M9/6

Holland Park, Spalding, Lincolnshire

Geophysical Survey Report

Produced for CgMs Consulting

HPL081

07/05/09

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Mapping Our Heritage

Postbook Ref:	286453
Officer Dealing:	Louise J.
Date Reply Required:	
Date Replied Via:	
CRM Transaction No.	

Lincolnshire County Council

22 MAY 2009

Support Services

Non-Technical Summary

Magnetic survey was commissioned by CgMs Consulting to attempt to map archaeological features within an area of complex soils in the South Lincolnshire fens. Various cropmarks had been observed here over the years over a strongly alluvial soil.

The survey was not as successful as expected due to the shallowness of the surface soil over peat which in turn overlay deeper alluvial material. Modern plough activity has meant that the peaty subsoil is close to the surface with an inevitable lack of magnetic contrast between it and features cut into it. In addition the surface soil, which is partly due to a second phase of alluvial activity as well as ploughed-up peat, is strongly magnetic and masks variation from archaeological sources within it.

However, where the peat itself could be imaged it is apparent that magnetic features are sealed beneath it. In addition, the northern part of the site hosts a number of small structures which have been suggested (Gajos, *pers. comm.*) to be related to salterns of which further examples to the north were found during earlier work.

Although this survey did not perform as well as expected in terms of mapping features known from cropmarks, the result is due to the nature (including thickness) of the soils at this particular site and considerable care needs to be taken if extrapolating the result to other sites in the region. As suggested early in the formation of the project the use of borehole and test-pit logs in conjunction with survey in fenland environments is usually a good way of prospecting.

May 2009

Digital Data

Data	Included?	Format
Survey outlines	Yes	Vector: AutoCAD DXF R12 "AP HPL081 Interpretation, Outlines etc.dxf"
Interpretation	Yes	Vector: AutoCAD DXF R12 "AP HPL081 Interpretation, Outlines etc.dxf"
XY Traces	No	Vector:
Contours	No	Vector:
Images	Yes	Georeferenced raster: GeoTIFF "AP HPL081 Magnetic Pseudogradient A -6 nTpm Black +6 nTpm White.tif", "AP HPL081 Magnetic Pseudogradient B -6 nTpm Black +6 nTpm White.tif", "AP HPL081 Magnetic Pseudogradient C -6 nTpm Black +6 nTpm White.tif", "AP HPL081 Magnetic Pseudogradient D -6 nTpm Black +6 nTpm White.tif", "AP HPL081 Magnetic Pseudogradient E -6 nTpm Black +6 nTpm White.tif"
Catalogue	Yes	Database: MS Access 2003 "AP HPL081 Catalogue.mdb"

Media	Sent to	Date
E-mail	Paul Gajos	08.05.09

Audit

Version	Author	Checked	Date
Draft Final	MJR	ACKR	08.05.09
Final	MJR	MJR	08.05.09

Table of Contents

1 Introduction

Objective

1.1 Paul Gajos of CgMs Consulting commissioned ArchaeoPhysica on behalf of the end client to provide geophysical survey as part of an assessment of land prior to development.

1.2 A brief was agreed by Paul Gajos.

1.3 The fundamental objective was to establish the extent and nature of any features of likely archaeological interest.

Location

Country	England
County	Lincolnshire
Nearest Town	Spalding
Landholding	
Central Co-ordinates	523100 320600

Summary of methodology

1.4 The following instrumentation and procedures were used:

Detailed magnetic survey

Measured Variable	Total magnetic field
Instrument	Geometrics MagMapper caesium magnetometer
Configuration	Dual magnetometer, 0.5m sensor separation
Sensitivity	0.03nT
QA Procedure	Static test and repeated observation
Resolution	0.20m (max) along lines 1.0m apart

DGPS-tracked coarse magnetic survey

Measured Variable	Total magnetic field vertical gradient
Instrument	Geometrics MagMapper caesium magnetometer
Configuration	Vertical gradiometer, 0.65m sensor separation
Sensitivity	0.03nT
QA Procedure	Static test and repeated observation
Resolution	Approx. 0.30m along lines approx. 10m apart

Set out

1.5 Set out was by total station using a network of temporary reference points established by GPS. The internal precision was within 0.05m.

Constraints & variations

1.6 Survey followed the specification, with the exception of the small field east of the railway being excluded due to ground conditions (roughly ploughed in the winter, potatoes planted in the spring).

2 Context

Archaeology

2.1 This summary is drawn primarily from the archaeological desk based assessment (Gajos, 2008).

2.2 The DBA states: "The site is considered to have a high potential for the survival of archaeological remains dating from the Iron Age and Romano-British periods, particularly relating to salt production." and "The potential of much of the central portion of the site is indeterminate although it is believed that only isolated features, possibly including salt production sites, are likely to be present in this area."

2.3 No sites or find spots of earlier date have been recorded in the HER: this correlates with the understanding of the soil formation processes in the wider area. Salt marshes drained through creeks to a tidal estuary in the area of Spalding, becoming more stable in the later 1st millennium BC. Salterns (3rd – 2nd century BC) and probable associated occupation (Late Iron Age/Roman era) are the earliest evidence of land use in the vicinity. Earlier remains that may exist are likely to be deeply buried.

2.4 The northern part of the development, outside the present geophysical survey area, had previously been subject to magnetometer survey, revealing archaeological features thought to relate to a saltern.

2.5 The aerial photographic assessment identified multiple sets of cropmarks of interest, including settlement, drove/trackways and field systems. These were numerous in the northern and southern parts of this geophysical survey area, with a large area of creeks also picked out in the western field. Central parts of the site showed little or no cropmark evidence, either because persisting marshy conditions precluded activity or due to masking of features by later silting.

2.6 The Late Roman period saw marine inundation, with peat formation in the early to middle Saxon period followed by further marine inundation.

2.7 The potential for medieval archaeological remains is thought to be low, due to low intensity use of the marshy area.

2.8 Major drainage works continued throughout the post-medieval and modern periods, giving us the landscape we see today.

Environment

NRSI Soil Description	Loamy and clayey soils of coastal flats with naturally high groundwater
Other Soil Information	Peat deposit (Saxon period) between sets of marine inundations
Quaternary Drift	Alluvium (clays)
Bedrock	Jurassic Kellaways formations of mudstones, locally sandy, thought to lay at great depth below the site
Topography	Level, low-lying (below 2m OD)
Hydrology	Naturally wet, altered by major drainage
Current Land Use	Arable
Historic Land Use	Arable, reclaimed marsh
Vegetation Cover	None/ recently sown crops
Sources of Interference	Railway, road (minimal)

3 Catalogue

3.1 The table below is the catalogue of anomalies found during survey for this project. The labels refer to DWGs 17 - 21 and also those in green in the text of this report.

Label	Description	Easting	Northing
1	Possible archaeological feature up to 5m wide, enhanced linear magnetic field, slight dipolar character, however, could be a natural edge of palaeochannel feature	523177.5	319564.5
2	Possible ditch fill up to 4m wide, crossing a major palaeochannel [3] and therefore stratigraphically recent	523108.5	319532.7
3	Major palaeochannel, former course of the river with a tributary at [4] (illustrative, numerous others exist)	523227.5	319645.8
4	Minor palaeochannel, tributary of [3] (illustrative, numerous others exist)	523105.3	319601.4
5	Possible archaeological feature, if so, an annular ditch fill with low susceptibility, i.e., peaty, fill	523089.8	319585.9
6	Minor palaeochannel, tributary of [3] (illustrative, numerous others exist)	523222.0	319508.1
7	Major palaeochannel, former course of the river	522888.6	320116.9
8	A short length of linear feature, a possible ditch fill, however, could also be a drain	522829.9	320084.2
9	This could be a corner of an enclosure bounded by a ditch up to 2m wide, however, a natural origin is possible	522775.9	320118.1
10	Crossing palaeochannel [7] is a curving magnetic feature, possibly a ditch fill up to 2m wide	522792.6	320041.3
11	Narrow ditch fill less than 1m wide	522775.9	320135.4
12	Ditch fill up to 1.5m wide or a natural feature	522787.8	320150.1
13	Non-magnetic linear feature, perhaps a peaty ditch fill, width uncertain but narrow	523063.6	320368.9
14	Site of central access road through former allotments, apparent as a band of magnetically noisy ground. The scatter of debris throughout this field is typical of allotment soil and is caused by ferrous scrap, brick and tile fragments, etc, introduced by gardens and in night soil	523110.4	320524.9
15	Edge of spread of strongly magnetic ground [15]. It is uncertain why this should be the case as unless the alluvial material has been exposed to subsequent modification there is no clear reason why it should be more magnetic. If (for example) there has been a settlement here in the past, resting on the alluvial surface and with magnetic material finding its way into creeks and hollows, it is possible that modern ploughing is bringing this material to the surface	523106.1	320569.4
16	A linear division between natural anomalies hints at the presence of an archaeological structure although its form cannot be determined	523095.0	320688.0
17	See [15] of which this is the principal area	523069.6	320654.3
18	Central within area [15] there is an area perhaps 30m across without significant magnetic enhancement. It is unclear why this should exist, however, both the region of elevated field strength and the alluvial texture are both disrupted	523121.2	320699.5

Label	Description	Easting	Northing
19	Possible deeply-buried non-magnetic ditch fill, not clearly defined but evident for approximately 90m with a right-angled bend to the southwest at the southern end	522887.4	320687.6
20	Possible archaeological feature	522769.9	320203.8
21	Non-magnetic fill, perhaps peat within a narrow (< 1m) ditch?	522839.0	320216.1
22	Linear magnetic fill, perhaps a ditch up to 2m wide and potentially deeply buried	522792.2	320342.7
23	Possible ditch fill within a palaeochannel, might be an element of a small enclosure but could equally well have a modern origin	522675.9	320337.6
24	Possible continuation of [23], though probably natural	522694.5	320314.2
25	Archaeological feature. A series of discontinuous linear ditch fills define a broadly rectangular enclosure measuring about 20m x 10m with a rounded northeast end. It is similar to two others [26] and [27, all devoid of associated features	522690.2	320457.4
26	Archaeological feature. This seems to be a clearer example of something similar to [25] but with a more rectangular shape and measures about 17m x 11m	522695.7	320546.7
27	Archaeological feature. This is similar to [26] but less regular in shape and measures about 20m x 11m with a rounded west end	522567.1	320567.0
28	Deeply-buried enclosure ditch up to 1m wide with a right-angled bend to the northeast at the southern end	522620.3	320512.6
29	Narrow (< 1m) magnetic ditch fill or drain	522684.2	320528.1
30	Possible deeply-buried linear magnetic ditch fill	522726.5	320545.6

4 Discussion

Geophysical environment

4.1 The soil is strongly alluvial in character with strongly magnetic natural variations bisected by relatively non-variable bands of ground marking the lines of palaeochannels. The alluvial variation is typical of salt marsh and the strong magnetic fields will be due in part to iron sulphide formation within formerly waterlogged contexts. This is in addition to the normal freshwater alluvial processes that can lead to magnetic enhancement through reduction of naturally occurring iron compounds.

