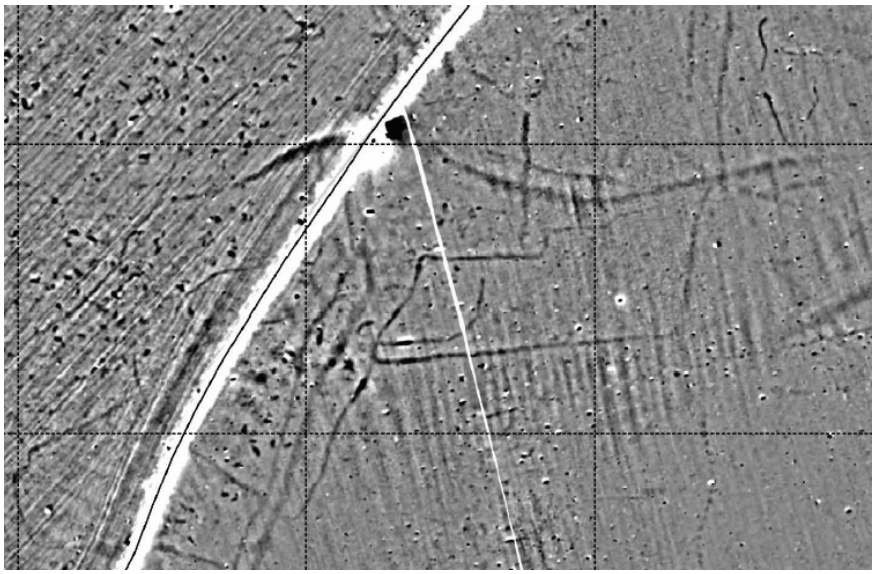

Archaeological geophysical survey of land north-east of Daventry, Northamptonshire August to October 2016

Event number ENN 108242

Report No. 16/187

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NGR: SP 590 640

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***OASIS* REPORT**

PROJECT DETAILS	Oasis No. molanort1-267629	
Project name	Archaeological geophysical survey of land north-east of Daventry, Northamptonshire	
Short description	MOLA was commissioned to conduct an archaeological geophysical survey of circa 180ha of land to the north-east of Daventry, Northamptonshire. The survey mapped widespread Iron Age and Roman remains, including pit alignments, linear ditches, enclosures and a trackway, which together formed part of the northern hinterland of the nearby hillfort at Borough Hill. Other remains including medieval ridge and furrow, a post-medieval farmstead and post-medieval brick kilns were also detected.	
Project type	Geophysical survey	
Site status	None	
Previous work	Desk-based assessment (Conolly 2016) Geophysical surveys (GSB 2005, Butler and Fisher 2008, Ladocha and Smith 2010)	
Current Land use	Arable and pasture	
Future work	Trial trench excavation	
Monument type/ period	Iron Age pit alignments, Iron Age or Roman trackways, enclosures and ditches, medieval ridge and furrow, post-medieval farmstead, post-medieval brick kilns. post-medieval quarries.	
Significant finds	None	
PROJECT LOCATION		
County	Northamptonshire	
Site address		
Study area	*c* 180ha	
OS Easting & Northing	SP 590 640	
Height OD	*c* 109m - 161m aOD	
PROJECT CREATORS		
Organisation	MOLA	
Project brief originator	Lesley-Ann Mather, Northamptonshire Archaeological Advisor	
Project design originator	MOLA Northampton	
Director/Supervisor	Adam Meadows and Graham Arkley	
Project Manager	John Walford	
Sponsor or funding body	CgMs Consulting	
PROJECT DATE		
Start date	15 August 2016	
End date	21 October 2016	
ARCHIVES	Location	Content
Physical	N/A	
Paper	MOLA Northampton	Site survey records
Digital		Geophysical survey & GIS data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	
Title	Archaeological geophysical survey of land north-east of Daventry, Northamptonshire, August to October 2016	
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Contents

Figures

Archaeological geophysical survey of land north-east of Daventry, Northamptonshire August to October 2016

ABSTRACT

MOLA (Museum of London Archaeology) was commissioned to conduct an archaeological geophysical survey of circa 180ha of land to the north-east of Daventry, Northamptonshire. The survey mapped widespread Iron Age and Roman remains, including pit alignments, linear ditches, enclosures and a trackway, which together formed part of the northern hinterland of the nearby hillfort at Borough Hill. Other remains including medieval ridge and furrow, a post-medieval farmstead and post-medieval brick kilns were also detected.

1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by CgMs Consulting, on behalf of Barratt Homes, to undertake a magnetometer survey of circa 180ha of land located to either side of the B4036 Long Buckby Road on the north-eastern side of Daventry (NGR SP 590 640; Fig 1). The survey followed on from previous episodes of survey conducted in 2005, 2008 and 2010, completing the coverage of a proposed development area so as to provide a comprehensive overview of its archaeological potential.

The fieldwork for the project was prompted by a requirement from Lesley-Ann Mather, the Northamptonshire County Council Archaeological Advisor, and was undertaken between August and October 2016. It has been recorded with the Northamptonshire Historic Environment Record (HER) under event number ENN 108424.

2 BACKGROUND

2.1 Topography and geology

The survey area lies on the north-eastern side of Daventry, encompassing parts of the parishes of Daventry and Norton. It is roughly tadpole shaped, with its long axis stretching 2.6km from Thrupp Lodge in the north-east to the southern end of Daventry Reservoir in the south-west, more or less parallel to the B4036 Long Buckby Road. Much of its southern boundary is defined by the road between Daventry and Norton, and part of its northern boundary by the Grand Union Canal.

The topography of the survey area may be described, broadly speaking, as an irregular ridge of land projecting north-eastwards from below the northern tip of Borough Hill. A minor stream valley, dammed in the west to form Daventry Reservoir, defines the north-western limit of this ridge and the head of another stream valley cuts into its south-eastern flank. The survey area attains a maximum elevation of *c* 161m aOD on its southern edge, on the lower slope of Borough Hill, and a minimum height of *c* 109m in the stream valley to the north.

The solid geology of the survey area comprises a sequence of Liassic strata, with Whitby Mudstone outcropping on the highest ground and Marlstone Rock, Dyrham Formation Mudstone and Charmouth Mudstone outcropping successively downslope. Drift geology is largely absent from the higher ground, but there are deposits of Oadby Diamicton (boulder clay) and fluvio-glacial gravels at the north-eastern end of the survey area and a belt of alluvium lies on the floor of the stream valley to the north-west (BGS 2016).

2.2 Historical and archaeological background

The survey area has been the subject of a recent desk-based archaeological assessment (DBA) (Conolly 2016), upon which this summary largely draws. There have also been three previous episodes of geophysical survey (GSB 2005, Butler and Fisher 2008, Ladocha and Smith 2010), as further discussed below.

Evidence for Palaeolithic activity in or around the survey area is currently non-existent, and that for the Mesolithic and Neolithic activity is sparse. A surface scatter of worked flints has been collected from the fields south of Daventry Reservoir and there are a few stray Neolithic finds recorded from the wider vicinity (Conolly 2016, 16-17). Additionally, two Neolithic pits have been found 600m west of the survey area during the excavation of an otherwise Iron Age to Roman site at Monksmoor Farm (Egan 2016, 13). The Bronze Age is also poorly represented, although there are records of probable Bronze Age round barrows formerly standing on top of Borough Hill, *c* 600m south of the survey area.

Three sites of probable Iron Age to Roman date have been identified within the survey area. One extensive complex of enclosures and other remains lies at the foot of Borough Hill, close to Lower Thrupp Grounds, and another group of enclosures, with associated boundary ditches, lies 400m to the north-west adjacent to Daventry Reservoir. The third site, which also lies adjacent to the reservoir, comprises a pit alignment of probable early Iron Age date and an apparently associated ditch (Conolly 2016, 25). Outside of the survey area, the most notable site is the exceptionally large hillfort on Borough Hill (Scheduled Monument No 1010696), which would presumably have served as a focal point in the Iron Age landscape, and which contained a villa or other substantial building in the Roman period. Other substantial remains are known to lie to the north-east of the survey area, around Thrupp Lodge (Conolly 2016, 26), and to the west, around Monksmoor Farm (Egan 2016).

Little of significance is known about the survey area in the early to middle Saxon periods, but by the late Saxon period it was predominantly associated with the settlement of Thrupp. The Domesday Book refers to a settlement with thirteen households, and finds suggest that this may have lain just outside the survey area, close to Thrupp Lodge (Conolly 2016, 20). Occupation of this locality continued almost throughout the medieval period, until 1489, at which date the village was depopulated and the land enclosed as pasture (Conolly 2016, 21). In the post-medieval period the area continued to be sparsely populated, although historic maps do show it to have contained a small number of dispersed farmsteads (Conolly 2016, 22-3 & figs 7-8)

Two previous geophysical survey projects, in 2005 and 2008, were undertaken in response to a prior incarnation of the present development proposals. Each survey covered a series of sample blocks, and each discovered several archaeological sites. These have been noted in the general discussion above, and will be more specifically referred to in the results section below. A third survey, sampling the route of a proposed new canal arm in 2010, provided no significant new archaeological information (Ladocha and Smith 2010).

