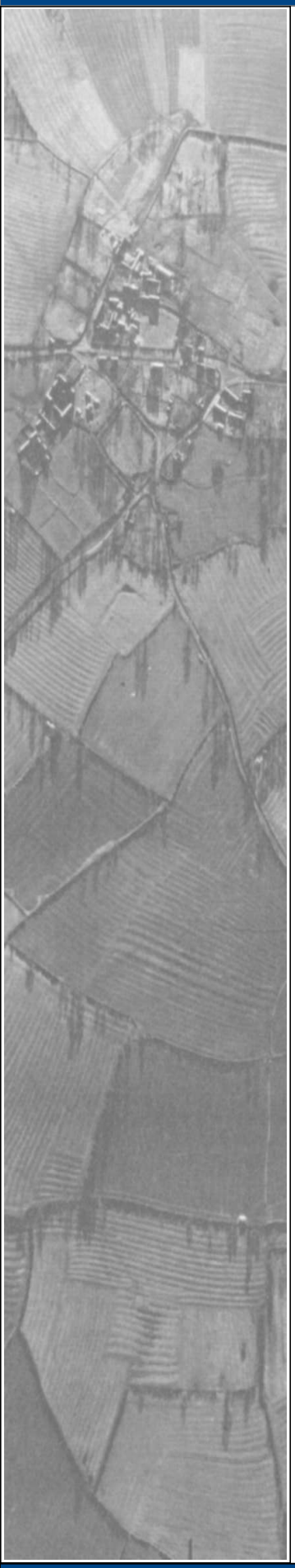


First Time Sewerage Scheme
Toot Baldon
Oxfordshire

MAGNETOMETER SURVEY REPORT

for

Stantec UK Limited

Kerry Donaldson & David Sabin

October 2021

Ref. no. J862

ARCHAEOLOGICAL SURVEYS LTD

First Time Sewerage Scheme
Toot Baldon
Oxfordshire

MAGNETOMETER SURVEY REPORT

for

Stantec UK Limited

Fieldwork by David Sabin BSc (Hons) MCIfA
Report by Kerry Donaldson BSc (Hons)
Report checked by David Sabin
Primary archive location - Archaeological Surveys Ltd, Yatesbury, Wiltshire

Survey dates – May to October 2021
Ordnance Survey Grid Reference – **SP 56474 00064 to SP 56706 02554**

Archaeological Surveys Ltd
1 West Nolands, Nolands Road, Yatesbury, Calne, Wiltshire, SN11 8YD
Tel: 01249 814231 Fax: 0871 661 8804
Email: info@archaeological-surveys.co.uk
Web: www.archaeological-surveys.co.uk

CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY

A geophysical survey, comprising detailed magnetometry, was carried out by Archaeological Surveys Ltd over the route of a new first time sewerage system at Toot Baldon in Oxfordshire. The results of the survey indicate the presence of archaeological features within two zones along the survey corridor. In the south western part of the corridor there are a number of linear and rectilinear anomalies relating to ditches and enclosures. Situated 700m to the north east are another group of similar linear ditches and rectilinear enclosures that also appear to relate to settlement features. Elsewhere, the majority of linear and possible rectilinear anomalies are weak, indistinct and lack a coherent morphology. Many of the areas situated on the lower lying clay contain ridge and furrow and land drains.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Stantec UK Limited, on behalf of Thames Water, to undertake a magnetometer survey along sections of new gravity sewers, rising main and pumping stations ahead of a first time sewerage scheme (FTSS) at Toot Baldon in Oxfordshire. The survey was completed in a series of small sections around the village of Toot Baldon and Baldon Row, with two new pumping stations joined by a 2.78km section of new rising main to an existing sewer at Garsington. An additional c850m long corridor was also included along the proposed line of the construction access track between the northern and southern pumping stations.

1.1.2 The geophysical survey was carried out in accordance with a Written Scheme of Investigation (WSI) produced by Archaeological Surveys (2021) and issued to Oxfordshire County Council prior to commencing the fieldwork.

1.2 Survey objectives and techniques

1.2.1 The objective of the survey was to use magnetometry to locate geophysical anomalies that may be archaeological in origin so that they may be assessed prior to the construction of the FTSS. The methodology is considered an efficient and effective approach to archaeological prospection.

1.2.2 Geophysical survey can provide useful information on the archaeological potential of a site; however, the outcome of any survey relies on a number of factors and as a consequence results can vary. The success in meeting the aims and objectives of a survey is, therefore, often impossible to predetermine.

1.3 Standards, guidance and recommendations for the use of this report

1.3.1 The survey and report follow the recommendations set out by: European Archaeological Council (2015) *Guidelines for the Use of Geophysics in Archaeology;* Institute for Archaeologists (2002) *The use of Geophysical Techniques in Archaeological Evaluations.* The work has been carried out to the Chartered Institute for Archaeologists (2014) (updated 2020) *Standard and Guidance for Archaeological Geophysical Survey.*

1.3.2 Archaeological Surveys Ltd provide a detailed geophysical survey report and it is recommended that where possible the contents should be considered in full. The Summary provides a brief overview of the results with more detail available in the Discussion and/or Conclusion. The *List of anomalies* within the Results provides a detailed assessment of the anomalies within separate categories which can be useful in inferring a level of confidence to the interpretation. Quality and factors influencing the interpretation of anomalies is also set out within the results.

1.3.3 It is recommended that the full report should always be considered when using data and interpretation plots; where this is not possible, in the field for example, the abstraction and interpretation plots should retain their colour coding and be used with a corresponding legend.

1.3.4 Where targeting of anomalies by excavation is to be carried out, care should be taken to place trenches over solid lines or features visible on the abstraction and interpretation plots. Archaeological Surveys abstraction and interpretation avoids the use of dashed or dotted line formats, and broken or fragmented lines used in interpretive plots may well correspond closely with truncation of archaeological features.

1.4 Site location, description and survey conditions

1.4.1 The site lies between Baldon Row and Toot Baldon extending northwards to the B480 Watlington Road near Garsington. For the purposes of the survey the areas have been numbered from 1 to 16, south to north. The survey covers a variable width corridor over the proposed gravity sewer locations as well as the pumping stations and a proposed access track. The geophysical survey covers approximately 20ha.

1.4.2 The ground conditions along the survey corridor were frequently difficult to traverse due to the nature of the ground cover, uneven surfaces and presence of wet clayey soils. Survey was frequently delayed by crop cover and land access issues. The survey was undertaken in generally fine weather conditions.

Area no.	Fig no.	Grid reference	Geology	Soil Associations	Ground cover	Survey dates	Area coverage
1	8-10	456474 200064 to 456625 200058	Kimmeridge Clay Formation – siltstone & sandstone	Frilford – argillic brown sand	Mown grass	13/10/21	0.6ha
2	8-10	456688 200030 to 456791 200063	Kimmeridge Clay Formation – mudstone, siltstone & sandstone	Frilford	Mown grass	13/10/21	0.4ha
3	8-10	456688 200155 to 456909 200183	Kimmeridge Clay Formation – mudstone, siltstone & sandstone	Frilford – argillic brown sand & Wickham 2 – typical	Mown grass	23/07/21	1ha

4	8-13	456692 200178 to 456622 200603	Portland Group – Limestone & calcareous sandstone	stagnogley Frilford	Short arable crop	19/05/21	3.2ha
4a	8-13	456745 200377 to 456703 200611	Portland Group – Limestone & calcareous sandstone and Kimmeridge sandstone and siltstone	Frilford	Short arable crop	13/10/21	0.75ha
5	11-13	456597 200609 to 456413 200645	Portland Group – Limestone & calcareous sandstone	Frilford	Grazed grass	14/07/21, 28/05/21 & 13/10/21	0.8ha
6	14-19	456876 200127 to 457378 200616	Kimmeridge Clay Formation – mudstone, with head deposits	Wickham 2	Stubble	2/09/21	2.5ha
7a & 7b	20-22	457151 200787 to 457212 200836 & 457260 200831	Kimmeridge Clay Formation – mudstone,	Wickham 2	Stubble	2/09/21	0.75ha
8	20-22	457120 200839 to 457179 200874	Kimmeridge Clay Formation – mudstone, with head deposits	Wickham 2	Long grass	28/05/21	0.3ha
9	23-25	457110 200885 to 456675 201188	Kimmeridge Clay Formation – mudstone, with head deposits	Wickham 2	Bean crop	18/05/21	2.5ha
10	26	456667 201196 to 456654 201326	Kimmeridge Clay Formation – mudstone, with head deposits	Wickham 2	Short arable crop	17/05/21	0.6ha
11	26 & 28	456643 201331 to 456587 201650	Kimmeridge Clay Formation – mudstone, with head deposits	Wickham 2	Short arable crop	19/05/21	1.5ha
12	27	456718 201696 to 456787 201906	Kimmeridge Clay Formation – mudstone, with alluvial deposits	Wickham 2	Grass	17/05/21	0.75ha
13	28	456587 201568 to 456667 201862	Kimmeridge Clay Formation – mudstone	Wickham 2 –	Short arable crop	28/05/21	1.1ha
14	29	456655 201900 to 456682 202248	Ampthill Clay Formation - mudstone	Wickham 2 – typical stagnogley & Shabbington – typical argillic gley soils	Ploughed soil	17/09/21	1.8ha
15	30	456678 202257 to 456598 20245	Ampthill Clay Formation – mudstone, with head deposits	Shabbington	Ploughed soil	17/09/21	0.9ha
16	30	456631 202464 to 456706 202554	Ampthill Clay Formation – mudstone, with head deposits	Shabbington	Ploughed soil	17/09/21	0.5ha

Table 1: Survey area information

1.5 Site history and archaeological potential

1.5.1 Three areas of archaeological potential have been identified in close proximity to the scheme. They include an undisturbed and undated buried settlement, enclosure and field complex recorded during geophysical survey (PRN 28645/ EOX6132) with nearby linear feature containing late Roman pottery (PRN 16245) at and around Grenoble Road, 350m due west of the northern end of the route. The course of the Alchester to Dorchester Roman Road (PRN 8923) runs north-south across the area of interest, predominantly to the west of the site. A series of earthworks form a boundary bank with 4 or 5 crofts or house platforms (PRN 1549) representing the former, now shrunken Medieval village, are located to the east of modern Toot Baldon and within 120m of the location of the proposed Northern Sewage Pumping Station (NSPS). Ridge and furrow, representing Medieval agricultural activity, is also documented (Stantec, 2020).

2 METHODOLOGY

2.1 Technical synopsis

2.1.1 Magnetometry survey records localised magnetic fields that can be associated with features formed by human activity. Magnetic susceptibility and magnetic thermoremnance (also known as thermoremanence) are factors associated with the formation of localised fields.

2.1.2 Iron minerals within the soil may become altered by burning and the break down of biological material; effectively the magnetic susceptibility of the soil is increased, and the iron minerals become magnetic in the presence of the Earth's magnetic field. Accumulations of magnetically enhanced soils within features, such as pits and ditches, may produce magnetic anomalies that can

be mapped by magnetic prospection.

2.1.3 Magnetic thermoremnance can occur when ferrous minerals have been heated to high temperatures such as in a kiln, hearth, oven etc. On cooling, a permanent magnetisation may be acquired due to the presence of the Earth's magnetic field. Certain natural processes associated with the formation of some igneous and metamorphic rock may also result in magnetic thermoremnance.

2.1.4 The localised variations in magnetism are measured as sub-units of the Tesla, which is a SI unit of magnetic flux density. These sub-units are nano Teslas (nT), which are equivalent to 10^{-9} Tesla (T). Additional details are set out in 2.2 below and within Appendix A.

2.2 Equipment configuration, data collection and survey detail

2.2.1 The detailed magnetic survey was carried out using a SENSYS MAGNETO®MXPDA 5 channel cart-based system. The instrument has 5 fluxgate gradiometers (FGM650) spaced 0.5m apart with readings recorded at 20Hz. The cart is pushed at walking speed and not towed. Each sensor is not zeroed in the field as the vertical axis alignment is precisely fixed leaving sensor offsets that are removed during data processing. The fixing of the vertical alignment ensures the sensors are not unduly influenced by localised magnetic fields and that the vertical component of a magnetic anomaly is measured. The gradiometers have a measurement range of ±8000nT, although the recorded range is ±3000nT, and resolution is around 0.1nT. They are linked to a Leica GS10 RTK GNSS with data recorded by SENSYS MAGNETO®MXPDA software on a rugged PDA computer system.

2.2.2 Due to the fixed offsets within the fluxgate sensors, as a result of the manufacturing and tensioning process, the survey data do not provide a visually useful dataset until a zero median traverse algorithm is applied. It is recognised that this has the potential to affect some anomalies detrimentally by removing linear features orientated parallel to survey transects. However, this has not been noted as a particular problem with the system due to the high resolution data collection, generally long length of traverses and variability within the magnetic characteristics of a linear anomaly.

2.2.3 Data are collected along a series of parallel survey transects to achieve 100% coverage of the surveyable land. The length of each transect is variable and relates to the size of the survey area and other factors including ground conditions. A visual display allows accurate placing of transects and helps maintain the correct separation between adjacent traverses. Data are not collected within fixed grids and data points are considered to be random even though the data are collected in a systematic manner covering all accessible areas (Aspinall, Gaffney and Schmidt, 2009).

2.2.4 Fluxgate sensors are highly sensitive to temperature change and this manifests as drift during the course of a survey. This can be particularly noticeable during the

morning as temperatures rise and the equipment warms or cools. Sensor drift within the course of a traverse will appear as a line trending from negative to positive after processing with a zero median traverse algorithm. To remove the potential for temperature drift, data were collected after a 20 minute stabilisation period and traverses were limited to a time of generally <100s.

2.3 Data processing and presentation

2.3.1 Magnetic data collected by the MAGNETO®MXPDA cart-based system are initially prepared using SENSYS MAGNETO®DLMGPS software. The software effectively allocates a geographic position for each data point and can compensate for fixed offsets present within the FGM650 sensors. The offsets are positive or negative values present on all fluxgate gradiometer sensors. Some systems use manual or electronic balancing to effectively zero the sensors; however, this is a short term measure that is prone to drift through temperature changes and vibration and can easily be incorrectly set due to localised magnetic fields. The FGM650 sensors are very accurately aligned to the vertical magnetic gradient and are highly stable showing negligible drift on long traverses. The offset values are removed using TerraSurveyor software.

2.3.2 Survey tracks are analysed and georeferenced raw data (UTM Z30N) are then exported in ASCII format for further analysis and display within TerraSurveyor. The removal of the offset values (compensation) of the sensors is also carried out in TerraSurveyor using a zero median traverse function. Data are then considered to be minimally processed. Note: without the zero median traverse function it is not possible to create a meaningful data plot as all sensors have a different offset value. Although a zero median traverse algorithm can remove anomalies aligned with the survey tracks, in practice this rarely occurs due to the use of long traverses, high resolution measurement and variability within the magnetic susceptibility of long linear features.

2.3.3 The minimally processed data are collected between limits of ±3000nT and clipped for display at ±3nT. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track.

2.3.4 Additional data processing has been carried out for Areas 1, 3 and 5 in the form of high pass filtering, Areas 8, 11 and 13 in the form of low pass filtering and Areas, 4, 9, 10 & 12 in the form of both low pass and high pass filtering. Low pass filtering effectively removes high frequency variation along a traverse that has been caused by uneven ground and associated vibration. High pass filtering effectively removes low frequency variation along a traverse that has been caused by large magnetic bodies, cultivation or rapid temperature change. Data treated to additional processing have been compared to unprocessed data to ensure that no significant anomalies have been removed.

2.3.5 Appendix C contains metadata concerning the survey and data attributes and

is derived directly from TerraSurveyor. Reference should be made to Appendix B for further information on processing.

2.3.6 A TIF file is produced by TerraSurveyor software along with an associated world file (.TFW) that allows automatic georeferencing (OSGB36 datum) when using GIS or CAD software. The main form of data display used in the report is the minimally processed greyscale plot. With regard to the Sensys MXPDA, minimally processed data are considered by the manufacturer to be data that are compensated by SENSYS MAGNETO DLMGPS software, see 2.3.1 and 2.3.2. Due to the very high density of data points in order to show traceplots without overlapping lines, the data points have been reduced in order to produce a clear image.

2.3.7 The raster images are combined with base mapping using ProgeCAD Professional 2021, creating DWG (2018) file formats. All images are externally referenced to the CAD drawing in order to maintain good graphical quality. The CAD plots are effectively georeferenced facilitating relocation of features using GNSS, resection method, etc.

2.3.8 An abstraction and interpretation is drawn and plotted for all geophysical anomalies located by the survey. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing. Appendix E sets out CAD layer names with colour and graphic content for each interpretation category, see 3.3.