4.2 There are known to be complex alluvial processes at this site with two phases of marine alluviation separated by peat formation. This makes for a complex magnetic environment as there are two stratigraphic units with associated magnetic activity, not one. The interaction of the depth of the magnetic component of archaeological fills with each of the two magnetic soils and the diamagnetic peat between will govern the visibility of those fills. This assumes of course that the fills have a magnetic component in the first place; several features here have not e.g. [5] and [21] and are presumably peat-filled.

4.3 The following structural models apply:

- Magnetic fill within surface alluvium – only detectable if the contribution to the surface magnetic field from the fill remains separable from that of the alluvium, something that varies from location to location
- Magnetic fill within peat – strong magnetic contrast due to lack of magnetic contribution from the peat itself. In some ways this presents an ideal situation
- Non-magnetic fill within peat – cannot be detected as there is no magnetic contrast between the fill and the diamagnetic peat
- Magnetic fill below peat – weak contrast and broad diffuse anomalies mean that only certain instrument configurations can detect these fills and they do have to be significantly more magnetic than the material supporting the peat.

4.4 In general the following methods of magnetic enhancement exist within and around archaeological sites.

4.5 Surface and near-surface soil tends to accumulate in negative features like pits and ditches and will include particles with thermo-remanent magnetization (TRM) through exposure to heat if there is settlement or industry nearby. In addition, particles slowly settling out of stationary water will attempt to align with the ambient magnetic field at the time, creating a deposit with depositional remanent magnetization (DRM).

4.6 A third mechanism is that topsoil tends to acquire an enhanced magnetic susceptibility through natural processes that are not fully understood. Where this soil becomes buried and provided nothing happens to destroy that magnetisation it can be detected through normal survey. It is most common in lenses of relict soil associated with the upper fills of features. Deep ploughing can destroy this but sometimes it is the only part of a buried feature that is sufficiently magnetic to be detectable from the surface.

4.7 At this site this relatively simple set of processes are considerably modified by the presence of peat and marine alluvium. As noted above, there are iron sulphides involved in the soil chemistry, providing alternate pathways for reduction then re-oxidation cycles associated with TRM for example. DRM will be present, however, it is usually detected through contrast with a less magnetic host material which is not the case here. Peat is this instance does not count as a less magnetic host because it does not trap the water essential to the DRM process.

Instrumentation

4.8 The use of caesium vapour technology is critical for the avoidance of loss of sensitivity to deeply-buried features – it is this technology that has allowed the glimpses of deep structures [22] and [28] below the peat. Fluxgate instruments reject, by virtue of their design, broad weak anomalies typically produced by magnetic materials deep in the soil.

General comments

4.9 The cropmark features are in general not evident and with reference to the structural models outlined above this suggests the features to have been cut into the surface alluvial material and to possess fills containing alluvial material and peat. Deeper features may have predominantly peat fills and overall magnetic contrast against the magnetic parent alluvium will be both low and highly variable. Anomalies [13] and [21] may be members of this group.

4.10 Peat, being diamagnetic rather that ferrimagnetic, cannot be detected directly using a magnetometer and therefore peat-filled features can only be mapped if they are cut through more magnetic ground.

4.11 The survey has confirmed that magnetic techniques are capable of imaging through superficial peat as evidenced by [22] and [28]. If this peat not been buried by a significant secondary phase of alluviation a substantially more complete map of these pre-peat features could have been obtained.

4.12 It is therefore the specific deposition sequences at this site that have created this particular result and this type of overall result does not hold for other fenland sites. The presence or absence of the later alluvial material will have a big effect, as will the thickness of the peat itself.

Archaeology

4.13 Structures [25 – 27] are of similar size and spaced apart but do not seem to be known from cropmarks, which suggests they have a different structure to the magnetically-invisible structures causing the cropmarks.

4.14 From conversation with Paul Gajos it would appear that these could be the remains of enclosures associated with salterns but there is no magnetic debris typical of briquetage scattered around. However, earlier excavations (Horseshoe Park) lend credibility to this suggestion as enclosure ditches were found with significant quantities of briquetage within their fills which were therefore found to be strongly magnetic. The creek-side situation is also similar.

Other structures

4.15 Insufficient is visible of other structures to permit description of their form and function over and above what is already evident from their cropmarks, however, there is no evidence for strongly magnetic structures like debris associated with salterns or indeed other industrial activity.

4.16 The data shows there to be deeply buried magnetic structures, e.g. [22] and [28] which are typical of archaeological structures, i.e. possess fills more magnetic than the material into which the feature is cut. However, at Holland Park, the anomalies from these structures are universally weak and diffuse which is indicative of magnetic material buried at depth and in this case, logically, below the peat. The potential for other such features to exist is high, however, they are only visible from the surface where not masked by phases of alluviation post-dating peat deposition. Indeed, many are apparently indistinguishable from linear alluvial features.

Caveats

4.17 Geophysical survey is literally that, a systematic measurement of some physical property related to the earth. There are numerous sources of disturbance of this property, some due to archaeological features, some due to the measuring method, and others that relate to the environment in which the measurement is made. No disturbance, or 'anomaly', is capable of

providing an unambiguous and comprehensive description of a feature, in particular in archaeological contexts where there are a myriad of factors involved.

4.18 The measured anomaly is generated by the presence or absence of certain materials within a feature, not by the feature itself. Not all archaeological features produce disturbances that can be detected by a particular instrument or methodology. For this reason, the absence of an anomaly must never be taken to mean the absence of an archaeological feature. The best surveys are those which use a variety of techniques over the same ground at resolutions adequate for the detection of a range of different features.

4.19 Where the specification is by a third party ArchaeoPhysica will always endeavour to produce the best possible result within any imposed constraints and any perceived failure of the specification remains the responsibility of that third party.

4.20 Where third party sources are used in interpretation or analysis ArchaeoPhysica will endeavour to verify their accuracy within reasonable limits but responsibility for any errors or omissions remains with the originator.

4.21 Any recommendations are made based upon the skills and experience of staff at ArchaeoPhysica and the information available to them at the time. ArchaeoPhysica is not responsible for the manner in which these may or may not be carried out, or for any matters arising from the same.

Bibliography

Roseveare, 2008. "*AP WIE081 Specification 1.0*", ArchaeoPhysica, unpublished

Gajos, 2008. "*Archaeological desk based assessment*", CgMs Consulting, unpublished

Appendices

Survey metadata

Project information

Project Name	Holland Park, Spalding, Lincolnshire
Project Code	HPL081
Client	CgMs Consulting
Fieldwork Dates	8-12/12/08; 6-9, 12-13, 26-30/01/09; 6-10, 14-16/04/09
Field Personnel	Thomas Desalle, Neil Paveley, Graham Arnold
Processing Personnel	Thomas Desalle, Anne Roseveare
Reporting Personnel	Anne Roseveare, Martin Roseveare
Draft Report Date	06/05/09
Final Report Date	

Data geolocation

Projection	Orthographic
Co-ordinate System	British National Grid
Bearing	Zero
Precision	0.05m internally
Instrument Used	Total station
Reference Points	Resection off points established by GPS
References Definition	ArchaeoPhysica

Process documentation

4.22 General information on processes commonly applied to data can be found in standard text books and also in the 2008 English Heritage Guidelines "*Geophysical Survey in Archaeological Field Evaluation*" at http://www.helm.org.uk/upload/pdf/Geophysical_LoRes.pdf.

4.23 ArchaeoPhysica uses more advanced processing for magnetic data using potential field techniques standard to near-surface geophysics. Details of these can be found in Blakely, 1996, "*Potential Theory in Gravity and Magnetic Applications*", Cambridge University Press.

4.24 All archived data includes process metadata.

Detailed magnetic survey

Measured Variable	Total magnetic field
Instrument	Geometrics MagMapper caesium magnetometer
Configuration	Dual magnetometer, 0.5m sensor separation
Sensitivity	0.03nT
QA Procedure	Static test and repeated observation
Resolution	0.20m (max) along lines 1.0m apart

Process

4.25 Overall processing follows correct procedure for potential field data using industry standard routines. The sequence is as follows:

- Removal of temporal component by subtraction of base station magnetometer data, creating a total field model specific to that location
- Suppression of missing or individual outlying data (single-datum spike reduction)
- Reduction of heading offsets (constant) due to rotation of instrument in use

- Along-line interpolation to a constant 0.25m interval and creation of a regular grid of data
- Cross-line interpolation to 0.25m partly for cosmetic purposes and partly to stabilise subsequent processes
- Modelling and removal of regional field component through Butterworth filtering to leave the residual field
- Splitting of residual field by spectral filtering to create shallow and deep field models and optional pseudo-vertical gradient.

DGPS-tracked coarse magnetic survey

Measured Variable	Total magnetic field vertical gradient
Instrument	Geometrics MagMapper caesium magnetometer
Configuration	Vertical gradiometer, 0.65m sensor separation
Sensitivity	0.03nT
QA Procedure	Static test and repeated observation
Resolution	Approx. 0.30m along lines approx. 10m apart

Process

4.26 The data handling follows standard procedure for potential field data collected with an integral positioning stream. The sequence is as follows:

- Removal of any anomalous GPS positions
- Removal of temporal component by subtraction of base station magnetometer data (to enable comparison of individual sensor response in addition to the vertical gradient measure commonly used)
- Visualisation of data spatially as positive and negative bars and/or traces
- Reduction to line or file median, as appropriate, with clipping of outlying magnetic data values

Archive data

Introduction

4.27 ArchaeoPhysica maintains an archive for all its projects, access to which is permitted for research purposes. Copyright and intellectual property rights are retained by ArchaeoPhysica on all material it has produced, the client having full licence to use such material as benefits their project.

4.28 Access is by appointment only. Some content is restricted and not available to third parties. There is no automatic right of access to this archive by members of the public. Some material retains commercial value and a charge may be made for its use. An administrative charge may be made for some enquiries, depending upon the exact nature of the request.