3 METHODOLOGY

3.1 General comments

Two different survey methodologies were applied on this site, to maximise the resources which MOLA could bring to bear and thus ensure prompt completion. One team undertook a gridded survey with hand-held magnetometers whilst a second team operated a cart-mounted magnetometer system. The two techniques produced comparable datasets, although the latter recorded data at greater spatial precision and resolution than the former.

Both survey techniques used the same key components; Bartington Instruments Grad601 magnetic gradiometers (Bartington and Chapman 2003) and a Leica Geosystems Viva GPS antenna. However, the instrument configurations, operational procedures and data processing routines varied for each technique, as described below. These variations notwithstanding, both techniques complied with the survey guidelines issued by Historic England and by the Chartered Institute for Archaeologists (HE 2015; CIfA 2014).

The data from both survey techniques has been converted into greyscale raster plots at a display range of +/-5nT and these have been geo-rectified for display against the Ordnance Survey base mapping (Figs 3, 5, 7, 9, 11, 13 & 15). The same plots are presented with an interpretive overlay in Figures 4, 6, 8, 10, 12, 14 & 16, and plots of the raw data are presented at a range of +/-10nT in Figures 17-23.

The figures in this report display not only the data from the present fieldwork but also that from the 2008 and 2010 surveys which were undertaken by Northamptonshire Archaeology (the predecessor organisation of MOLA Northampton). However, MOLA does not have access to the original data files from the 2005 GSB survey and was not commissioned to undertake any detailed re-consideration or re-presentation of this data. Consequently, whilst the GSB results are acknowledged in the text and the principle archaeological elements are schematically indicated on the interpretation figures, no data plots or full written descriptions are provided.

3.2 Gridded survey

An independent network of 30m grid squares was established across each field to be surveyed by this technique. These were set out with a tape measure and optical square and were tied in to the Ordnance Survey National Grid by measurement with the Leica Viva GPS. The gradiometers were carried at a brisk but steady pace through each grid square, collecting data along 1m spaced traverse lines. Measurements were automatically triggered every 0.25m along the traverses, giving a total of 3600 measurements per square.

The survey data was processed using Geoplot 3.00v software. Striping, caused by slight imbalances between the magnetic sensors, was typically removed using the 'Zero Mean Traverse' function and destaggering of the data was performed where necessary to correct errors introduced by an uneven survey pace. A few parts of the data were destriped by a different method, using an in-house spreadsheet routine designed to preserve the appearance of magnetic anomalies running parallel to the direction of traverse.

3.3 Cart survey

The MOLA magnetometer cart is a lightweight two-wheeled structure designed to be pushed by hand. It incorporates a bank of six vertically-mounted Grad601 magnetic

sensor tubes, spaced at half-meter intervals along a bar aligned crossways to the direction of travel, and also incorporates a GPS antenna mounted on the central axis, 0.5m astern of the sensors. The magnetic sensors each output data at a rate of six readings per second and the GPS antenna outputs NMEA format data (GGA messages) at a rate of one position every two seconds. These data streams are fed into a laptop computer where they are compiled into a single raw data file by MultiGrad601 logging software specifically designed for that purpose.

The cart was pushed along largely straight and parallel traverses across the survey area, with logging being manually toggled on and off at the start and end of each traverse to avoid the collection of spurious data whilst turning. Traverse ends were marked with ranging poles to aid even coverage, and the evenness of coverage was further checked by monitoring the positional trace plotted in real time by the MultiGrad601 logging software. The average speed of coverage was *c* 1.5m/s and the effective data resolution thus approximated to 0.25m x 0.50m.

The raw survey data was initially processed with MLGrad601 software, which calculated an actual UTM co-ordinate for each data point by interpolating the GPS readings and applying offset corrections based on the array geometry and calculated heading direction. This produced an output file in XYZ format which could be imported into TerraSurveyor software for data visualization and further processing.

The raw XYZ data exhibited striping caused by slight mis-matches in the calibration of the individual magnetic sensors. This was removed in TerraSurveyor by applying the median destripe function to runs of data from each sensor. The data thus de-striped was interpolated to produce a greyscale raster image (range +/-5nT) and this was output with an associated world file for geo-rectification.

4 SURVEY RESULTS

4.1 General comments

The survey has identified extensive sets of magnetic anomalies relating to late prehistoric and Roman remains and to medieval ridge and furrow cultivation, and more localised anomalies relating to post-medieval quarry pits, farmsteads and kilns. Various other anomalies relate to modern features and to elements of the underlying geology.

Much of the detected archaeology comprises boundaries and trackways which stretch across large swathes of landscape and link into clusters of ditched enclosures and other settlement features. There are few neatly definable 'sites' but the remains can be broadly grouped into western, central and eastern zones for descriptive purposes (Fig 2).

In the following account of the survey results, the modern fields are referred to by number according to a numbering scheme devised by the client. An overview of these field numbers is provided on Figure 2, and individual field numbers are shown on the interpretation and results figures as appropriate. The principle archaeological features are identified by letters, as shown on Figure 2 and on the various interpretation figures.

4.2 Prehistoric and Roman archaeology

The western zone (Figs 3-8)

This zone lies between the Long Buckby Road and Daventry Reservoir, stretching from the southern tip of the survey area towards the former site of Lower Thrupp Grounds. Its principal feature is a linear ditch which runs for almost a mile, closely following the contours of a series of short spurs and dry valleys (the full course is indicated on Figure 2). Various other ditches, enclosures and a pit alignment are also present in this area.

The linear ditch (a) is represented by a positive linear anomaly which commences in Field 1 and can be traced as a largely continuous feature through Fields 2, 8 11, 14 and into Field 15 where it fades out (Figs 3-8). It appears to have gaps at the points where it projects into the dry valleys, although this may be a result of masking by colluvial overburden. There are also several places where the line of the ditch is obscured by a modern pipeline, and one area close to the reservoir dam where it runs briefly outside the boundary of the survey area.

There are two points where the ditch shows a relationship with other archaeological features. In Field 8 it intersects with the corner of an Iron Age or Roman enclosure ditch (Fig 7-8), and it Field 2 it crosses with a pit alignment (Figs 3-4). At the latter point the main ditch anomaly weakens abruptly, implying that the pit alignment may have passed through a gap which was later blocked by a less substantial ditch cut. This suggests that the ditch could be broadly contemporary with the pit alignment which, by analogy with other examples, is most probably an early Iron Age feature.

The pit alignment (b) contains a minimum of 50 pits, many of which have a sub-rectangular shape. It runs eastwards across Field 2 for *c* 250m before coming to a seemingly abrupt stop (Figs 3-4). However, there is a short run of four pit-like anomalies on a similar orientation in Field 3 and these may comprise a detached part of the same alignment (Figs 5-6).

In Field 1, near the southern end of the survey area (Figs 3-4), there is a small trapezoidal ditched enclosure (c) with a south-facing entrance gap. The western edge of this apparently connects to a ditch which runs north-south, on a slightly divergent alignment from the overlying ridge and furrow. Further south, in Field 1a, there is a small

tightly curving ditch projecting into the survey area from beneath the adjacent road (d). This could represent the edge of either an enclosure or a ring ditch, but too little of the feature can be seen to determine which.

In Field 8 there are three groups of Iron Age or Roman enclosures; two groups of relatively small settlement enclosures or stock pens in the west, located *c* 90m from each other, and a larger enclosure or small field with some associated features to the east (Figs 7-8). One of the western groups (f) is poorly resolved and largely obscured by interference from a modern pipeline but apparently comprises two conjoined enclosures of rectilinear form. The other western group (e), which is also partly obscured by modern interference, comprises a sub-rectangular enclosure with an internal partition across one corner, a smaller enclosure appended to its eastern edge, and a pair of ditches extending southwards, perhaps defining part of a third enclosure. The eastern enclosure (g) is trapezoidal and about 80m across. Its eastern edge seems to largely underlie a modern field boundary, projecting slightly across it into Field 7. A substantial ditch extends northwards from the corner of this enclosure, and a number of small positive anomalies suggest the possible presence of pits.

In Field 15, adjacent to 'Westlands' (Fig 7-8), the GSB survey identified an L-shaped ditch with a rounded corner (h). Although such a feature cannot be firmly dated, there are some comparable examples of L-shaped ditches which have proved to date from the middle to late Bronze Age (eg Chapman and Jones 2012, 27-8; Evans *et al* 2007; 48-51).

In addition to the specific features described above, the survey has detected a few dispersed and irregular linear anomalies (i). Many of these could represent ditches, although a few may prove to be geological in origin. Similarly, there are various small, discrete positive anomalies, often occurring in groups, which could either represent pits or else pockets of weakly magnetic minerals within the underlying geology (j).

The central zone (Figs 5-6)

This zone encompasses the greater part of Field 6 and smaller parts of the adjacent Fields 5, 7 and 10. It contains one substantial archaeological site with a rather sprawling form (k), and a possible second site that is much smaller and simpler (p). The main site can be broadly dated to the Iron Age or Roman period and the other site is provisionally suggested to be of similar date.

The core of the main site, which is located in the western half of Field 6, was identified by the GSB survey in 2005 and was not re-surveyed during the present phase of work. The reader is therefore referred to the GSB report for a full description of the features in this area.