2.3.9 A brief summary of each anomaly, with an appropriate reference number, is set out in list form within the results (Section 3) to allow a rapid and objective assessment of features within each survey area. Where further interpretation is possible, or where a number of possible origins should be considered, more subjective discussion is set out in Section 4.

2.3.10 A digital archive is produced with this report, see Appendix D below. The main archive is held at the offices of Archaeological Surveys Ltd.

3 RESULTS

3.1 General assessment of survey results

3.1.1 The detailed magnetic survey was carried out over a total of 16 survey areas covering approximately 20ha.

3.1.2 Magnetic anomalies located can be generally classified as positive linear and discrete positive responses of archaeological potential, positive and negative linear anomalies of an uncertain origin, linear anomalies of an agricultural origin, areas of magnetic debris and disturbance, strong discrete dipolar anomalies relating to ferrous objects and strong multiple dipolar linear anomalies relating to buried services or pipelines.

3.1.3 Anomalies located within each survey area have been numbered and are described in 3.4 to 3.20 below with subsequent discussion in Section 4.

3.2 Statement of data quality and factors influencing the interpretation of anomalies

3.2.1 Data are considered representative of the magnetic anomalies present within the site. There are no significant defects within the dataset. Localised zones of magnetic debris and disturbance have the potential to obscure weak anomalies where there is a high magnitude response; however, these zones are not widespread.

3.2.2 A general assessment of magnetic contrast tends to infer low levels of magnetic susceptibility within the soils and, as a consequence, generally low magnetic contrast associated with features of archaeological potential. The properties of the soils and underlying geology are often associated with low levels of magnetic enhancement.

3.3 Data interpretation

3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A general explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, see Table 1.

Interpretation category	Description and origin of anomalies
Anomalies with archaeological potential	Anomalies have the characteristics (mainly morphological) of a range of archaeological features such as pits, ring ditches, enclosures, etc. The category is used where there is a high level of confidence which may be due to additional supporting information where morphology is unclear or uncharacteristic.
Anomalies with an uncertain origin	The category applies to a range of anomalies where there is not enough evidence to confidently suggest an origin. Anomalies in this category may well be related to archaeologically significant features, but equally relatively modern features, geological/pedological features and agricultural features should be considered. Morphology may be unclear or uncharacteristic and there may be a lack of additional supporting information. Positive anomalies are indicative of magnetically enhanced soils that may form the fill of 'cut' features or may be produced by accumulation within layers or 'earthwork' features; soils subject to burning may also produce positive anomalies. Negative anomalies are produced by material of comparatively low magnetic susceptibility such as stone and subsoil.
Anomalies relating to land management	Anomalies are mainly linear and may be indicative of the magnetically enhanced fill of cut features (i.e. ditches). The anomalies may be long and/or form rectilinear elements and they may relate to topographic features or be visible on early mapping. Associated agricultural anomalies (e.g. headlands, plough marks and former ridge and furrow) may support the interpretation. Land drains can appear in a classic herringbone pattern of interconnected multiple dipolar linear anomalies, or as parallel linear anomalies. The multiple dipolar response indicates ceramic land drains.
Anomalies with an agricultural origin	The anomalies are often linear and form a series of parallel responses or are parallel to extant land boundaries. Where the response is broad, former ridge and furrow is likely; narrow response is often related to modern ploughing. This category does not include agricultural features of early date or considered to be of archaeological potential (e.g. animal stockades, enclosures, farmsteads, etc).
Anomalies associated with magnetic debris	Magnetic debris often appears as areas containing many small dipolar anomalies that may range from weak to very strong in magnitude. They often occur where there has been dumping or ground make-up and are related to magnetically thermoremnant materials such as brick or tile or other small fragments of ferrous material. This type of response is occasionally associated with kilns, furnace structures, hearths and nail spreads from former wooden structures or rooves and may, therefore, be archaeologically significant. It is also possible that the response may be

	caused by natural material such as certain gravels and fragments of igneous or metamorphic rock. Strong discrete dipolar anomalies are responses to ferrous objects within the topsoil.
Anomalies with a modern origin	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc. Often a significant area around these features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.
Anomalies with a natural origin	Naturally formed magnetic anomalies are caused by localised variability in the magnetic susceptibility of soils, subsoils and other drift or solid geologies. Anomalies may be amorphous, linear or curvilinear and may appear 'fluvial' or discrete; the latter are almost impossible to distinguish from pit-like anomalies with an anthropogenic origin. Fluvial, glacial and periglacial processes may be responsible for their formation within drift material and subsoil. Igneous and metamorphic activity can lead to anomalies within more solid geology.

Table 2: List and description of interpretation categories

3.4 List of anomalies - Area 1

Area 1 between OS NGR 456474 200064 to 456625 200058, see Figs 08 to 10.

Anomalies with an uncertain origin

(1.1 & 1.2) – Area 1 contains a small number of weak, discrete positive responses at the western end (1.1) and also a small number of positive linear anomalies (1.2). The area has been subject to a large amount of ground disturbance and dumping and it is not possible to determine their origin.

Anomalies with a modern origin

(1.3 & 1.4) – Magnetic debris from dumped material (1.3) and disturbance from a pipe (1.4).

3.5 List of anomalies - Area 2

Area 2 between OS NGR 456688 200030 to 456791 200063, see Figs 08 to 10.

3.5.1 Area 2 contains magnetic debris at the western end but also within the furrows of the ridge and furrow. A pipe can be seen along the eastern end.

3.6 List of anomalies - Area 3 (southern pumping station)

Area between OS NGR 456688 200155 to 456909 200183, see Figs 08 to 10.

Anomalies of archaeological potential

(3.1) – A small number of positive linear and possible rectilinear anomalies are located in the north western corner of Area 3. Although on more sloping ground,

these may be a continuation of those seen immediately north of the track within Area 4 and their archaeological potential should be considered.

Anomalies with an uncertain origin

(3.2) – A positive linear anomaly can be seen parallel with, and to the east of, a buried pipe/service. It is not clear if this relates to material disturbed by the groundworks associated with the pipe or if it relates to a cut feature with archaeological potential.

(3.3) – Two positive linear anomalies flank a negative response. While such features can be associated with ridge and furrow this is on a slightly different orientation and is generally parallel with anomaly (3.2) and an archaeological origin is possible.

(3.4) – The central western part of the survey area contains a large number of small, discrete, positive responses and several weakly positive linear responses. It is not possible to determine if they are associated with naturally formed features, ground disturbance through quarrying, or human occupation.

(3.5) -A small number of positive responses could be associated with former quarrying.

(3.6) – Two strongly positive responses are located towards the eastern end of the survey area and correspond to a linear gully.

Anomalies associated with land management

(3.7) – A linear anomaly is associated with a former field boundary.

Anomalies with a natural origin

(3.8) – Positive responses close to the southern edge of the survey area are likely to be associated with natural features at the base of the south facing slope.

Anomalies with an agricultural origin

(3.9) – The site contains ridge and furrow, parallel with anomaly (3.8). It does not have a clear response across the survey area due to lack of magnetic contrast.

Anomalies with a modern origin

(3.10) – A buried pipe or service extends through the western part of the survey area and continues into Areas 2 and 4.

3.7 List of anomalies - Areas 4 and 4a

Area 4 between OS NGR 456692 200178 to 456622 200603, Area 4a between 456745 200377 to 456703 200611, see Figs 08 – 13.

Anomalies of archaeological potential

(4.1) – A number of positive linear and rectilinear anomalies are situated within the southern part of Area 4. The anomalies have been truncated by a pipe/service, but their morphology indicates that they relate to linear ditches and rectilinear enclosures.

Anomalies with an uncertain origin

(4.2) – To the north of anomalies (4.1) are a number of weakly positive linear anomalies that lack a coherent morphology. It is, therefore, not possible to determine if these relate to cut features with archaeological potential.

(4.3) – Situated at the northern end of Area 4a is a weakly positive rectilinear anomaly. It is possible that this relates to a cut feature and could have archaeological potential. It appears to be crossed by a land drain.

(4.4) – A positive linear anomaly can be seen in the southern part of Area 4a. It is moderately enhanced (up to 23nT), but its origin is uncertain. It is possible that it continues southwards as a negative linear anomaly, which could suggest an association with a pipe or service.

Anomalies with a natural origin

(4.5) – A number of weakly positive anomalies are located in the northern part of Area 4 extending eastwards into the southern part of Area 4a. They are likely to correspond to variations within the underlying sandstone and siltstone of the Kellaways Clay Formation.

Anomalies associated with magnetic debris

(4.6) – Patches of magnetic debris in the northern part of Area 4 appear to be associated with the line of a formerly mapped field boundary.

3.8 List of anomalies - Area 5

Area between OS NGR 456597 200609 to 456413 200645, see Figs 11 to 13.

Anomalies with an uncertain origin

(5.1) – A number of positive anomalies are located within the eastern and northern parts of the survey area, with a small number at the western end. Two negative linear anomalies have also been located. While there is no coherent morphology and some of the anomalies could be associated with former agricultural activity,

others could relate to cut features and an archaeological origin should be considered.

(5.2) – Magnetic disturbance from ferrous material and a service/pipe.

3.9 List of anomalies - Area 6 (access track)

Area between OS NGR 457378 200616 to 456876 200127, see Figs 14 – 19.

Anomalies with an uncertain origin

(6.1) – A weakly positive anomaly is located in the southern part of the survey area. It is not clear if it has a similar natural origin to (6.5) or if it relates to magnetic enhancement of anthropogenic origin.

(6.2) – A single, discrete positive response appears to relate to a pit-like feature.

Anomalies associated with land management

(6.3) – The survey area contains a number of land drains.

Anomalies with an agricultural origin

(6.4) – A series of parallel linear anomalies relate to former ridge and furrow.

Anomalies with a natural origin

(6.5) – Zones of magnetically variable responses are likely to relate to naturally formed features.

Anomalies associated with magnetic debris

(6.6) – The survey area contains several patches of magnetic debris. These are likely to relate to dumped material used for ground consolidation.

(6.7) – The survey area contains a number of ferrous objects within the topsoil, including a linear group towards the southern end that appear to be associated with a former mapped boundary.

3.10 List of anomalies - Area 7

Area between OS NGR 457151 200787 to 457212 200836 & 457260 200831 to 457210 200903, see Figs 20 to 22.

Anomalies of archaeological potential

(7.1) – A number of positive linear and rectilinear anomalies can be seen primarily within the western block of Area 7 (7a) but also extending into the eastern block (7b). It also appears that at least one linear extends directly into Area 8 to the north. The anomalies relate to linear ditches and enclosures associated with settlement features.

Anomalies with an uncertain origin

(7.2) – A number of weakly positive linear anomalies can be seen in the eastern part of Area 7b. It is possible that some could be a continuation of archaeological features 7.1, while others could be associated with agricultural activity; however, they are generally short and fragmented and poorly defined and cannot be confidently interpreted.

Anomalies associated with magnetic debris

(7.3) – Patches of magnetic debris appear to be associated with dumped material.

3.11 List of anomalies - Area 8 (northern pumping station)

Area between OS NGR 457120 200839 to 457179 200874, see Figs 20 to 22.

Anomalies of archaeological potential

(8.1) – A positive linear anomaly appears to be a continuation of a linear ditch seen within Area 7a to the south.

Anomalies with an uncertain origin

(8.2) – The survey area contains a number of weakly positive linear anomalies. Some oriented east north east to west south west could be associated with the extant ridge and furrow, but there is generally poor magnetic contrast. The majority are short, weak and indistinct and while it is possible that they relate to further cut features associated with anomalies (7.1) & (8.1), they generally lack a coherent morphology.

3.12 List of anomalies - Area 9

Area between OS NGR 457110 200885 to 456675 201188, see Figs 23 to 25.

Anomalies with an uncertain origin

(9.1) – A broad, curving, linear, positive zone appears to continue as three discrete positive areas in the southern part of Area 9. To the north is a weakly positive band

and a negative band. It is not possible to determine the origin of the responses, but they could relate to a former broad boundary, enclosure or trackway feature. However, natural variations and bands within the underlying clay geology could cause similar responses.

(9.2) – A small number of short, weakly positive, linear anomalies can be seen at the south eastern end of the survey area. They lack a characteristic morphology, but they are similar to those seen within Area 8 to the south.

Anomalies associated with land management

(9.3) – A positive linear anomaly with associated magnetic debris relates to the line of a formerly mapped field boundary.

(9.4) – A small number of weak, multiple dipolar, linear anomalies relate to land drains.

Anomalies with an agricultural origin

(9.5) – Parallel linear anomalies are associated with former ridge and furrow.

Anomalies associated with magnetic debris

(9.6) – Magnetic debris is associated with magnetically thermoremnant material, such as brick/tile and ferrous fragments, which has been used within the agricultural track that extends along the western edge and probably encroaches further into the field.

3.13 List of anomalies - Area 10

Area 10 between OS NGR 456667 201196 to 456654 201326, see Fig 26.

3.13.1 Area 10 contains land drains and magnetic debris associated with a farm track.

3.14 List of anomalies - Area 11

Area 11 between OS NGR 456643 201331 to 456587 201650, see Figs 26 & 28.

3.14.1 A small number of positive linear and discrete positive responses are located at the southern end of Area 11. A land drain has also cut through this area and magnetic debris is present; however, it is not possible to determine if the anomalies relate to cut features or ground disturbance through more recent activity.

3.15 List of anomalies - Area 12

Area 12 between OS NGR 456718 201696 to 456787 201906, see Fig 27.

3.15.1 Area 12 contains a small number of positive discrete and short linear anomalies and a series of land drains.

3.16 List of anomalies - Area 13

Area 13 between OS NGR 456587 201568 to 456667 201862, see Fig 28.

3.16.1 Area 13 contains a number of land drains with different orientations.

3.17 List of anomalies - Area 14

Area centred on OS NGR 456655 201900 to 456682 202248, see Fig 29.

Anomalies with an uncertain origin

(14.1) – In the northern part of the survey area there are a group of positive anomalies that appear to have an association with burning. This type of response can be associated with industrial activity.

(14.2) – A small number of weakly positive discrete and linear anomalies are located to the north and south of anomalies (14.1). They lack a coherent morphology and it is not possible to determine their origin.

Anomalies associated with land management

(14.3) – Positive linear anomalies with associated strong discrete dipolar responses relate to former L-shaped boundary that once separated the south eastern corner of the current field.

(14.4) – The survey area contains land drains on a number of orientations.

3.18 List of anomalies - Area 15

Area 15 between OS NGR 456678 202257 to 456598 202455, see Fig 30.

3.18.1 Area 15 contains land drains on several orientations.

3.19 List of anomalies - Area 16

Area between OS NGR 456631 202464 to 456706 202554, see Fig 30.

3.19.1 Area 16 contains land drains and magnetic debris.

4 DISCUSSION

4.1.1 The results of the geophysical survey indicate anomalies with archaeological potential within two main zones, one in the west of the site in Areas 3 and 4 and the second within Area 7, 700m to the north east.

4.1.2 Area 4 lies on the higher ground at Toot Baldon and contains numerous positive linear and rectilinear anomalies indicative of ditches and enclosures probably associated with settlement. These features appear to extend into lower ground in the north western corner of Area 3, which has been outlined for the location of the southern pumping station. There are a number of other positive linear and amorphous anomalies further east, that are not clearly defined, although it is possible that they relate to further cut features. Area 5 to the north of Area 4 also contains a small number of weakly positive anomalies and although they lack definition and have a low magnitude, it is possible they could relate to cut features with archaeological potential.

4.1.3 The second zone containing anomalies with archaeological potential lies mainly within Areas 7a and 7b on the lower clay lands to the east of Toot Baldon. The anomalies appear in the form of linear and rectilinear anomalies relating to ditches and enclosures with a similar morphology to those seen in Area 4, 700m to the south west. It appears that at least one linear anomaly extends into Area 8, which has been outlined for the northern pumping station. Linear and rectilinear anomalies at the southern end of Area 9 could relate to features with archaeological potential; however, a response to natural variations within the underlying clay geology is possible.

4.1.4 The northern part of the survey corridor (Areas 9-16) all contain evidence for various phases of land drainage. The only anomalies of any note are a group within Area 14 (14.1), which could be associated with burning or industrial activity.

5 CONCLUSION

5.1.1 The geophysical survey was carried within 16 separate survey areas and located two main areas of archaeology within the survey corridor. A number of linear and rectilinear anomalies that appear to relate to linear ditches and enclosures can be seen on the higher ground on land to the west of the church at Toot Baldon. Similar features have been located 700m to the north

east.