General description

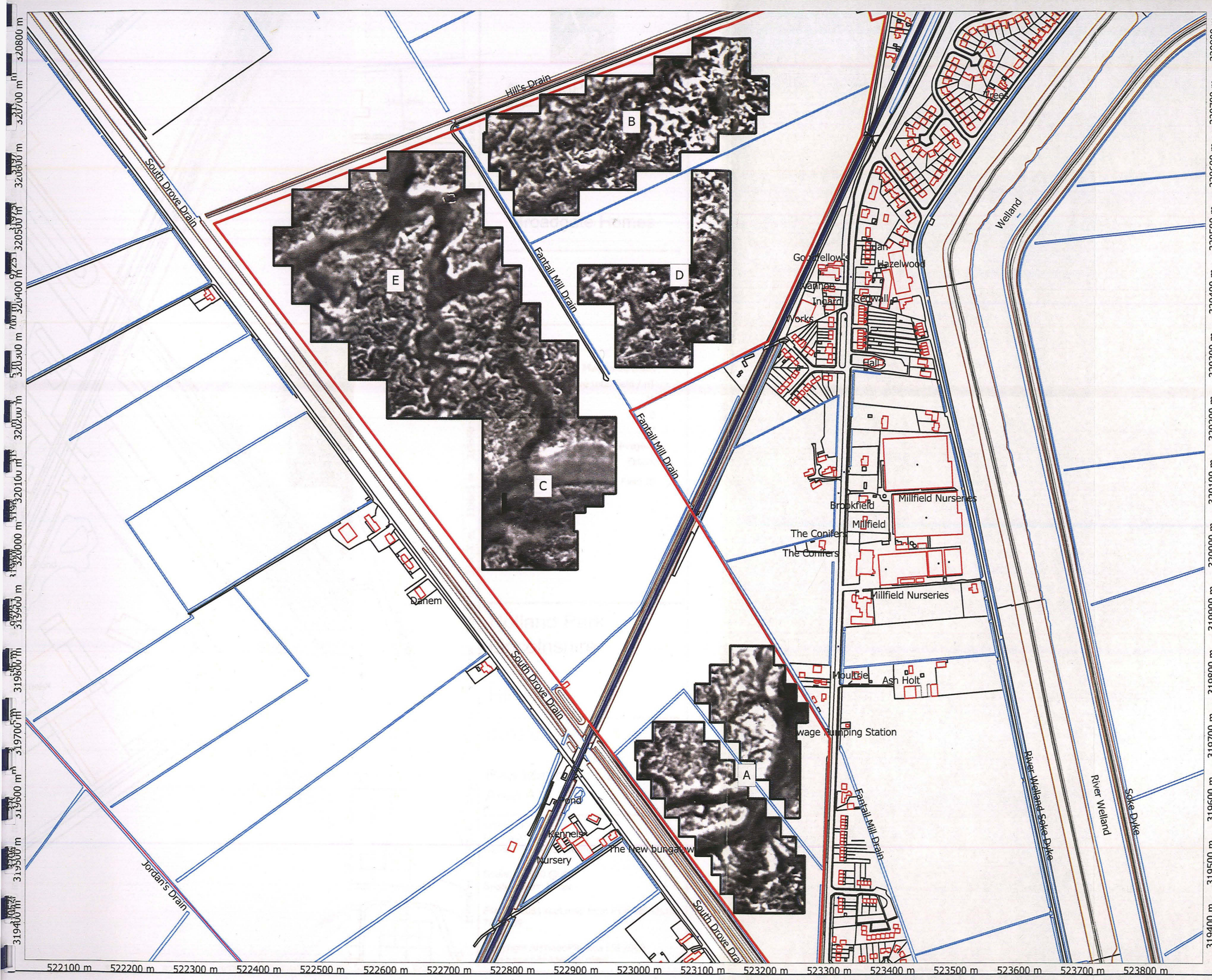
4.29 The archive contains all survey and project data, communications, field notes, reports and other related material including copies of third party data (e.g. CAD mapping, etc) in digital form. Many are in proprietary formats while report components are available in PDF format.

4.30 In addition, there are paper elements to some project archives, usually provided by the client. Nearly all elements of the archive that are generated by ArchaeoPhysica are digital.

Dissemination

4.31 It is the client's responsibility to ensure that reports are distributed to all parties with a necessary interest in the project, e.g. local government offices, including the HER where present. ArchaeoPhysica reserves the right to display data from projects on its website and in other marketing or research publications, usually with the consent of the client. Information that might locate the project is normally removed unless otherwise authorised by the client.

4.32 ArchaeoPhysica are subscribed to the OASIS system and can initiate records within this if required.



ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Magnetic Data

Relative total field / nT

20

0

-20

Project

Extent

text Field ID

Holland Park Lincolnshire

HPL081

DWG 01

Raw Magnetic Data Overview

Orthographic
Centre X: 522959.82 m
Centre Y: 320092.29 m

Scale: 1:5500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client

ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Magnetic Data
Relative total field / nT
20
0
-20
Project
Extent
text Field ID

Holland Park Lincolnshire

HPL081

DWG 02

Raw Magnetic Data
Area A

Orthographic
Centre X: 523133.30 m
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Scale: 1:1500 @ A3
Spatial Units: Meter

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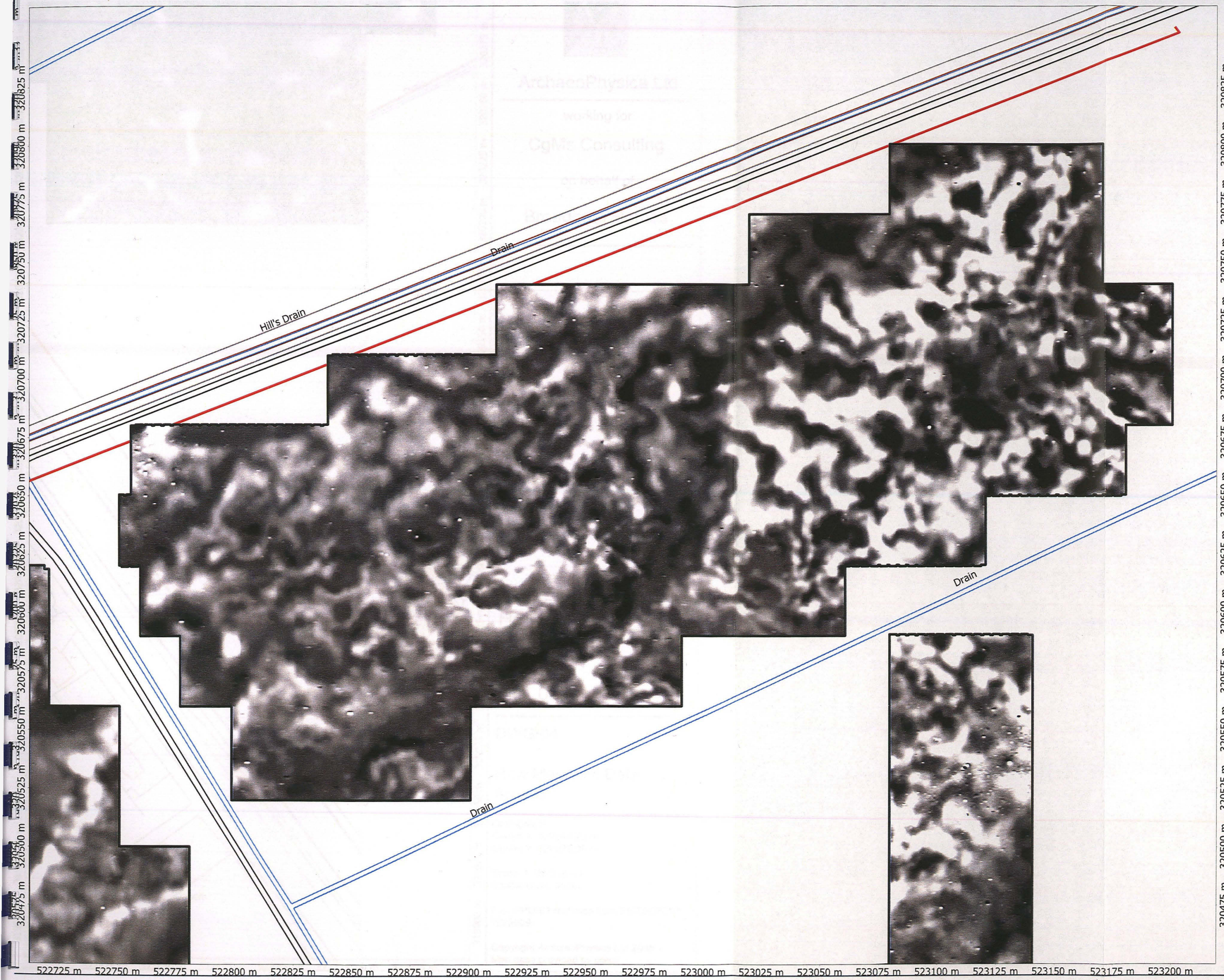
Map base provided by client



ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Magnetic Data
Relative total field / nT
20
0
-20
Project
Extent
text Field ID

Holland Park
Lincolnshire

HPL081

DWG 03

Raw Magnetic Data
Area B

Orthographic
Centre X: 522965.64 m
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Scale: 1:1500 @ A3
Spatial Units: Meter