On the southern side of the main site there is a pair of linear ditches which extend south-eastwards, probably flanking the sides of a trackway (o). They align directly towards the northern tip of the hillfort at Borough Hill, *c* 50m to the south and also correspond perfectly with the modern field boundary along which the Daventry - Norton parish boundary runs. This appears to be an instance of landscape fossilisation, whereby a historic (late Saxon or medieval?) boundary was established along, and preserved the line of, a much more ancient feature.

Also south of the site, near the northern edge of Field 5, there is an irregular anomaly (n) with a moderately intense magnetic signature (peak value *c* 40nT). This possibly represents the remains of a kiln, oven, or other small structure subjected to intense heat.

To the north of the site there is a coherent, if somewhat irregular, set of linear ditches to which a number of small rectilinear enclosures are appended (l). These intersect with a probable trackway (m), represented by three weak and closely spaced linear anomalies, which does not respect the layout of the ditches and clearly derives from a separate phase of activity Also, to the north-east of the site, there is a weak curvilinear anomaly which could represent a sub-circular enclosure or a ring ditch.

The other possible site in the central zone lies wholly within Field 5 and is represented by a set of very weak and disjointed linear and curvilinear anomalies (p). These seemingly define an enclosure ditch, measuring *c* 65m by 30m, with a square eastern end and a rounded western end. Within the western end a sinuous linear anomaly probably represents the course of a much smaller enclosure ditch of multi-lobed form, and east of this there is an incoherent scatter of short linear anomalies which may represent elements of further internal features.

The eastern zone (Figs 5-6 & 9-12)

The principal archaeology within this zone comprises a small southern group of enclosures in Field 9 (q), a much larger northern group of enclosures and boundary ditches spreading across Fields 10 and 17 (r) and a long sinuous trackway running between the two. These remains are likely to be mostly Iron Age to Roman in date, as are the various ditches and pit alignments (s, t) which are present elsewhere in the zone

The two enclosures at the southern end of Field 9 (q) have simple but irregular forms (Figs 5-6). The western one appears to contain a small cluster of pits, whereas the eastern one lacks any obvious internal features. A trackway, defined by two ditches, passes neatly between the two and the swings around in a dog-leg bend before continuing north-eastwards towards the northern enclosures.

A large amorphous magnetic anomaly, probably representing a quarry pit, disrupts the northern end of the western enclosure. Because the enclosure is unlikely to be earlier than Iron Age, and the quarry anomaly is overlain by Medieval ridge and furrow (see below), the date of quarrying is likely to be bracketed between these two periods.

To the south-east of the two enclosures there are some fragmentary linear anomalies which may represent the edge of another enclosure projecting into the survey area from beneath the adjacent road. There are also a large number of small positive anomalies, both here and elsewhere in the southern part of Field 9, which could either represent pits or else pockets of weakly magnetic minerals within the underlying geology.

The northern enclosure group (r) comprises a piecemeal agglomeration of large, irregular enclosures covering a total area in excess of 4ha (Figs 11-12). The overall layout of these is incoherent, and it appears the site is a palimpsest of individual features which developed piecemeal over a protracted timespan. The size of the enclosures, and the absence of any obvious roundhouses suggests that the site may be a field system or a series of stock enclosures rather than a settlement.

A linear ditch branches away from the northern enclosure group, running north-west across the end of Field 10 and continuing into Field 18 where its anomaly rapidly becomes indistinct. It is possible that it bends back on itself to link with the ditch that runs corner to corner across Field 22 (Figs 11-12).

The two pit alignments in the eastern zone are located in Fields 9 and 17 (Figs 11-12). The former (s) is aligned east to west and can be traced over a distance of *c* 200m, whereas the latter (t) is aligned north to south and can be traced for c 100m. Neither

alignment has clearly resolved terminals, and it is likely that they each run further than the survey results would suggest. As with the pit alignment in Field 2, these alignments can be provisionally dated to the early Iron Age by analogy with similar sites elsewhere in Northamptonshire.

Of the other ditches within the eastern zone, most call for little comment. However, the one at the eastern end of Field 17 (u) has a very unusual 180 degree hairpin bend and, whilst the purpose of this is unclear, it does suggest that this ditch may have a more specialist purpose than just a field boundary.

Minor, dispersed features

Various other anomalies of possible archaeological interest have been detected across the survey area. Most of these are linear anomalies occurring in isolation or in small groups, and only two can be interpreted beyond the generalised observation that they may represent sections of ditch. One of these (v) is the small curvilinear anomaly in the south-western corner of Field 15, which could represent a ring ditch or small unenclosed roundhouse (Figs 9-10), and the other (w) is the set of four short linear anomalies in Field 28 which might represent parts of a small square enclosure (Figs 15-16).

4.3 Medieval ridge and furrow cultivation

Ridge and furrow of medieval date is almost ubiquitous across the survey area, although most has been levelled by modern ploughing and it is only in Fields 3 and 4 that any upstanding earthworks survive. The furrows are represented in the survey data as sets of regularly spaced linear anomalies with gently curving forms, often aligned to run with the local direction of slope. In a few places, such as the southern end of Field 21, the furrows are further highlighted by sets of field drain anomalies (see below) following the same lines, the drains evidently having been laid along the furrow bases when they were still apparent as earthworks.

The clarity with which the ridge and furrow has been detected varies markedly across the survey area. This may partly reflect the degree of preservation, with heavily truncated furrows tending to give rise to weaker anomalies. However, the main determining factor is likely to be geological, as the magnetic properties of soils formed over different strata will vary and not all will support the formation of equally clear magnetic anomalies.

4.4 Post-medieval buildings and settlement

Three substantial zones of small, densely clustered magnetic dipoles and monopoles ('magnetic noise') have been detected in areas where historic maps of the survey area (Conolly 2016, figs 7-8) depict former farms and barns. The largest of these zones (x) occurs at the junction of Fields 11 and 12 (Figs 7-8), where a farm or hamlet called 'Thorpe' appears on the Ordnance Survey surveyor's draft (1813). This same farm is named as 'Thrupp Grounds Farm' on the Ordnance Survey first edition (1881). The other two zones are in Fields 18 (Figs 9-10) and 20 (Figs 13-14), in places where there are indistinct marks on the 1813 map and un-named buildings and yards depicted on the 1881 map.

In each case, the spread of magnetic noise is likely to represent a scatter of building rubble and domestic or agricultural rubbish, including pieces of ferrous scrap. In the case of the Thrupp Grounds Farm site and the site in Field 20 there are also some traces of linear anomalies which partially correspond to small plot or yard boundaries recorded on the mapping.

Two narrow strips of magnetic noise correspond with the lines of tracks leading from the Long Buckby Road towards Thrupp Grounds Farm and the buildings in Field 18. In each case the noise is likely to represent residual track hardcore mixed into the ploughsoil.

One other former building has been detected in Field 3, where there is a moderately well-defined rectangular anomaly corresponding to the site of a demolished house (Figs 5-6). This presumably dated from the mid-19th century, as it appears on the 1881 map but not on the 1813 one.

4.5 Post-medieval brick kilns

At the northern end of Field 20, between the canal and Thrupp Covert, the survey has detected four probable brick kilns (y1) which are represented by intense positive rectangular anomalies ranging in size from 7m to 9m long and 3m to 5m wide (Figs 13-14). Three of these lie parallel to the canal and the edge of the covert, whilst the fourth is aligned perpendicularly. The latter anomaly shows some internal detail, with enhanced magnetic intensity at the edges possibly indicating sections of the kiln wall, but the other anomalies are stronger and have exceeded the maximum sensor resolution (100nT), with the result that no meaningful internal details can be discerned.

Spreads of weak magnetic noise, suggestive of brick rubble, occur in the same area as the putative kilns, together with a large amorphous anomaly and a chain of smaller anomalies suggestive of pits. It seems a reasonable assumption that all these features they are associated with the canal, perhaps denoting an area of construction activity dating from the end of the 18th century when the canal was dug.

One other possible brick kiln (y2) has been detected at the opposite end of the survey area, close to the reservoir at the northern end of Field 2 (Figs 3-4). This measures *c* 4m by 3m and is represented by a positive anomaly with an intensity of *c* 30nT at one end and *c* 60nT at the other. Based on comparison with similar anomalies encountered on other sites (*eg* Chinnock 2015), this is thought more likely to represent the site of a clamp than a permanent kiln structure.

At the southern edge of Field 13 there is an unusual staple-shaped anomaly measuring *c* 8m across, surrounded by a diffuse halo of weak magnetic noise (Figs 7-8). This has a typical intensity of 20 - 30nT. Its cause is unclear, but it might represent part of a kiln or other heavily burnt structure.

4.6 Post-medieval field boundaries, ponds and related features

A number of linear anomalies correlate with former field boundaries depicted on historic maps of 19th to 20th century date and two others, one at the northern end of Field 2 and the other extending through Fields 10 and 15, clearly form part of the same landscape although the do not appear on any of the readily available historic mapping. Most of these anomalies are likely to represent backfilled ditches, although those in Field 3 are composed of chains of intense magnetic dipoles which more probably represent the remains of metal fencing and that in Field 23 is a weak negative anomaly which would be more suggestive of a wall footings or a concrete drain.