5.1.2 Elsewhere the majority of the survey areas contain evidence for land drainage and ridge and furrow, and while a small number of areas contain positive responses, they are generally weak and/or lack a coherent morphology preventing confident interpretation.

6 REFERENCES

Archaeological Surveys, 2021. *First Time Sewerage Scheme, Toot Baldon, Oxfordshire, Geophysical Survey Written Scheme of Investigation.* Unpublished typescript document.

Aspinall, A., Gaffney, C. and Schmidt, A. 2009. *Magnetometry for Archaeologists*. Lanham (US), AltaMira Press.

British Geological Survey, 2017. *Geology of Britain 3D (Beta version), 1:50 000 scale [online]* available from http://mapapps.bgs.ac.uk/geologyofbritain3d/index.html? [accessed 10/5/2021].

Chartered Institute for Archaeologists, 2014. *Standard and Guidance for archaeological geophysical survey*. CIfA, University of Reading.

European Archaeological Council, 2015. *EAC Guidelines for the Use of Geophysics in Archaeology: Questions to Ask and Points to Consider.* Europae Archaeologia Consilium and Association Internationale sans But Lucratif, Belgium.

Historic England, 2018. Geophysical Survey Advice [online] available from https://historicengland.org.uk/advice/technical-advice/archaeological-science/geophysics/ [accessed July 2018].

Institute for Archaeologists, 2002. *The use of Geophysical Techniques in Archaeological Evaluations*. IfA Paper No. 6. IfA, University of Reading.

Schmidt, A., 2013. *Geophysical Data in Archaeology: A Guide to Good Practice.* Oxbow Books.

Soil Survey of England and Wales, 1983. *Soils of England and Wales, Sheet 5 South West England.*

Stantec, 2020. *Preliminary Desk-Based Assessment of the Archaeological Implications, Toot Baldon, South Oxfordshire, First Time Sewerage Scheme.*

Appendix A – basic principles of magnetic survey

Iron minerals are always present to some degree within the topsoil and enhancement associated with human activity is related to increases in the level of magnetic susceptibility and thermoremnant material. Magnetic susceptibility is an induced magnetism within a material when it is in the presence of a magnetic field. This can be thought of as effectively permanent due to the presence of the Earth's magnetic field. Thermoremnant magnetism occurs when ferrous material is heated beyond a specific temperature known as the Curie Point. Demagnetisation occurs at this temperature with re-magnetisation by the Earth's magnetic field upon cooling.

Enhancement of magnetic susceptibility can occur in areas subject to burning and complex fermentation processes on biological material; these are frequently associated with human settlement. Thermoremnant features include ovens, hearths, and kilns. In addition thermoremnant material such as tile and brick may also be associated with human activity and settlement.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil can create an area of enhancement compared with surrounding soils and subsoils into which the feature is cut. Mapping enhanced areas will produce linear and discrete anomalies allowing an assessment and characterisation of hidden subsurface features.

It should be noted that areas of negative enhancement can be produced from material having lower magnetic properties compared to the topsoil. This is common for many sedimentary bedrocks and subsoils which were often used in the construction of banks and walls etc. Mapping these 'negative' anomalies may also reveal archaeological features.

Magnetic survey or magnetometry can be carried out using a fluxgate gradiometer and may be referred to as gradiometry. The SENSYS gradiometer is a passive instrument consisting of two fluxgate sensors mounted vertically 65cm apart. The instrument is carried about 10-20cm above the ground surface and the upper sensor measures the Earth's magnetic field as does the lower sensor but this is influenced to a greater degree by any localised buried magnetic field. The difference between the two sensors will relate to the strength of the magnetic field created by the buried feature.

There are a number of factors that may affect the magnetic survey and these include soil type, local geology and previous human activity. Situations arise where magnetic disturbance associated with modern services, metal fencing, dumped waste material etc., obscures low magnitude fields associated with archaeological features.

Appendix B – data processing notes

Clipping

Minimum and maximum values are set and replace data outside of the range with those values. Extreme values are removed improving colour or greyscale contrast associated with data values that may be archaeologically significant. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Despike

Removal of data points that exceed the mean/median/threshold by selecting a window size of data points and replace by mean/median/threshold. Magnetic spikes can be caused iron objects on the surface or within the topsoil. Despike can improve the appearance of data and remove extreme readings that may affect further processing.

High Pass Filter

Removes low frequency anomalies within the data that are not considered to be archaeologically significant and may be natural in origin. A window passes over the data, the mean of all the data within the window is subtracted from the centre value. The size of the window is adjusted as is the weighting which may be uniform or Gaussian. The process is used to improve the visibility of anomalies of interest.

Low Pass Filter

Removes high frequency anomalies or 'noise' within datasets and provides a smoother output. A window passes over the data, the mean of all the data within the window is used to replace the centre value. The size of the window is adjusted as is the weighting. The process is used to improve the visibility of anomalies of interest.

Zero Median/Mean Traverse

The median (or mean) of data from each traverse is calculated ignoring data outside a threshold value, the median (or mean) is then subtracted from the traverse. The process is used to equalise differences between the offset values of the gradiometer sensors. The process can remove archaeological features that run along a traverse but with the high resolution datasets created by the Sensys FGM650 sensors and the method of data collection this has not been a notable problem. In fact, the removal of offsets using software avoids carrying out a balancing procedure on site, which inevitably can never be done in magnetically clean conditions and results in improperly aligned fluxgate sensors and/or electronic adjustment values.

Appendix C – survey and data information

Filename: J862-mag-Area1-proc-hpf.xcp
Instrument Type: Sensys DLMGPS
Units:
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 456470.09, 200114.81m
Southeast corner: 456635.99, 200011.16 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Dimensions
Survey Size (meters): 166 m x 104 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 199296, Recorded: 199296
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.86
Mean: -0.06
Median: -0.01
Composite Area: 1.7196 ha
Surveyed Area: 0.6976
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 200
5 Clip from -3.00 to 3.00

Filename: J862-mag-Area2-proc.xcp
Northwest corner: 456686.65, 200089.76 m
Southeast corner: 456797.80, 200019.56 m
Survey Size (meters): 111 m x 70.2 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 147700, Recorded: 147700
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.60
Mean: 0.00
Median: 0.08
Composite Area: 0.78027 ha
Surveyed Area: 0.4754 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 DeStripe Median Traverse:
5 Clip from -3.00 to 3.00

Filename: J862-mag-Area3-proc-hpf.xcp

Northwest corner: 456688.51, 200195.54 m
Southeast corner: 456911.41, 200108.99 m
Survey Size (meters): 223 m x 86.6 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 335988, Recorded: 335988
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.10
Mean: -0.05
Median: -0.01
Composite Area: 1.9292 ha
Surveyed Area: 1.1515 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Clip from -3.00 to 3.00

Filename: J862-mag-Area4-proc-hpf-lpf.xcp
Northwest corner: 456585.46, 200613.91 m
Southeast corner: 456709.66, 200152.36 m
Dimensions
Survey Size (meters): 124 m x 462 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 1026360, Recorded: 1026360
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.99
Mean: -0.01
Median: 0.00
Composite Area: 5.7325 ha
Surveyed Area: 3.3535 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Lo pass Uniform (median) filter: Window dia: 13
6 Clip from -3.00 to 3.00

Filename: J862-mag-Area4a-proc-hpf-lpf.xcp
Northwest corner: 456685.94, 200616.77 m
Southeast corner: 456758.84, 200373.17 m
Dimensions
Survey Size (meters): 72.9 m x 244 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 240300, Recorded: 240300

Stats
Max: 3.32
Min: -3.30
Std Dev: 0.89
Mean: 0.02
Median: 0.01
Composite Area: 1.7758 ha
Surveyed Area: 0.9127 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 200
5 Lo pass Uniform (median) filter: Window dia: 11
6 Clip from -3.00 to 3.00

Filename: J862-mag-Area5-proc-hpf.xcp
Northwest corner: 456408.95, 200712.59 m
Southeast corner: 456612.95, 200600.56 m
Dimensions
Survey Size (meters): 204 m x 112 m
X&Y Interval: 0.17 m
Source GPS Points: Active: 228179, Recorded: 228179
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.21
Mean: -0.03
Median: 0.01
Composite Area: 2.2858 ha
Surveyed Area: 0.965 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 200
5 Clip from -3.00 to 3.00

Area 6

Filename: J862-mag-Area6-proc-lpf.xcp
Northwest corner: 456871.53, 200634.83 m
Southeast corner: 457389.78, 200109.08 m
Dimensions
Survey Size (meters): 518 m x 526 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 685580, Recorded: 685580
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.85
Mean: -0.01
Median: 0.01
Composite Area: 27.247 ha
Surveyed Area: 2.7049 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Lo pass Uniform (median) filter: Window dia: 13
5 Clip from -3.00 to 3.00

Area 7

Filename: J862-mag-Area7-hpf-lpf.xcp
Northwest corner: 457138.86, 200920.57 m
Southeast corner: 457280.91, 200773.87 m
Dimensions
Survey Size (meters): 142 m x 147 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 252596, Recorded: 252596
Stats
Max: 2.21
Min: -2.20
Std Dev: 0.55
Mean: 0.00
Median: 0.00
Composite Area: 2.0839 ha
Surveyed Area: 0.8425 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Lo pass Uniform (median) filter: Window dia: 13
6 Clip from -2.00 to 2.00

Area 8

Filename: J862-mag-Area8-proc-lpf.xcp
Northwest corner: 457108.93, 200889.44 m
Southeast corner: 457188.75, 200817.03 m
Dimensions
Survey Size (meters): 79.8 m x 72.4 m
X&Y Interval: 0.13 m
Source GPS Points: Active: 97593, Recorded: 97593
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.85
Mean: 0.01
Median: 0.03

Composite Area: 0.57798 ha
Surveyed Area: 0.3478 ha
GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Lo pass Uniform (median) filter: Window dia: 10
5 Clip from -2.00 to 2.00

Area 9

Filename: J862-mag-Area9-proc-hpf-lpf.xcp
Northwest corner: 456654.90, 201193.33 m
Southeast corner: 457129.52, 200872.70 m
Dimensions
Survey Size (meters): 475 m x 321 m
X&Y Interval: 0.125 m
Source GPS Points: Active: 814974, Recorded: 814974
Stats
Max: 2.21
Min: -2.21
Std Dev: 0.69
Mean: 0.01
Median: 0.01
Composite Area: 15.218 ha
Surveyed Area: 2.5837 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Lo pass Uniform (median) filter: Window dia: 13
6 Clip from -2.00 to 2.00

Area 10

Filename: J862-mag-Area10-proc-hpf-lpf.xcp
Northwest corner: 456632.13, 201328.60 m
Southeast corner: 456701.43, 201188.80 m
Dimensions
Survey Size (meters): 69.3 m x 140 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 195394, Recorded: 195394
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.05
Mean: -0.01
Median: 0.01
Composite Area: 0.96881 ha
Surveyed Area: 0.62715 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Lo pass Uniform (median) filter: Window dia: 13
6 Clip from -3.00 to 3.00

Area 11

Filename: J862-mag-Area11-proc-lpf.xcp
Description: Imported as Composite from: J862-mag-Area11.asc
Northwest corner: 456564.67, 201656.00 m
Southeast corner: 456676.17, 201320.37 m
Dimensions
Survey Size (meters): 112 m x 336 m
X&Y Interval: 0.125 m
Source GPS Points: Active: 432886, Recorded: 432886
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.59
Mean: 0.01
Median: 0.00
Composite Area: 3.7422 ha
Surveyed Area: 1.603 ha
GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Lo pass Uniform (median) filter: Window dia: 10
5 Clip from -3.00 to 3.00

Area 12

Filename: J862-mag-Area12-proc-hpf-lpf.xcp
Northwest corner: 456695.72, 201922.60m
Southeast corner: 456789.97, 201691.97m
Dimensions
Survey Size (meters): 94.3 m x 231 m
X&Y Interval: 0.125 m
Source GPS Points: Active: 217700, Recorded: 217700
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.55
Mean: 0.01
Median: 0.00
Composite Area: 2.1736 ha
Surveyed Area: 0.75423 ha
GPS based Proce6
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Lo pass Uniform (median) filter: Window dia: 17
6 Clip from -3.00 to 3.00

Area 13

Filename: J862-mag-Area13-proc-lpf.xcp
Northwest corner: 456554.29, 201878.15 m
Southeast corner: 456696.41, 201651.03 m
Dimensions
Survey Size (meters): 142 m x 227 m
X&Y Interval: 0.125 m
Source GPS Points: Active: 319496, Recorded: 319496
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.70
Mean: 0.00
Median: -0.01
Composite Area: 3.228 ha
Surveyed Area: 1.1807 ha
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00
5 Lo pass Uniform (median) filter: Window dia: 11

Area 14

Filename: J862-mag-Area14-hpf-lpf.xcp
Northwest corner: 456652.49, 202256.67m
Southeast corner: 456773.247, 201876.72 m
Dimensions
Survey Size (meters): 121 m x 380 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 688324, Recorded: 688324
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.71
Mean: 0.01
Median: 0.01
Composite Area: 4.5879 ha
Surveyed Area: 1.9212 ha
GPS based Proce6
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Lo pass Uniform (median) filter: Window dia: 13
6 Clip from -3.00 to 3.00

Filename: J862-mag-Area15-hpf-lpf.xcp
Northwest corner: 456583.47, 202476.50 m
Southeast corner: 456698.52, 202248.05 m
Dimensions
Survey Size (meters): 115 m x 228 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 352000, Recorded: 352000

Stats
Max: 3.32
Min: -3.30
Std Dev: 0.81
Mean: 0.00
Median: 0.00
Composite Area: 2.6283 ha
Surveyed Area: 1.0043 ha
GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 300
5 Clip from -3.00 to 3.00

Area 16

Filename: J862-mag-Area16-proc-lpf.xcp
Northwest corner: 456622.33, 202570.82 m
Southeast corner: 456725.01, 202439.75 m
Dimensions
Survey Size (meters): 103 m x 131 m
X&Y Interval: 0.17 m
Source GPS Points: Active: 203900, Recorded: 203900
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.79
Mean: -0.01
Median: 0.02
Composite Area: 1.3458 ha
Surveyed Area: 0.6069 ha
GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Lo pass Gaussian filter: Window dia: 13
5 Clip from -3.00 to 3.00

Appendix D – digital archive

Archaeological Surveys Ltd hold the primary digital archive at their offices in Wiltshire. Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site. The digital data will also be supplied to the Archaeology Data Service for archiving. This includes the raw and processed data, greyscale images and CAD abstraction and interpretation.

A draft copy will be supplied to the Oxfordshire county archaeological officer for comment and the agreed final copy supplied in PDF format to the Oxfordshire Historic Environment Record. The report will also be uploaded to the Online AccesS to the Index of archaeological investigationS (OASIS).

Archive contents:

File type	Naming scheme	Description
Data	J862-mag-**[area number/name]**.asc J862-mag-**[area number/name]**.xcp J862-mag-**[area number/name]**-proc.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J862-mag-**[area number/name]**-proc.tif	Image in TIF format
Drawing	J862-**[version number]**.dwg	CAD file in 2018 dwg format
Report	J862 report.odt	Report text in LibreOffice odt format

Table 3: Archive metadata

Appendix E – CAD layers for abstraction and interpretation plots

The table below sets out Archaeological Surveys Ltd CAD layer names with associated colours and graphical content. Where CAD files are available layers may be extracted for further CAD/GIS use. Note: hatched polygon boundaries are contained within layers with the RGB colour code 254, 255, 255 (near white) in order to prevent their visibility.

