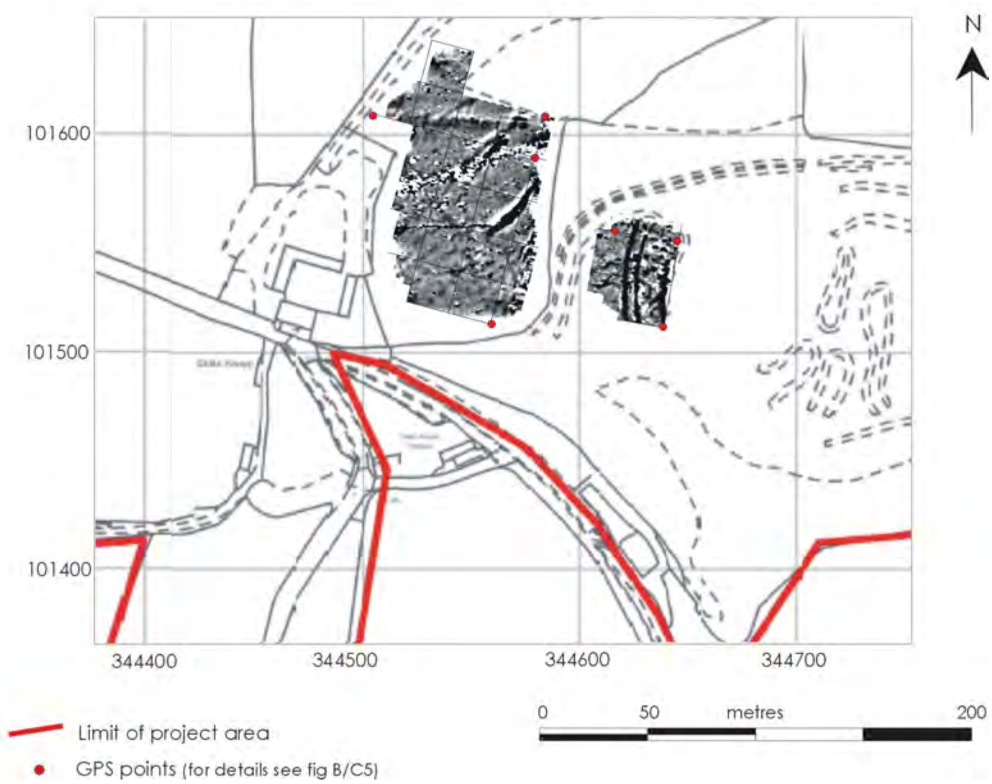


Fig B/C3: Survey results for Areas B & C

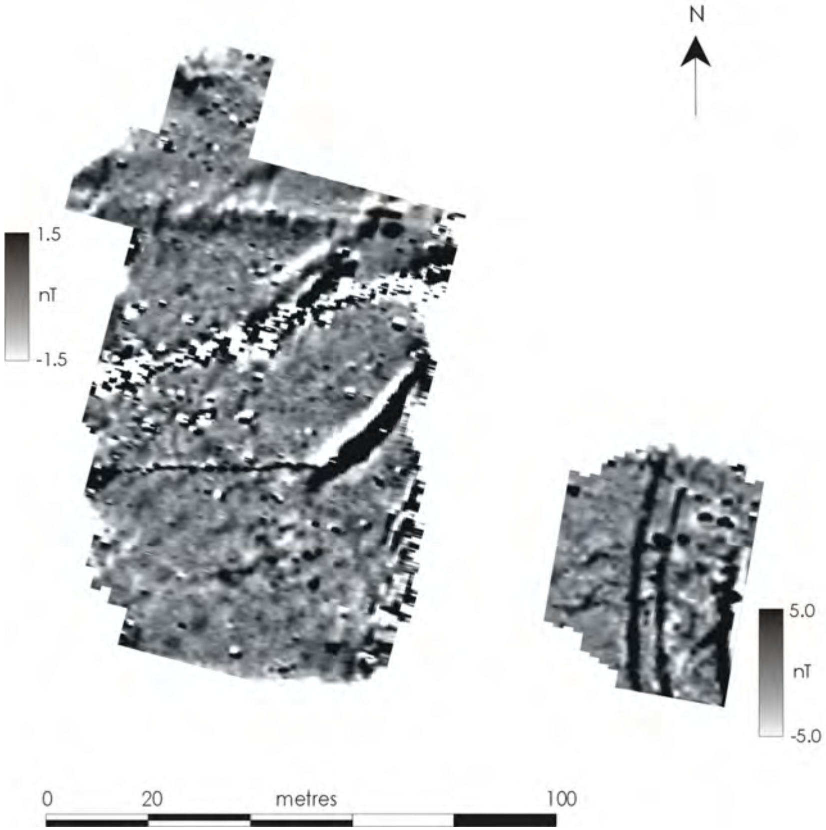


Fig B/C4: Highlighted survey results for Areas B & C

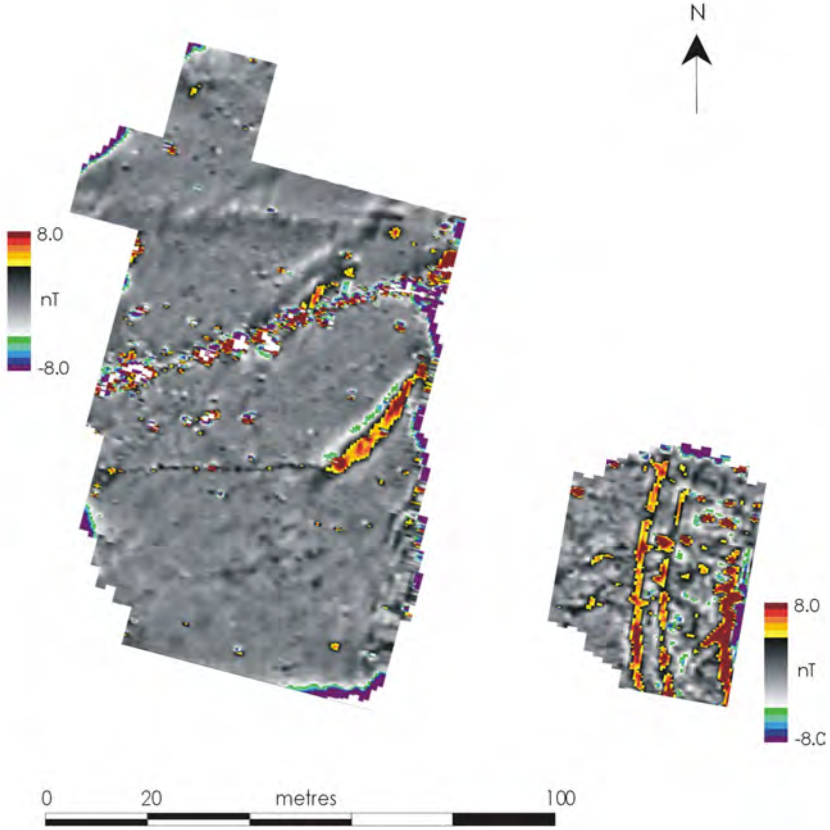
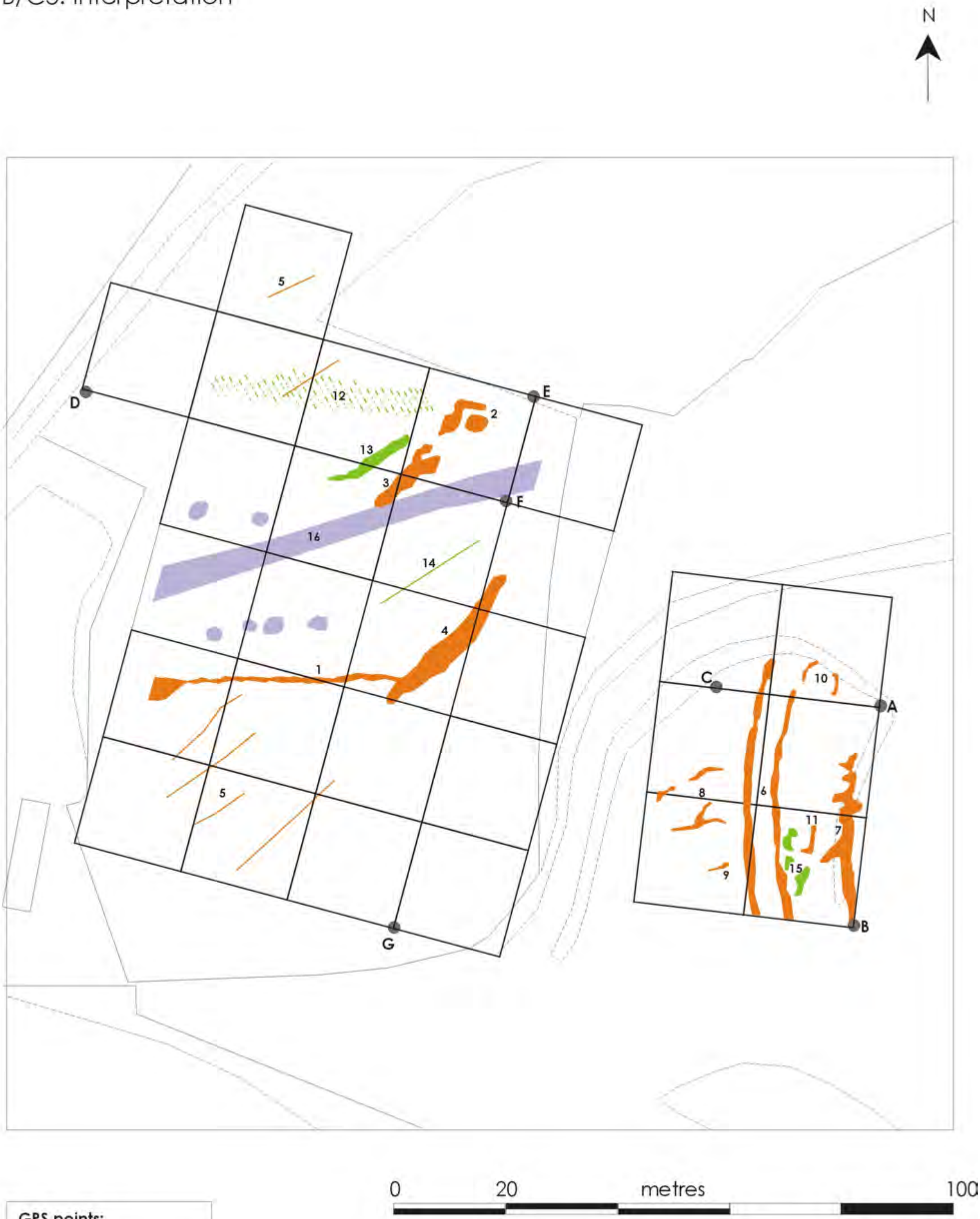


Fig B/C5: Interpretation



GPS points:

A. 344647.985, 101553.047
B. 344643.017, 101513.372
C. 344618.388, 101556.494
D. 344504.064, 101609.092
E. 344584.232, 101927.927
F. 344579.06, 101589.617
G. 344559.22, 101512.538

Positive anomalies
Negative anomalies
Ferrous magnetic disturbance

Area D Stoke Knapp Farm
Gradiometry Survey

D1.0 The survey area *(figs D1 & D2)*

The grid comprises 26 contiguous whole and partial 20m squares covering the whole of a triangular shaped field to the north of Stoke Knapp Farm. The field is situated on a curving uphill slope to the southeast. The traverse direction was north – south.

Note: The GPS location points for the survey grid are listed in fig D5.

D2.0 Survey results *(figs D3, D4 & D5)*

The results for Area D reveal very little evidence of previous occupation or activity phases. There are a small number of faint and irregular linear trends but confidence in their integrity is limited due to their weak and amorphous nature.

There is a general scatter of small, irregular non-linear anomalies across the survey area. A clipped colour plot (fig D4) shows the nature of the spread of this material, where readings higher than 5nT are included in the maximum red colour band. These readings are within the range for thermo remanent material, however they could also be caused by modern ferrous magnetic interference associated with modern agricultural practices.

All major anomalies are discussed in **D2.*1***and ***D2.2*** below.

D2.1 Positive magnetic anomalies *(fig D5)*

1 Very weak parallel linears generally within a range of 0.3 – 1nT. Although extremely weak, their parallel nature lends confidence to their integrity.

2 & 3 Two weak and amorphous, parallel linear trends generally within a range of 1 to 1.5nT. Identification is limited due to their magnetically weak signature and nature.

4 Weak and diffuse anomaly within a range of 0.3 to 1nT. Would appear to run perpendicular to **2** and **3** although this may be coincidental.

5 Two very weak linears possibly on a coaxial alignment. Within a range of 0.3 to 1.7nT. Identification is limited due to their magnetically weak character.

6 Area of irregular dipolar anomalies, generally within a range of 5 to 11nT. Adjacent to the gateway into the field and therefore likely to be due to modern material.

D2.2 Ferrous magnetic anomalies *(fig D5)*

7 Ferrous magnetic linear corresponding with the former line of the fence.

8 There is no visible surface feature to account for this major dipolar anomaly.

D3.0 Area D Conclusion

The degree of confidence in identified anomalies is generally low. Although the survey has detected a number of very weak and amorphous linear trends, confidence in their integrity is limited due to their magnetically weak character and indeterminate appearance.