Small areas of magnetic noise occur in a few places alongside the modern field boundaries. These probably mark points where gateways have been re-enforced with hardcore to prevent rutting.

A dense concentration of large dipolar anomalies at the north-eastern corner of Field 9 (Figs 13-14) corresponds to a former pond depicted on the first edition Ordnance Survey map, demonstrating that there is much ferrous debris within the backfill of this feature.

Two much smaller concentrations of ferrous anomalies in Fields 11 and 19 similarly correspond to former ponds adjacent to the former buildings noted above. It is possible that another such backfilled pond (or, alternatively, a quarry pit) is represented by the cluster of large dipoles in the southern end of Field 6 (Figs 5-6). There is, however, no map evidence to support the interpretation in this latter case.

4.7 Post-medieval quarry pits

The survey has detected a number of anomalies suggestive of small quarry pits. One of these is thought to relate to Iron Age or Roman quarrying (see above) but the rest seem more likely to date from the post-medieval period. Some apparently disrupt the medieval ridge and furrow and a pair lying to either side of the Long Buckby Road, in Fields 10 and 15, are both constrained on their western sides by what is thought to be a recent field boundary.

The quarry pit anomalies are concentrated in the southern half of the survey area, with their distribution corresponding broadly to the mapped extent of the Marlstone Rock geology. Possible outliers are present in Fields 19 and 27. Elsewhere there are some ambiguous anomalies which have been interpreted as geology (see below) but could, in certain instances, relate to quarrying. This is particularly the case in the northern part of the site where the geological mapping indicates superficial deposits of sand and gravel to be present.

At the northern end of Field 6 there is a narrow strip of intense magnetic noise extending for more than 50m along the side of the hedge. This probably represents another quarry, backfilled with modern debris including a certain amount of ferrous scrap.

4.8 Pipelines, field drains, pylons and other modern features

Three major pipelines have been detected across the survey area, two of them represented by intense linear anomalies of alternating magnetic polarity and the third by a similarly intense linear anomaly of more variable form. One runs around the edge of the reservoir and northwards to the canal, another runs alongside the canal, and the third cuts through the centre of the survey area on a north-west to south-east alignment. The last of these appears, from the form of its anomaly, to consist of two pipes running closely alongside each other.

Many smaller pipes have also been detected, the majority apparently serving the dwellings and other buildings along Long Buckby Road. There is also a probable drain in Field 2 represented by a row of large dipolar anomalies aligned downslope from a former pond in the edge of the adjacent field. It is likely that this is a non-magnetic drain with the dipoles arising from metal collars or other regularly spaced fittings.

Very weak linear anomalies of alternating magnetic polarity are widespread across the survey area. These typically occur in parallel sets as, for instance, in Field 9. Such anomalies are highly characteristic of modern field drains.

Double linear anomalies have been detected running across Field 8 and across the southern corner of Field 12, each one being associated with intermittent patches of weak magnetic noise. The exact cause of these is uncertain, but they are not convincing as ditch anomalies and would be more plausibly interpreted as drains or other modern features.

A set of electricity pylons runs northwards through the whole western side of the site. Each of this has given rise to a large, magnetically positive halo, with a radius of *c* 20m.

Other magnetic halos occur widely across the survey area, alongside buildings, metal gates and other modern ferrous structures.

Intense dipolar anomalies of ferrous origin are widespread and abundant throughout the survey area. The vast majority will relate to insignificant pieces of scrap metal within the ploughsoil, but larger ones, such as those at the southern end of Field 8 and the south-western end of Field 5, may sometimes relate to substantial pieces of buried infrastructure.

4.9 Geology

The survey data contains a wide range of geological anomalies, including some that correlate to alluvial and colluvial deposits and others which are harder to attribute to specific causes. These anomalies are very varied in character, including some which are best described as background patterning and others which are discrete anomalies with distinguishing characteristics such as irregular or amorphous forms and diffuse edges. The distinction between these geological anomalies and others of archaeological origin is not always clear cut, and in some cases an interpretation one way or the other can only be made on the balance of probability.

The colluvial anomalies are typically large, tapering zones of weak magnetic enhancement corresponding with the bases of small dry valleys. Three occur in Field 2, another in Field 23, and another, less distinct example in Field 9. The last mentioned has a dendritic western end where several small channels appear to converge.

The alluvial anomalies are restricted to the lowest-lying part of the survey area, at the northern ends of Fields 12 and 13 (Figs 13-14). There are a series of roughly parallel linear trends, probably representing successive stages of stream channel migration, and a linear chain of dipolar anomalies which mark the course of the stream as it was prior to canalisation in the late 20th century.

In the southern part of Field 15, and in the adjoining parts of Fields 10 and 18, there is a series of closely-spaced linear anomalies aligned almost east to west. Although these superficially resemble ridge and furrow anomalies, they are much less regular and are more likely to represent a swarm of natural fissures (perhaps periglacial) in the surface of the natural geology.

The remainder of the probable geological anomalies are difficult to attribute to specific causes and there is little that can be meaningfully said about them.

5 CONCLUSION

The survey has detected widespread archaeological remains, particularly in the southern half of the survey area. The majority of these appear to date from the Iron Age and Roman period, and include trackways, pit alignments and linear diches as well as various ditched enclosures. Taken as a whole, these provide substantial evidence for the contemporary landscape context of the nearby hillfort on Borough Hill. The survey has also detected large expenses of medieval ridge and furrow cultivation, areas of building debris associated with post-medieval farmsteads, and a group of four probable post-medieval brick kilns. The latter lie adjacent to the Grand Union Canal and seem likely to be associated with its construction.

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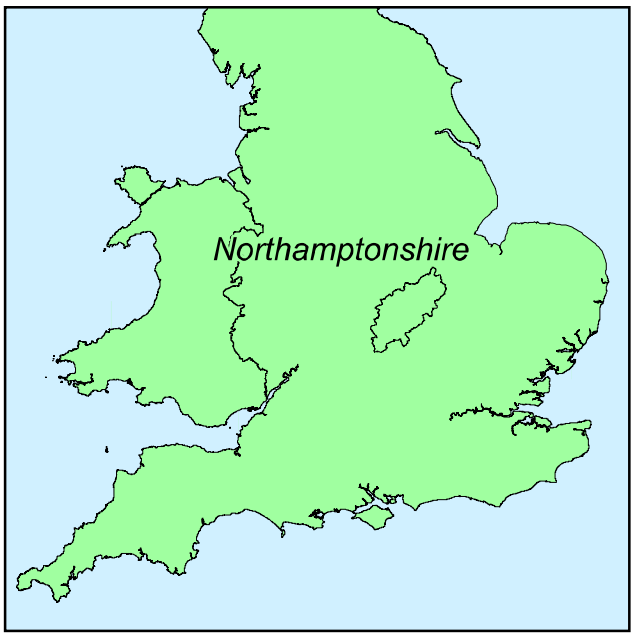
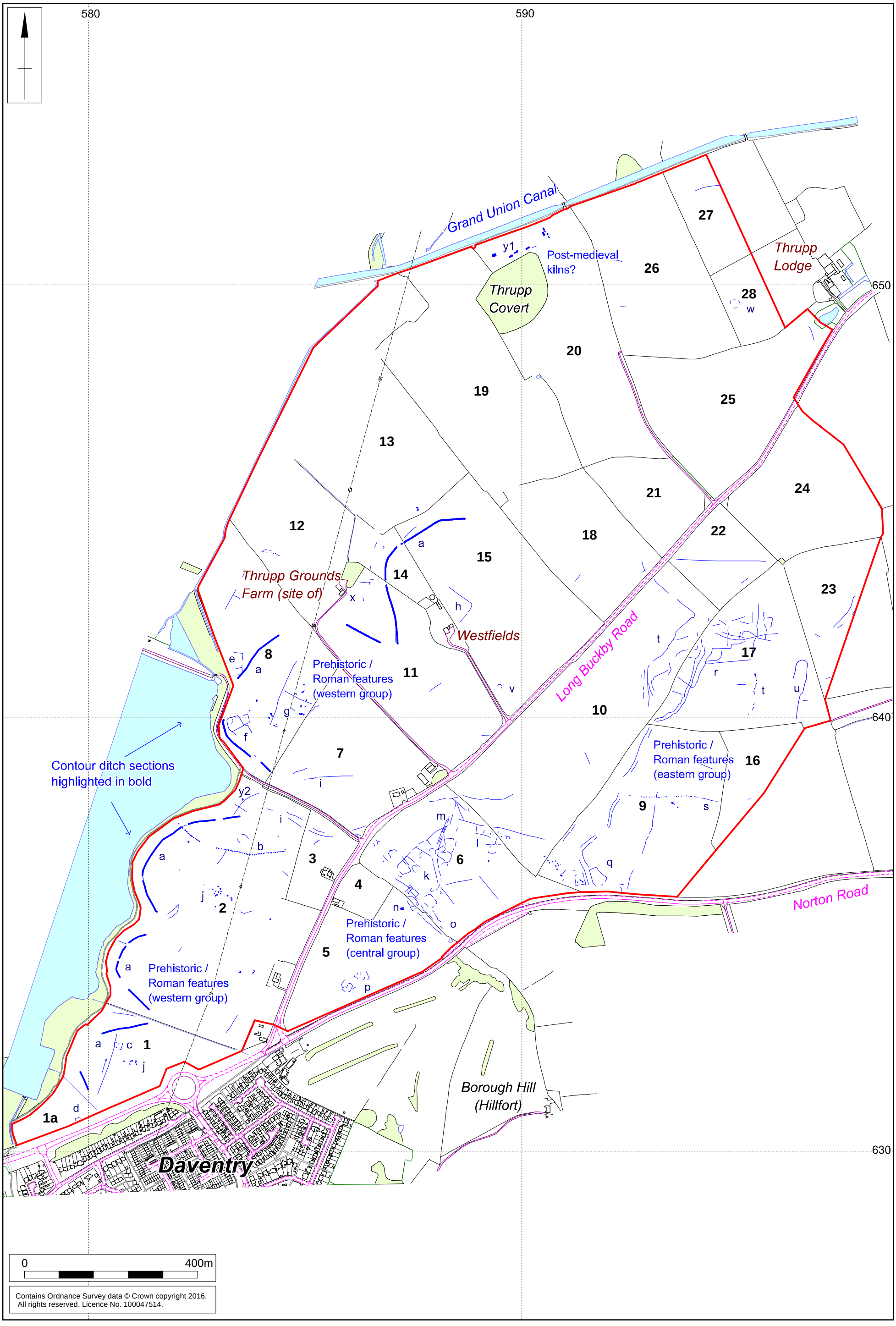
14 November 2016