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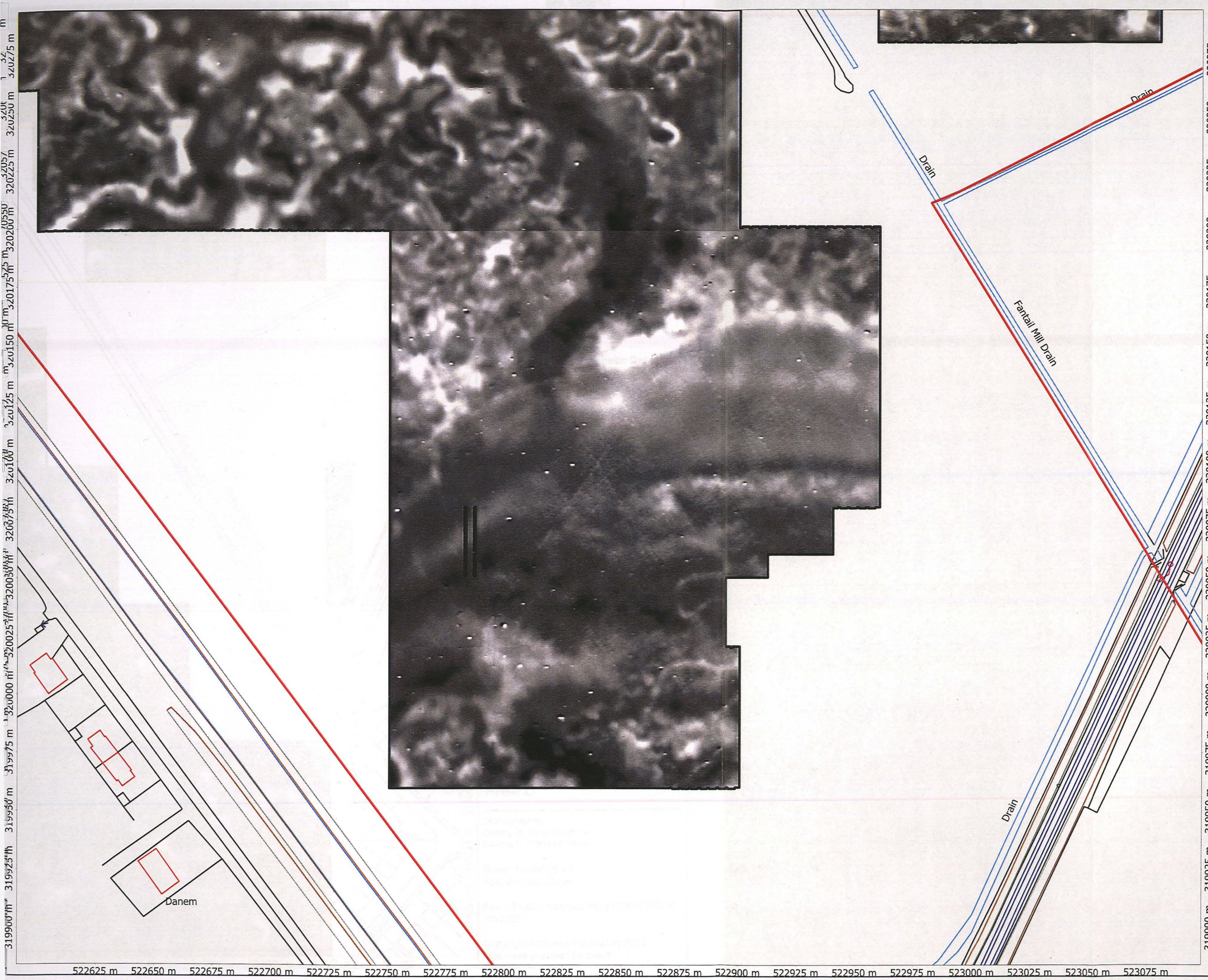
7/5/2009



ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Magnetic Data
Relative total field / nT
20
0
-20
Project
Extent
text Field ID

Holland Park
Lincolnshire

HPL081

DWG 04

Raw Magnetic Data
Area C

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Spatial Units: Meter

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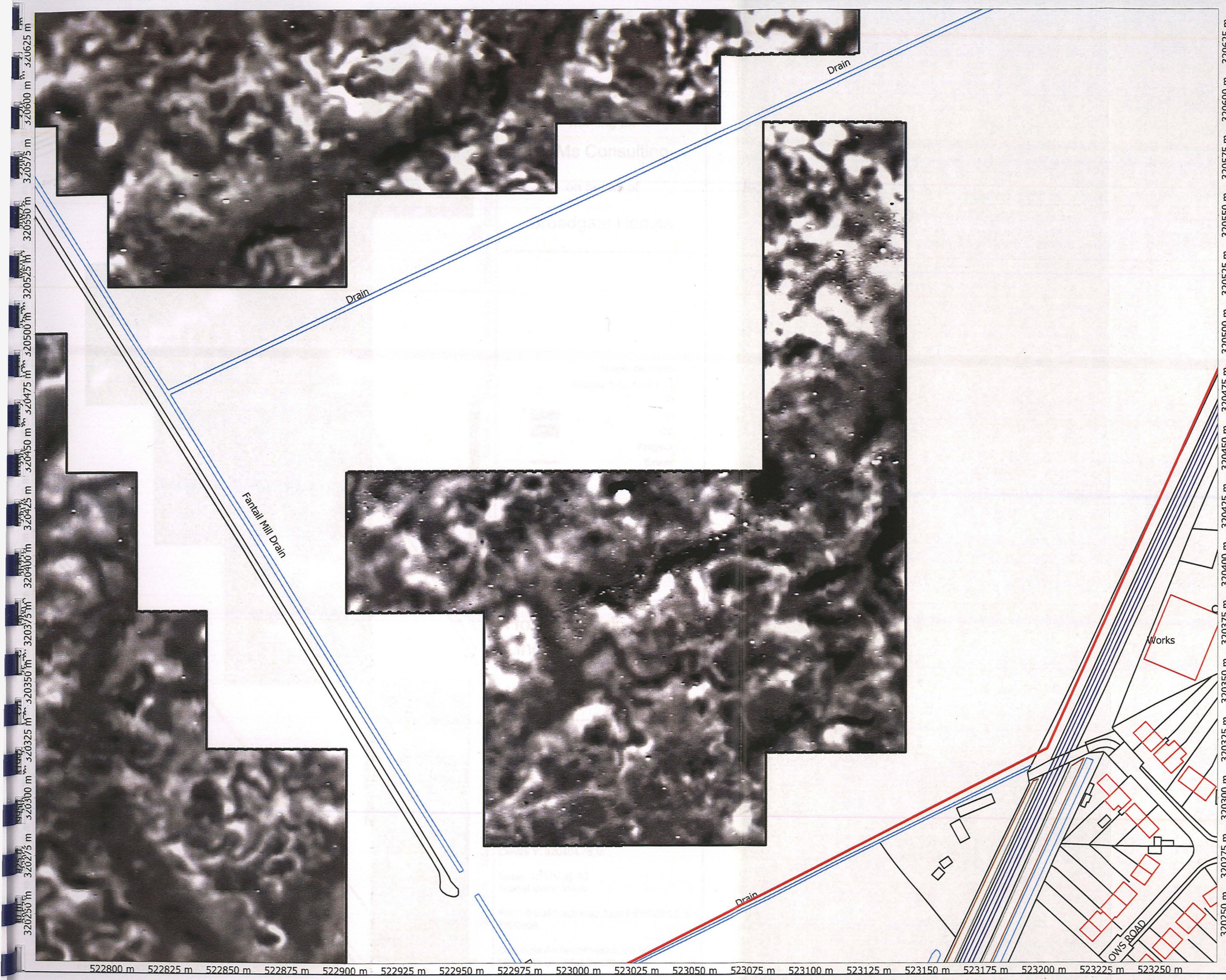

ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Magnetic Data
Relative total field / nT
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-20
Project
Extent
text Field ID

Holland Park Lincolnshire

HPL081

DWG 05

Raw Magnetic Data
Area D

Orthographic
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Centre Y: 320434.26 m

Scale: 1:1500 @ A3
Spatial Units: Meter

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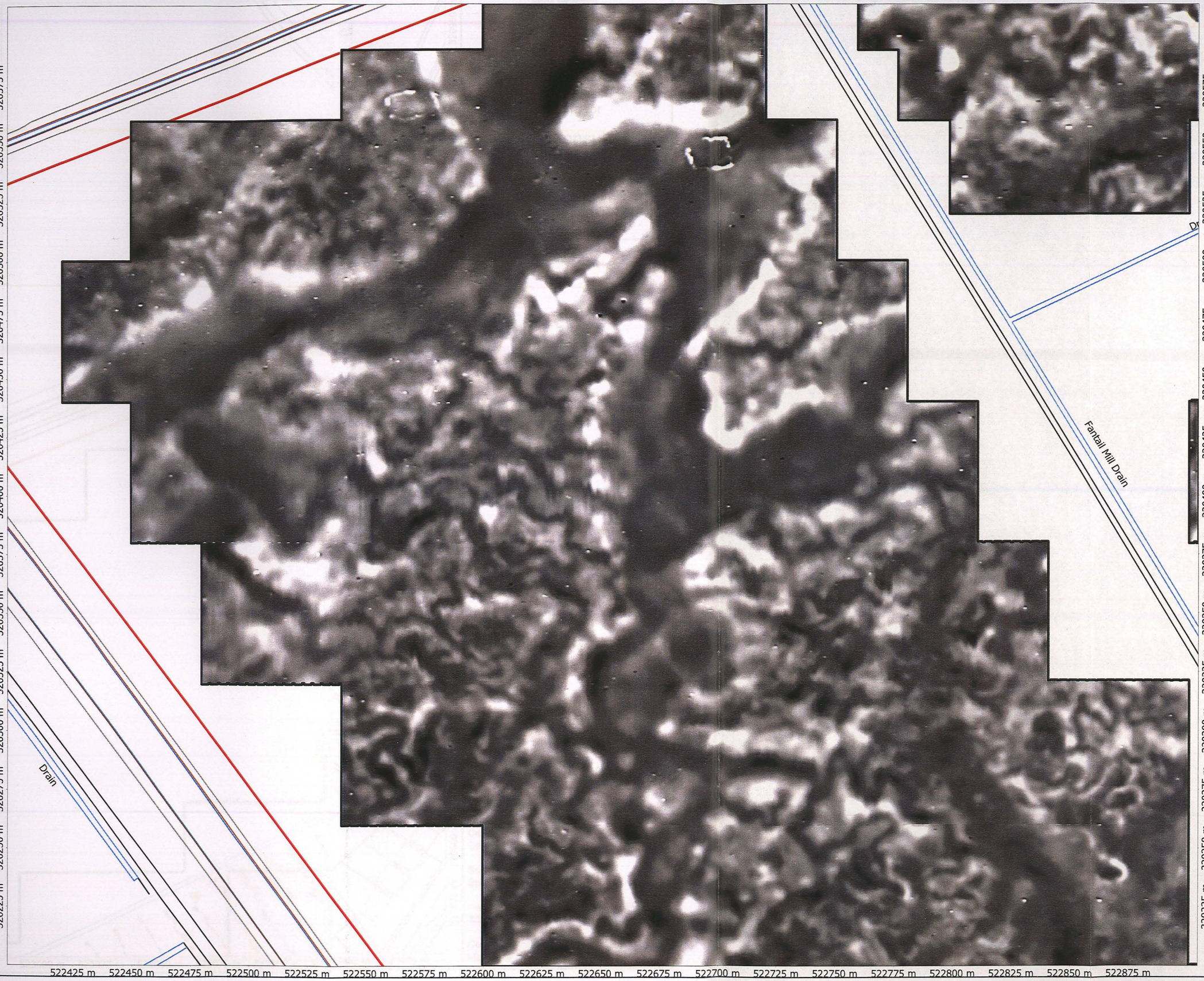
7/5/2009