Fig D1: Location of survey Area D

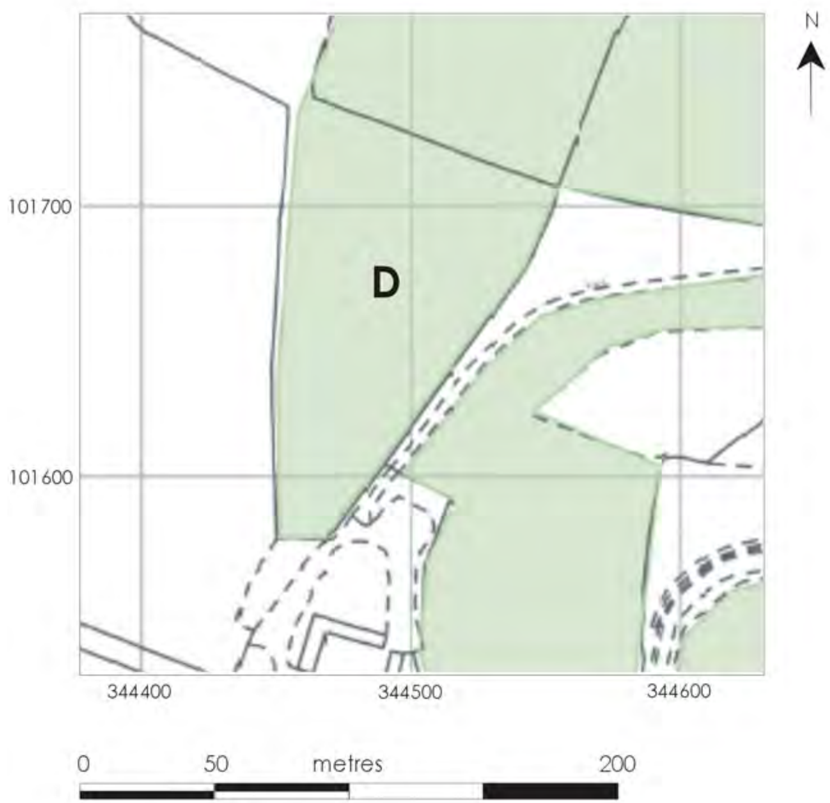


Fig D2: Location of survey D

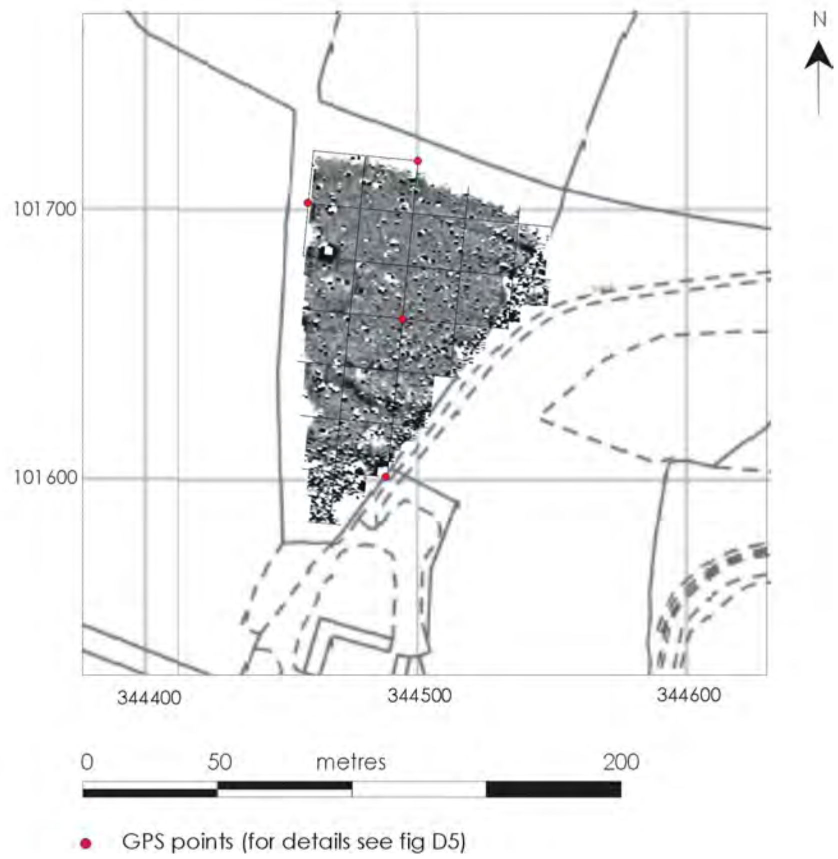


Fig D3: Survey results for Area D

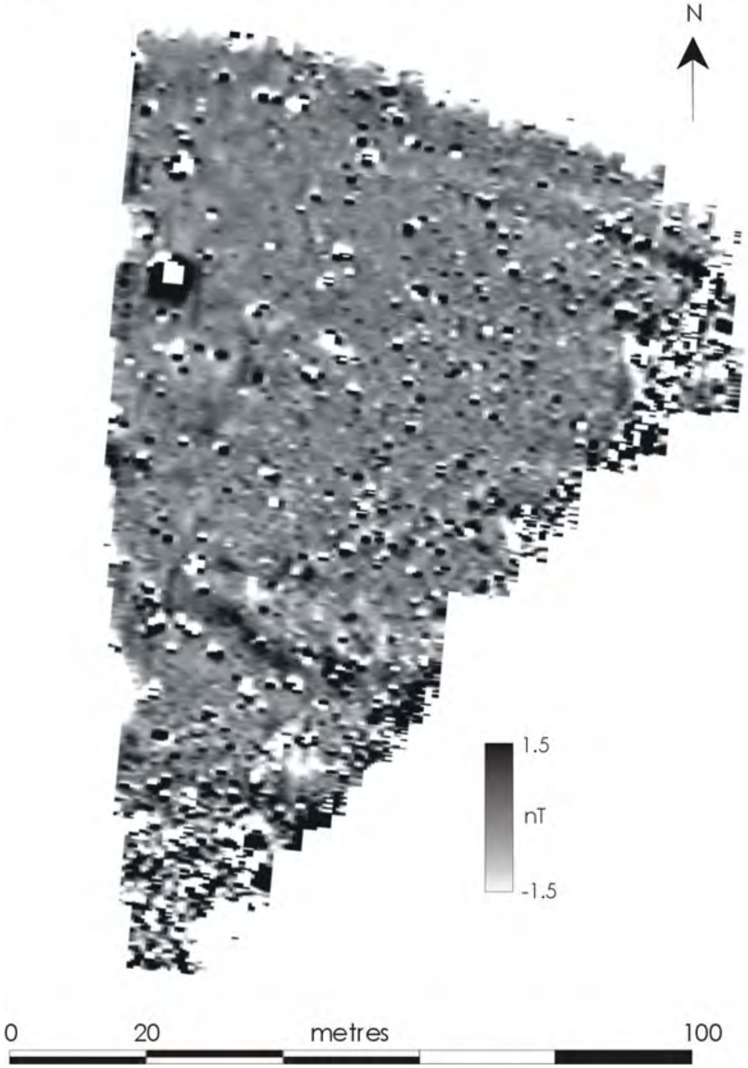


Fig D4: Highlighted survey results for Area D

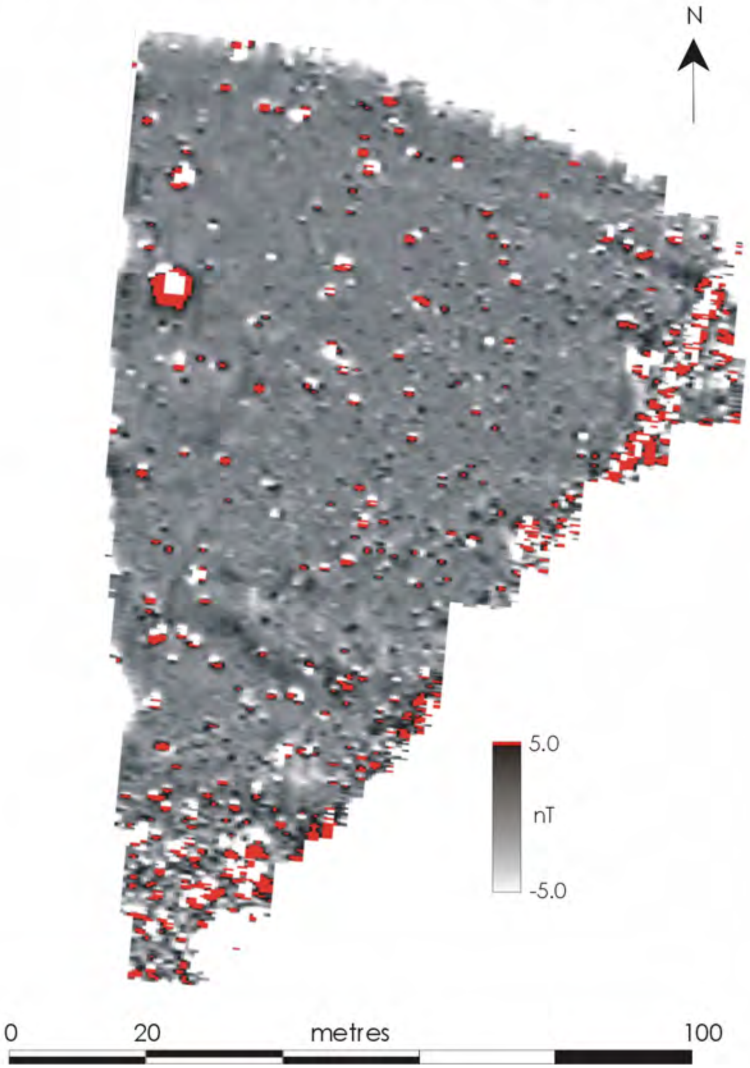
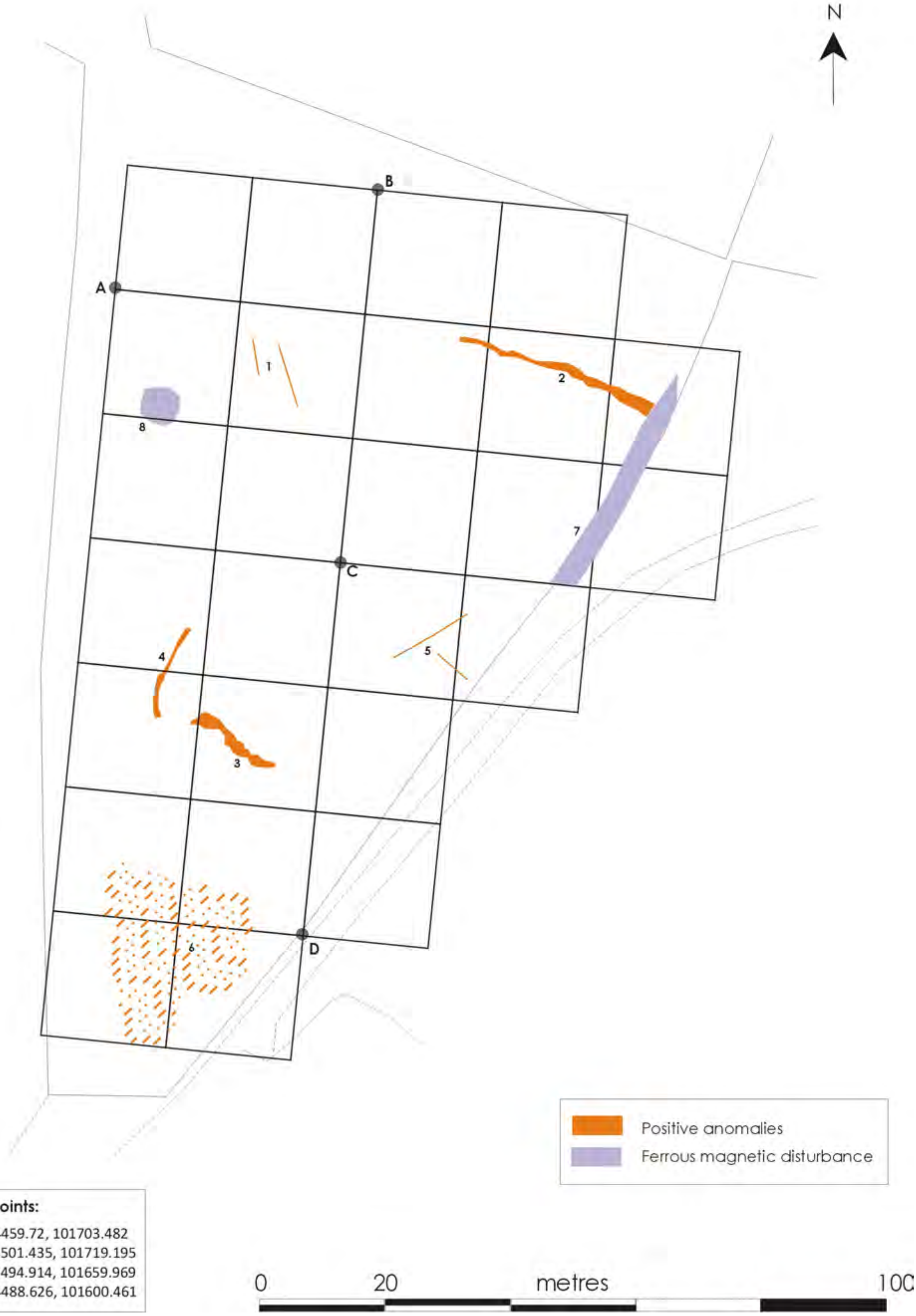


Fig D5: Interpretation



GPS points:

A. 344459.72, 101703.482
B. 344501.435, 101719.195
C. 344494.914, 101659.969
D. 344488.626, 101600.461

Area E Stoke Knapp Farm
Gradiometry Survey

E1.0 The survey area *(figs E1 & E2)*

The grid comprises 35 contiguous whole and partial 20m squares covering the whole of a rectangular field approximately 200m north of Stoke Knapp Farm. It is situated on a steep, western-facing slope. The traverse direction was northeast – southwest.

It should be noted that the fence along the eastern field boundary has recently been replaced. Fig E2 shows the original fenceline. Fig E5 shows the location of the new fence.

Note: The GPS location points for the survey grid are listed in fig E5.

E2.0 Survey results *(figs E3, E4 & E5)*

The results for Area E show a network of linears crossing the field (fig E3). Readings for these linears are very weak, generally within a range of 0.5 to 1nT which can severely limit confidence in their integrity. The majority are on a northwest – southeast alignment but there are a few linears on differing alignments and these are discussed in **E2.1** below. All readings are within the range for shallow gullies with organic fills.

There is also a scatter of non-linear anomalies across the survey area. A clipped colour plot (fig E4) shows the nature of the spread of this material, where readings higher than 5nT are included in the maximum red colour band, demonstrating that although some of these anomalies are within the range for thermo remanent material, a significant amount are fairly weak. It should be noted that some of these readings could also be caused by modern ferrous magnetic interference associated with agricultural practices.

Major ferrous magnetic anomaly **10** (fig E5) is caused by a metal fence.

E2.1 Positive magnetic anomalies *(fig E5)*

1 Very weak, parallel linear trend covering the majority of the survey area. Readings are generally within a range of 0.3 to 1nT. Their parallel nature and weak magnetic signature could be suggestive of former agricultural activity, however their intermittent and irregular appearance could also suggest slight, naturally formed gullies where water has drained down the steep hillside.

2 Two adjacent linear anomalies within a range of 0.3 to 1.2nT. Their weak magnetic signature limits confidence in identification.

3, 4 & 5 Three linear anomalies on a parallel alignment. Readings are generally within a range of 0.5 to 1.2nT. Although extremely weak their parallel nature lends support to their integrity.

6 Small, very weak linear running parallel with **2**. Within a range of 0.3 to 0.6nT.

7 & 8 Parallel linears generally within a range of 0.5 to 2nT. Their parallel nature lends support to their integrity.

9 Linear anomaly within a range of 0.6 – 1nT. Alignment could suggest an association with **3, 4 & 5**.

E3.0 Area E Conclusion

The degree of confidence in identified anomalies is generally low. Although the survey has detected a number of very weak and intermittent linear trends, confidence in their integrity is limited due to their magnetically weak character.

The scatter of non-linear anomalies does not appear to be directly associated with any of the linears. It is possible that some of the non-linears could be pits/cut features but the lack of confidence in the identified linear anomalies makes any conclusions about occupation activity in this area inconclusive.