Report sub-heading and associated CAD layer names	Colour with RGB index	Layer content
Anomalies with archaeological potential		
AS-ABST MAG POS DISCRETE ARCHAEOLOGY	Red 255,0,0	Solid donut, point or polygon (solid)
AS-ABST MAG POS ARCHAEOLOGY	Red 255,0,0	Polygon (cross hatched ANSI37)
AS-ABST MAG POS LINEAR ARCHAEOLOGY	Red 255,0,0	Polyline or polygon (solid)
Anomalies with an uncertain origin		
AS-ABST MAG POS LINEAR UNCERTAIN	255,127,0	Line, polyline or polygon (solid)
AS-ABST MAG NEG LINEAR UNCERTAIN	Blue 0,0,255	Line, polyline or polygon (solid)
AS-ABST MAG POS DISCRETE UNCERTAIN	255,127,0	Solid donut, point or polygon (solid)
AS-ABST MAG POS UNCERTAIN	255,127,0	Polygon (cross hatched ANSI37)
AS-ABST MAG NEG UNCERTAIN	Blue 0,0,255	Polygon (cross hatched ANSI37)
Anomalies relating to land management		
AS-ABST MAG BOUNDARY	127,0,0	Line, polyline or polygon (solid or cross hatched ANSI37)
AS-ABST MAG LAND DRAIN	Cyan 0,255,255	Line or polyline
Anomalies with an agricultural origin		
AS-ABST MAG RIDGE AND FURROW	0,127,63	Line, polyline or polygon (cross hatched ANSI37)
Anomalies associated with magnetic debris		
AS-ABST MAG DEBRIS	132, 132, 132	Polygon (cross hatched ANSI37)
AS-ABST MAG STRONG DIPOLAR	132, 132, 132	Solid donut, point or polygon (solid)
Anomalies with a modern origin		
AS-ABST MAG DISTURBANCE	132, 132, 132	Polygon (hatched ANSI31)
AS-ABST MAG SERVICE	132, 132, 132	Line or polyline
Anomalies with a natural origin		
AS-ABST MAG NATURAL FEATURES	Yellow 255,255,0	Polygon (cross hatched ANSI37)

Table 4: CAD layering

Appendix F – copyright and intellectual property

This report may contain material that is non-Archaeological Surveys Ltd copyright (eg Ordnance Survey, Crown Copyright) or the intellectual property of third parties, which we are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Archaeological Surveys Ltd. Users remain bound by the conditions of the Copyright, Design and Patents Act 1988 with regard to multiple copying and electronic dissemination of this report.

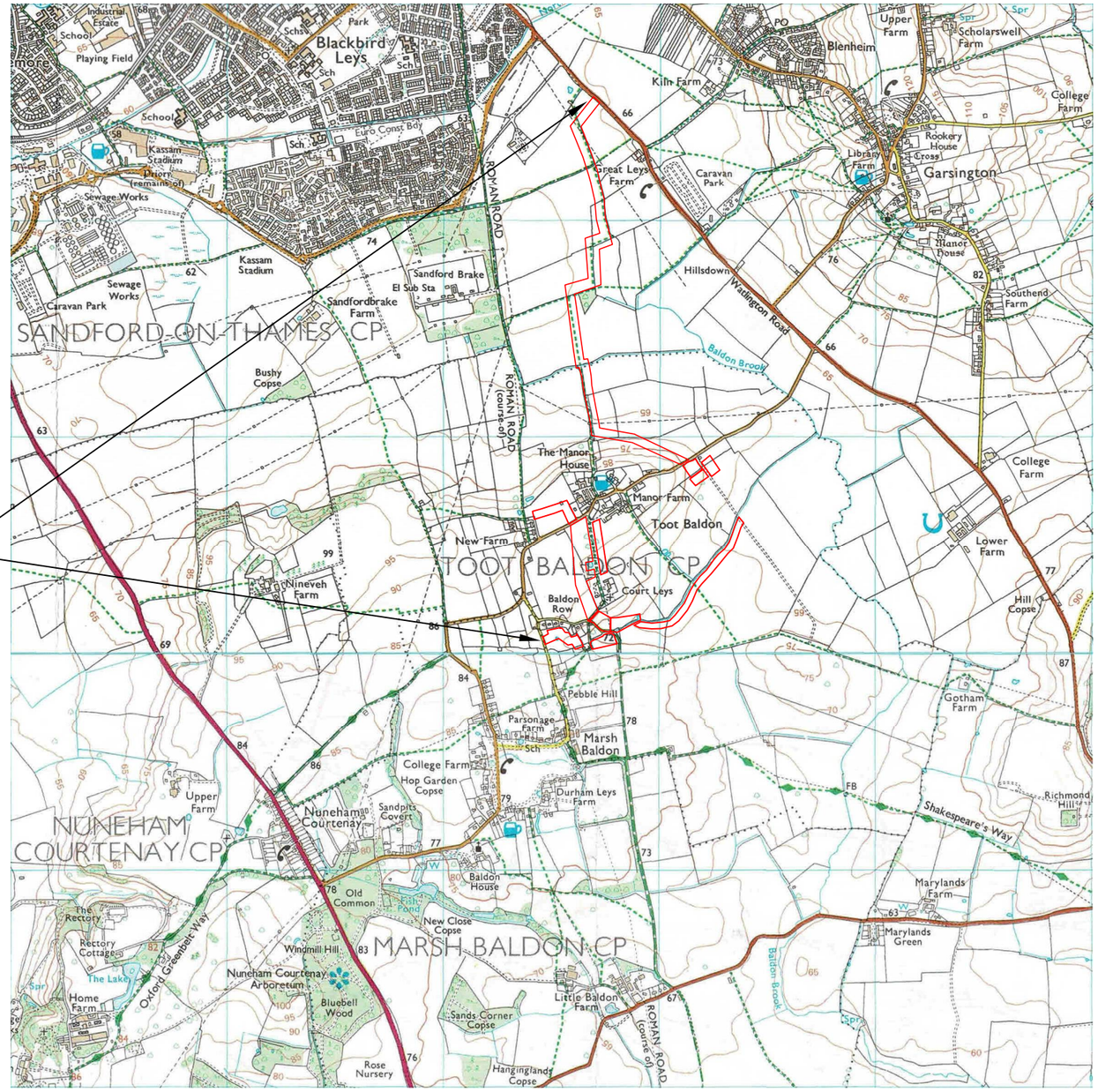
Archaeological Surveys Ltd shall retain intellectual property rights for the materials and records created as part of this project. A non-exclusive, transferable, sub-licensable, perpetual and royalty-free licence shall be granted to the client on full payment of works in order for them to use, reproduce and enhance the reports, documentation, graphics and illustrations produced as part of this project for the purpose for which they were commissioned. Copyright licence will also be granted to the local authority for planning use and within in the Historic Environment Record for public dissemination upon payment by the client. Any document produced to meet planning requirements may be freely copied for planning, development control, research and outreach purposes without recourse to the originator, subject to all due and appropriate acknowledgements being provided and to the terms of the original contract with the client. Archaeological Surveys Ltd shall retain the right to be identified as the author and originator of the material.

The report, data and any associated material produced by Archaeological Surveys Ltd cannot be freely used for any commercial activity other than those set out above. Any unauthorised use will be considered to be in breach of copyright.

Title of Goods remains with Archaeological Surveys Ltd until payment has cleared. Late payment may jeopardise any planning decision as there will be no transfer of title, licensing or any other right of copy or use of this report. Archaeological Surveys Ltd do not give permission for use of the report and associated data in cases of late payment. Any such use will be considered to be in breach of copyright. Late payment may also incur interest at 8% over the Bank of England base rate. Non-payment will be pursued by legal action.

www.archaeological-surveys.co.uk
info@archaeological-surveys.co.uk
Tel: 01249 814 231

Survey location



N

Archaeological Surveys

Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Map of survey area

Site located between OS NGR
SP 56474 00064 and SP 56706 20554

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 01

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Referencing information - south

Area 10
Area 9
Area 8
Area 7
Area 5
Area 4a
Area 4
Area 6
Access track
Area 3
Area 2
Area 1
Northern pumping station
Southern pumping station
N

Referencing grid to OSGB36 datum at 100m intervals

Survey tracks

Survey track start

Survey track stop

SCALE 1:5000

0m 100 200m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 02

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Referencing information

Referencing grid to OSGB36 datum at 100m intervals

- Survey tracks
- Survey track start
- Survey track stop

SCALE 1:5000

0m 100 200m

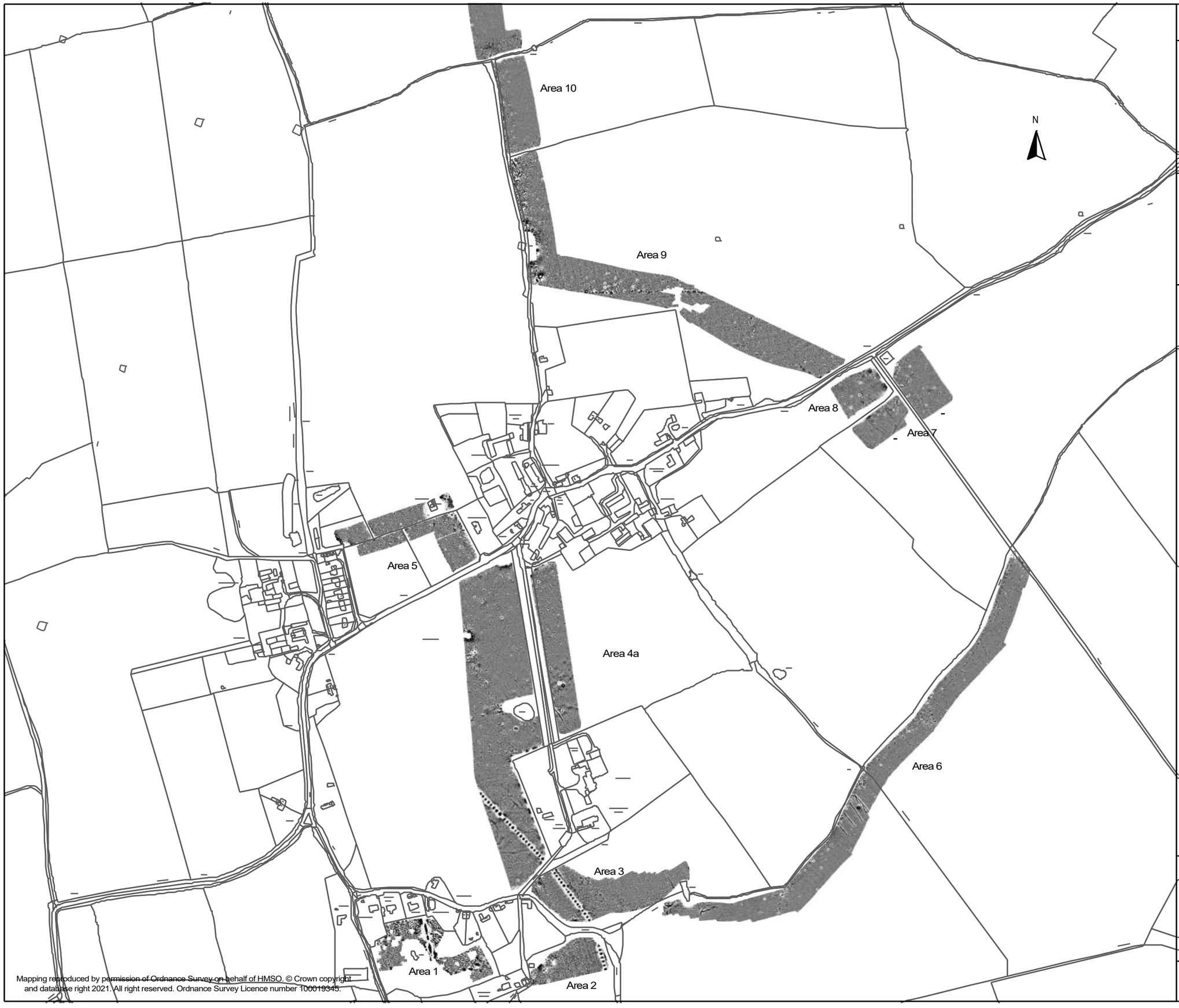
SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 03

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale plot of processed magnetometer data - south



+3nT

-3nT

SCALE 1:5000

0m 100 200m

KTD	DJS	FIG 04

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - south

N

Area 1
Area 2
Area 3
Area 4
Area 4a
Area 5
Area 6
Area 7
Area 8
Area 9
Area 10

- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - ridge and furrow
- Positive/weak multiple dipolar linear anomaly - land drain
- Positive linear anomaly - former field boundary
- Negative linear anomaly - material of low magnetic susceptibility
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Variable magnetic response - of natural origin
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong multiple dipolar linear anomaly - pipeline / cable / service
- Strong dipolar anomaly - ferrous object

SCALE 1:5000

0m 100 200m

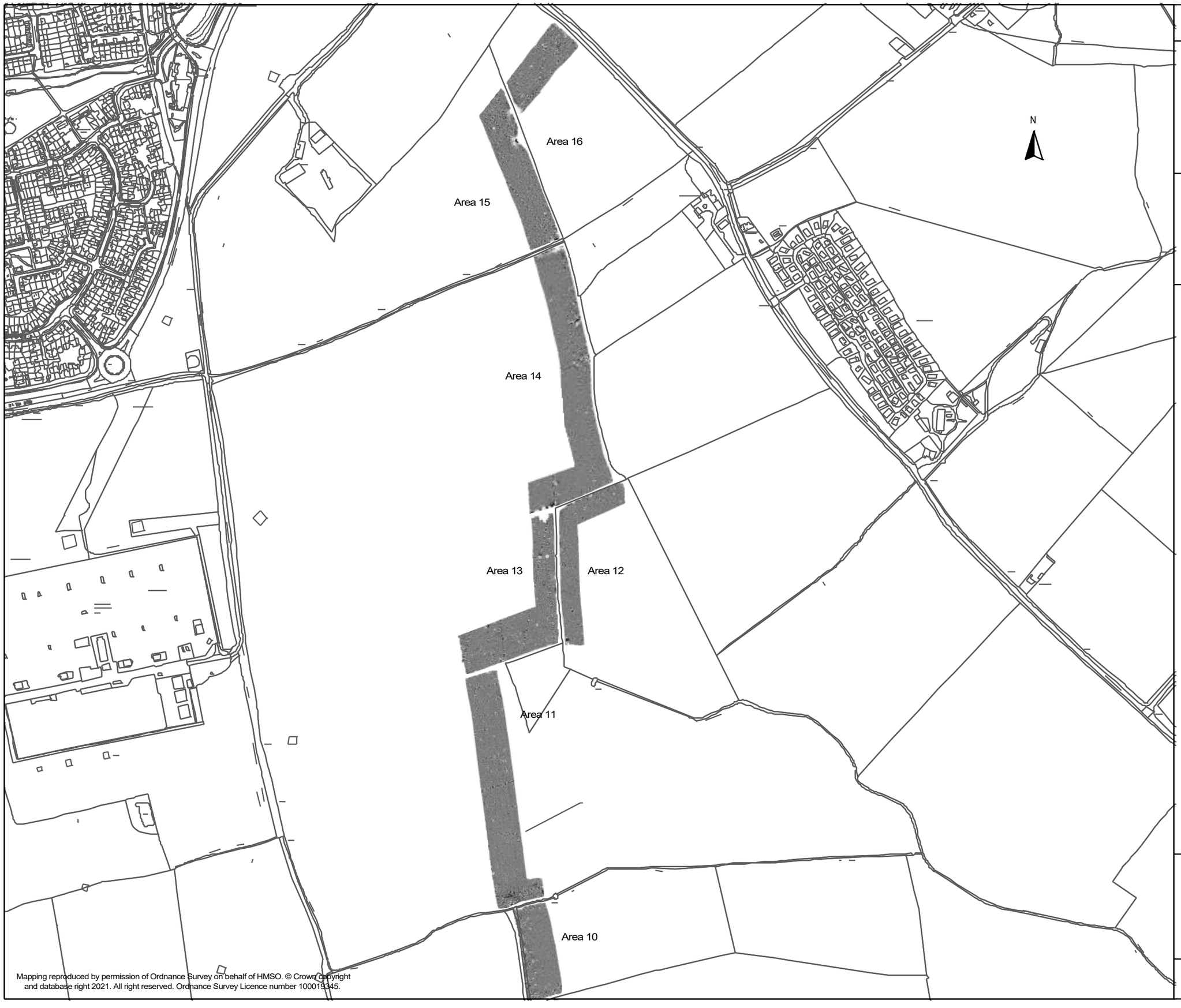
SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 05

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale plot of processed magnetometer data - north



+3nT

-3nT

SCALE 1:5000

0m 100 200m

KTD	DJS	FIG 06

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - north

N

Area 16
Area 15
Area 14
Area 13
Area 12
Area 11
Area 10

- Positive linear anomaly - of uncertain origin
- Negative linear anomaly - of uncertain origin
- Positive/weak multiple dipolar linear anomaly - land drain
- Discrete positive response - possible pit-like feature
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:5000