Map base provided by client



ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Magnetic Data
Relative total field / nT
20
0
-20
Project
Extent
text Field ID

Holland Park Lincolnshire

HPL081

DWG 06

Raw Magnetic Data
Area E

Orthographic
Centre X: 522650.79 m
Centre Y: 320404.76 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client

ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Scan Data

+ve, 25 nT/m per 10m

-ve, 25 nT/m per 10m

Project

Extent

Detailed survey extent

Holland Park Lincolnshire

HPL081

DWG 08

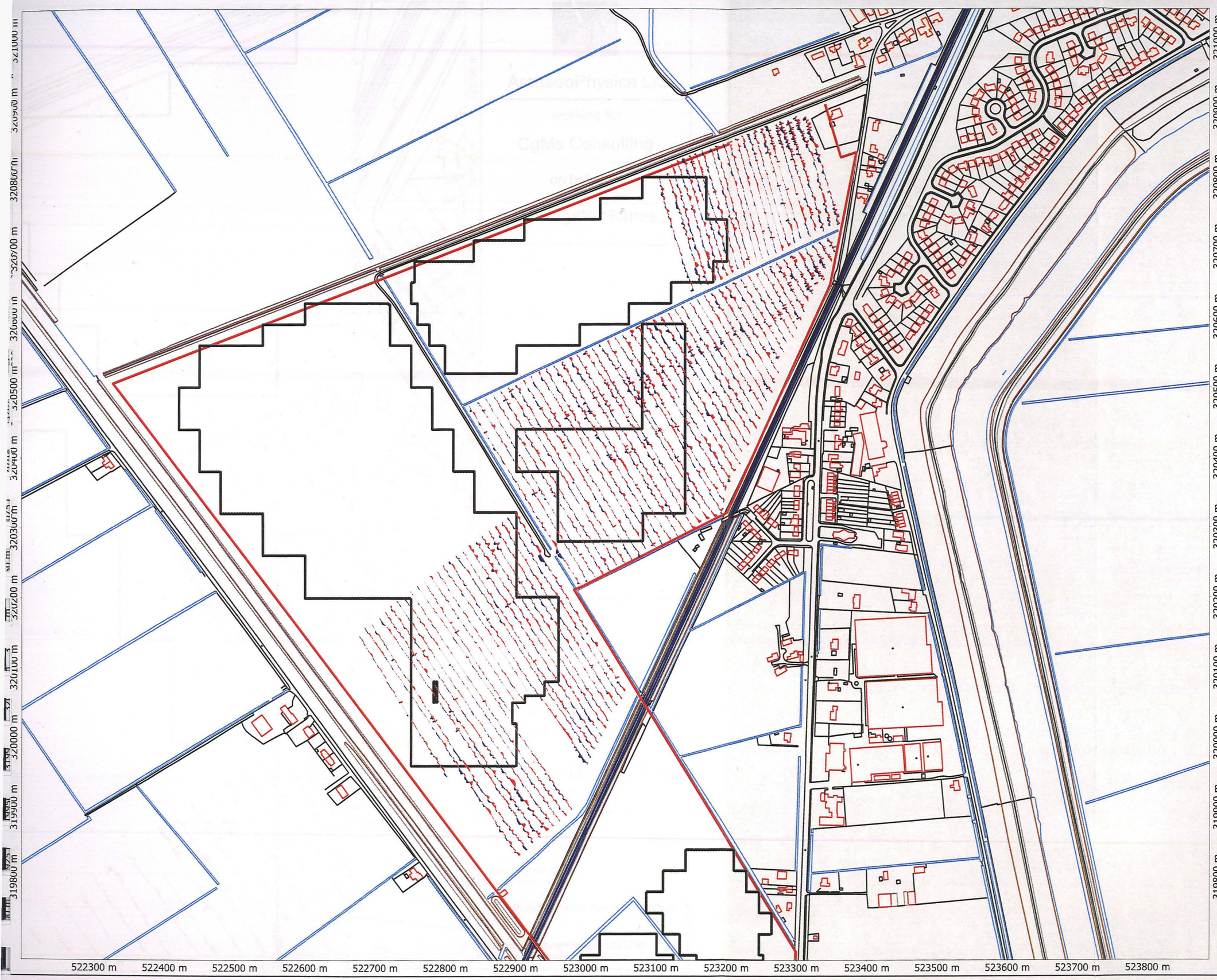
Qualitative Magnetic Scan
Northern area

Orthographic
Centre X: 523238.29 m
Centre Y: 320757.82 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