Fig E1: Location of survey Area E

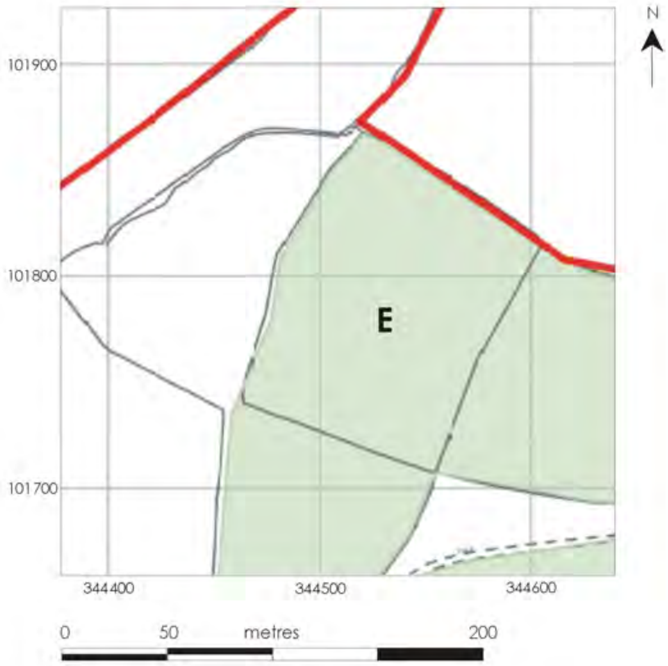


Fig E2: Location of survey E

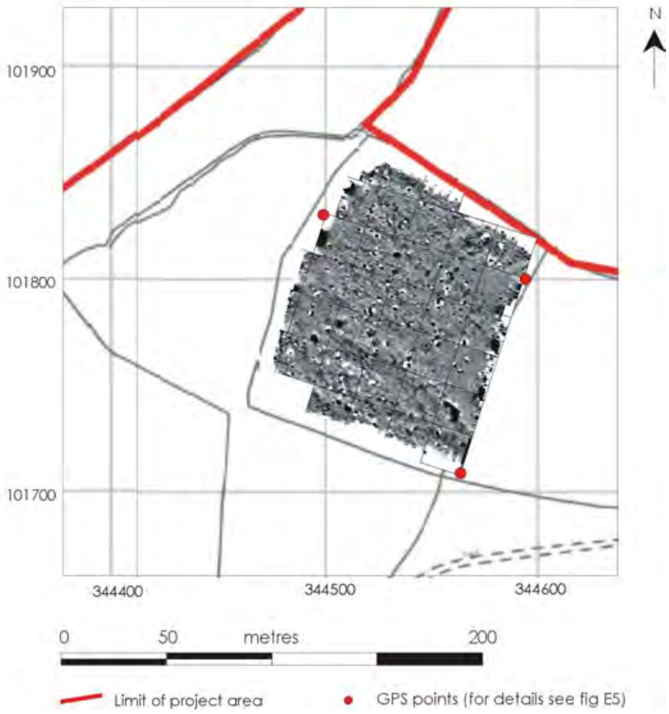


Fig E3: Survey results for Area E

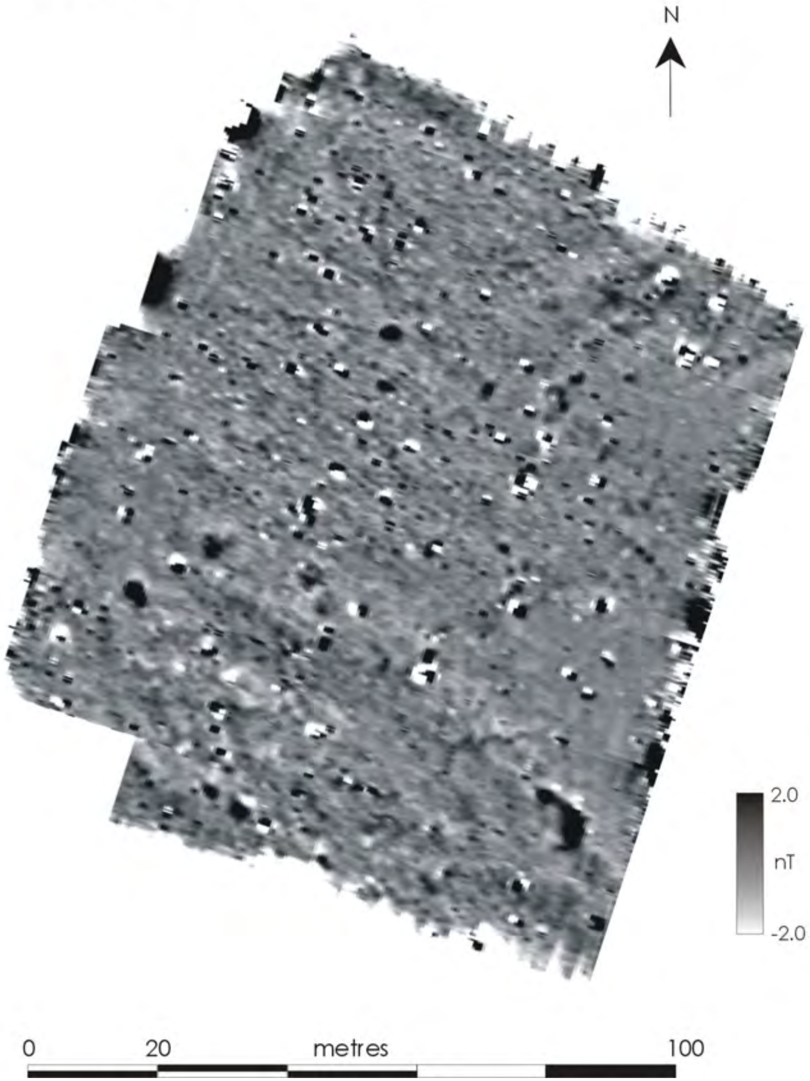


Fig E4: Highlighted survey results for Area E

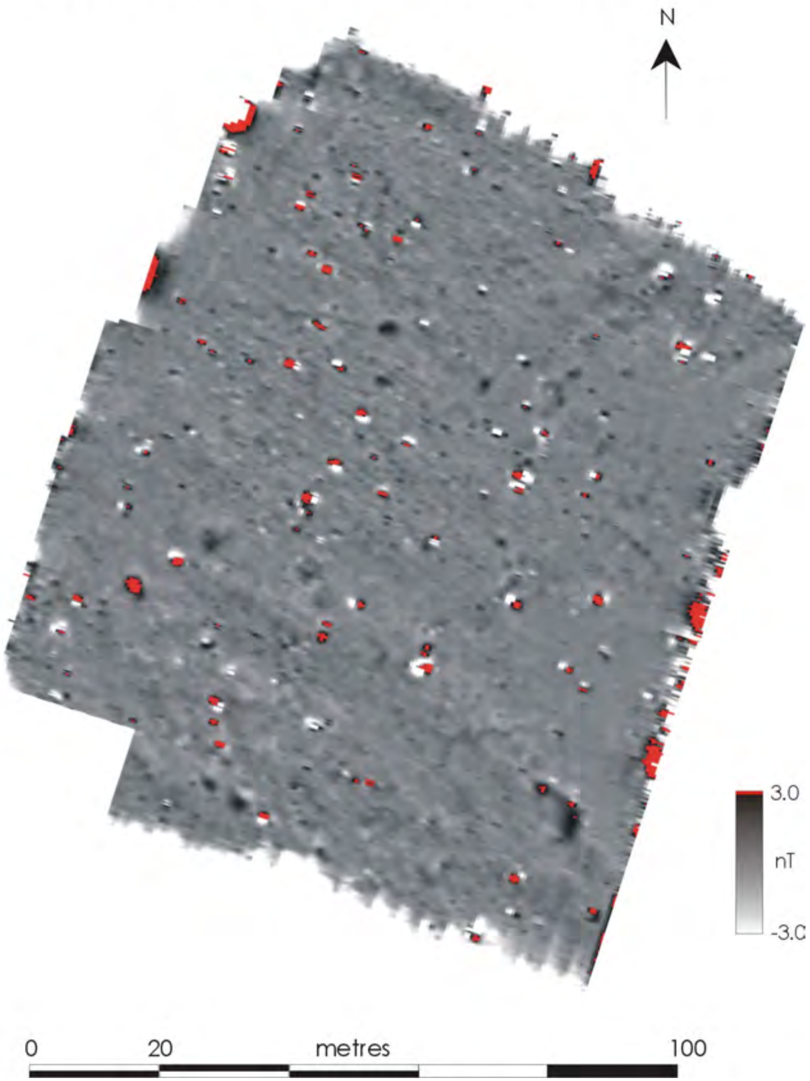
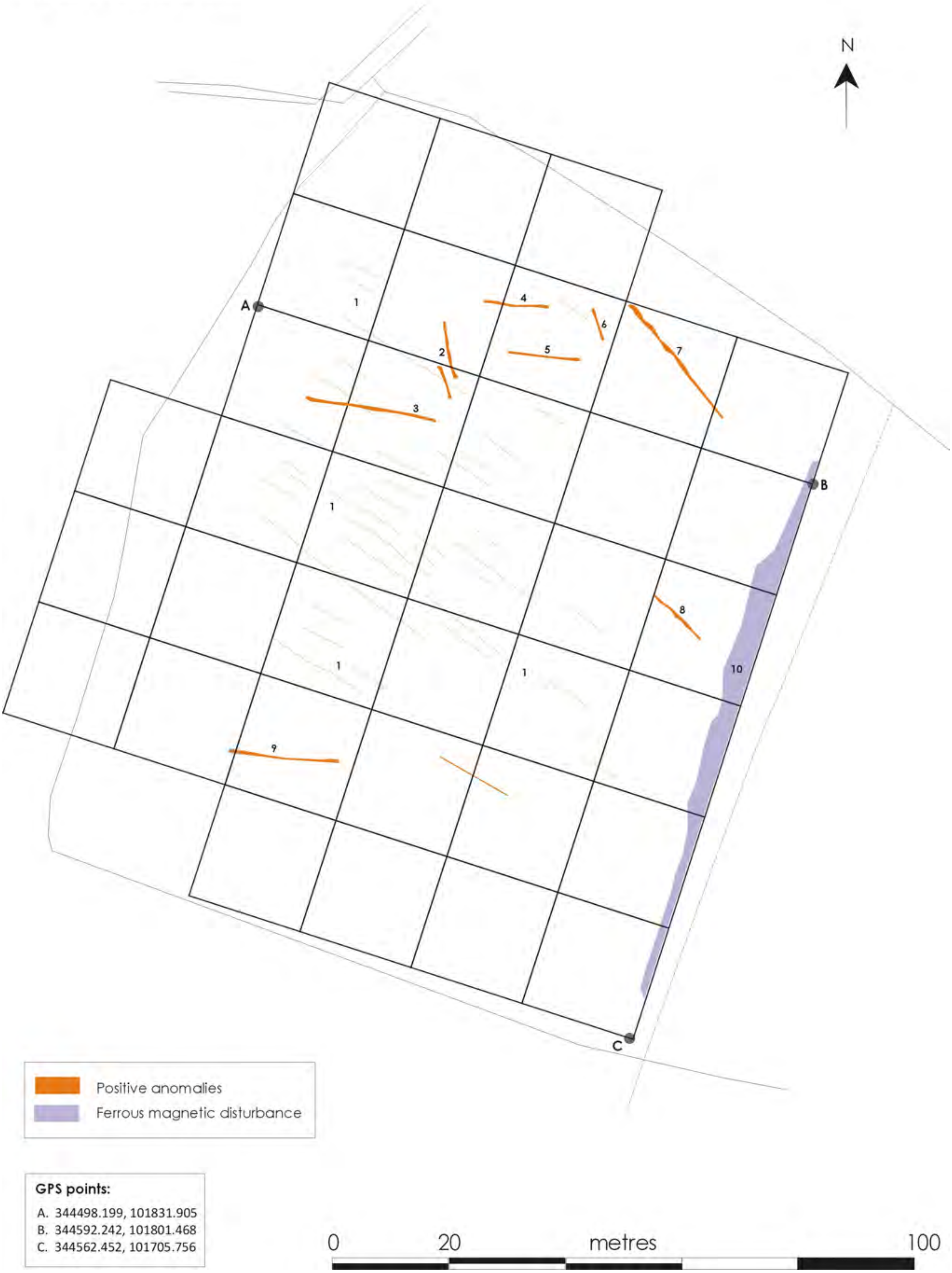


Fig E5: Interpretation



Area F Stoke Knapp Farm
Gradiometry Survey

F1.0 The survey area *(figs F1 & F2)*

The grid comprises 17 contiguous whole and partial 20m squares covering the unquarried part of Area F, and is situated approximately 200m northeast of Stoke Knapp Farm. The eastern survey grids covered plateau on top of a steep downhill slope to the southwest. The remainder of the grid covered unquarried areas of the hillside. The traverse direction was northwest – southeast.

Note: The GPS location points for the survey grid are listed in fig F5.

F2.0 Survey results *(figs F3, F4 & F5)*

The survey results for this area reveal a significant amount of modern ferrous interference, particularly in the southeast corner. This is caused by two electricity distribution poles, plus a significant amount of thermo remanent rubble from a former lime kiln which was located adjacent to the poles. A clipped colour plot (fig F4) shows the extent of the disturbance where readings between 2 to 4nT and -2 to -4nT are highlighted in the maximum and minimum colour bands.

Area F has also been subjected to intensive quarrying activity and consequently a large part of the central survey area could not be covered. Despite these factors the survey has detected a number of linear and curvilinear anomalies, some of which could be contemporary with the quarrying activity. These linears are discussed in **F2.1** and **F2.2** below.

F2.1 Positive magnetic anomalies (fig F5)

1 & 2 Two weak and intermittent linear trends running downhill from northeast to southwest across the survey area. Readings are generally within a range of 0.3 to 1nT. Their parallel alignment could suggest plough marks or possibly drainage, however their weak and intermittent nature limits confidence in identification.

3 & 4 Two intermittent and irregular linear trends, generally within a range of 1 to 2.5nT. Within normal range for ditches/cut features containing organic and weakly thermo remanent residues.

5 & 6 Two slightly diverging linears within a range of 0.3 to 1.5nT. Within the range for shallow ditches/gullies.

7 Intermittent curvilinear anomaly within a range of 1 to 3.2nT. Within normal range for a ditch containing weakly thermo remanent material. Confidence in the western half of **7** is less secure than the east section.

8 Irregular linear within a range of 1 to 2.5nT. Runs perpendicular to weak linear trend **1** and parallel with **4.**

9 Short, slightly curving anomaly within a range of 1.5 to 4nT. Anomaly is truncated by the limit of the survey grid, limiting confidence in identification.

10 Short irregular linear within a range of 1.2 to 2.5nT. Proximity to major ferrous disturbance and quarried area to the south limits confidence in identification.

F2.2 Negative magnetic anomalies (fig F5)

11 Irregular curvilinear anomaly within a range of -2 to -4nT. Position and alignment suggests an association with positive magnetic anomaly **7**.

12 Two irregular anomalies within a range of -1.8 to -3.5nT. Within the range for deposits/cut features with stone content.

13 Parallel linears running northeast – southwest and aligned with weak positive linears in **1**. Within a range of -1.2 to -2.5nT. An intermittent northwest – southeast linear trend intersects with **13** on a coaxial alignment.

F2.3 Ferrous magnetic anomalies *(fig F5)*

14 Major ferrous magnetic linear anomaly corresponding with an old fence line.

15 Area of strong dipolar anomalies ranging from 4 to 30+nT. Probable disturbance due to quarrying.

16 Large area of ferrous magnetic and highly thermo remanent disturbance due to electricity distribution poles and the site of a former lime kiln.