0m 100 200m

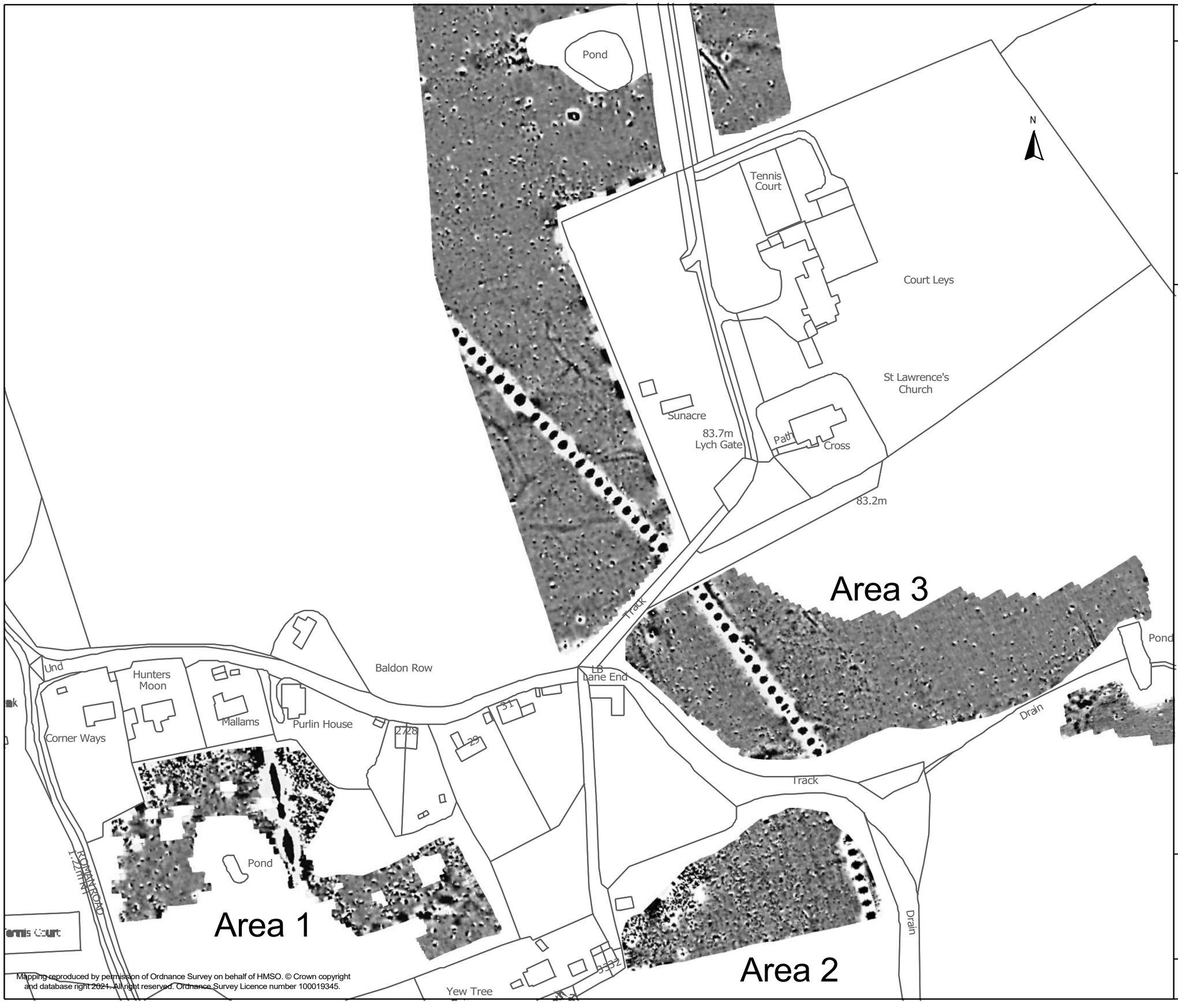
SCALE TRUE AT A3

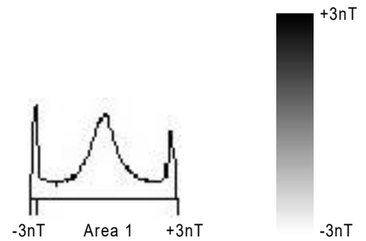
DRAWN BY	CHECKED BY	
KTD	DJS	FIG 07

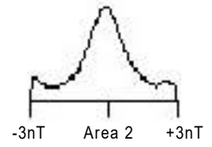
Archaeological Surveys
Specialist Geophysical Surveyors

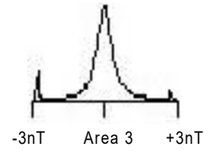
Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

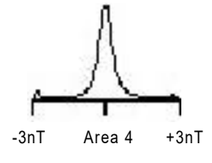
Greyscale plot of processed magnetometer data - Areas 1 to 4 south



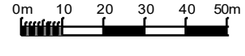








SCALE 1:1500



KTD	DJS	FIG 08

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Traceplot of magnetometer data - Areas 1 to 4

Area 4

Area 3

Area 1

Area 2

+ 40nT
+ 20nT
0nT
-20nT
-40nT

Approx 20nT/ cm vertical displacement

Data limits ± 100nT

Negative lines have been removed where they obscure underlying data

N

Pond
Tennis Court
Court Leys
St Lawrence's Church
Sunacre
83.7m
Lych Gate
Path
Cross
83.2m
Track
Pond
Drain
Baldon Row
LB
Lane End
Hunters Moon
House
Corner Ways
Pond
Track
Drain
Yew Tree
ROWAN ROAD
Tennis Court

SCALE 1:1500

0m 10 20 30 40 50m

KTD | DJS | FIG 09

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - Areas 1 to 4 south

- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Negative linear anomaly - material of low magnetic susceptibility
- Linear anomaly - ridge and furrow
- Positive linear anomaly - former field boundary
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Variable magnetic response - of natural origin
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong multiple dipolar linear anomaly - pipeline / cable / service
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

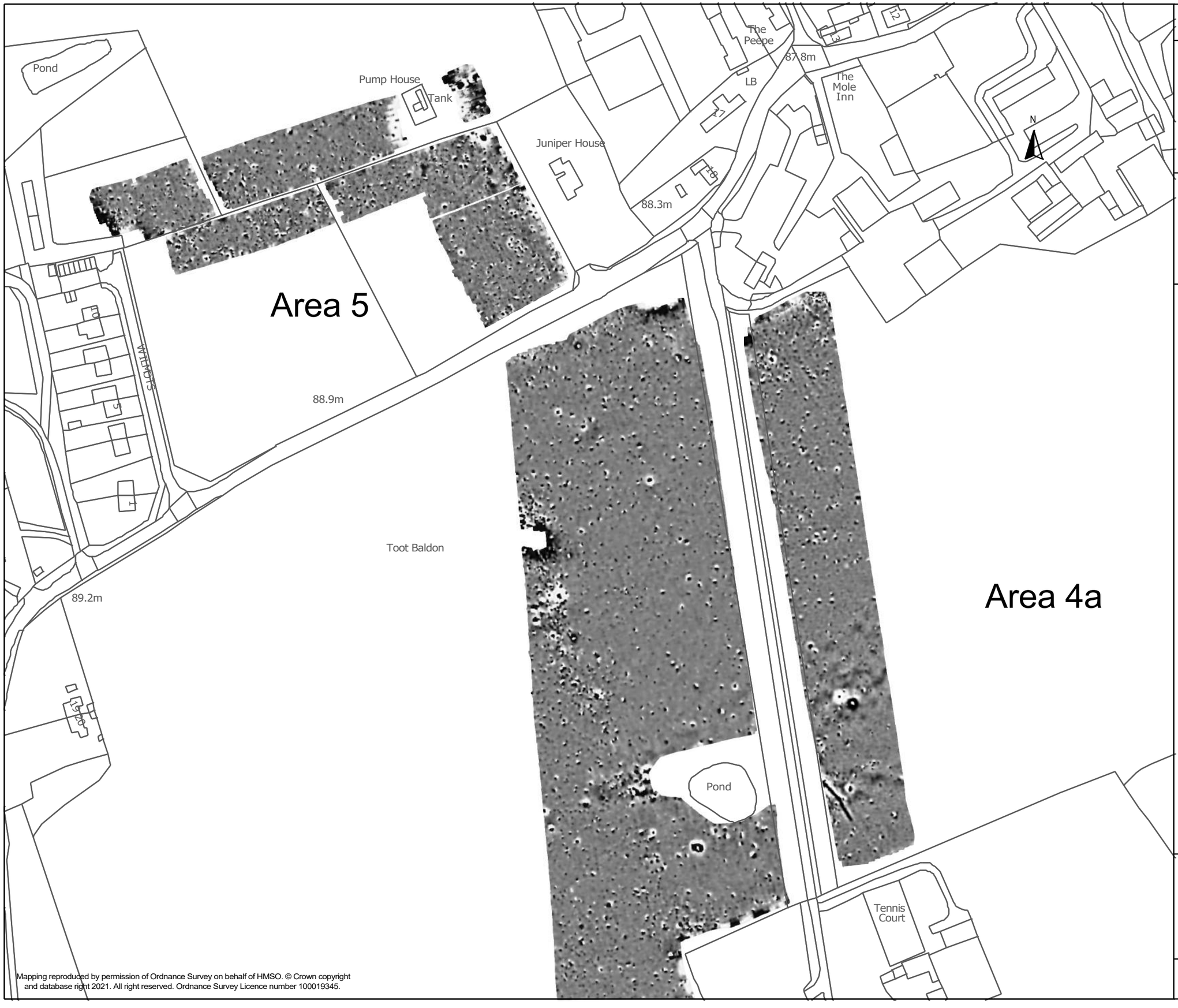
DRAWN BY	CHECKED BY	
KTD	DJS	FIG 10

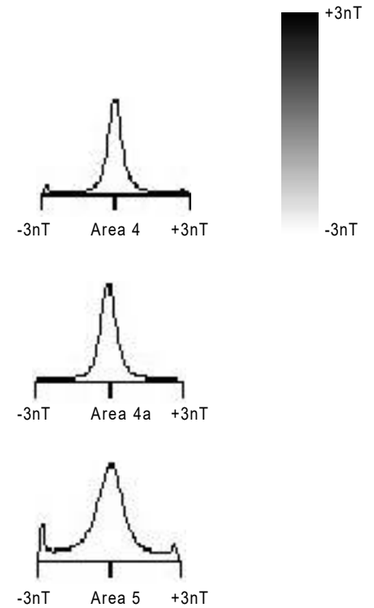
Area 1
Area 2
Area 3
4.1
4.2
4.4
1.1
1.2
1.3
1.4
3.1
3.2
3.3
3.4
3.5
3.6
3.7
3.8
3.9
3.10
Pond
Tennis Court
Court Leys
St Lawrence's Church
Sunacre
83.7m
Lych Gate
Path
Cross
83.2m
Track
Baldon Row
LB
Lane End
Hunters Moon
Mallams
Purlin House
Corner Ways
Drain
Yew Tree
ROMAN ROAD
6.5

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale plot of processed magnetometer data - Areas 4 north, 4a & 5





SCALE 1:1500

0m 10 20 30 40 50m

KTD	DJS	FIG 11

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Traceplot of magnetometer data - Areas 4 north, 4a & 5

+ 40nT — Approx 20nT/ cm vertical displacement

+ 20nT — Data limits ± 100nT

0nT — Negative lines have been removed where they obscure underlying data

-20nT

-40nT

Area 5

Area 4a

Area 4

Pond

Pump House

Tank

Juniper House

The Peepe

87.8m

LB

The Mole Inn

88.3m

88.9m

89.2m

Toot Baldon

Pond

Tennis Court

N

SCALE 1:1500

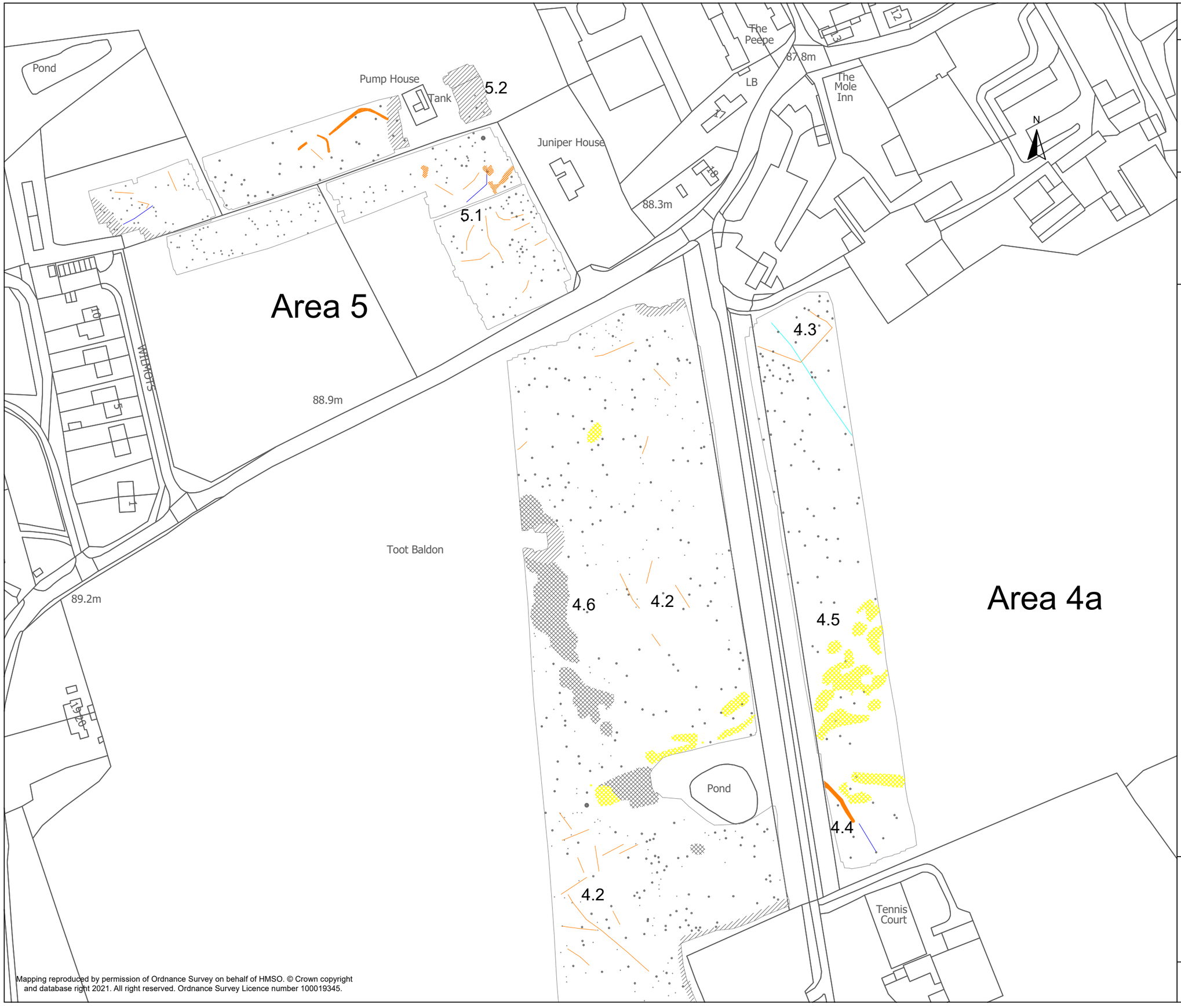
0m 10 20 30 40 50m

KTD | DJS | FIG 12

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - Areas 4 north, 4a & 5



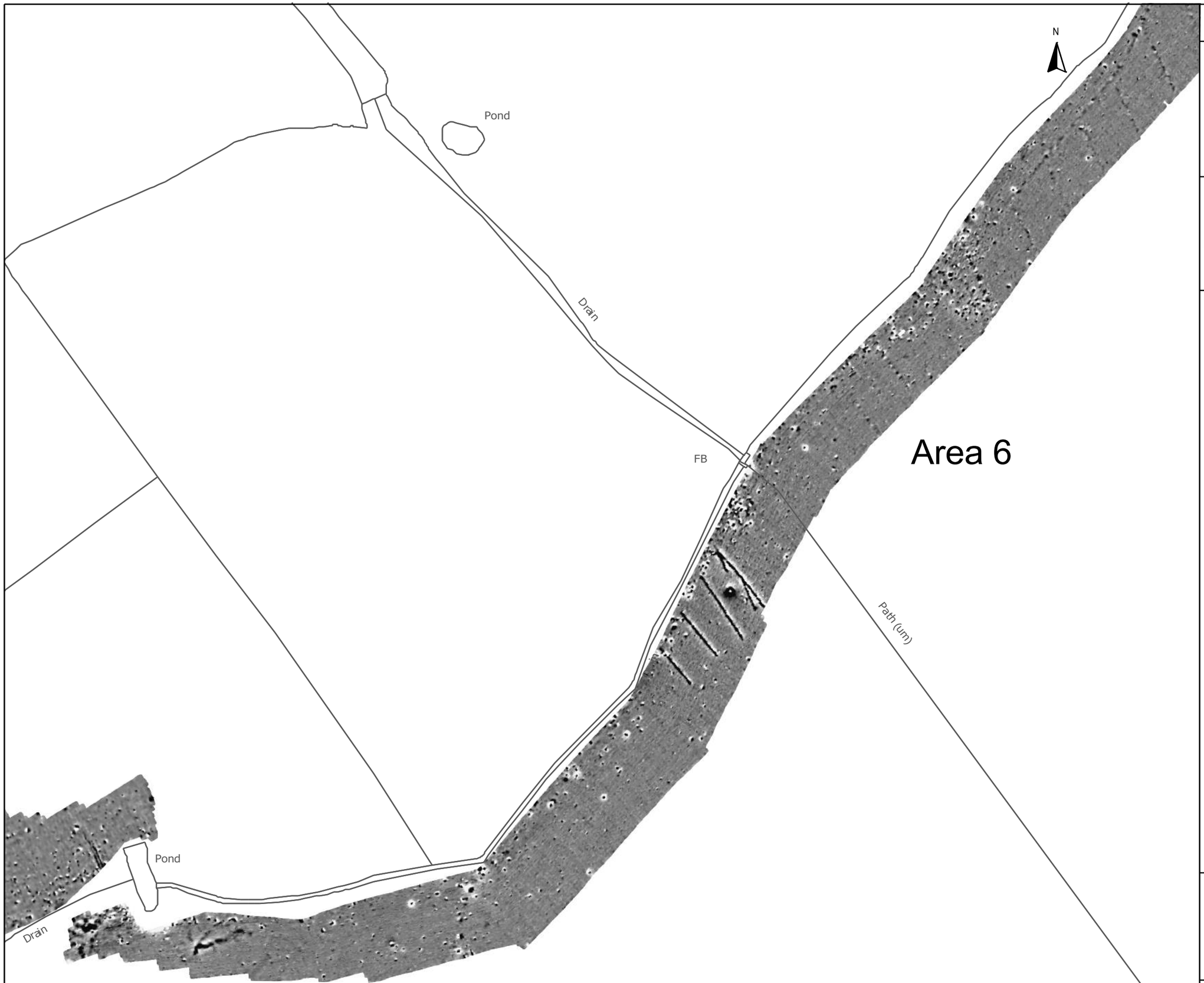
- Positive linear anomaly - possible ditch-like feature
- Negative linear anomaly - material of low magnetic susceptibility
- Discrete positive response - possible pit-like feature
- Variable magnetic anomaly - of natural origin
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong multiple dipolar linear anomaly - pipeline / cable / service
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