ArchaeoPhysica Ltd

working for

CgMs Consulting

on behalf of

Broadgate Homes

Scan Data

+ve, 25 nT/m per 10m

-ve, 25 nT/m per 10m

Project

Extent

Detailed survey extent

Holland Park Lincolnshire

HPL081

DWG 07

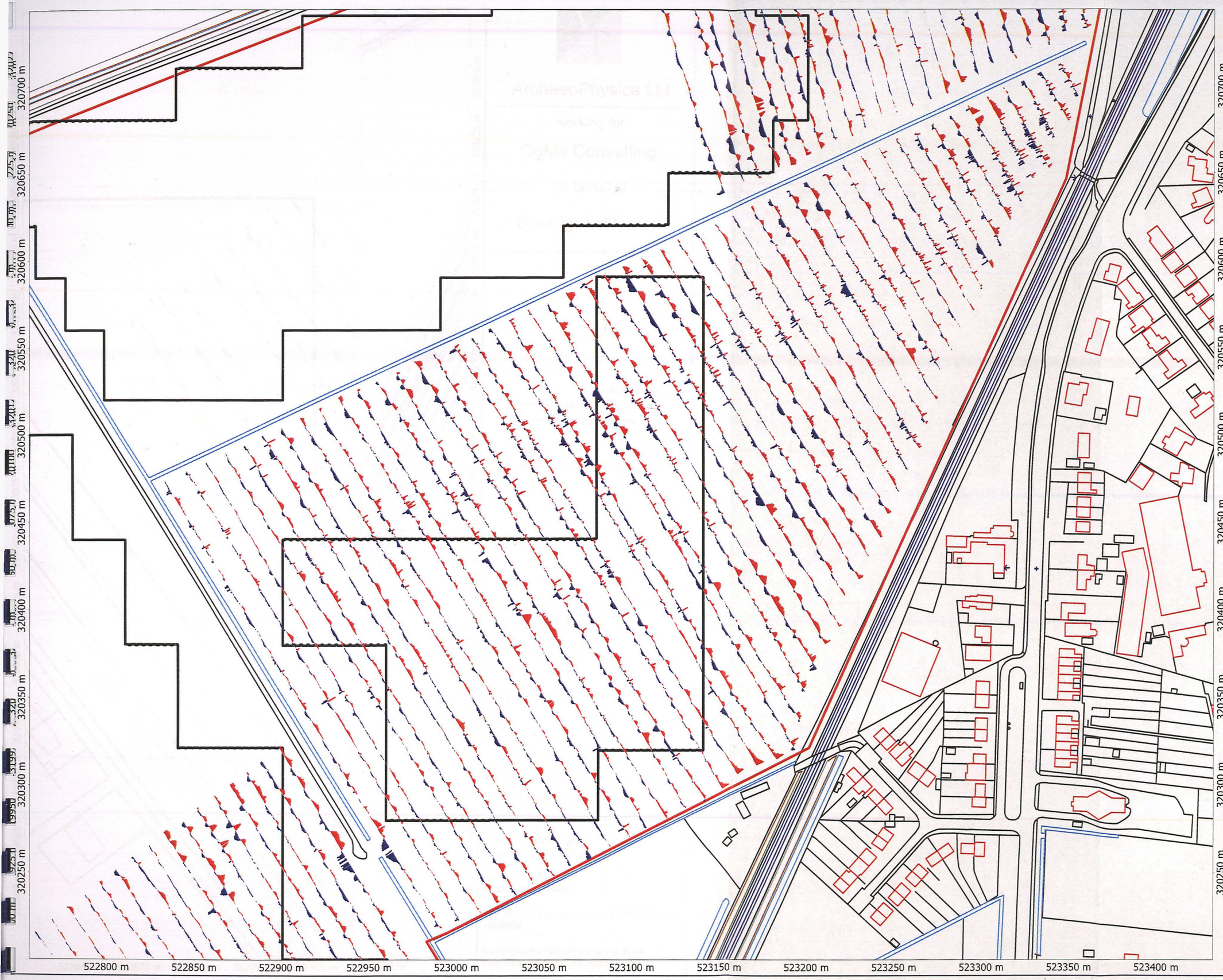
Qualitative Magnetic Scan Overview

Orthographic
Centre X: 523041.84 m
Centre Y: 320362.17 m

Scale: 1:5000 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



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working for

CgMs Consulting

on behalf of

Broadgate Homes

Scan Data

+ve, 25 nT/m per 10m

-ve, 25 nT/m per 10m

Project

Extent

Detailed survey extent

Holland Park Lincolnshire

HPL081

DWG 09

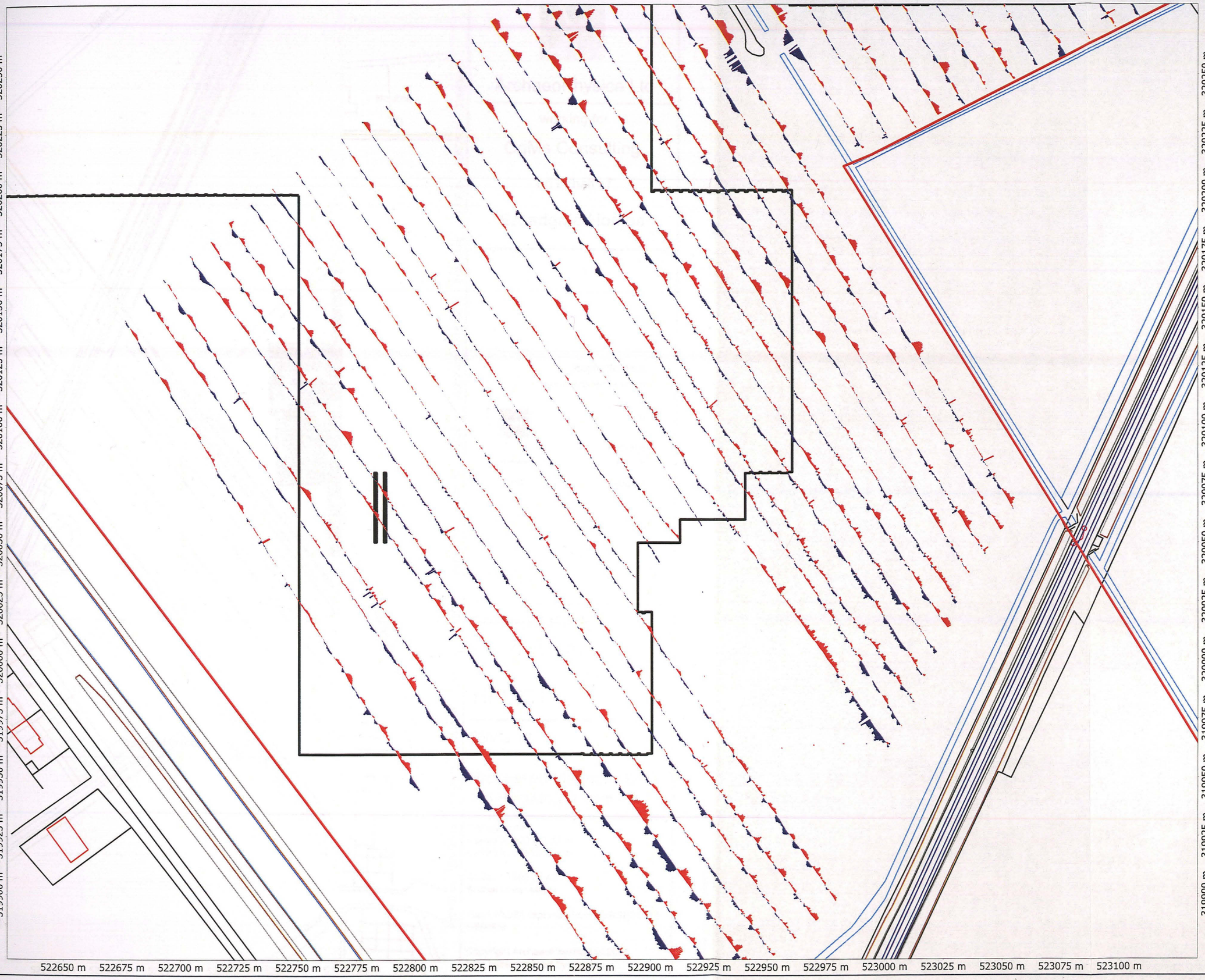
Qualitative Magnetic Scan
Central area

Orthographic
Centre X: 523094.10 m
Centre Y: 320471.97 m

Scale: 1:2000 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



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Scan Data

+ve, 25 nT/m per 10m

-ve, 25 nT/m per 10m

Project

Extent

Detailed survey extent

Holland Park Lincolnshire

HPL081

DWG 10

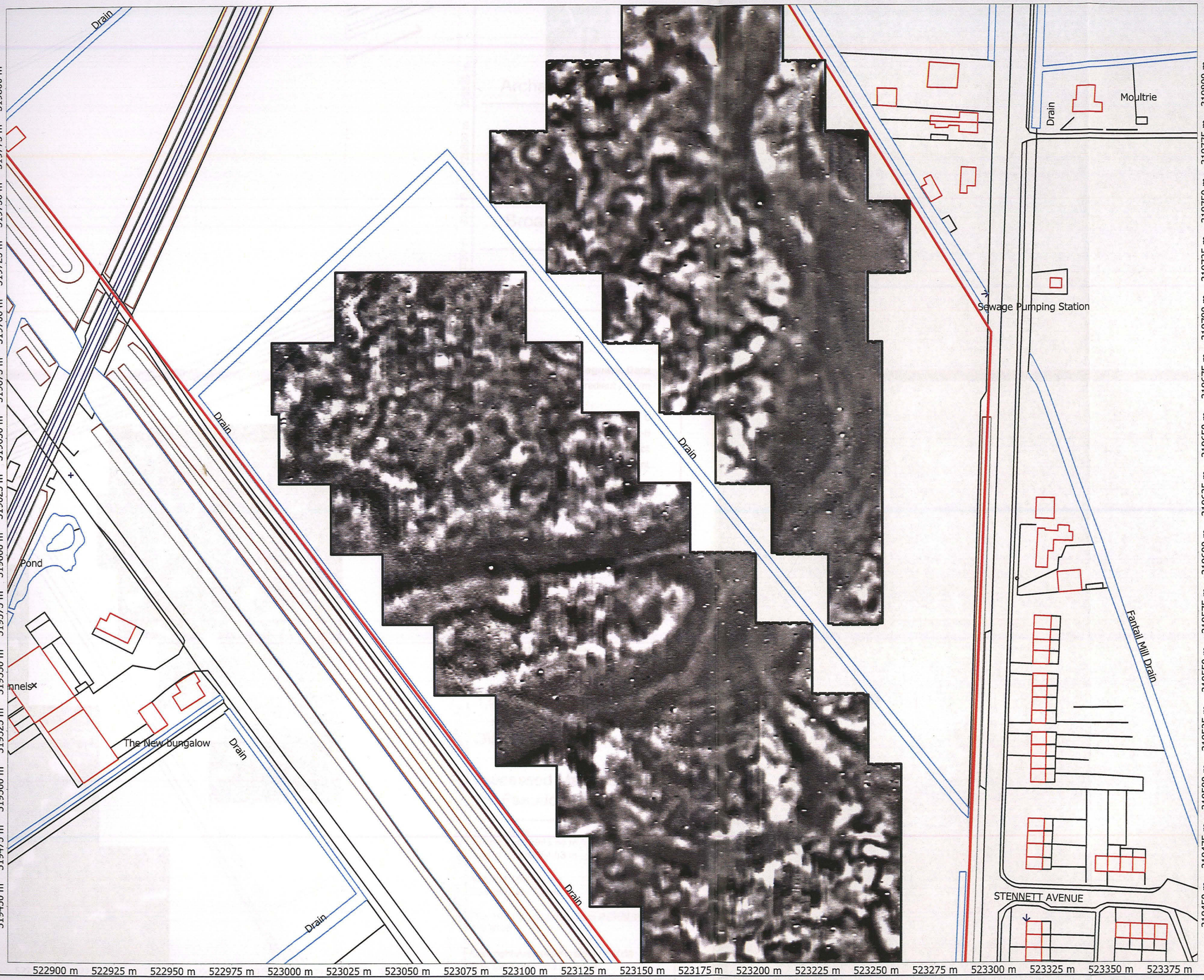
Qualitative Magnetic Scan
Southern area

Orthographic
Centre X: 522879.65 m
Centre Y: 320076.28 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



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Magnetic Data
Pseudogradient / nT/m
6
0
-6
Project
Extent
text Field ID

Holland Park
Lincolnshire

HPL081

DWG 11

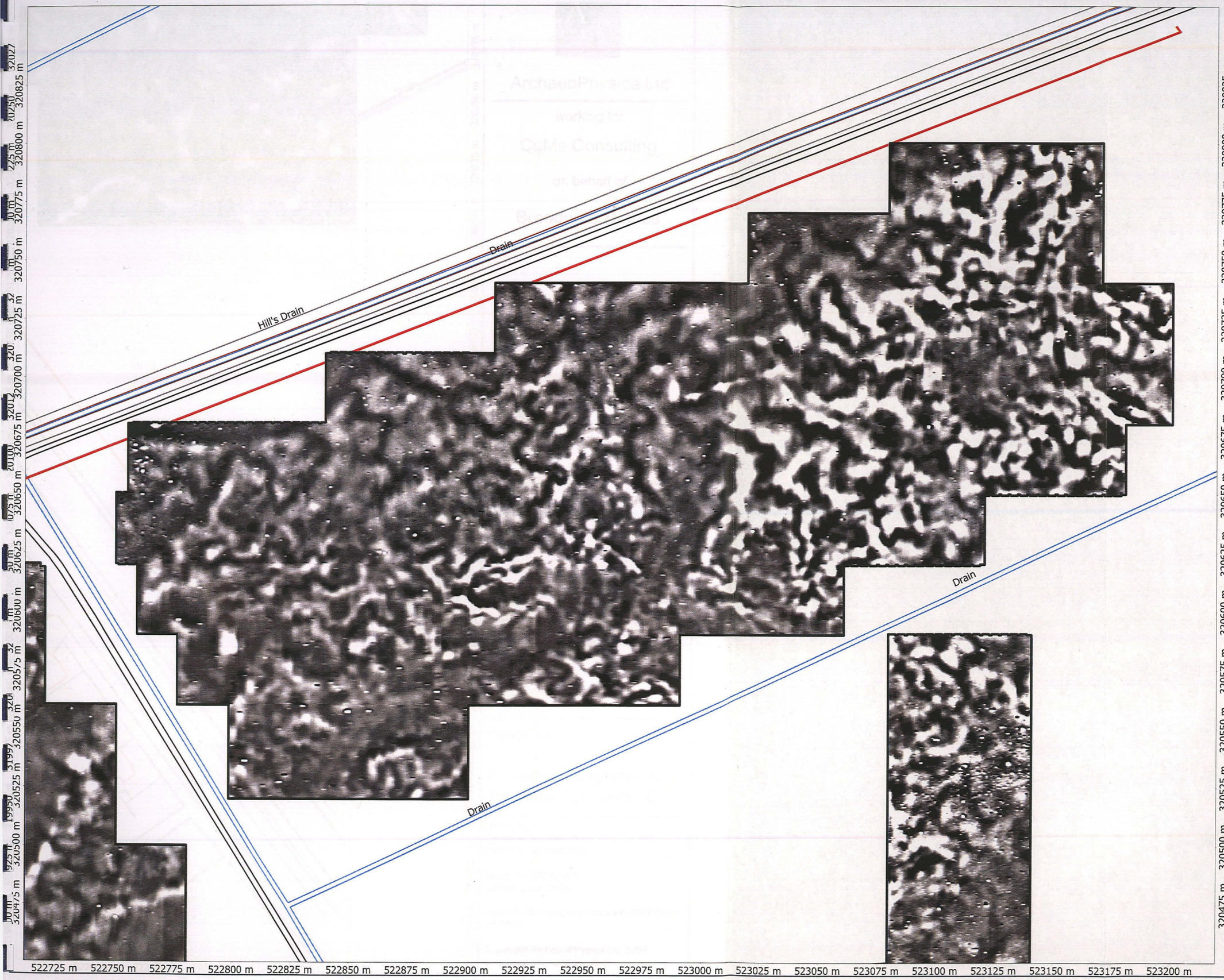
Processed Magnetic Data
1m Pseudogradient - A