17 Ferrous magnetic linear likely to be due to a former fence line.

F3.0 Conclusion

The degree of confidence in identified anomalies ranges from low to moderately high. Despite the restricted survey area and disturbance from quarrying, the survey has detected a number of anomalies where the confidence in them relating to archaeological features is slightly higher.

It is likely that some anomalies are due to quarrying activity, but differences in alignment between the linears identified in fig F5 is suggestive of multi-phase activity on the site.

Fig F1: Location of survey Area F

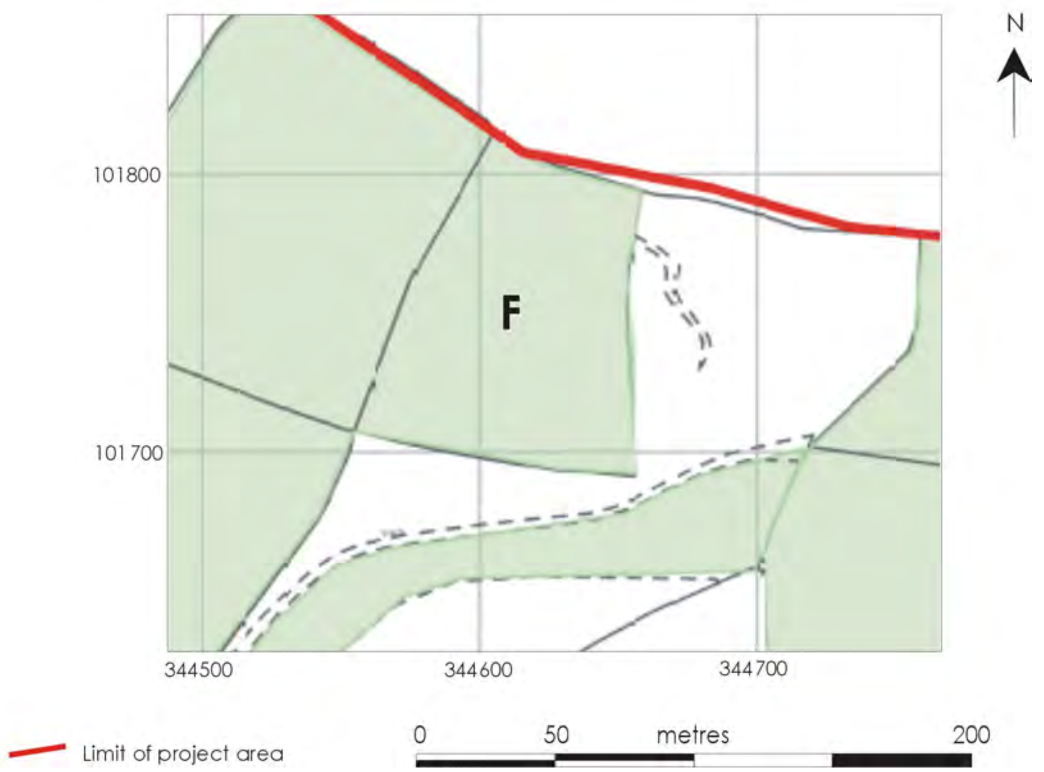


Fig F2: Location of survey

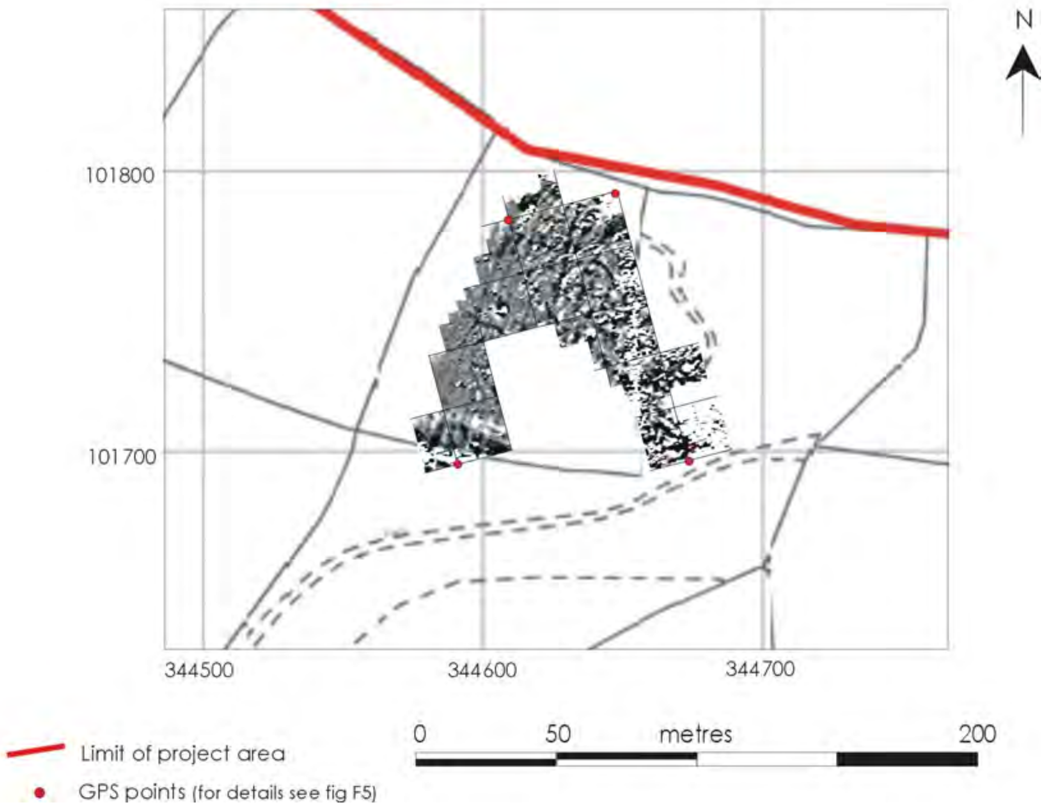


Fig F3: Survey results for Area F

Fig F4: Highlighted survey results for Area F

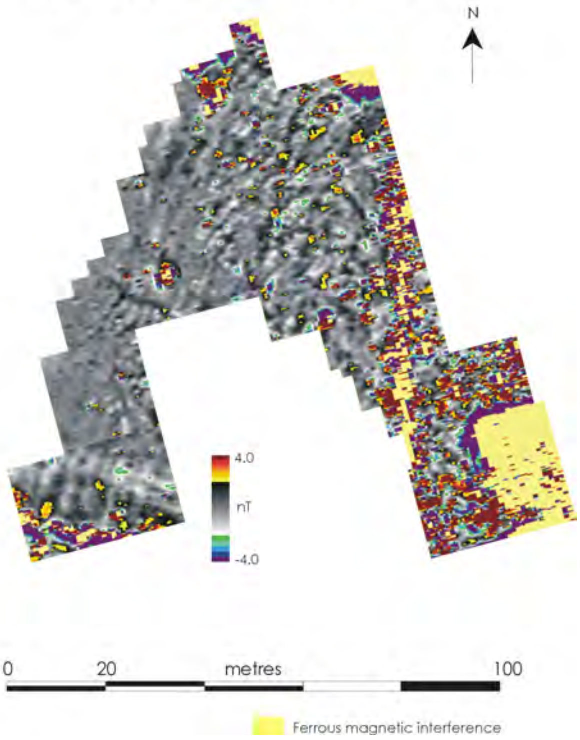
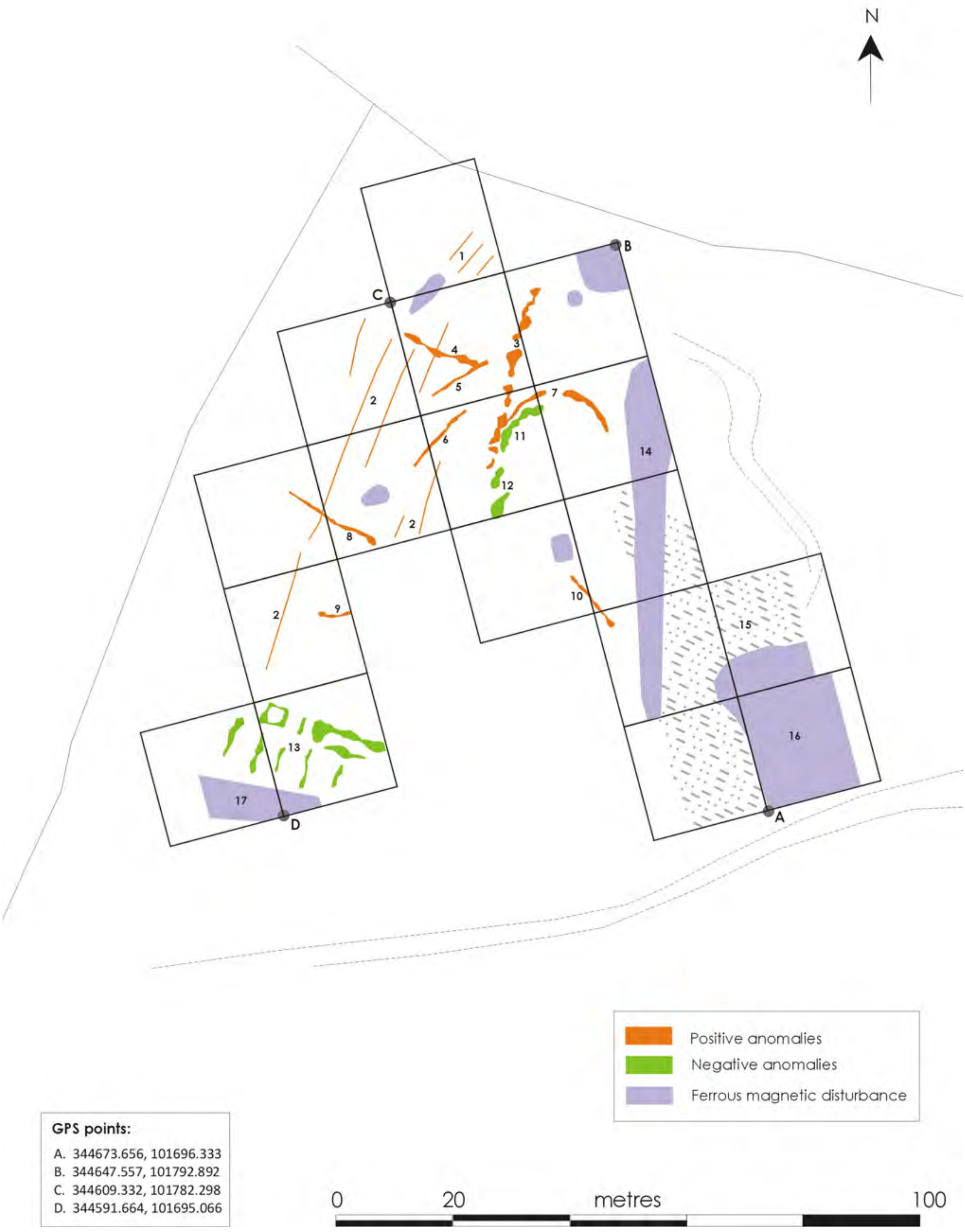


Fig F5: Interpretation



GPS points:

A. 344673.656, 101696.333
B. 344647.557, 101792.892
C. 344609.332, 101782.298
D. 344591.664, 101695.066

Areas G and H Stoke Knapp Farm
Gradiometry Survey

G/H1.0 The survey areas *(figs G/H1 & G/H2)*

Area G: The grid comprises 101 contiguous whole and partial 20m squares covering a long, rectangular field which lies to the north of a footpath between Stoke Knapp Farm and Beaminster. The west half of the field is relatively flat but begins to rise as it heads east to form the north side of an east – west valley between Areas G and H. The traverse direction was east – west.

Area H: The grid comprises 91 contiguous whole and partial 20m squares covering a long rectangular field to the south of the footpath between Stoke Knapp Farm and Beaminster. The ground slopes uphill to the south and west along the length of the field before rising steeply up to the hilltop (Area A) to the south. The traverse direction was east – west.

Note: The GPS location points for both survey grids are listed in fig G/H5.

G/H2.0 Survey results *(figs G/H3, G/H4 & G/H5)*

Area G: The survey results for this area show a marked contrast between the east and west sides of the field. The western end of the field reveals a system of parallel and intersecting linears on a dominant northwest – southeast alignment. There are also a small number of other linears of differing alignments. When viewed along with Area H, there would appear to be little evidence for the linears in Area G continuing to the south.

Immediately to the west of this is a highly disturbed area (**1**, fig G/H5) caused by rubble being re-deposited at this end of the field. It is possible that the linear system could continue to the west but is masked by the highly thermo remanent/ferrous magnetic material in the rubble. This end of the field has also been subjected to quarrying.

The results show another discrete area of anomalies approximately half way along the field next to the southern boundary, but these are less cohesive than the system to the west.

There is a general scatter of non-linear anomalies across the field, varying in their magnetic character from around 2 – 4nT to as high as 30+nT. A clipped colour plot (fig G/H4) shows the nature of this spread of material where reading higher than 2nT and lower than-2nT are highlighted in the maximum and minimum red and blue colour bands. These readings are within the range for deposits/cut features containing organic and thermo remanent material, however they could also be caused by modern ferrous magnetic interference associated with agricultural practices.

Area H: Upon initial viewing the survey results for this area are dominated by a major, intermittent and irregular linear trend running east – west in the east half of the field along the northern field boundary (**21**, fig G/H5). Appearance and readings are consistent with that of a palaeochannel. Whilst in the field the survey team noted that this area was extremely wet underfoot and that the route of this anomaly runs along the lowest point of the valley between Areas G and H.

There are a number of other large, amorphous anomalies, all of which correspond with wet areas in the field, particularly towards the east end of the survey area. A similar occurrence was observed in Areas G, I and J. In the majority of cases, the locations of these types of anomalies correspond with the interface between the Fullers Earth Formation Mudstone and Inferior Oolite Group Limestone (BGS website).

The survey has also detected a number of, for the most part, fairly weak linear anomalies on varying alignments towards the west end of the field.

There is a general scatter of non-linear anomalies across the field, varying in their magnetic character from around 2 – 4nT to as high as 30+nT. A clipped colour plot (fig G/H4) shows the nature of this spread of material where reading higher than 2nT and lower than-2nT are highlighted in the maximum and minimum red and blue colour bands. These readings are within the range for deposits/cut features containing organic and thermo remanent material, however they could also be caused by modern ferrous magnetic interference associated with agricultural practices.

All major anomalies are discussed in ***G/H2.1***and ***G/H2.2*** below.

G/H2.1 Positive magnetic anomalies *(fig G/H5)*

1 Area of strong dipolar anomalies within the range for strongly thermo remanent/ferrous magnetic material.

2 Series of parallel and intersecting northwest – southeast linears with a coaxial system running northeast – southwest. Generally within a range of 2.5 to 4.5nT which is within the range for ditches/cut features containing thermo remanent residues. Appearance suggests part of a system of enclosures but weakening as it heads southeast. This could be due to a lack of magnetically susceptible deposits or truncation by ploughing. Aligns with linears in **3** and weak linear trend in **4**.