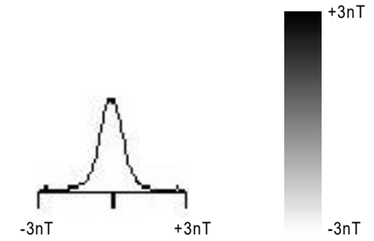
DRAWN BY	CHECKED BY	
KTD	DJS	FIG 13



Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale plot of processed magnetometer data - Area 6 south



SCALE 1:1500

0m 10 20 30 40 50m

KTD	DJS	FIG 14

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Traceplot of magnetometer data - Area 6 south

Pond

Drain

Area 6

FB

N

Path (um)

Pond

Drain

+ 40nT — Approx 20nT/ cm vertical displacement

+ 20nT — Data limits ± 100nT

0nT — Negative lines have been removed where they obscure underlying data

-20nT

-40nT

SCALE 1:1500

0m 10 20 30 40 50m

KTD	DJS	FIG 15

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - Area 6 south

N

Area 6

Pond
Drain
FB
Drain
Path (um)
Drain
Pond
Drain

6.1
6.2
6.3
6.4
6.5
6.6
6.7
3.6

- Linear anomaly - ridge and furrow
- Weak multiple dipolar linear anomaly - land drain
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Variable magnetic response - of natural origin
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

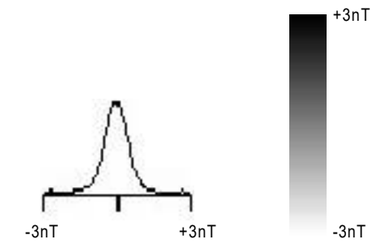
SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 16

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale plot of processed magnetometer data - Area 6 north



N

Drain

Pond

Drain

FB

Area 6

SCALE 1:1500

0m 10 20 30 40 50m

KTD | DJS | FIG 17

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Traceplot of magnetometer data - Area 6 north

+ 40nT
+ 20nT
0nT
-20nT
-40nT

Approx 20nT/ cm vertical displacement.

Data limits ± 100nT.

N

Drain

Pond

Drain

FB

FB

Area 6

SCALE 1:1500

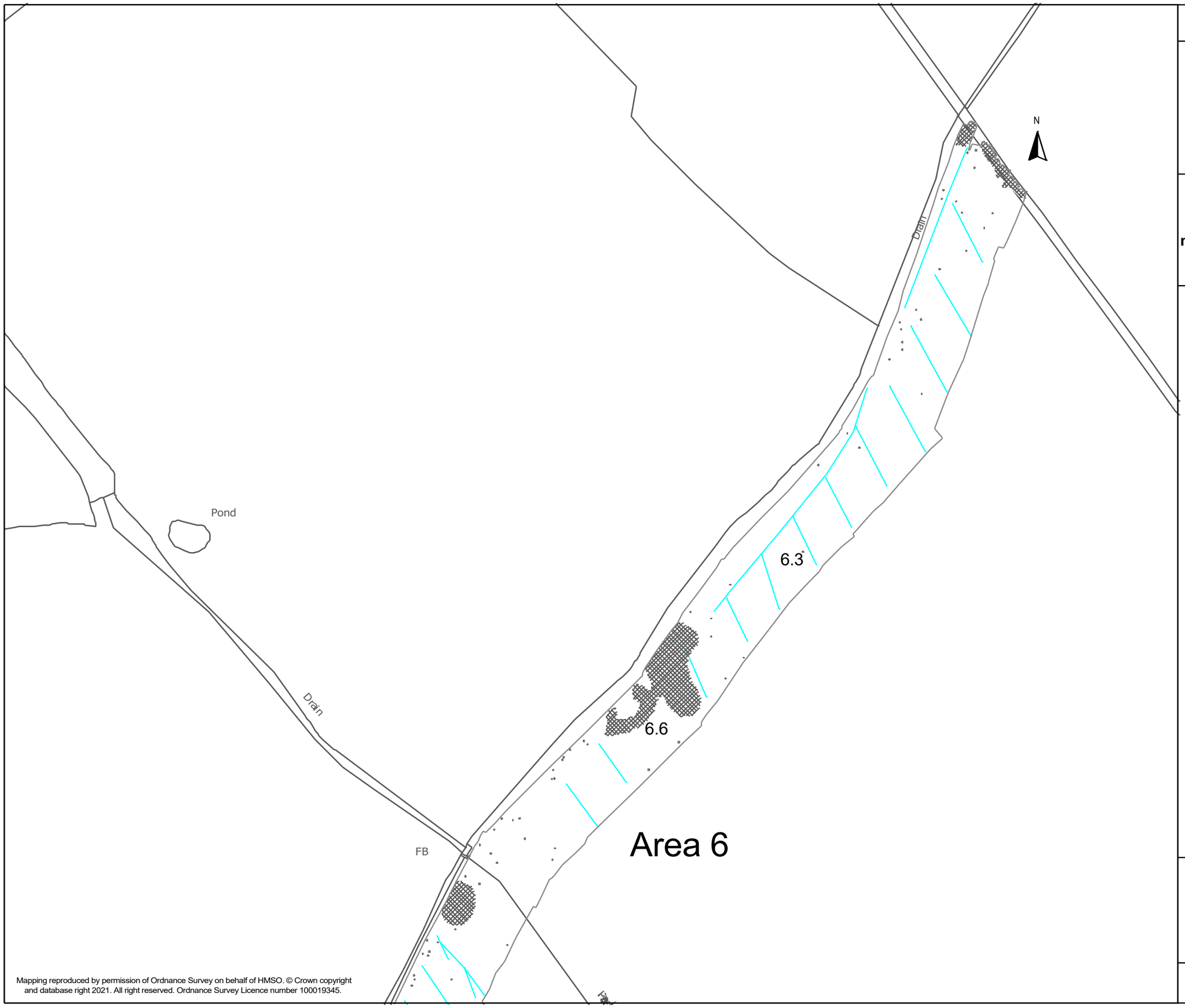
0m 10 20 30 40 50m

KTD | DJS | FIG 18

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - Area 6 north



Weak multiple dipolar linear anomaly - land drain

Magnetic debris - spread of magnetically thermoremnant/ferrous material

Strong dipolar anomaly - ferrous object

SCALE 1:1500

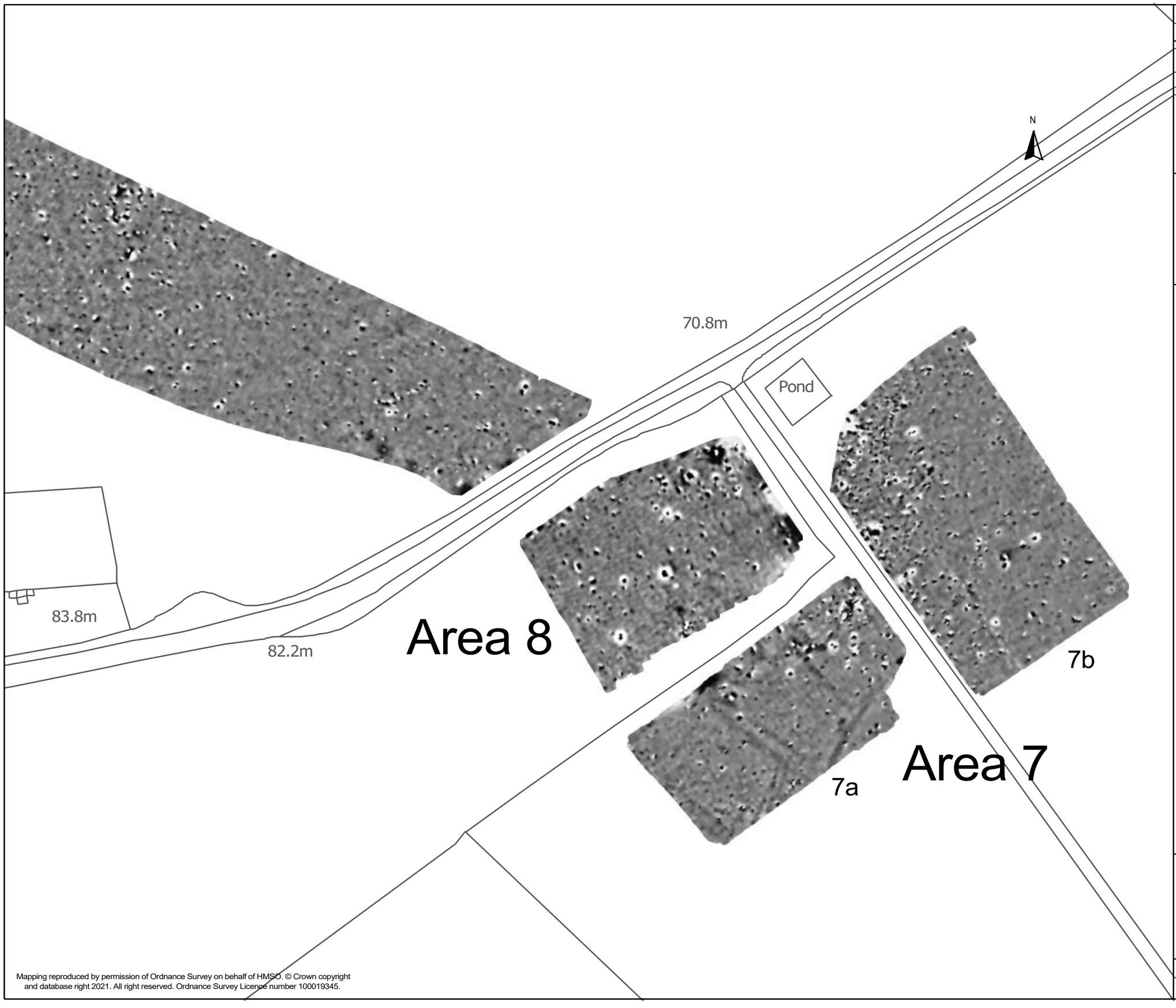
0m 10 20 30 40 50m

KTD	DJS	FIG 19

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale plot of processed magnetometer data - Areas 7 & 8



-2nT Area 7 +2nT

+2nT
-2nT

-2nT Area 8 +2nT

SCALE 1:1000

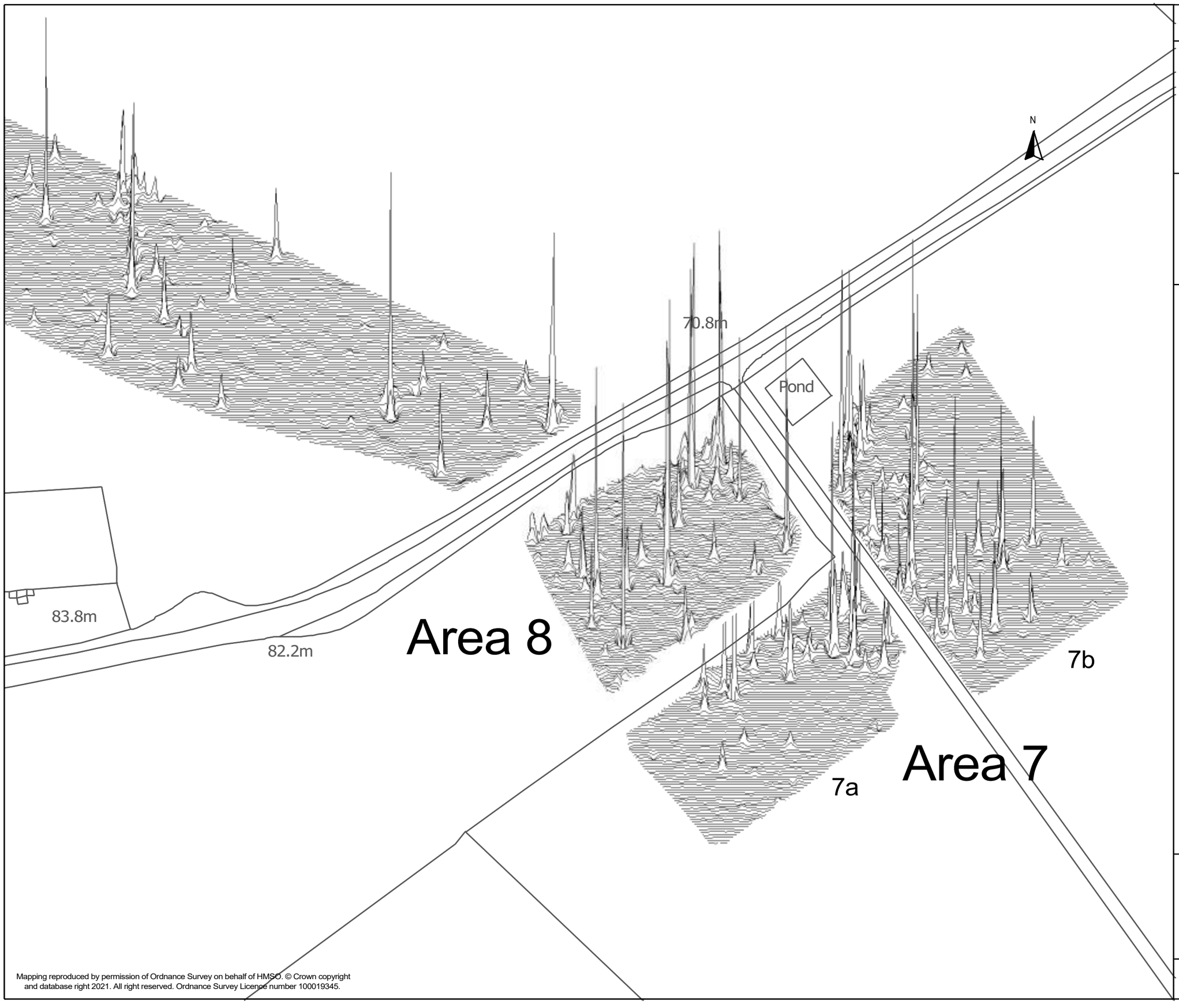
0m 10 20 30 40 50m

KTD	DJS	FIG 20

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Traceplot of magnetometer data - Areas 7 & 8



+ 30nT — Approx 15nT/ cm vertical displacement

+ 15nT — Data limits ± 100nT

0nT — Negative lines have been removed where they obscure underlying data

-15nT

-30nT

SCALE 1:1000

10 20 30 40 50m

KTD	DJS	FIG 21

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - Areas 7 & 8

N

9.5
9.1
9.2
70.8m
Pond
7.3
7.2
8.2
8.1
Area 8
83.8m
82.2m
7b
7.1
7a
Area 7

- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Negative linear anomaly - material of low magnetic susceptibility
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