Orthographic
Centre X: 523133.30 m
Centre Y: 319630.10 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



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Magnetic Data
Pseudogradient / nT/m
6
0
-6
Project
Extent
text Field ID

Holland Park
Lincolnshire

HPL081

DWG 12

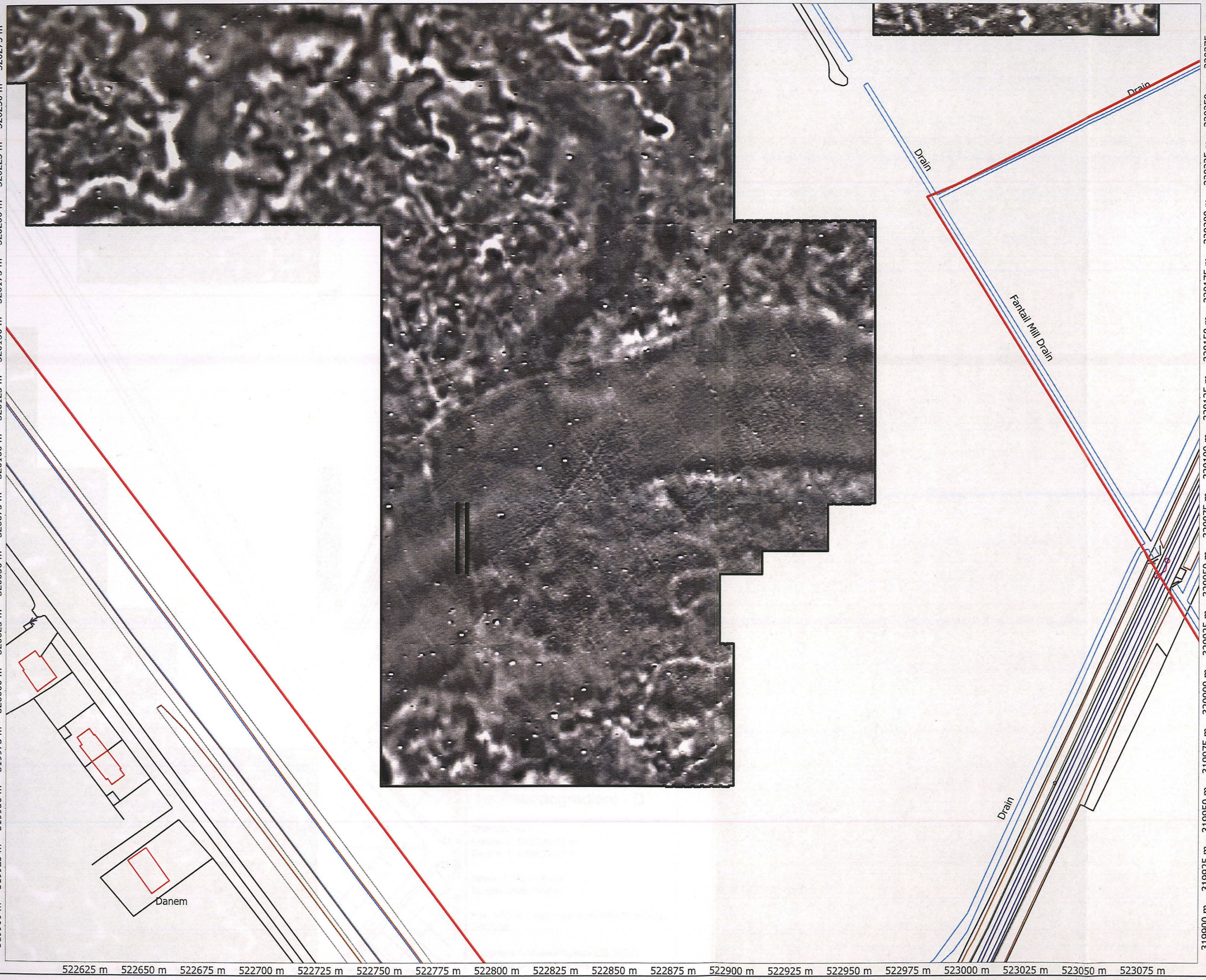
Processed Magnetic Data
1m Pseudogradient - B

Orthographic
Centre X: 522965.64 m
Centre Y: 320654.63 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



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Magnetic Data
Pseudogradient / nT/m
6
0
-6
Project
Extent
text Field ID

Holland Park
Lincolnshire

HPL081

DWG 13

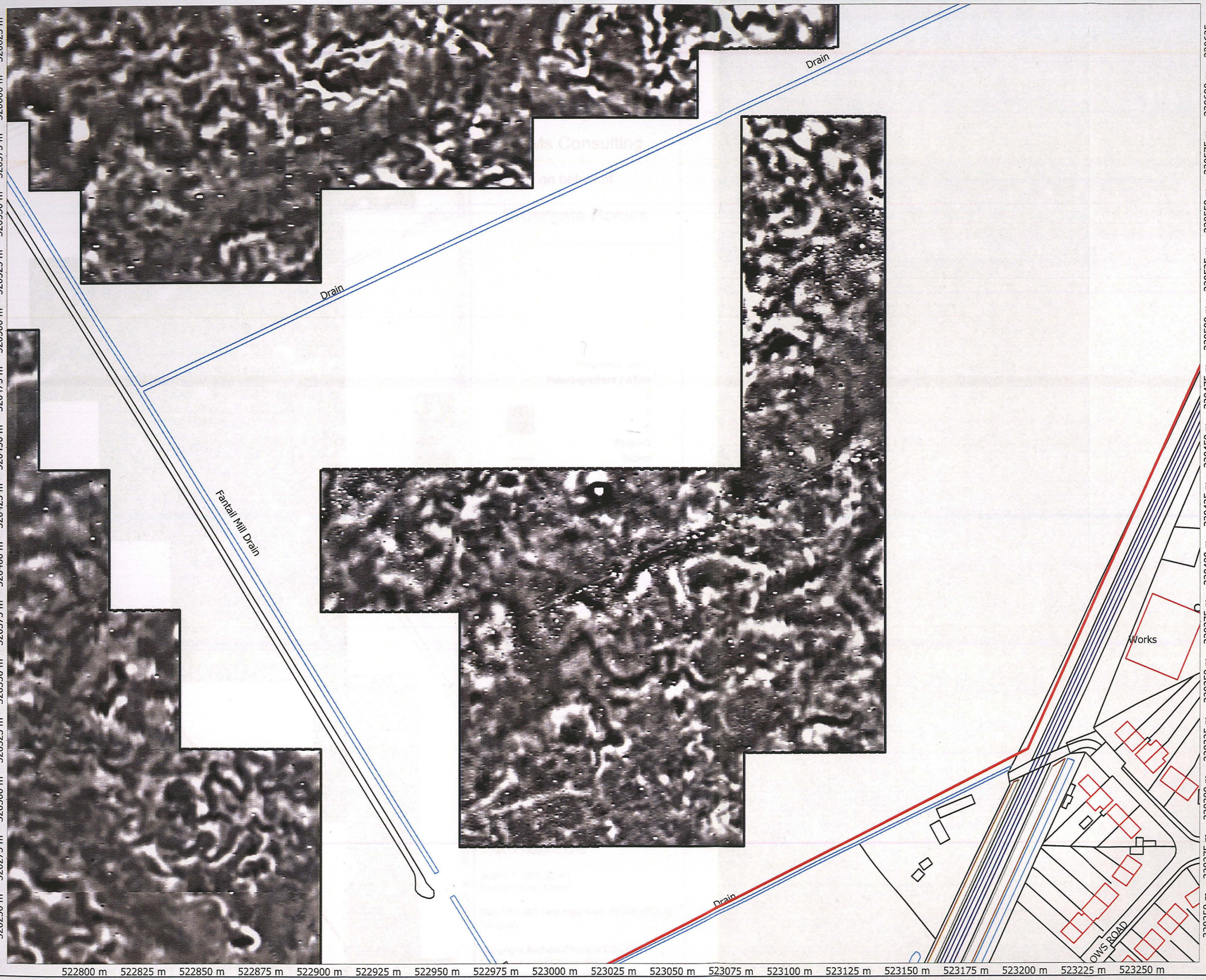
Processed Magnetic Data
1m Pseudogradient - C

Orthographic
Centre X: 522844.73 m
Centre Y: 320088.98 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



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Magnetic Data
Pseudogradient / nT/m
6
0
-6
Project
Extent
text Field ID