3 Grouping of parallel northwest – southeast linears with a coaxial arrangement running northeast – southwest. Readings are within a range of 1.6 to 5nT. Within normal range for ditches. Aligns with **2** and **4**.

4 System of weak, parallel and intersecting linears, generally within a range of 0.3 to 1.2nT. Aligns with linears in **2** and **3**. Possible ploughmarks.

5, 6 & 7 Series of linears on a parallel and coaxial alignment. Within a range of 2.5 to 6nT which is within normal range for ditches. Alignment suggests a different activity phase to **2**, **3** and **4**.

8 & 9 Two weak and parallel linear trends on a different alignment to each other and to **4**. Readings are within a range of 0.2 to 2.5nT. Possibly residual traces of ploughmarks.

10 Short linear anomaly within a range of 1.2 to 1.9nT. Along with negative linear **29** would appear to form part of an enclosure.

11 Grouping of irregular and short linear anomalies interspersed with strong dipolar responses. Generally ranging from around 4.5 to 13nT but includes readings of 30+nT which is within the range for highly thermo remanent/ferrous magnetic deposits. Location and alignment suggests an associated with negative magnetic anomaly **30** and possibly linears **10** and **29**.

12 & 13 Two areas of strong, dipolar anomalies corresponding with areas where subsurface water emerges from the permeable rock. The vegetation for these areas includes long, reedy grasses which are also present where similar conditions occur. (See discussion in **G/H2.0 Area H** above). *Note:* Early OS mapping shows a pond in the location of **13**.

14 & 15 Parallel linear trend. **14** is within a range of 0.5 to 1.5nT but **15** is much weaker, ranging from 0.2 to 0.5nT. Of similar alignment to the irregular anomalies in **17** and also with **5** in Area G.

16 Very weak, nebulous linear within a range of 0.2 to 0.5nT. Possibly formed by drainage gullies but the weak readings limit interpretation.

17 Irregular linear and non-linear anomalies which together with negative magnetic anomalies in **32** would appear to form a discrete, interconnected group. Generally within a range of 1.5 to 5nT. Runs parallel with **14** and **15** and also with positive northeast – southwest linear **5** in Area G. If linear **7**

in Area G is projected southeast it would intersect with **17** at a perpendicular angle, suggesting a possible association between **17** and **5, 6** and **7**.

18 & 19 Very weak linear trends of a similar nature to **14 -16**. generally within a range of 0.2 to 0.5nT. **18** appears to continue as a slight negative linear to the southeast.

20 Amorphous anomalies with readings ranging from 2 to 4nT. Readings, location and appearance suggests a possible association with major linear trend **21**.

21 Dominant, amorphous and intermittent linear trend running along the northern edge of the survey area. Readings are generally within a range of 2 to 4nT. Appearance and location along the valley floor suggests a palaeochannel. See discussion in **G/H2.0 Area H.**

22 Weak, parallel linears within a range of 0.2 to 1nT. Possibly gullies associated with **21**.

23, 24 & 25 Three discrete areas of amorphous anomalies. Readings are generally within a range of 1 to 2.5nT but **25** rises to 7nT in places. These areas, particularly **27** correspond with areas where subsurface water emerges from the permeable rock.

G/H2.2 Negative magnetic anomalies *(fig G/H5)*

26 Intermittent north – south linear within a range of -2.3 to -3.8nT at is northern end but lessening as it heads south to -0.5 to -1nT. Within normal range for a linear feature with non-magnetic/non-oxidic stone content.

27 Short linear anomaly running parallel with **7**. Within a range of -0.8 to -1.5nT. Within the range for a linear feature of stone content.

28 Three irregular anomalies in a linear alignment. Readings are within a range of -0.9 to -1.5nT. Within the range for cut features with some stone content.

29 Weak L-shaped linear within a range of -0.3 to -0.8nT. Identification of the northeast – southwest alignment is more secure than the northwest – southeast which is extremely weak. **29** appears to continue as positive magnetic linear **10** as it heads northeast.

30 Group of negative magnetic anomalies which would appear to be associated with positive magnetic anomalies in **11**. Within a range of -0.3 to -2.2nT. Within the range for cut features with stone content.

31 Short linear anomaly within a range of -1 to -2nT.

32 Group of linear and amorphous anomalies within a range of -0.5 to -2nT. Would appear to be associated with positive magnetic anomalies in **17**.

33 Amorphous anomalies within a range of -1.5 to -4nT. Associated with major positive anomaly **21** identified as a palaeochannel.

34, 35 & 36 Amorphous anomalies generally within a range of -2 to -5nT. Associated with positive magnetic anomalies **23 – 25** and corresponds to areas where subsurface water permeates up through the bedrock.

G/H3.0 Areas G & H Conclusion

The degree of confidence in identified anomalies is generally fairly high, particularly to the west of Area G where linear systems on varying alignments suggests multi-phase activity on this site.

Both survey areas have also picked up weaker linears on varying alignments, some of which appear to respect the stronger linear systems. These could indicate residual traces of ploughmarks or possibly drainage gullies, some of which could be natural.

Both areas have detected significant geological anomalies where subsurface water emerges. In most cases, these anomalies appear magnetically strong compared to the relatively weaker linears so that they could potentially mask any weaker archaeological features. However, apart from the western side of Area G there would appear to be little evidence for settlement in both these Areas.