Scale 1:25,000

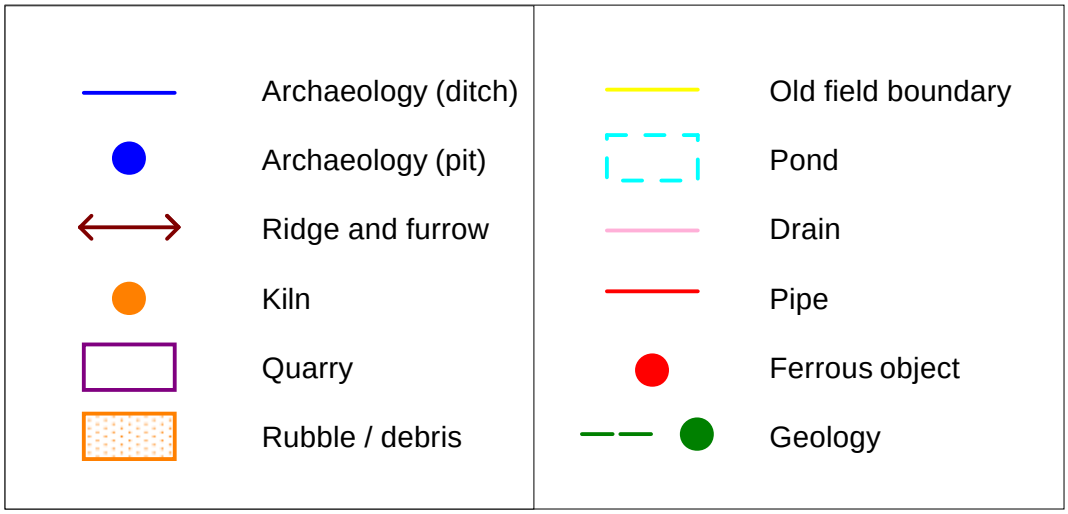
Site location Fig 1

Scale 1:8000



Overview of survey area and main archaeological features Fig 2

Magnetometer survey interpretation key
(for Figures 4, 6, 8, 10, 12, 14 and 16)



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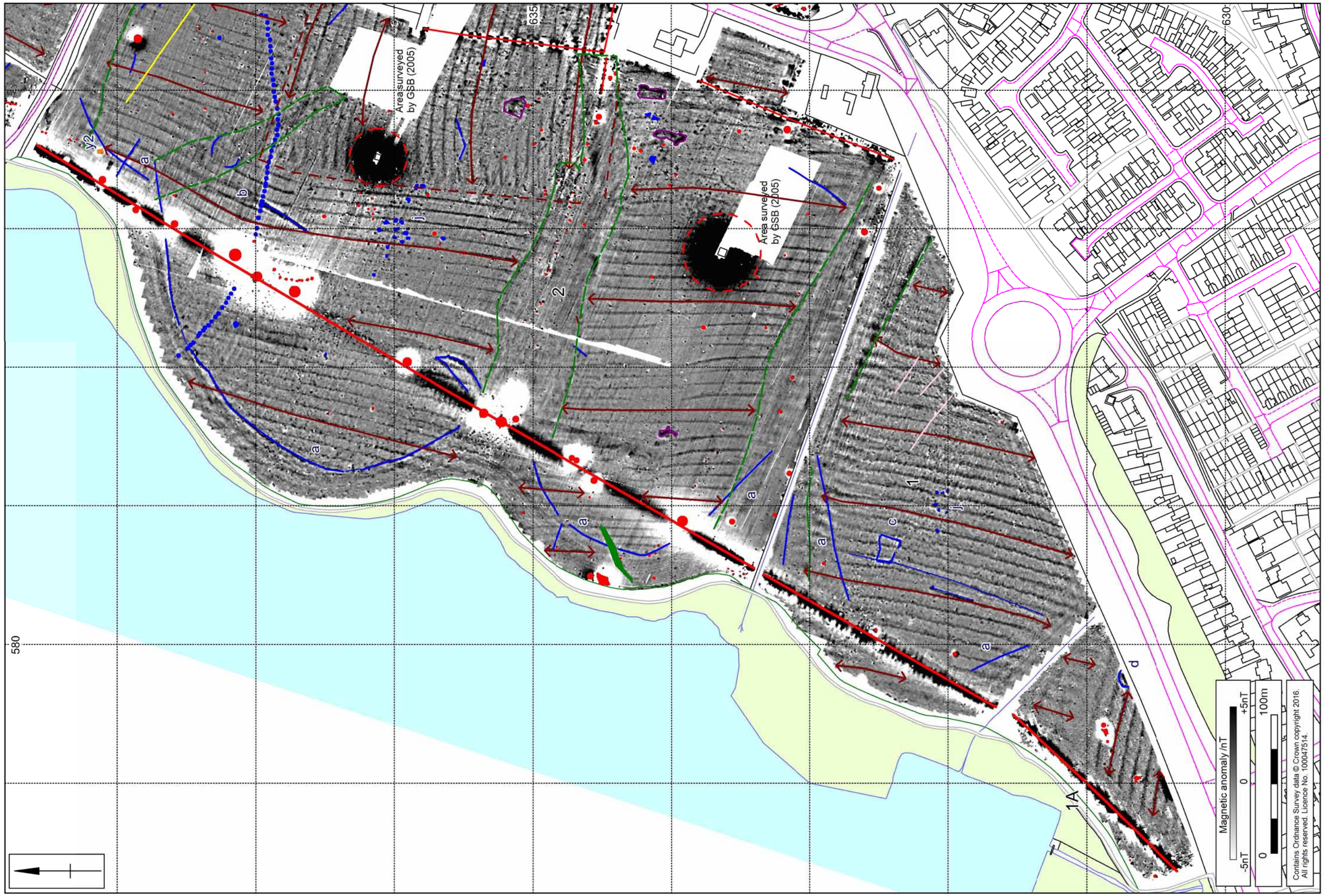
Magnetometer survey results (south-west) Fig 3