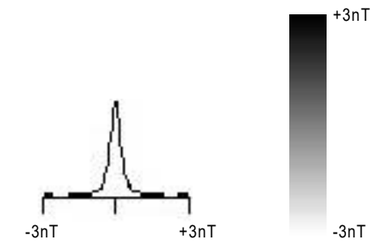
10 20 30 40 50m

KTD	DJS	FIG 22

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale plot of processed magnetometer data - Area 9



N

Area 9

Area 8

Track

ETL

14

11

9

The Manor House

Court

Pond

83.8m

82.2m

SCALE 1:1500

0m 10 20 30 40 50m

KTD	DJS	FIG 23

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Traceplot of magnetometer data - Area 9

+ 40nT — Approx 20nT/ cm vertical displacement

+ 20nT — Data limits ± 100nT

0nT — Negative lines have been removed where they obscure underlying data

-20nT

-40nT

SCALE 1:1500

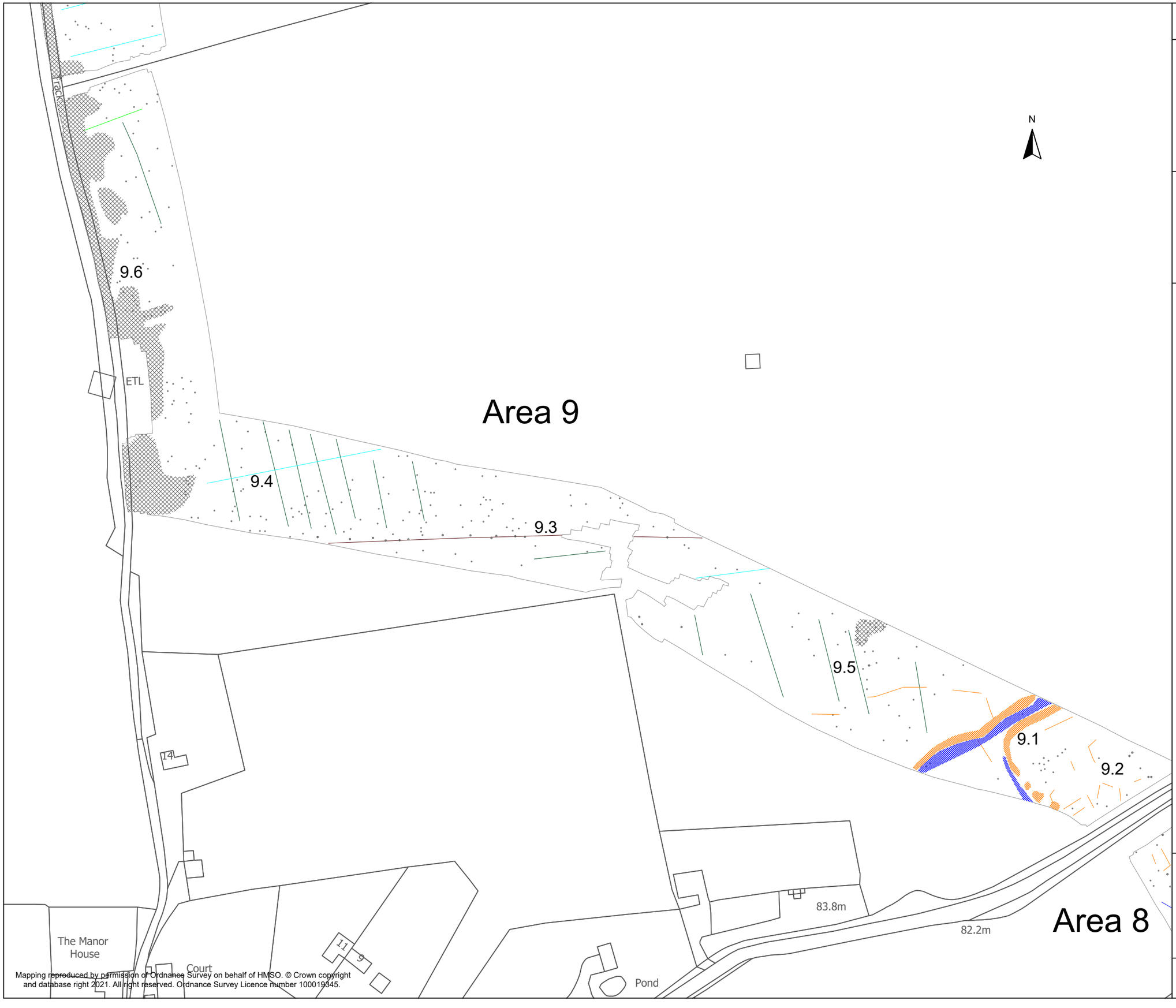
0m 10 20 30 40 50m

KTD	DJS	FIG 24

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Abstraction and interpretation of magnetic anomalies - Area 9



- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - ridge and furrow
- Positive/weak multiple dipolar linear anomaly - land drain
- Positive linear anomaly - former field boundary
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Negative anomaly - material with low magnetic susceptibility
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 25

Greyscale plot of processed magnetometer data

Area 11

Area 10

-3nT Area 10 +3nT

-3nT Area 11 +3nT

Traceplot of magnetometer data

Area 11

Area 10

+ 40nT
+ 20nT
0nT
-20nT
-40nT

Approx 20nT/ cm vertical displacement

Data limits ± 100nT

Negative lines have been removed where they obscure underlying data

Abstraction & interpretation of magnetic anomalies

N

Area 11

Area 10

Positive linear anomaly - of uncertain origin

Positive/weak multiple dipolar linear anomaly - land drain

Discrete positive response - possible pit-like feature

Magnetic debris - spread of magnetically thermoremnant/ferrous material

Strong dipolar anomaly - ferrous object

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale & traceplot of magnetometer data & abstraction & interpretation of magnetic anomalies - Areas 10 & 11 south

SCALE 1:1500

0m 10 20 30 40 50m

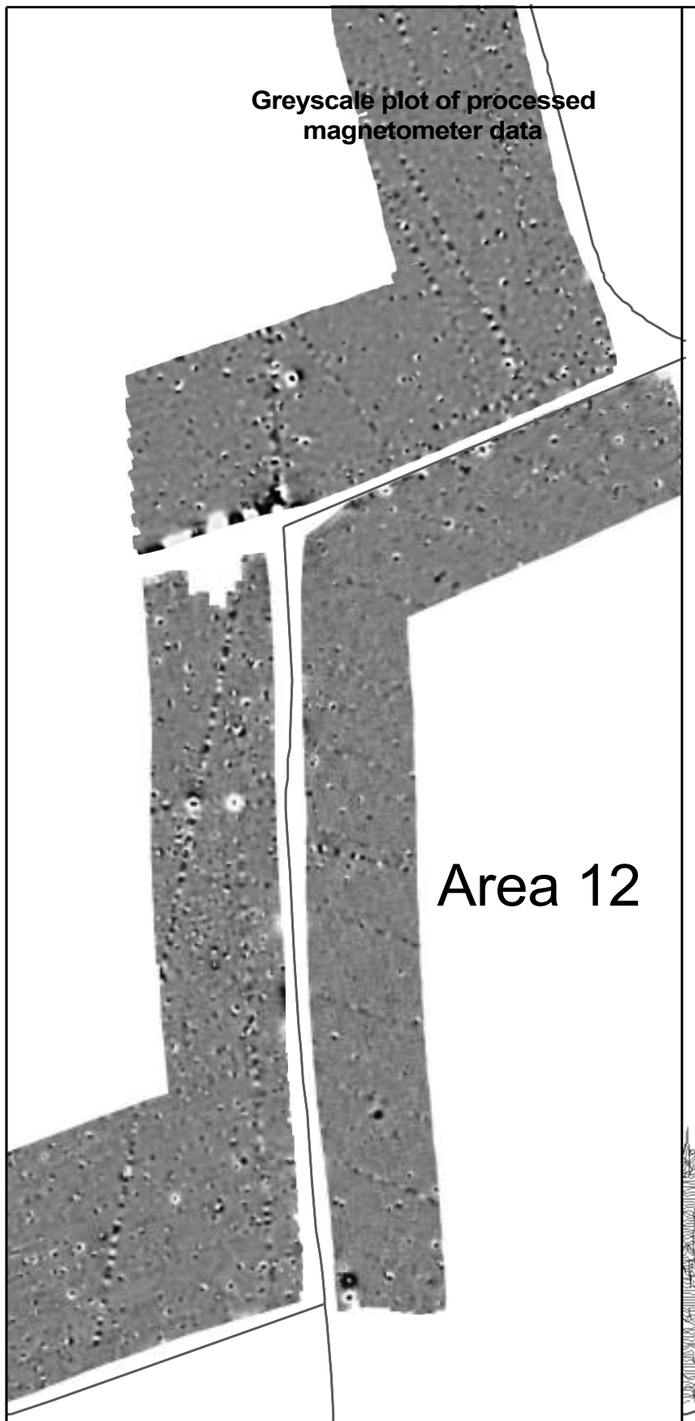
KTD	DJS	FIG 26

Archaeological Surveys
Specialist Geophysical Surveyors

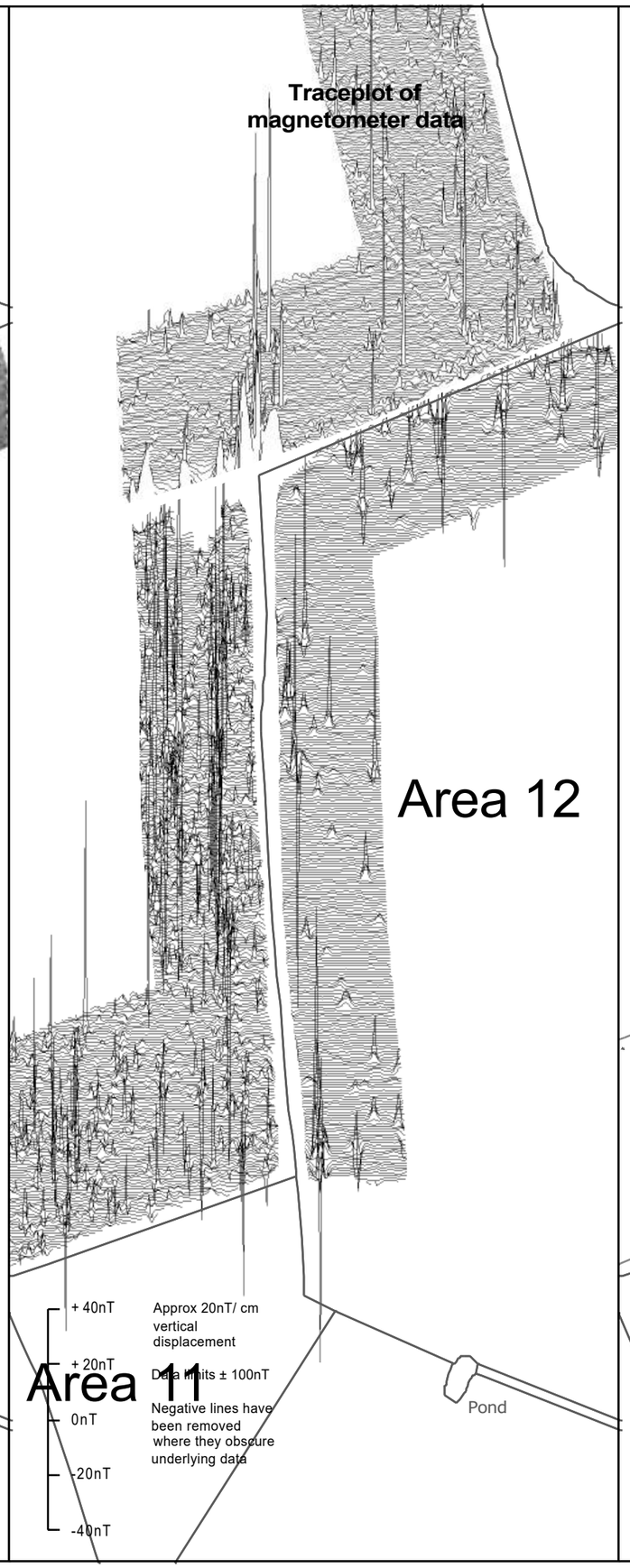
Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale & traceplot of magnetometer data & abstraction & interpretation of magnetic anomalies - Area 12

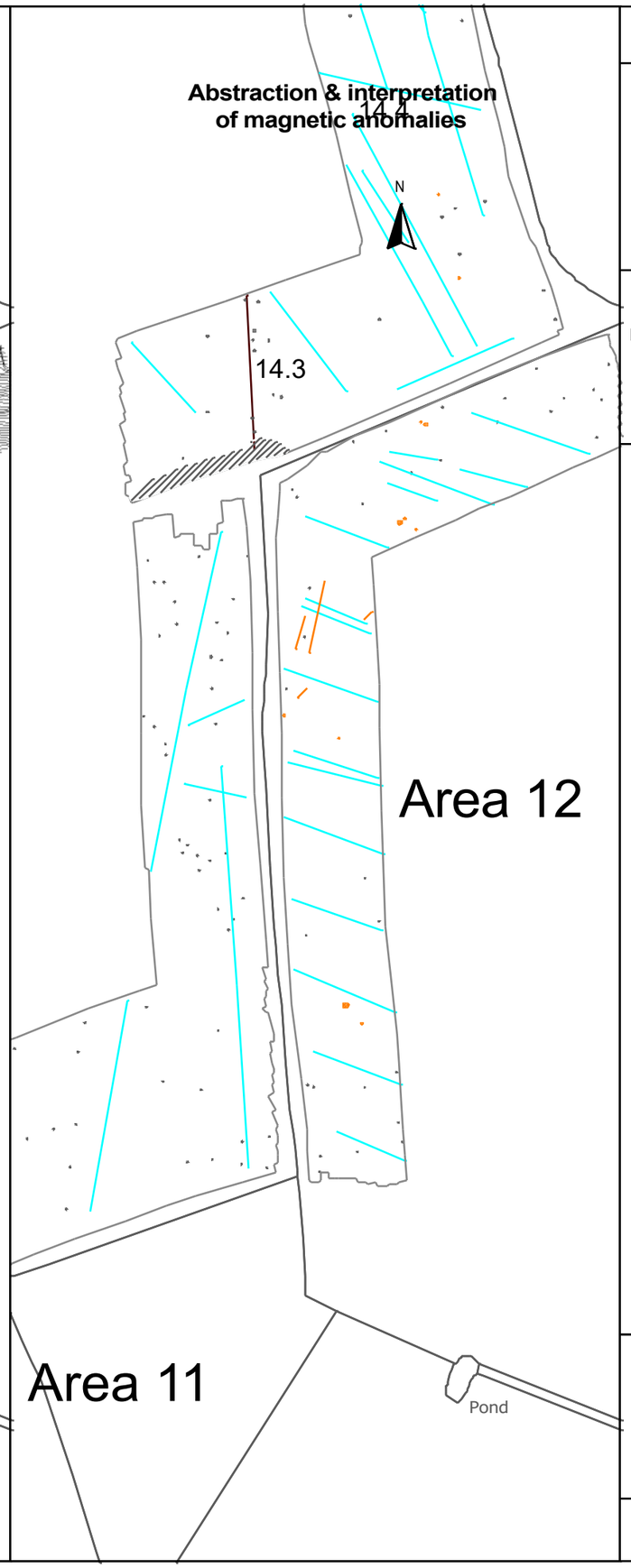
Greyscale plot of processed magnetometer data



Traceplot of magnetometer data



Abstraction & interpretation of magnetic anomalies



- Positive linear anomaly - of uncertain origin
- Positive/weak multiple dipolar linear anomaly - land drain
- Discrete positive response - possible pit-like feature
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