Fig G/H1: Location of survey Areas G and H

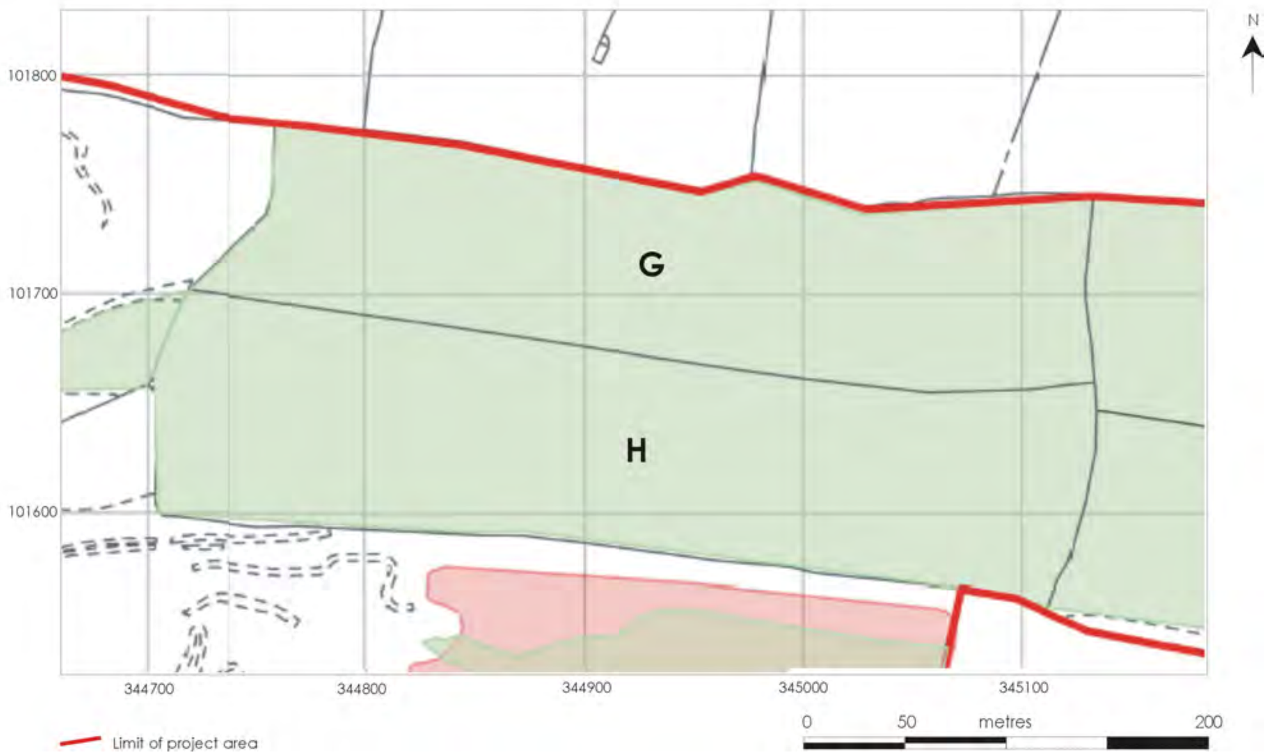


Fig G/H2: Location of surveys G and H

Fig G/H3: Survey results for Areas G & H

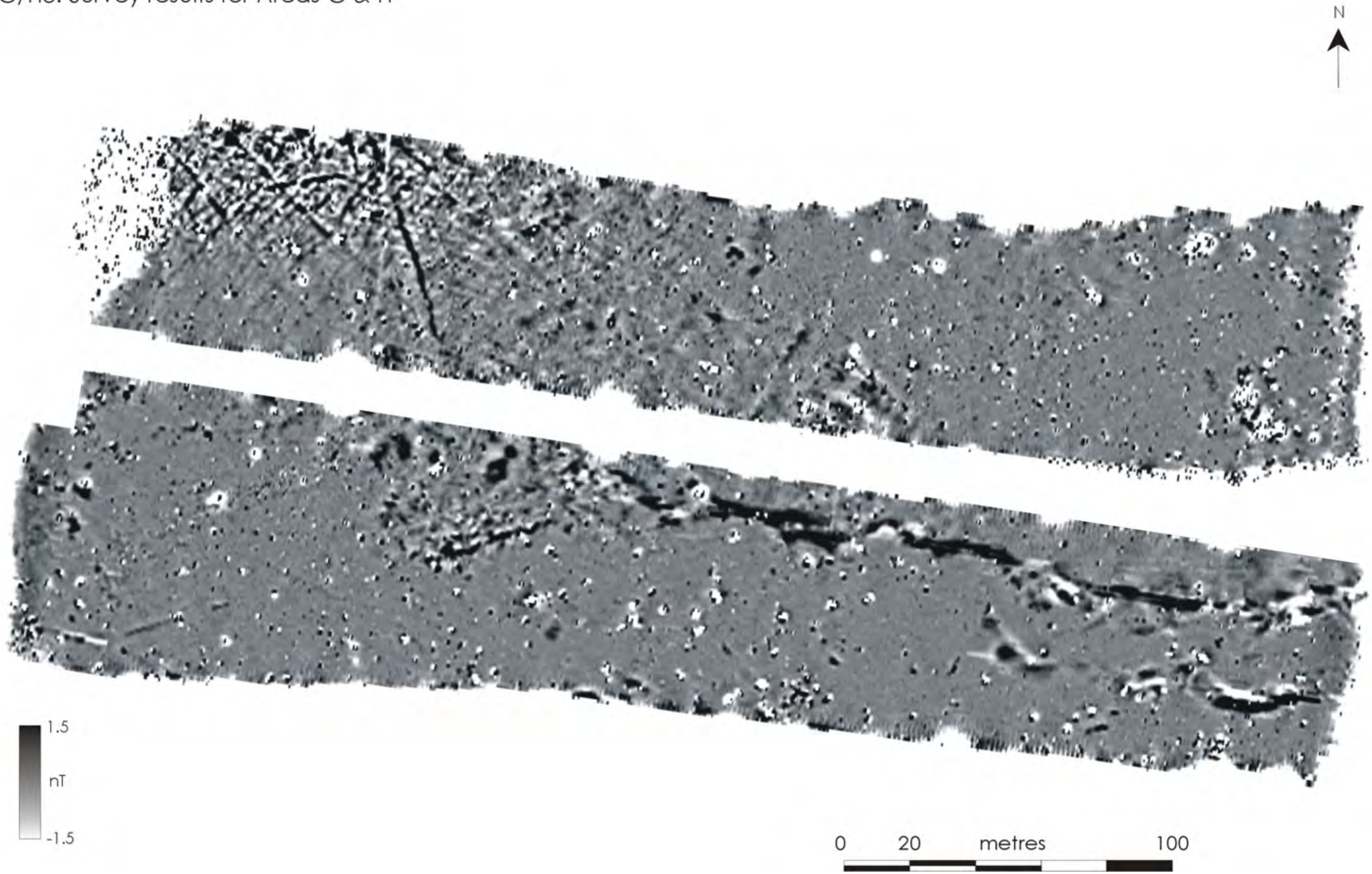


Fig G/H4: Highlighted survey results for Areas G & H

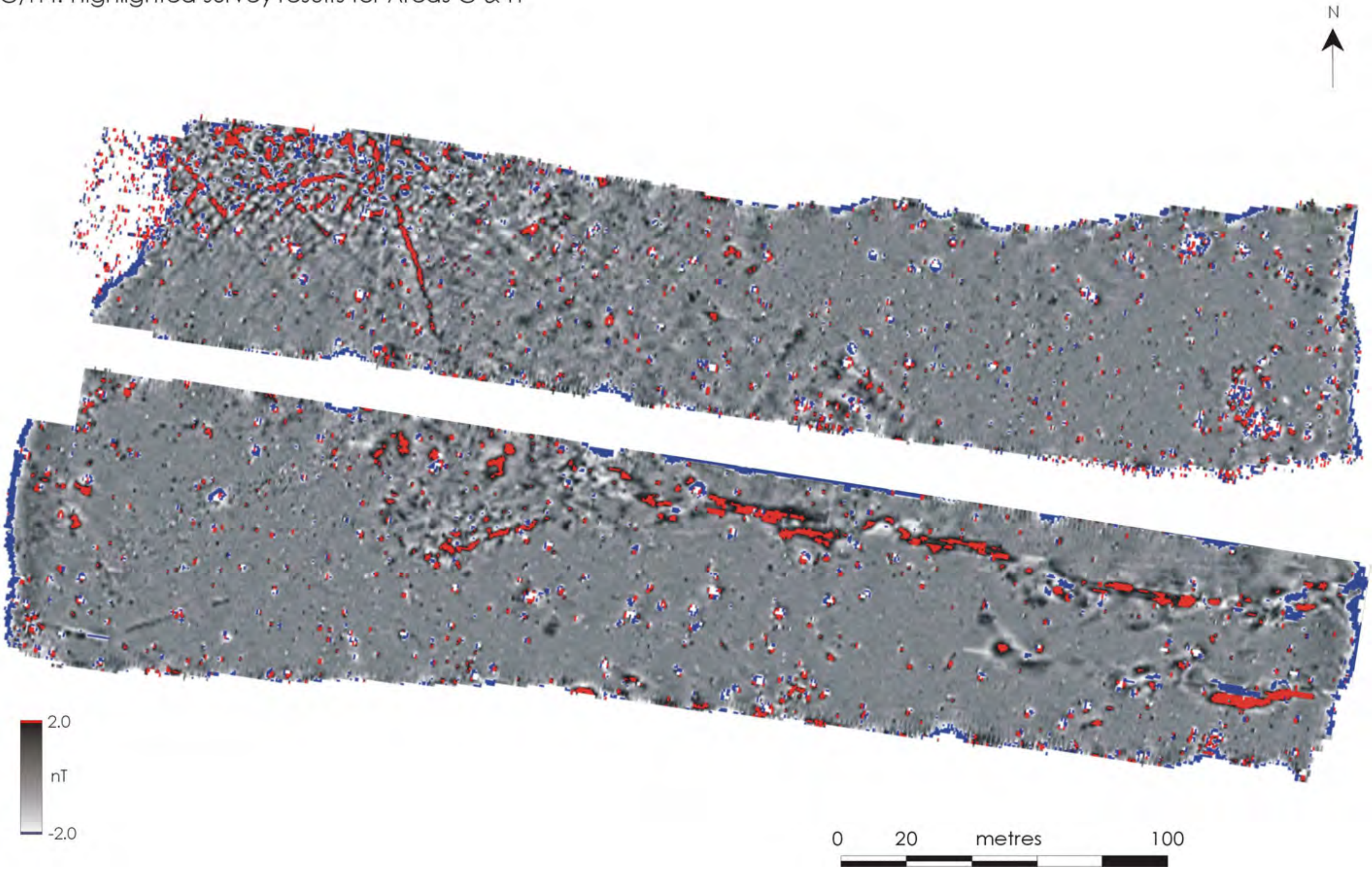
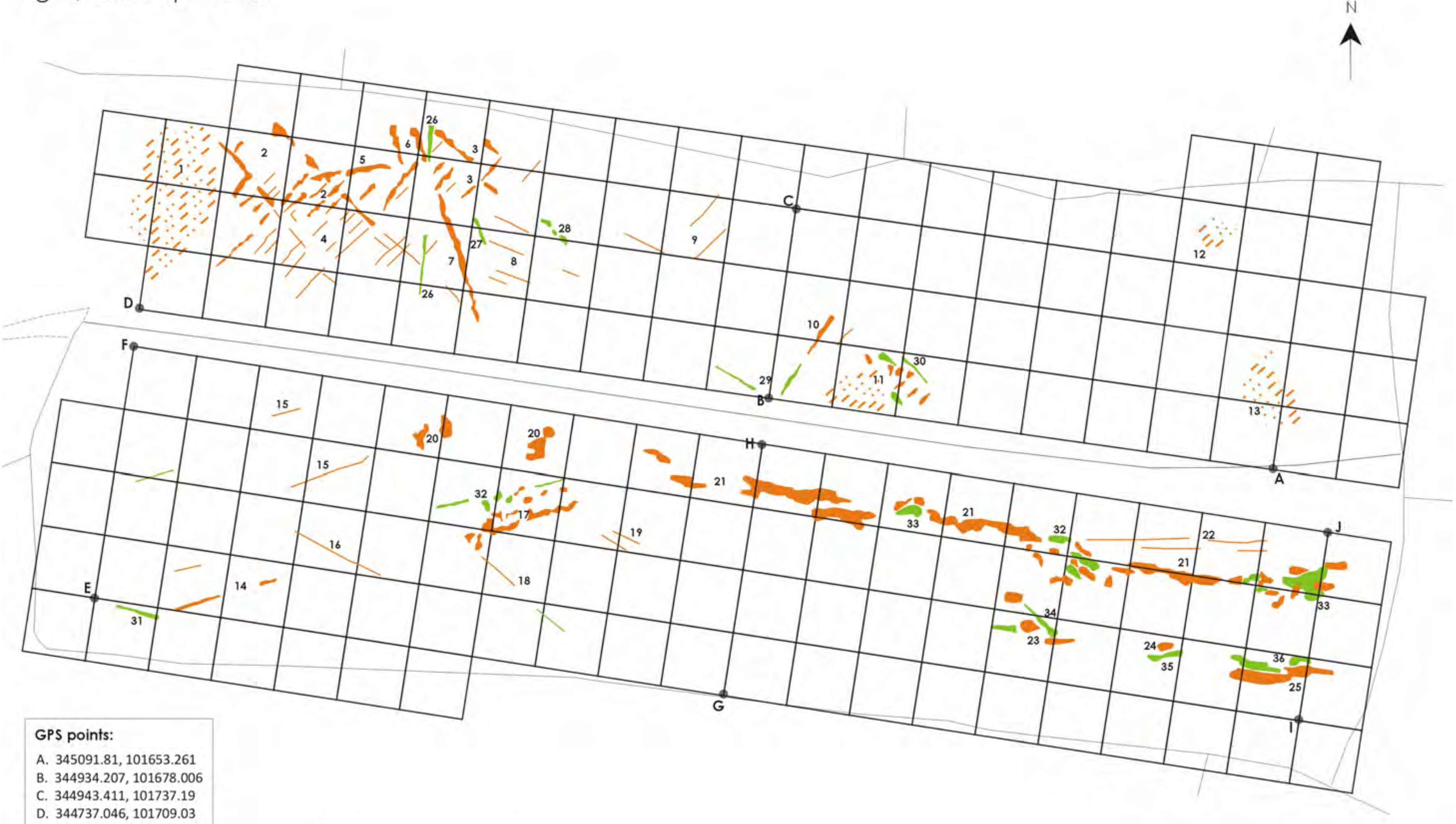


Fig G/H5: Interpretation



GPS points:

A. 345091.81, 101653.261
B. 344934.207, 101678.006
C. 344943.411, 101737.19
D. 344737.046, 101709.03
E. 344721.876,101615.384
F. 344734.027,101694.344
G. 344919.442,101584.552
H. 344931.024,101663.144
I. 345099.725,101576.4
J. 345108.335,101635.27

Positive anomalies
Negative anomalies
Ferrous magnetic disturbance

Areas I and J Stoke Knapp Farm
Gradiometry Survey

I/J1.0 The survey areas *(figs I/J1 & I/J2)*

Area I: The grid comprises 41 contiguous whole and partial 20m squares covering a trapezoidal field at the east end of the land owned by Stoke Knapp Farm. The field is relatively flat for the most part, but rises steeply uphill at its northwest corner. The traverse direction was east – west.

Area J: The grid comprises 56 contiguous whole and partial 20m squares covering a rectangular field to the south of Area I. The field slopes uphill to the south and west before rising steeply to form a curving east – west ridge leading up to the eastern approach to the hillfort. The traverse direction was east – west.

Note: The GPS location points for both survey grids are listed in fig I/J6.

I/J2.0 Survey results *(figs I/J3 – I/J6)*

Area I: The results for this area reveal a system of parallel and intersecting linear and non-linear anomalies on a northeast – southwest alignment. The linear system covers the majority of the field, although there is a noticeable increase in the overall strength of the anomalies towards the northeast corner.

The other dominant feature is a major dipolar curvilinear anomaly along the southern field boundary. This corresponds with the lowest point of the valley running between Areas I and J. Readings are suggestive of a palaeochennel, especially when considered in conjunction with anomaly **21** in Area H (see ***G/H2.1*** **21** above). A modern drainage ditch has been constructed adjacent to footpath between Areas I and J, rerouting the watercourse but it would appear that the original natural water channel was slightly to the north of the current ditch.

There is also a general scatter of non-linear anomalies across the field. A clipped colour plot (fig I/J4) shows the nature of this spread of material where reading between 1.5 to 3nT and -1.5 to -3nT are highlighted in the maximum and minimum colour bands. These readings are within the range for deposits/cut features containing organic and thermo remanent material, however some could also be caused by modern ferrous magnetic interference associated with agricultural practices.

The major linear systems are discussed in ***I/J2.1***and ***I/J2.2*** below.

Area J: The results show a major, irregular linear trends running northwest – southeast across the western side of the field, plus another running roughly east – west along the foot of the ridge which rises steeply uphill to the south. The readings for these are generally within a range of 2 – 4nT, with the east – west trend interspersed with negative anomalies generally within the range of -4 to -6nT.

These anomalies are comparable to similar ones present in **B** and **H** and are probably natural geological phenomenon where Fullers Earth Formation Mudstone meets the Inferior Oolite Group Limestone resulting in subsurface water permeating up through the topsoil (BGS website).

There is little evidence for anthropogenic activity in this field and a comparison between Areas I and J in fig I/J6 shows no continuation of the linear trends visible in I.

All major anomalies are discussed in ***I/J2.1***and ***I/J2.2*** below.

I/J2.1 Positive magnetic anomalies *(fig I/J6)*

1 System of parallel and intersecting linear anomalies on a northwest – southeast alignment with a coaxial northeast – southwest arrangement. Readings are generally within a range of 1 to 3.5nT but occasionally rising to 6nT. Within normal range for ditches/cut features containing organic and thermo remanent fills. There is a general similarity in alignment to the linears to the west of Area G (***G/H2.1* 2)** but the match is not precise.

2 Very weak system of parallel and intersecting linears on the same alignment as **1** running across the majority of the field. Readings are generally within a range of 0.3 to 1.5nT which is within the normal range for shallow ditches or gullies. Some appear to form possible enclosures but if so the size is unusually small. Could possibly be a combination of partial enclousres, ploughmarks and drainage, both natural and/or manmade.

3 Irregular linear anomaly within a range of 0.5 to 2.3nT. Within normal range for a ditch. Possibly associated with **4** and negative anomaly **10**.

4 Major amorphous linear trend running along the southern field boundary. Readings generally range from 2 – 4nT. Possible palaeochannel (see discussion for Area I in **I/J 2.0** above).

5 Irregular northwest – southeast linear trend within a range of 1 to 3nT. Likely due to geological phenomena (see discussion in Area J **I/J 2.0** above).

6 Area of weak, amorphous anomalies associated with **5**.

7 Irregular, curvilinear anomaly generally within a range of 1 to 2.5nT. Location corresponds with the lip of a steeply sloping bowl-like depression to the east, probably a natural phenomenon.

8 Irregular and amorphous anomalies running along the bottom of a steep uphill slope to the south. Generally within a range of 2 to 6nT. Likely to be of geological origin similar to **5** above.

9 Discrete area of strong, dipolar anomalies. Readings are generally within a range of 5 to 22nT which is within the range for highly thermo remanent /ferrous magnetic material. Proximity to the field boundary suggests possible modern origin.

I/J2.2 Negative magnetic anomalies *(fig I/J6)*

10 Major amorphous anomaly associated with positive magnetic anomaly **4**. Within a range of -1.5 to -4nT. Would appear to be a natural phenomenon associated with the palaeochannel (see **I/J2.1 4** above).

11 Short linear anomaly within a range of -1.2 to -1.7nT. Within normal range for a ditch containing stone content although interpretation is compromised by proximity to ferrous magnetic anomaly **15**.

12 Amorphous linear anomaly generally within a range of -4 to -6nT. Would appear to be a geological formation associated with positive magnetic anomaly **5**.

13 Irregular and amorphous anomalies associated with positive magnetic anomalies in **8**. Within a range of 3 to 6nT. Likely to be geological in nature.

I/J2.3 Ferrous magnetic anomalies *(fig I/J6)*

14 Major dipolar anomaly consistent with modern ferrous interference. There is no obvious surface feature to account for these readings.

15 Major dipolar anomaly adjacent to a gateway into the field.

16 Ferrous magnetic interference caused by wire fencing.

I/J3.0 Areas I & J Conclusion

The degree of confidence in identified anomalies ranges from moderate to fairly high, albeit some of them are mostly likely geological in origin.

The results for Area I include a discernible linear system on a northwest – southeast alignment with a possibly associated much weaker system across most of the field. The alignment bears some similarity to Area G but the system in Area I is less cohesive.

Both areas have detected significant geological anomalies associated with subsurface water. This is particularly the case in Area J where the results do not appear to indicate any significant anthropogenic activity.