Scale 1:2500

Magnetometer survey interpretation (south-west) Fig 4

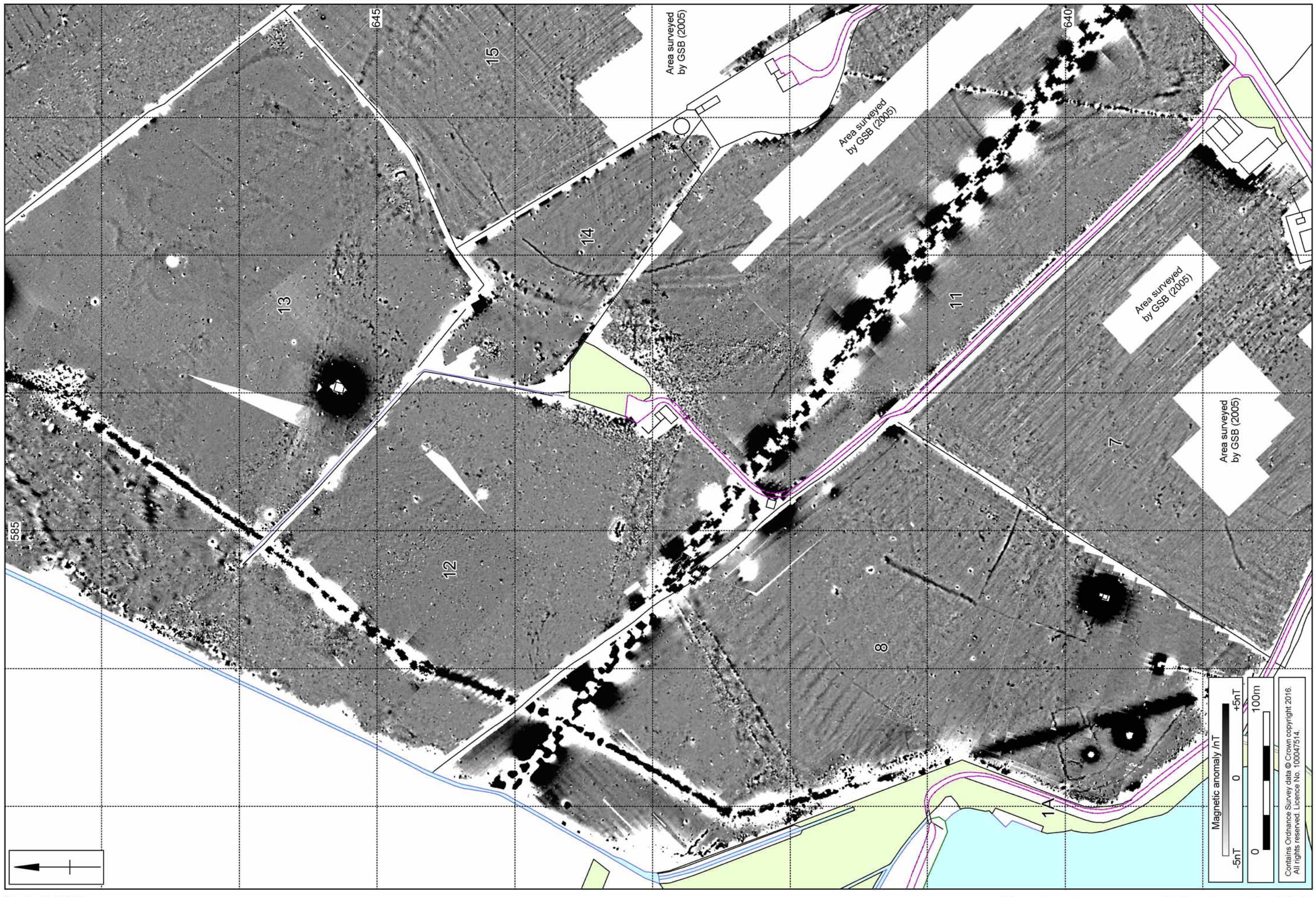
Scale 1:2500

Magnetometer survey results (south-east) Fig 5

585
590
635
Area surveyed by GSB (2005)
Area surveyed by GSB (2005)
Area surveyed by GSB (2005)
Area surveyed by GSB (2005)
2
3
4
5
6
7
9
10
b
k
l
m
n
o
p
q
Magnetic anomaly /nT
-5nT
5nT
0
100m

Scale 1:2500

Magnetometer survey interpretation (south-east) Fig 6



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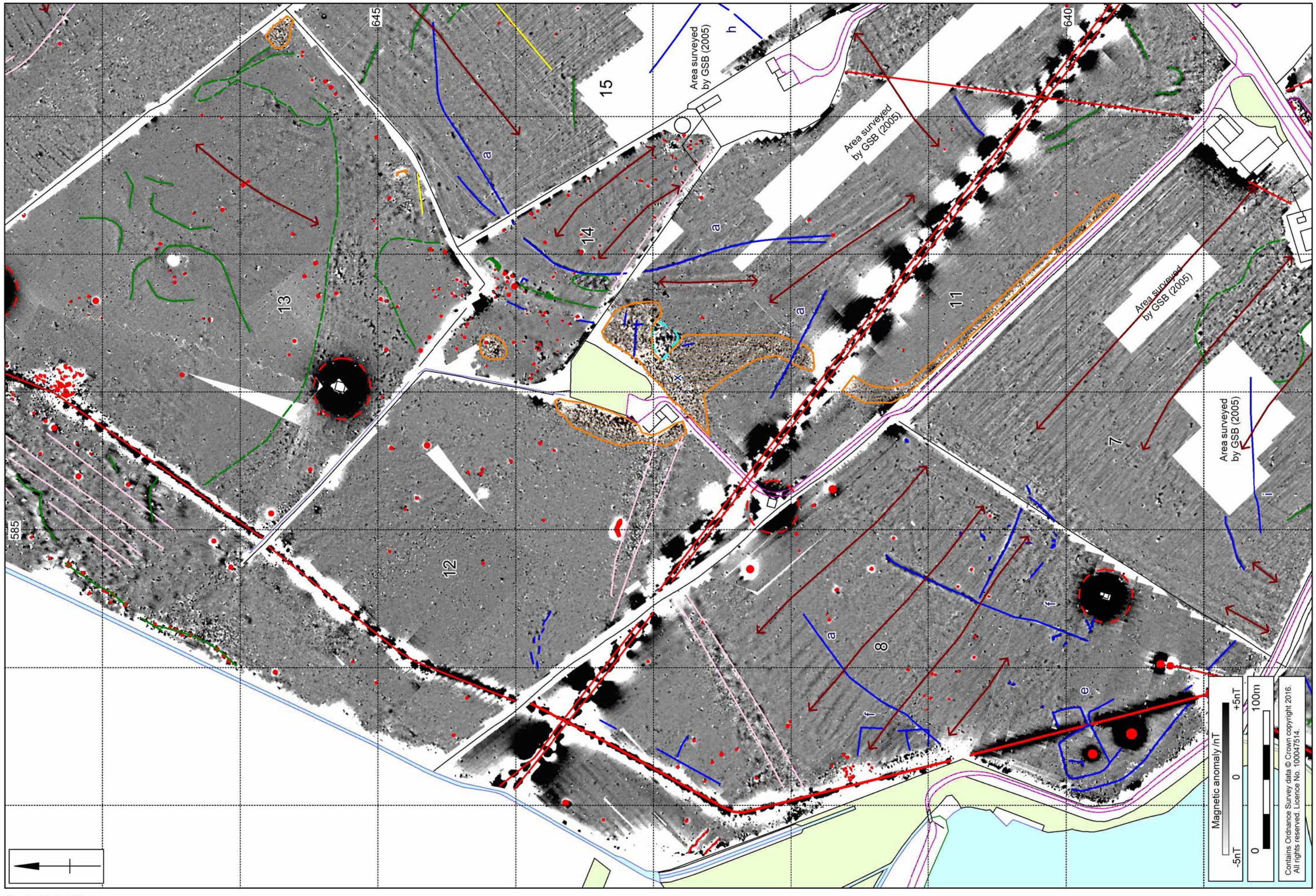
Magnetometer survey results (west-central) Fig 7



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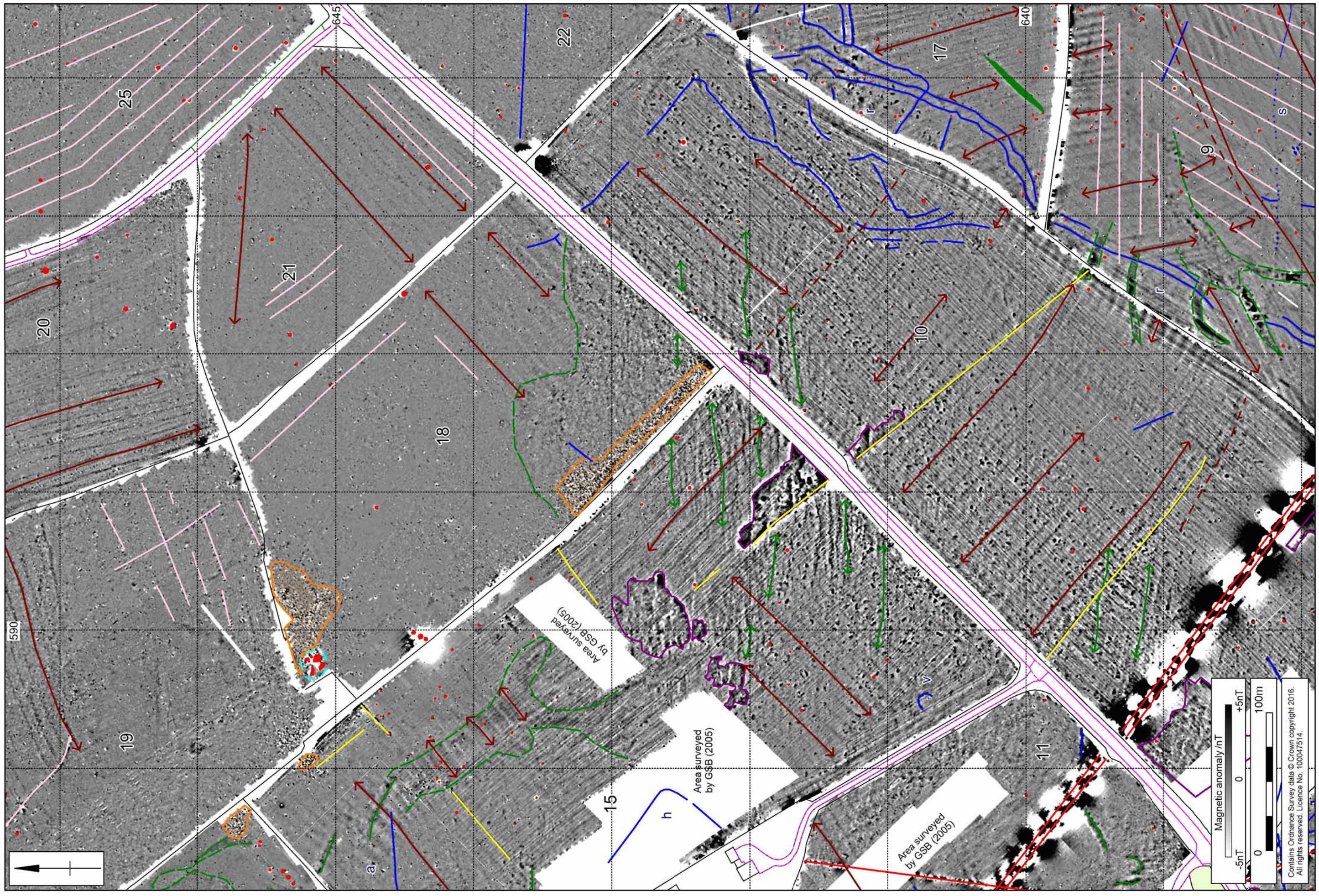
Magnetometer survey interpretation (west-central) Fig 8