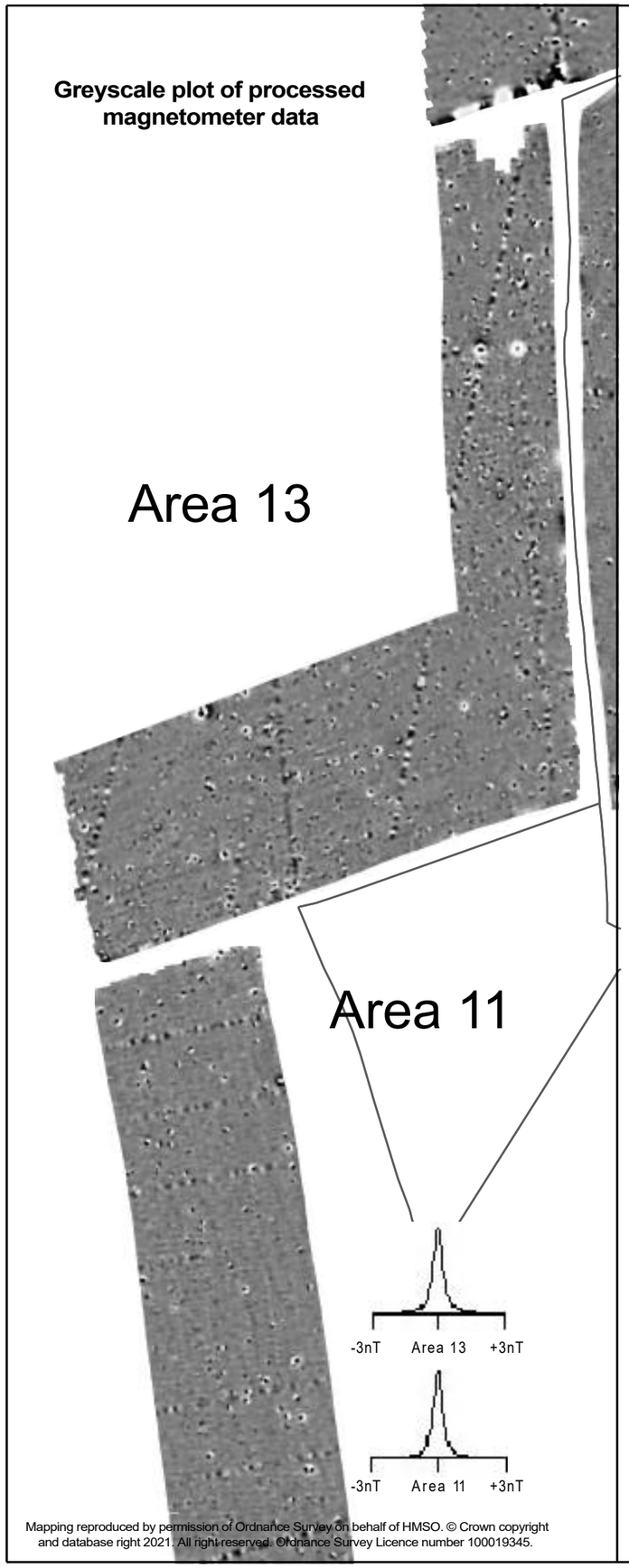
KTD	DJS	FIG 27

Archaeological Surveys
Specialist Geophysical Surveyors

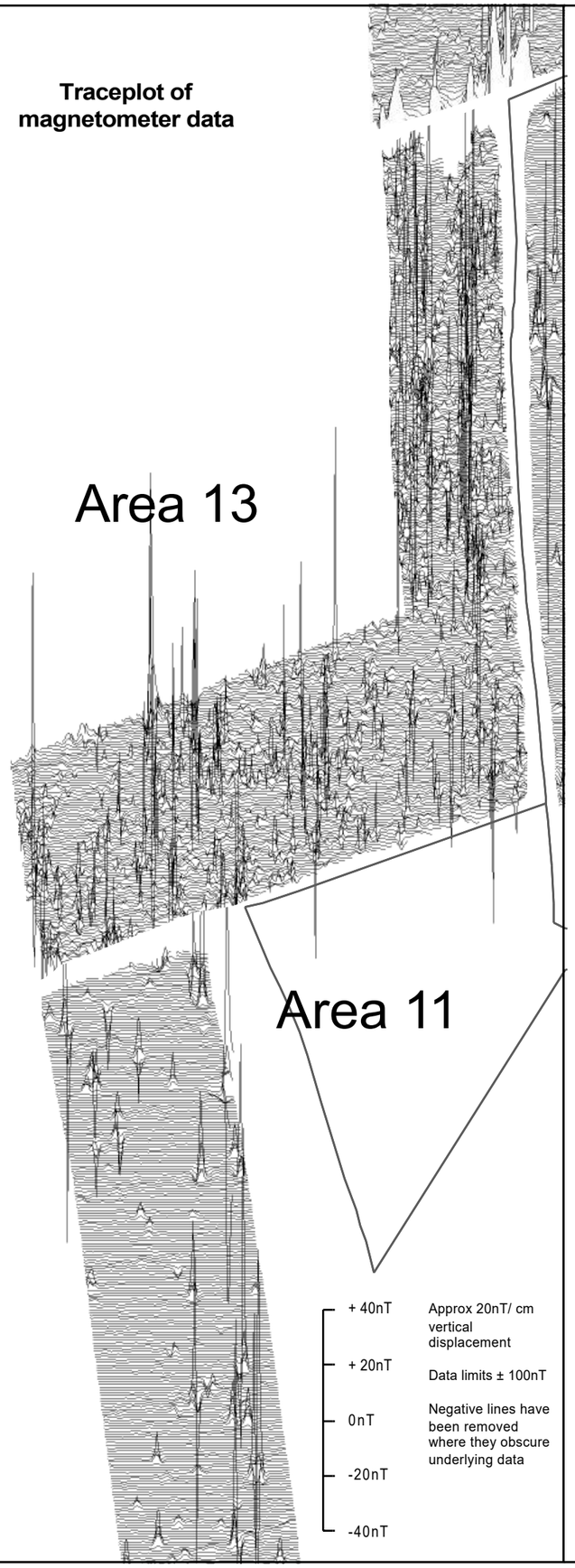
Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale & traceplot of magnetometer data & abstraction & interpretation of magnetic anomalies - Areas 11 north & 13

Greyscale plot of processed magnetometer data



Traceplot of magnetometer data



Abstraction & interpretation of magnetic anomalies

Positive/weak multiple dipolar linear anomaly - land drain

Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

KTD	DJS	FIG 28

Greyscale plot of processed magnetometer data

Area 14

+3nT

-3nT

-3nT +3nT

Traceplot of magnetometer data

Area 14

+ 40nT

+ 20nT

0nT

-20nT

-40nT

Approx 20nT/ cm vertical displacement

Data limits ± 100nT

Negative lines have been removed where they obscure underlying data

Abstraction & interpretation of magnetic anomalies

Area 14

N

14.1

14.2

14.3

14.4

14.3

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale & traceplot of magnetometer data & abstraction & interpretation of magnetic anomalies - Area 14

- Positive linear anomaly - magnetically enhanced feature of uncertain origin
- Weak multiple dipolar linear anomaly - land drain
- Positive linear anomaly - former field boundary
- Negative linear anomaly - material of low magnetic susceptibility
- Discrete positive response - possible pit-like feature
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

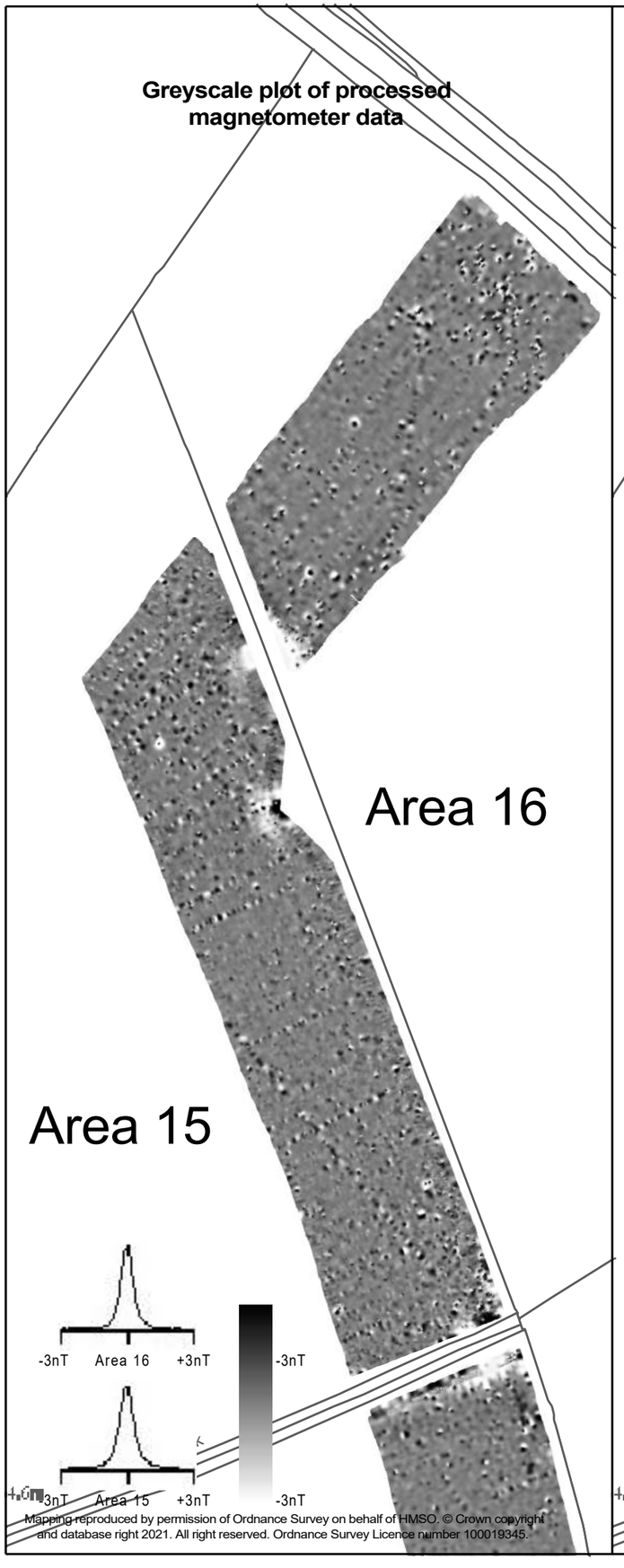
KTD	DJS	FIG 29

Archaeological Surveys
Specialist Geophysical Surveyors

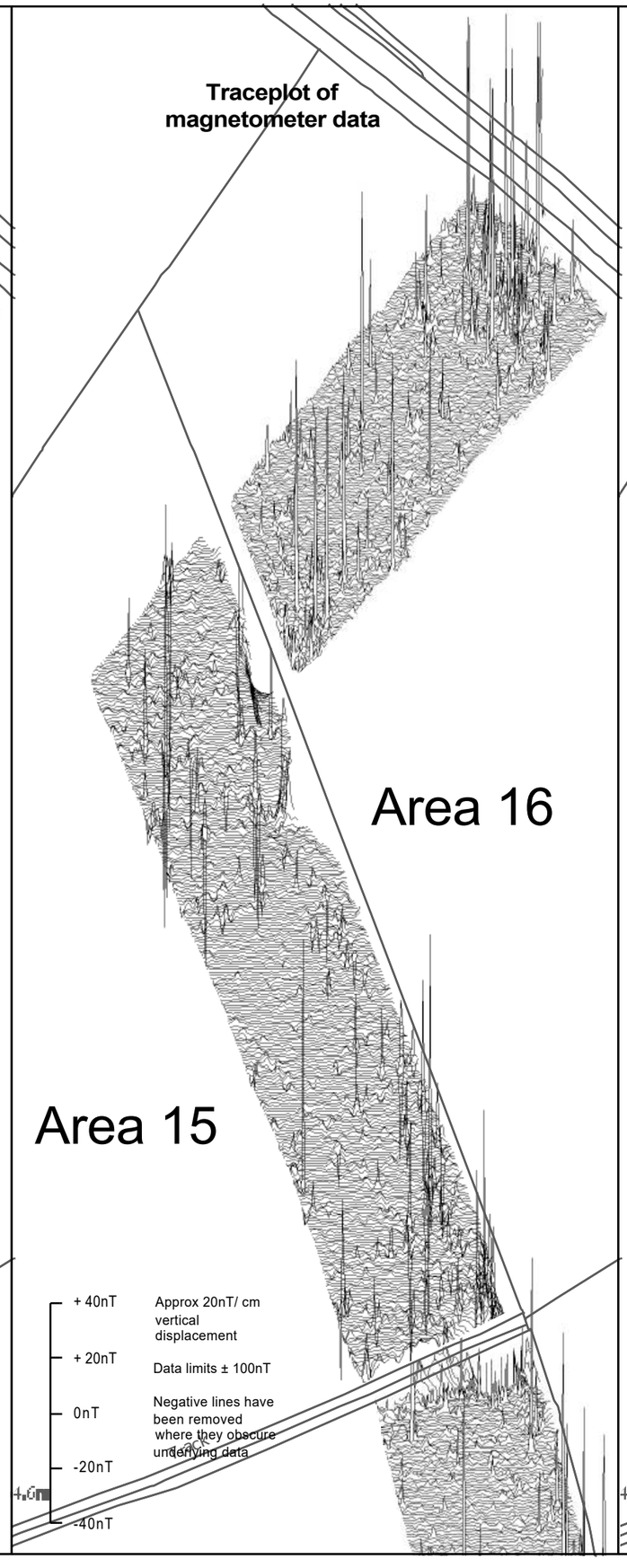
Geophysical Survey
First Time Sewerage Scheme
Toot Baldon
Oxfordshire

Greyscale & traceplot of magnetometer data & abstraction & interpretation of magnetic anomalies - Areas 15 & 16

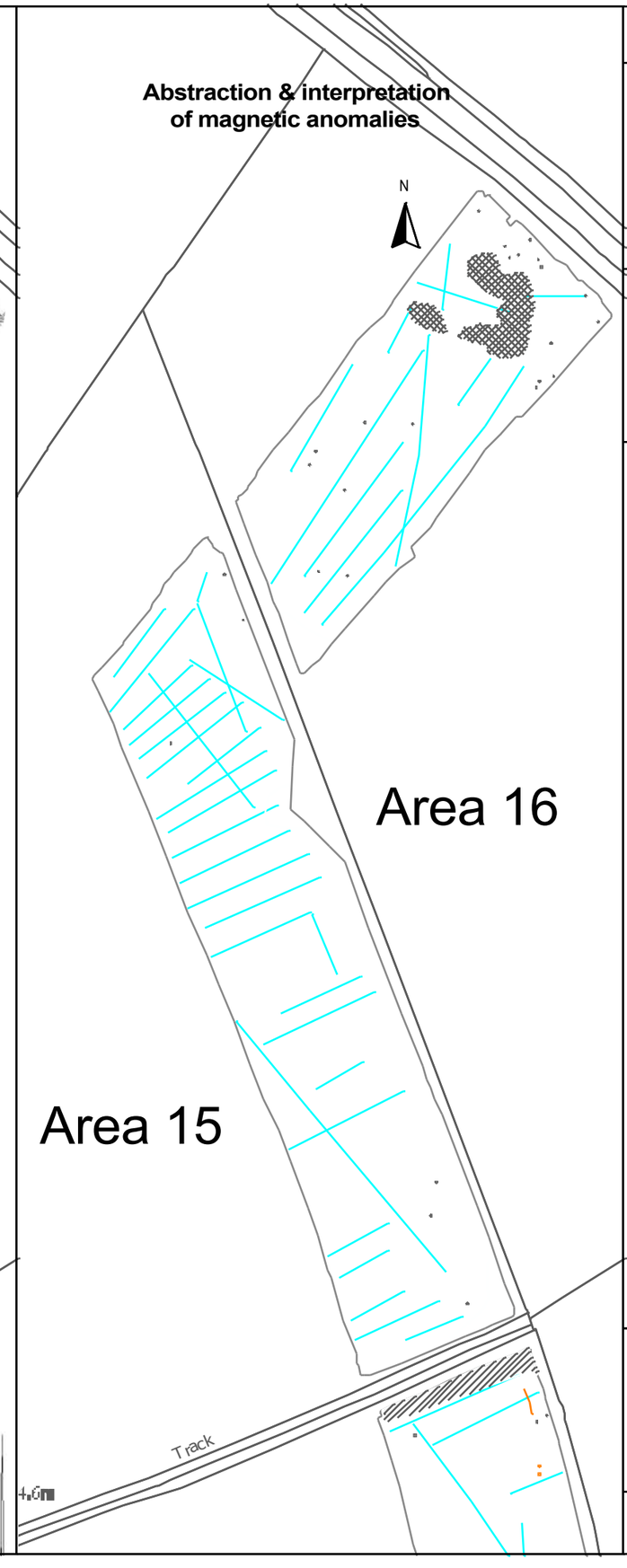
Greyscale plot of processed magnetometer data



Traceplot of magnetometer data



Abstraction & interpretation of magnetic anomalies



Weak multiple dipolar linear anomaly - land drain

Magnetic debris - spread of magnetically thermoremnant/ferrous material

Magnetic disturbance from ferrous material

Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

KTD	DJS	FIG 30