Fig I/J1: Locations of survey Areas I and J

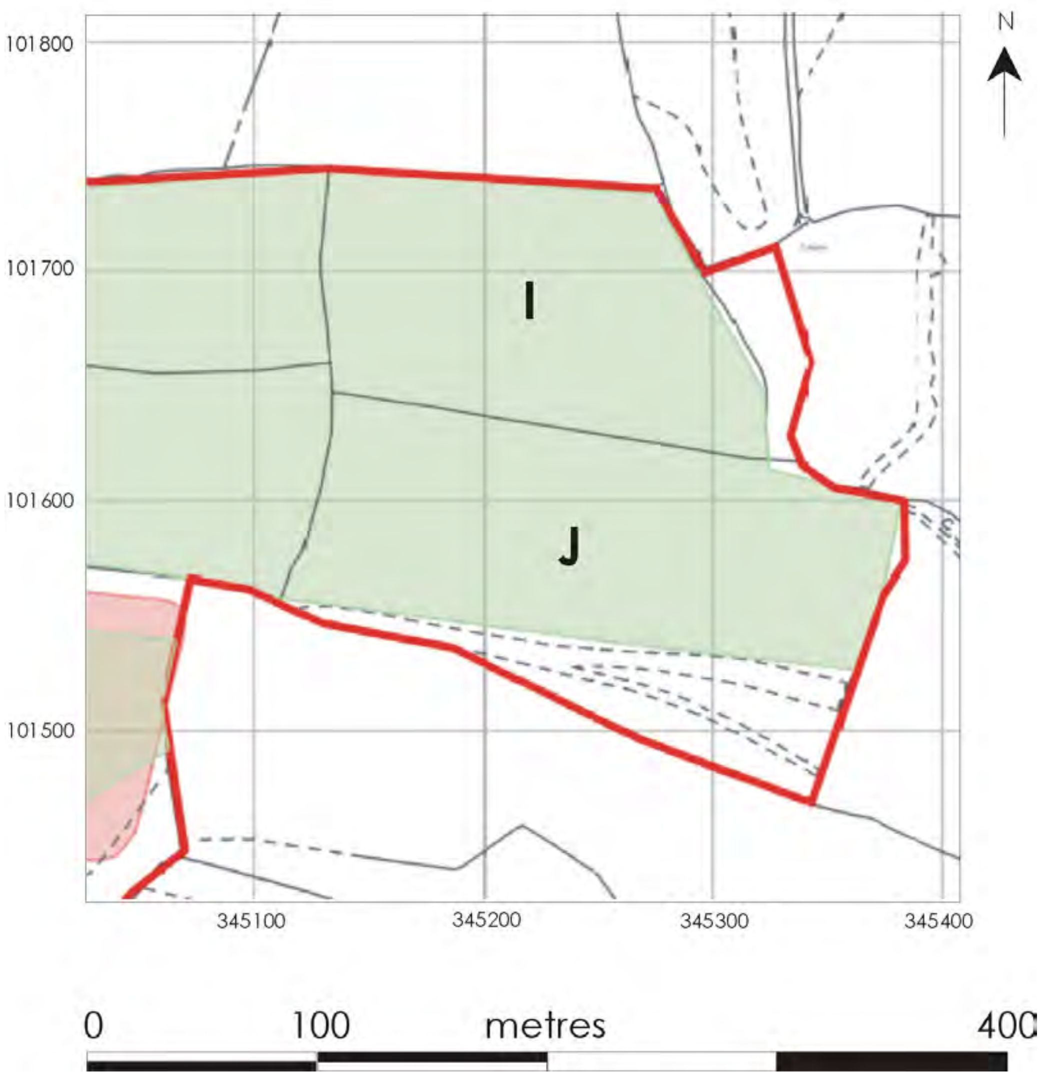


Fig I/J2: Location of surveys I and J

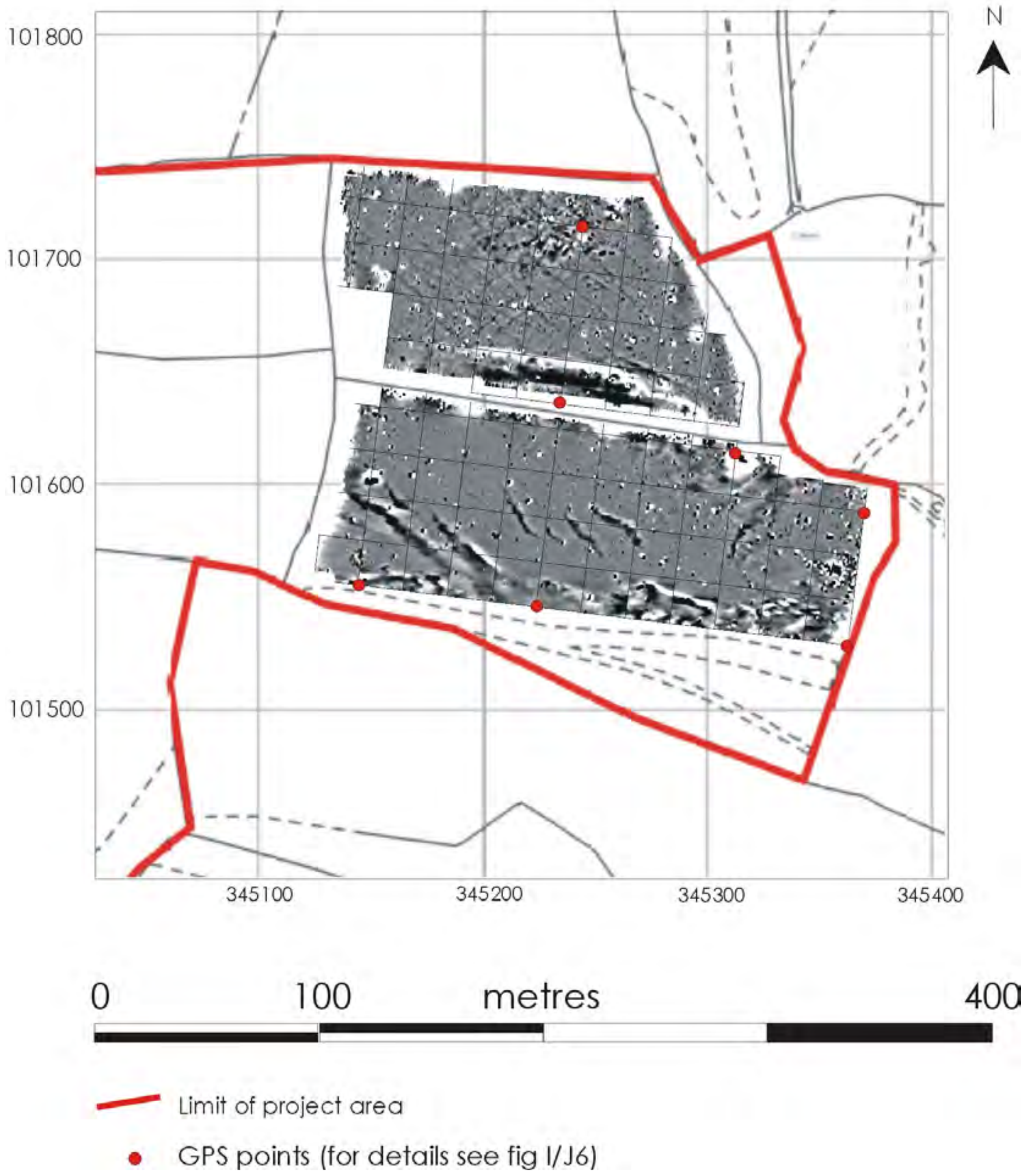


Fig I/J3: Survey results for Area I

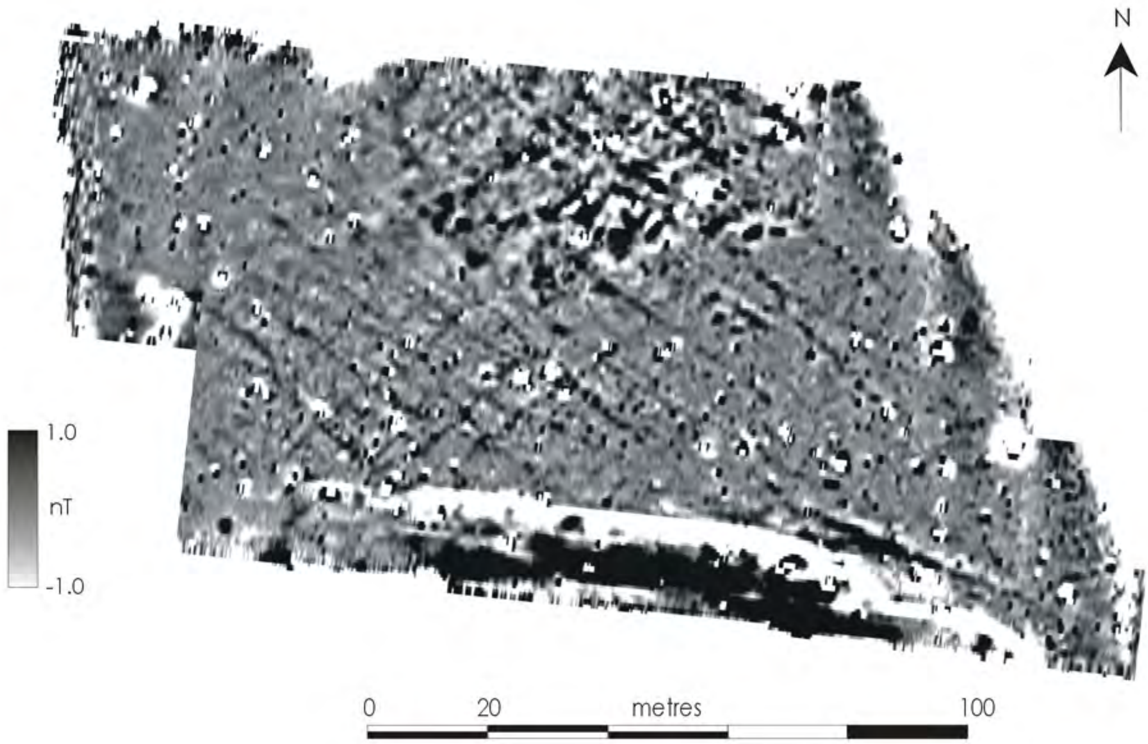


Fig I/J4: Highlighted survey results for Area I

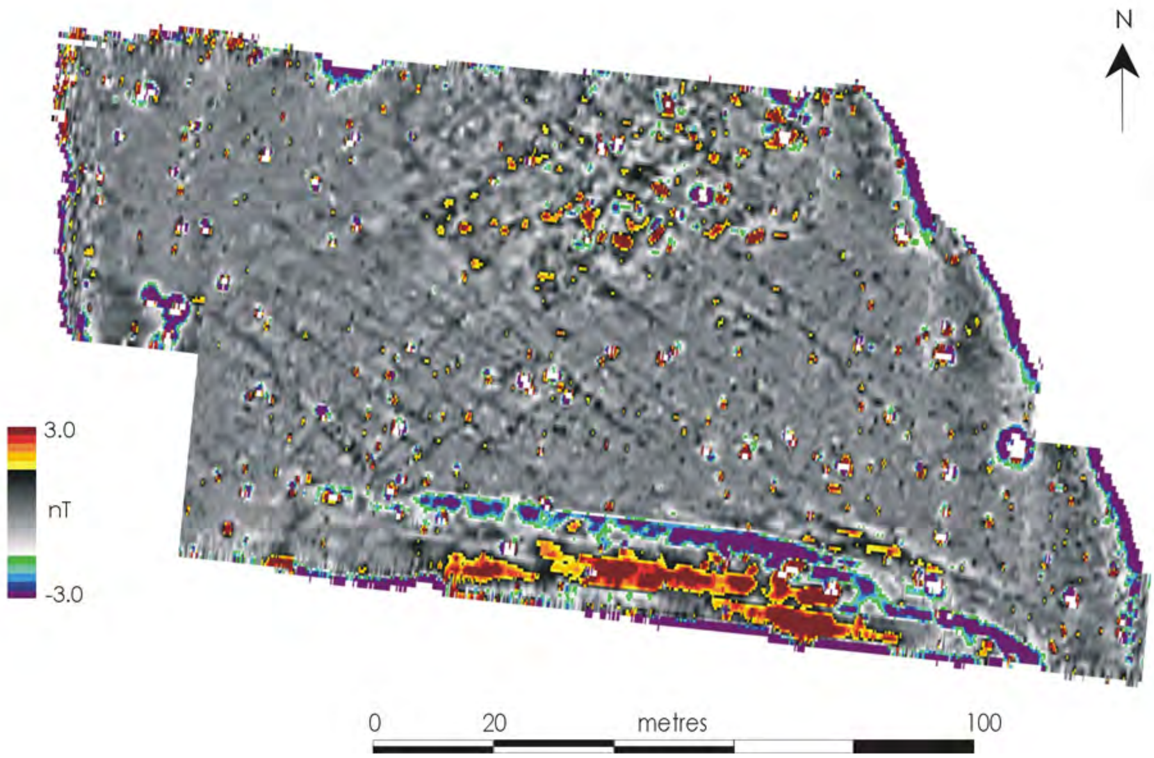


Fig I/J5: Survey results for Area J

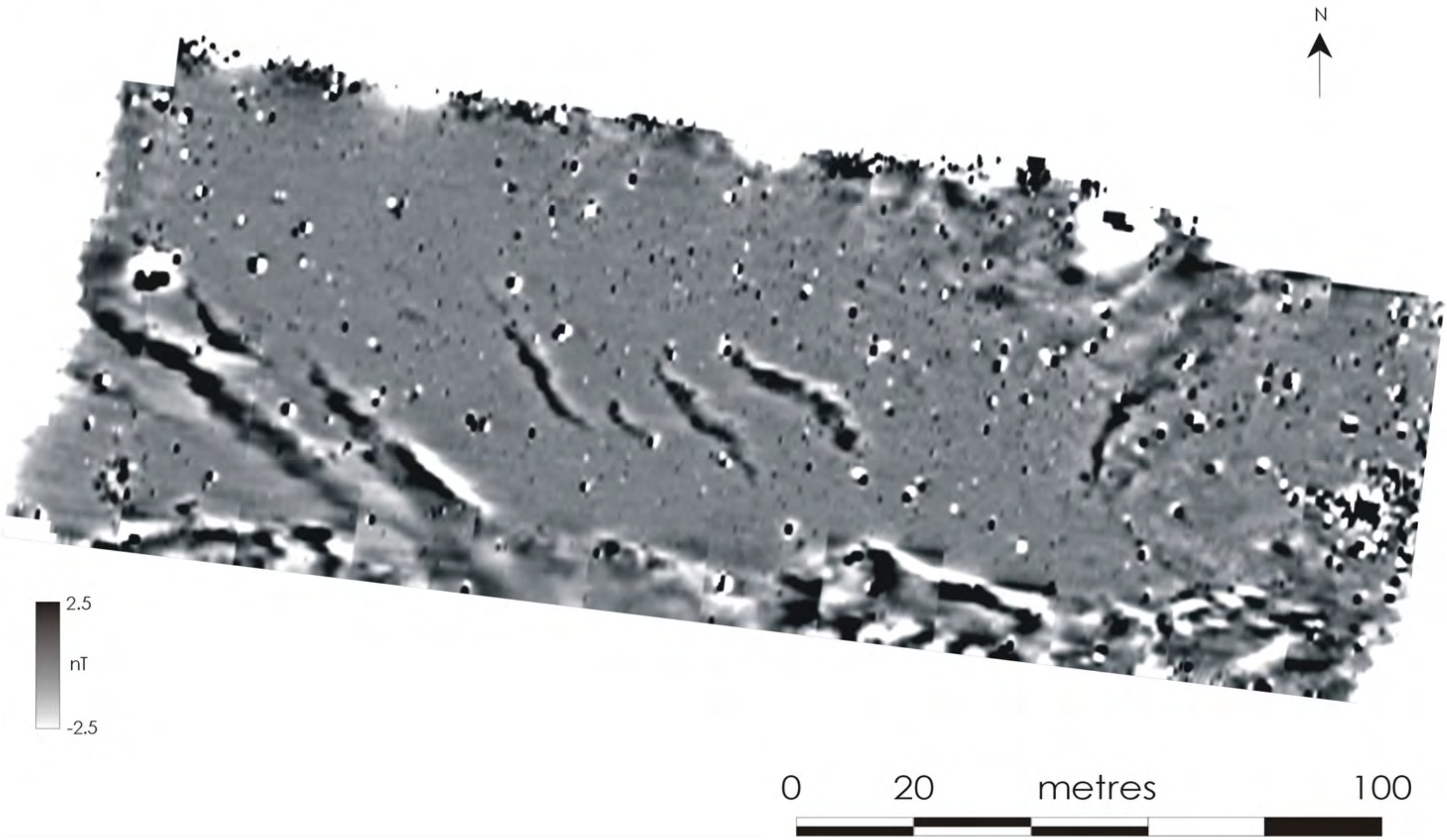
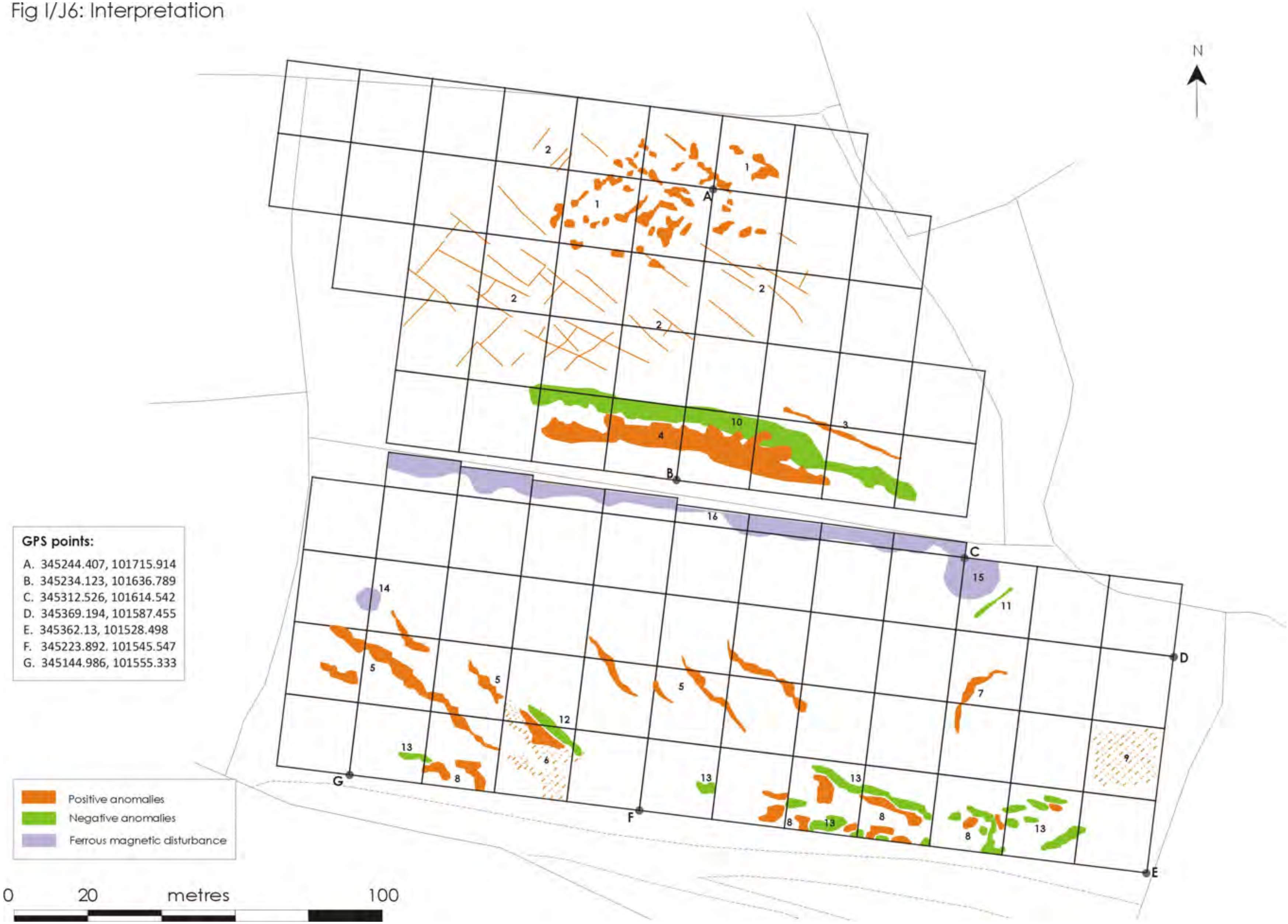


Fig I/J6: Interpretation



Area K Stoke Knapp Farm
Gradiometry Survey

K1.0 The survey area *(figs K1 & K2)*

The grid comprises 6 contiguous whole and partial 20m squares covering a small unquarried area to the northeast of Area B and south of Area F.