Scale 1:2500

Magnetometer survey results (central) Fig 9



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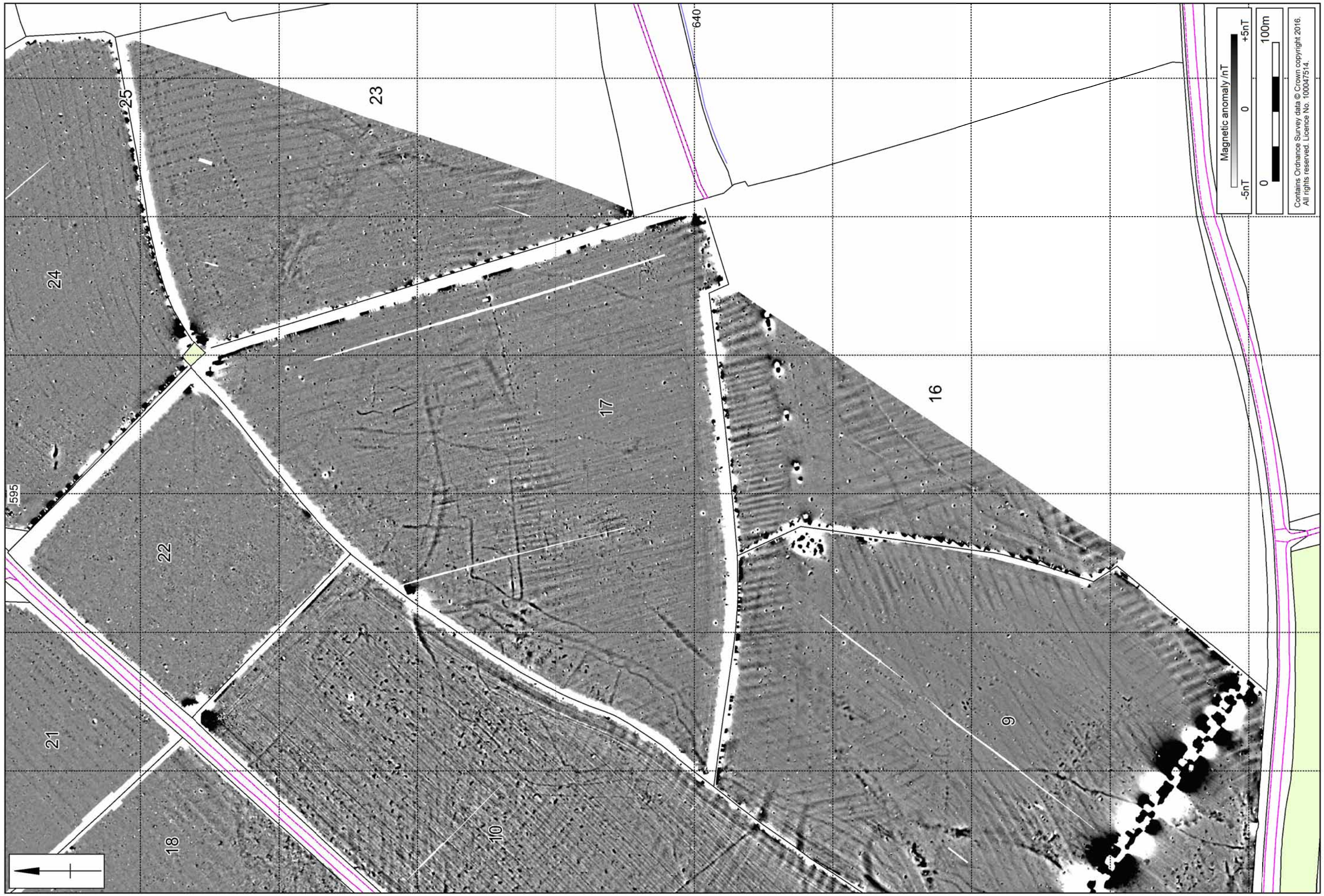
Magnetometer survey interpretation (central) Fig 10



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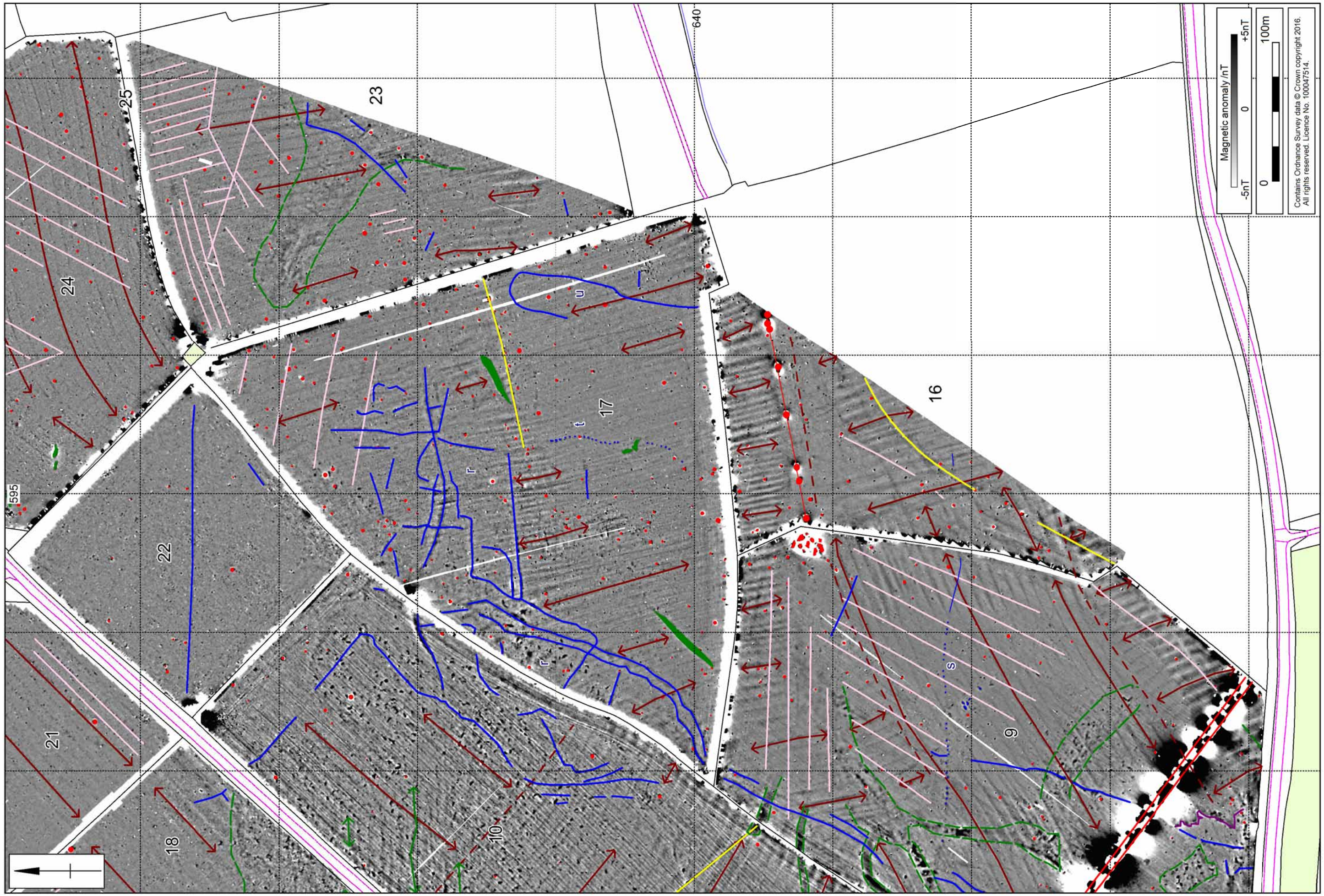
Magnetometer survey results (east-central) Fig 11



Scale 1:2500

Magnetometer survey interpretation (east-central) Fig 12

585
590
650
27
26
20
Thrupp
Covert
19
13
25
Area surveyed
by GSB (2005)
Magnetic anomaly /nT
-5nT
5nT
0
100m