The traverse direction was northwest – southeast

Note: The GPS location points for both survey grids are listed in fig K4.

K2.0 Survey results *(figs K3 & K4)*

Area K was chosen for surveying as it is one of the few areas undisturbed by quarrying adjacent to the trackway between Stoke Knapp Farm and Beaminster. The survey results reveal one major negative magnetic anomaly discussed in ***K2.1*** below.

K2.1 Negative magnetic anomalies *(fig K4)*

1 Major linear anomaly generally within a range of -3 to -8nT. Corresponds with a linear depression in the field which could be the former route of the trackway.

K3.0 Conclusion

The degree of confidence in the identified negative anomaly is high. Apart from this, the results for the rest of the survey are inconclusive.

Fig K1: Location of survey Area K

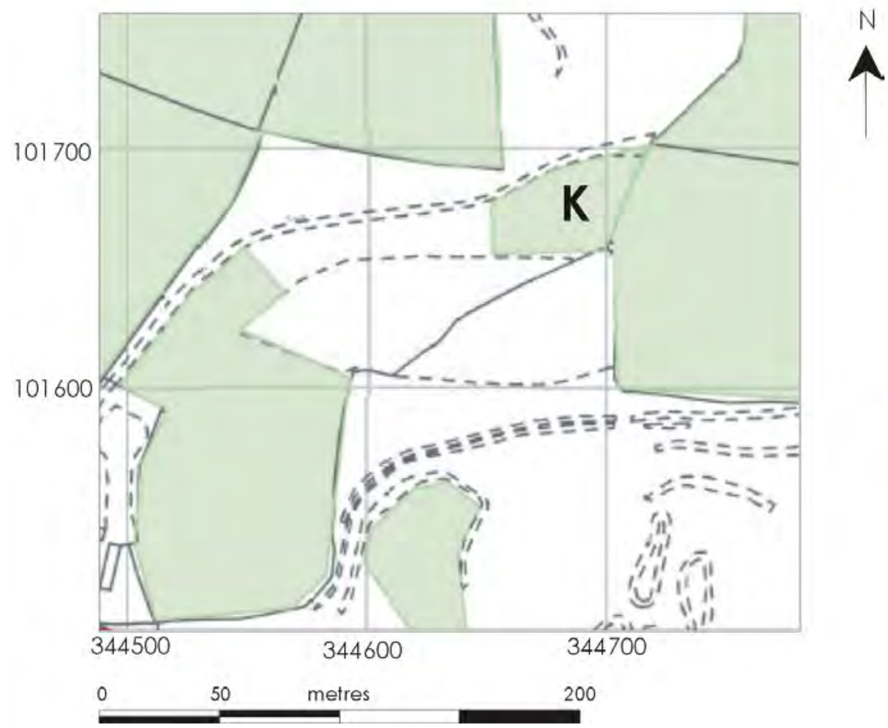


Fig K2: Location of survey K

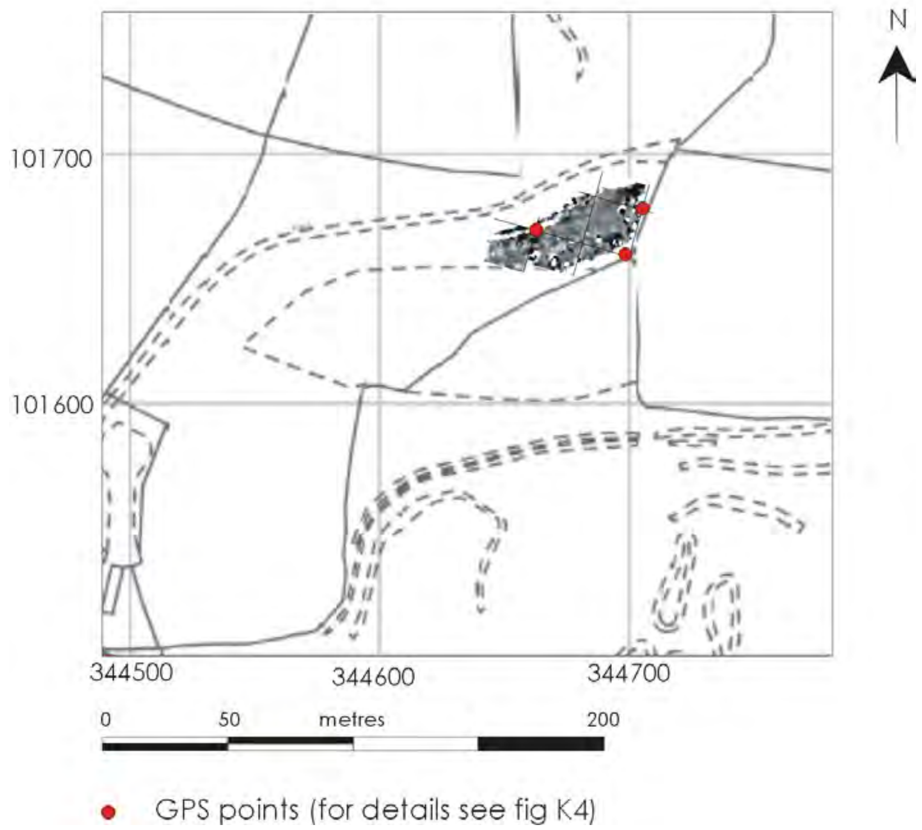


Fig K3: Survey results for Area K

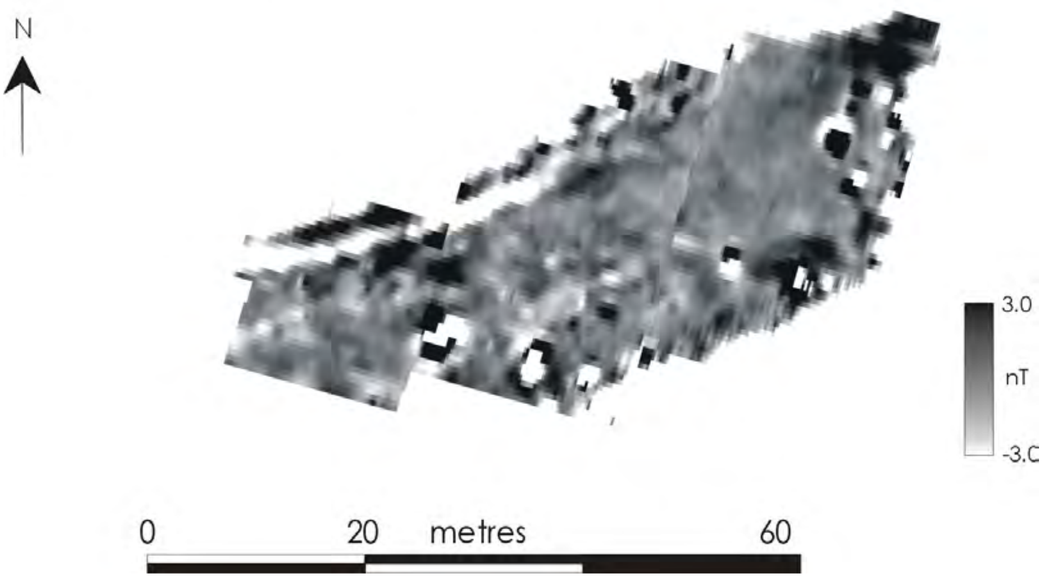
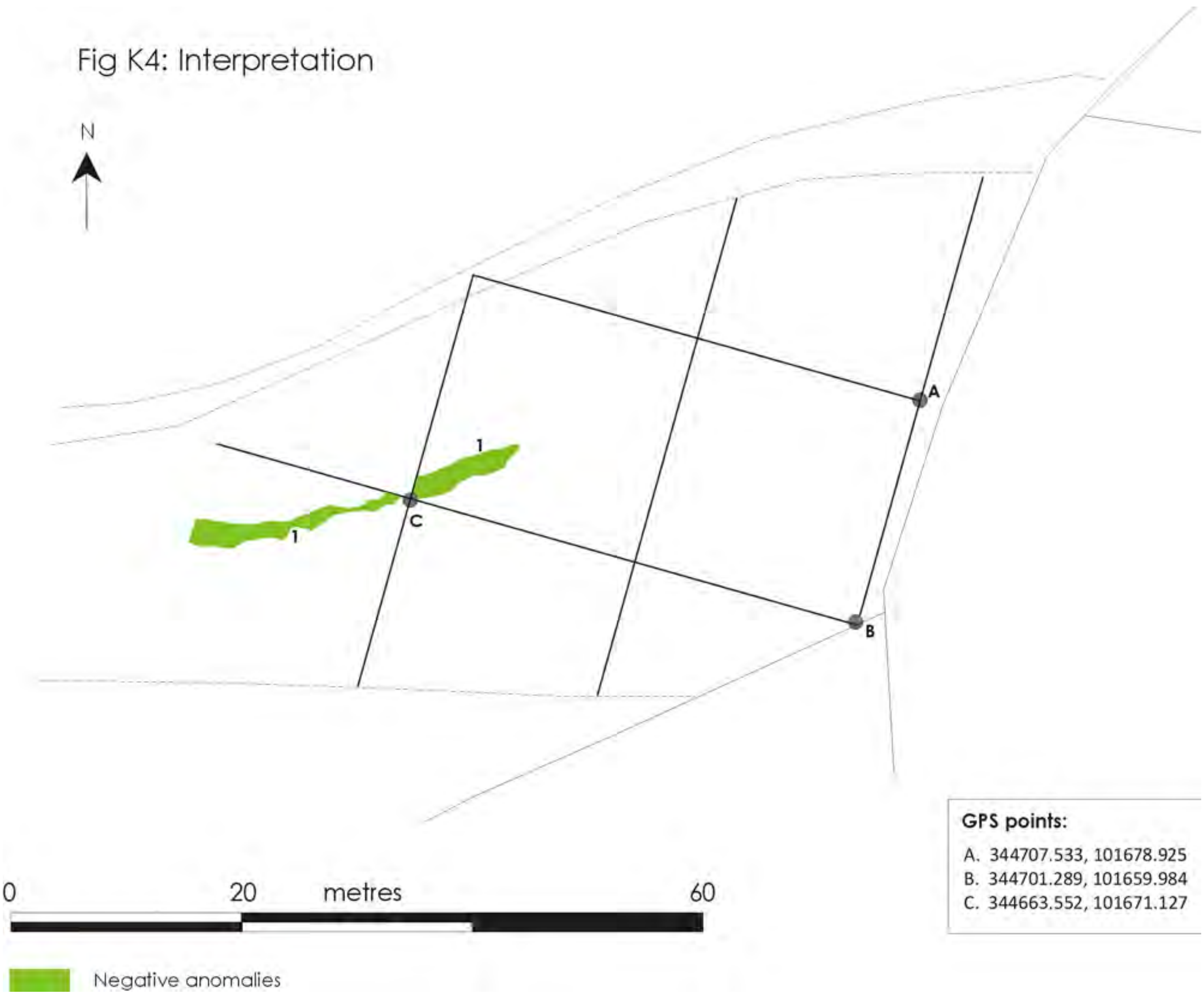


Fig K4: Interpretation



Stoke Knapp Farm Geophysical Survey
Overall Conclusion

According to the BUARC Project Design (Milward 2023) the primary aims for the research project at Stoke Knapp Farm are to confirm the presence and character of any Iron Age activity on and around Waddon Hill, and to enhance the existing knowledge of the Roman Fort. The results for the geophysical surveys, both on the hilltop and in the ten surrounding Areas, have provided evidence which supports both these objectives.

In the case of the Roman Fort itself, both the gradiometry and resistivity surveys have detected major linear anomalies corresponding to Webster's excavation plan. Both surveys have also detected a small number of linears on differing alignments not recorded by Webster which could suggest different activity phases to the Roman occupation of the hilltop.

There is surprisingly little evidence overall for settlement activity in the surrounding areas, apart from Areas C, G, I and possibly F. Out of these Area G reveals the most coherent linear system of all the Areas, although Area C clearly shows two major linears but their interpretation is limited due to surrounding quarrying activity.

The gradiometer is also picking up natural anomalies relating to sub-surfaces water and changes in the bedrock geology. A combined overlay all Areas (fig A-K4 below) shows both the archaeological and geological anomalies.

Webster's excavations of the Roman Fort suggest 1st century occupation which ceased after 64 AD (Historic England 2016). The lack of settlement activity in the areas adjacent to the fort would appear to support this short term Roman occupation. It is possible, however, that later quarrying has removed substantial archaeological deposits which may have been contemporary with Roman habitation. It is also possible there could have been a pre-Roman activity phase on the hill which has been all but lost to the extensive quarrying.

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Fig A-K4: Combined overlay of all Areas

Ordnance Survey Map Copying Licence Number: 100048647

0 100 metres 400

Limit of project area

- Positive anomalies
- Negative anomalies
- Low resistance anomalies
- High resistance anomalies
- Ferrous magnetic disturbance

Report prepared by Liz Caldwell of GeoFlo – Southwest Geophysical and Flotation Services. 29th February, 2024
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