Scale 1:2500

Magnetometer survey results (north-west) Fig 13

585
590
650
y1
20
27
26
25
19
13
Thrupp
Covert
Area surveyed
by GSB (2005)
Magnetic anomaly /nT
-5nT
5nT
0
100m

Scale 1:2500

Magnetometer survey interpretation (north-west) Fig 14

Scale 1:2500

Magnetometer survey results (north-east) Fig 15

Scale 1:2500

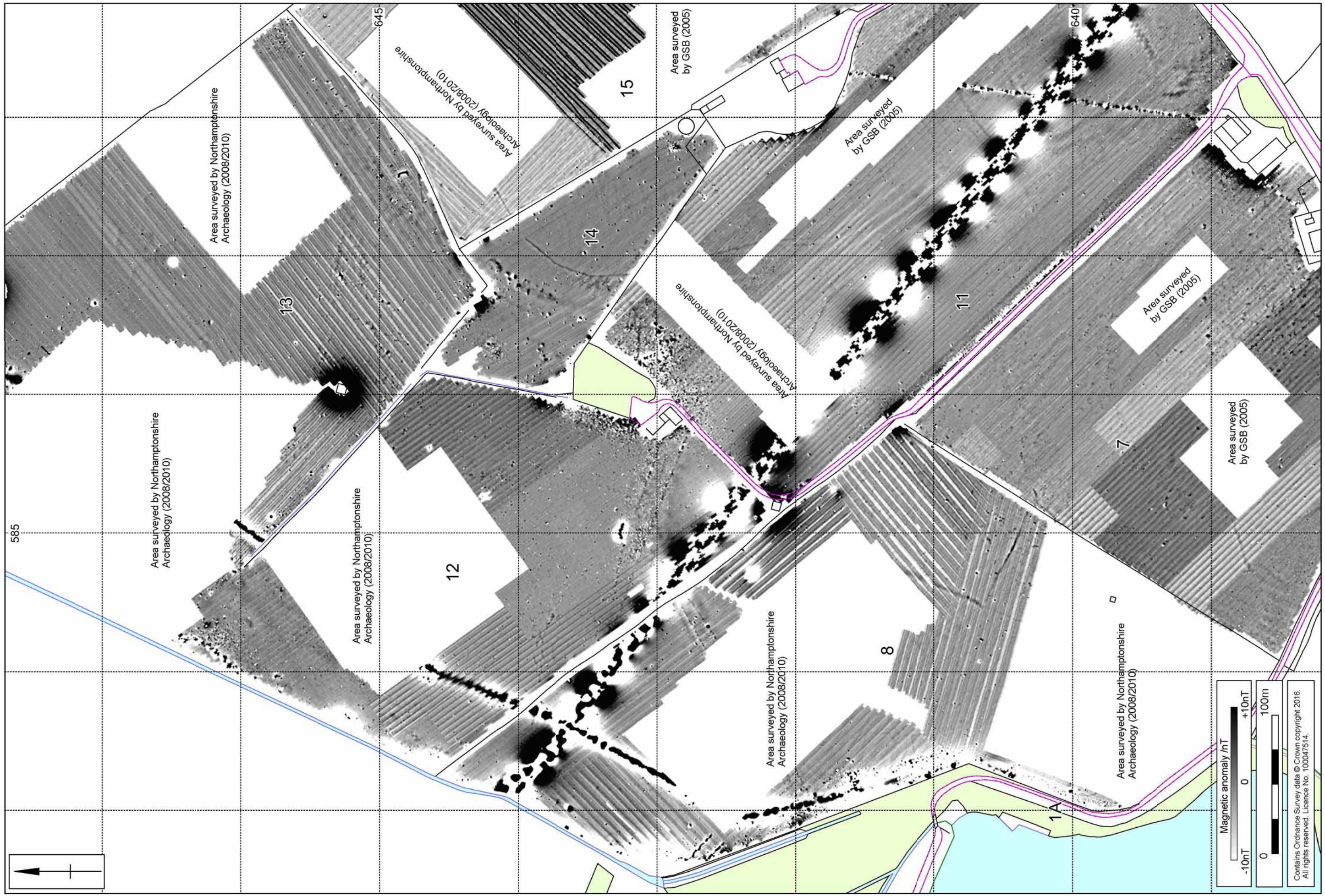
Magnetometer survey interpretation (north-east) Fig 16

Scale 1:2500

Unprocessed magnetometer data (south-west) Fig 17

Scale 1:2500

Unprocessed magnetometer data (south-east) Fig 18

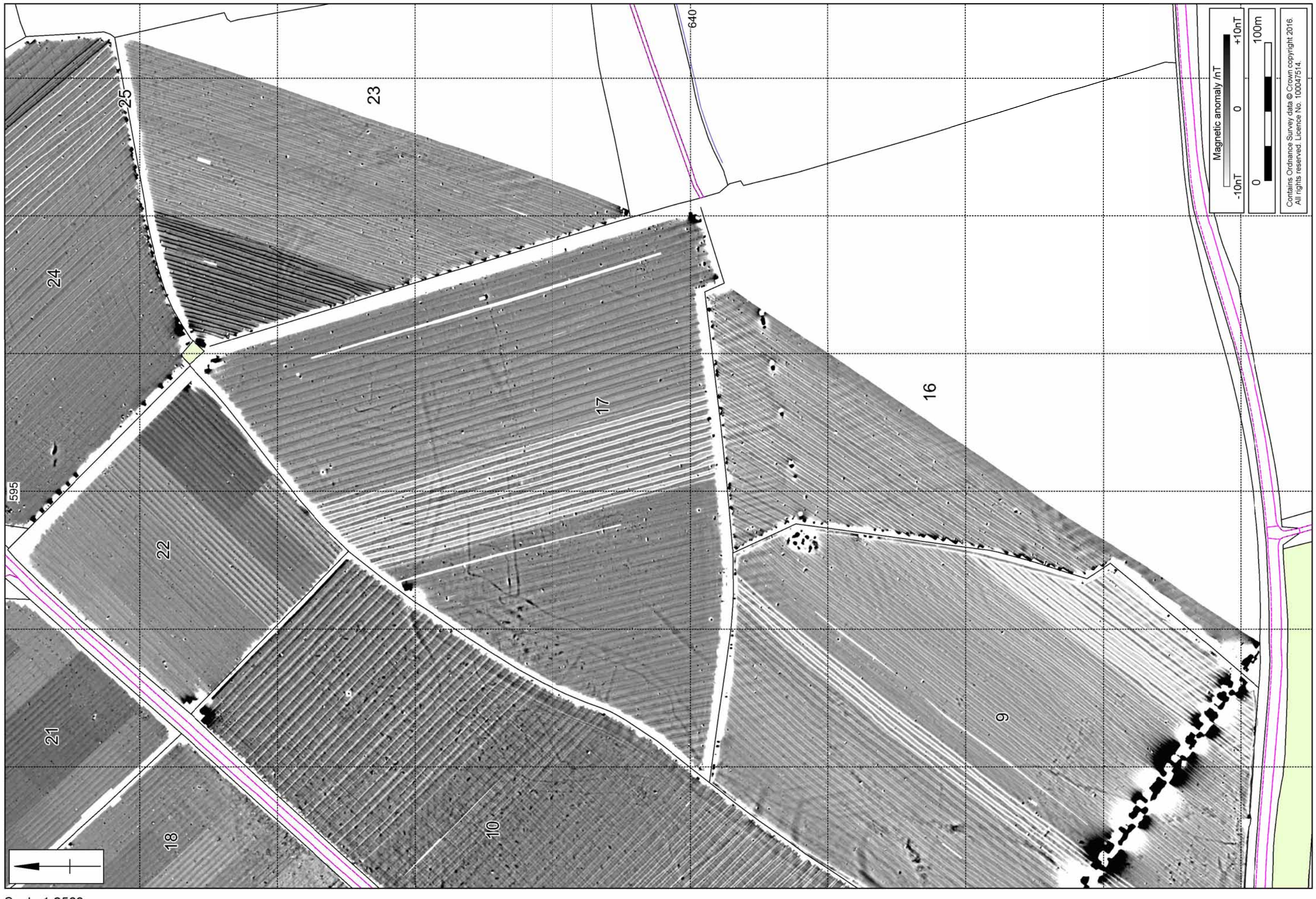


Scale 1:2500

Unprocessed magnetometer data (west-central) Fig 19

Scale 1:2500

Unprocessed magnetometer data (central) Fig 20



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Unprocessed magnetometer data (east-central) Fig 121

585

590

650

27

26

20

Area surveyed by Northamptonshire Archaeology (2008/2010)

Thrupp Covert

Area surveyed by GSB (2005)

19

Area surveyed by Northamptonshire Archaeology (2008/2010)

Area surveyed by Northamptonshire Archaeology (2008/2010)

25

Area surveyed by Northamptonshire Archaeology (2008/2010)

13

Magnetic anomaly /nT

-5nT 5nT

0 100m

Scale 1:2500

Unprocessed magnetometer data (north-west) Fig 22

Scale 1:2500

Unprocessed magnetometer data (north-east) Fig 23

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