Holland Park Lincolnshire

HPL081

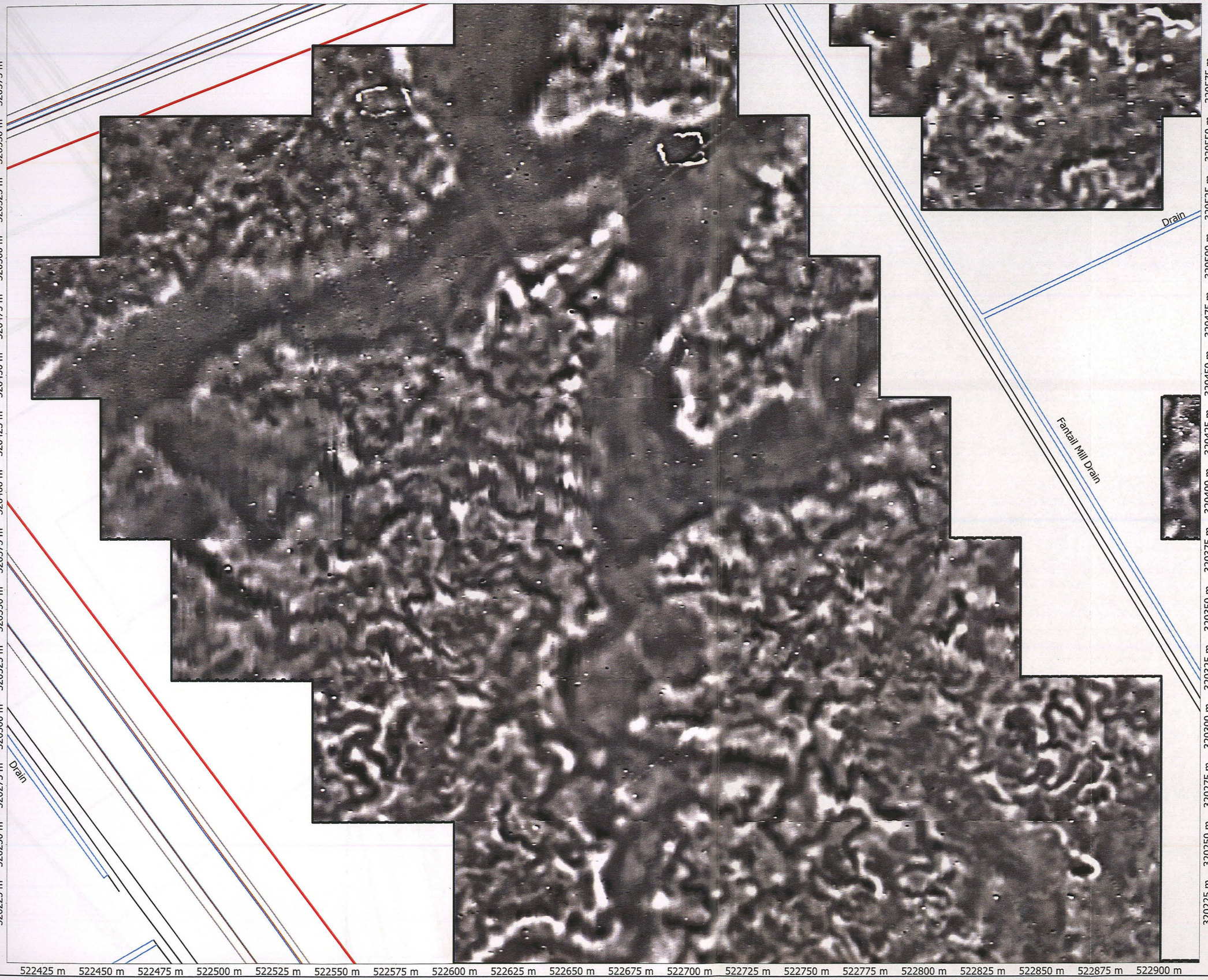
DWG 14

Processed Magnetic Data
1m Pseudogradient - D

Orthographic
Centre X: 523020.67 m
Centre Y: 320434.26 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009



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Magnetic Data
Pseudogradient / nT/m
6
0
-6
Project
Extent
text Field ID

Holland Park Lincolnshire

HPL081

DWG 15

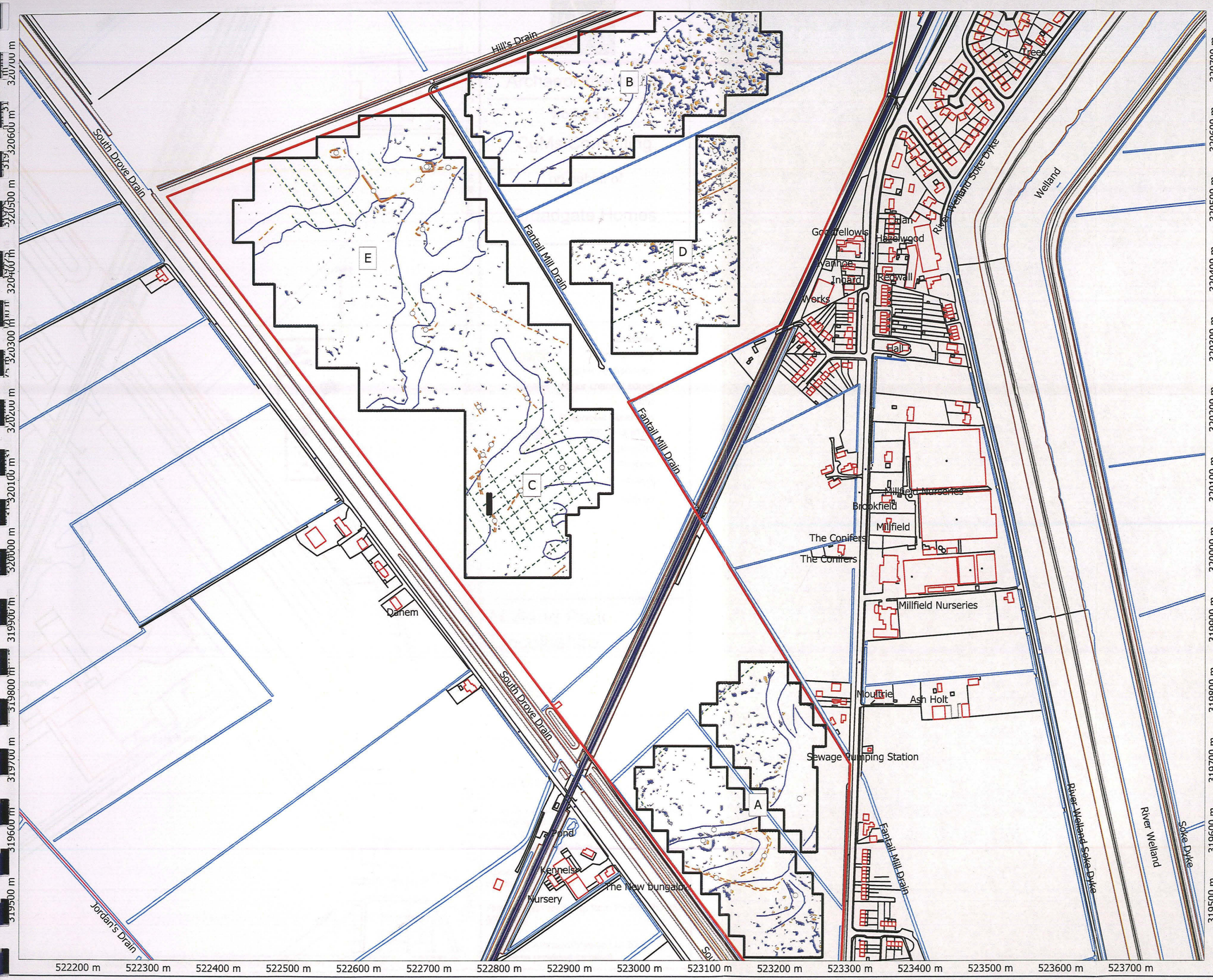
Processed Magnetic Data
1m Pseudogradient - E

Orthographic
Centre X: 522663.38 m
Centre Y: 320403.72 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009

Map base provided by client



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Broadgate Homes

Features
- Archaeology
- Possible Archaeology
- Major channel edges
- Drains

Magnetic Strength
- PSG < -5 nT/m
- PSG > 10 nT/m

Project
- Extent
- text — Field ID

Holland Park Lincolnshire

HPL081

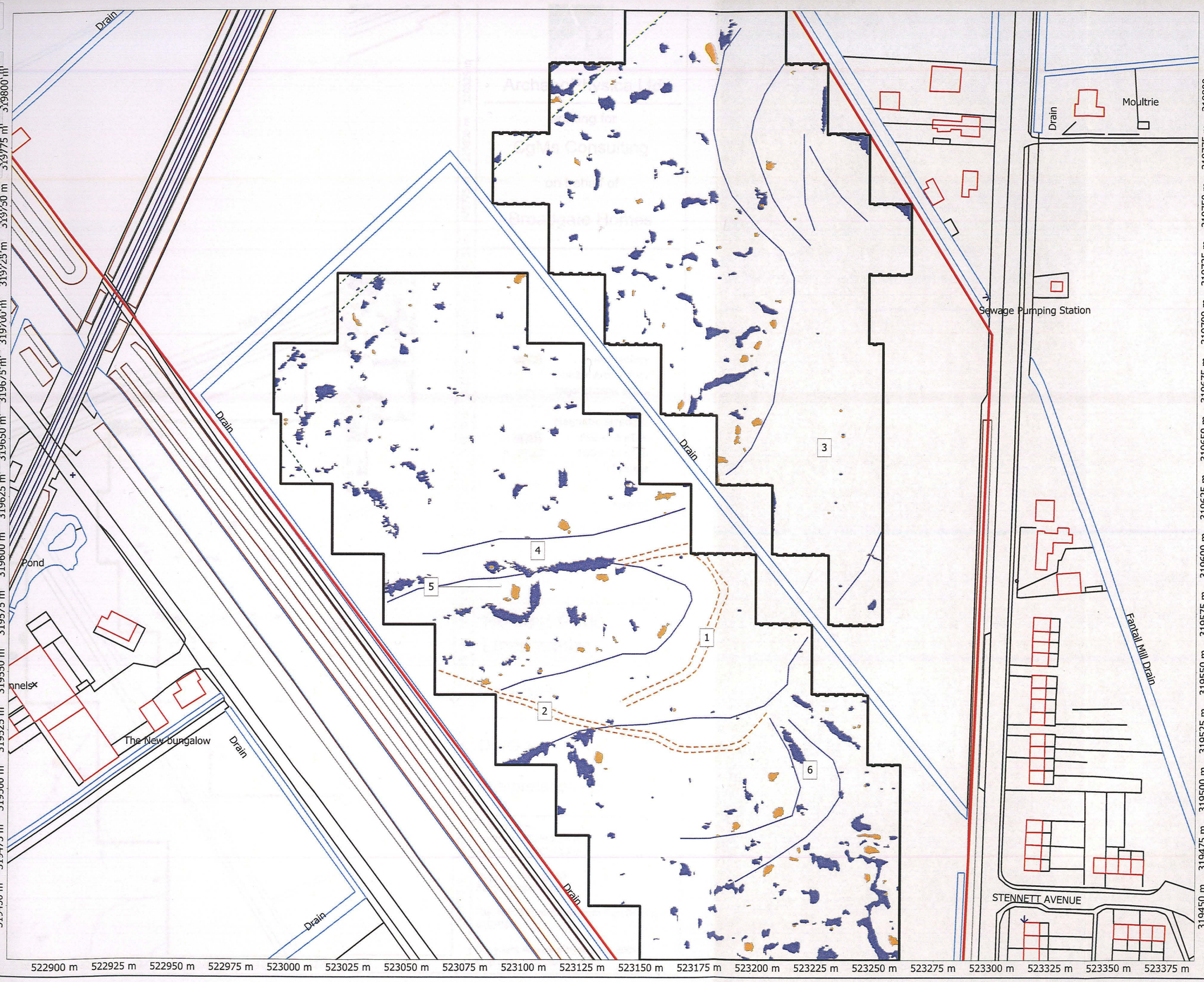
DWG 16

Interpretation Overview

Orthographic
Centre X: 522959.82 m
Centre Y: 320092.29 m

Scale: 1:5000 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
7/5/2009



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Features
- Archaeology
- Possible Archaeology
- Major channel edges
- Drains

Magnetic Strength
- PSG < -5 nT/m
- PSG > 10 nT/m

Project
- Extent
- text — Field ID

Holland Park Lincolnshire

HPL081

DWG 17

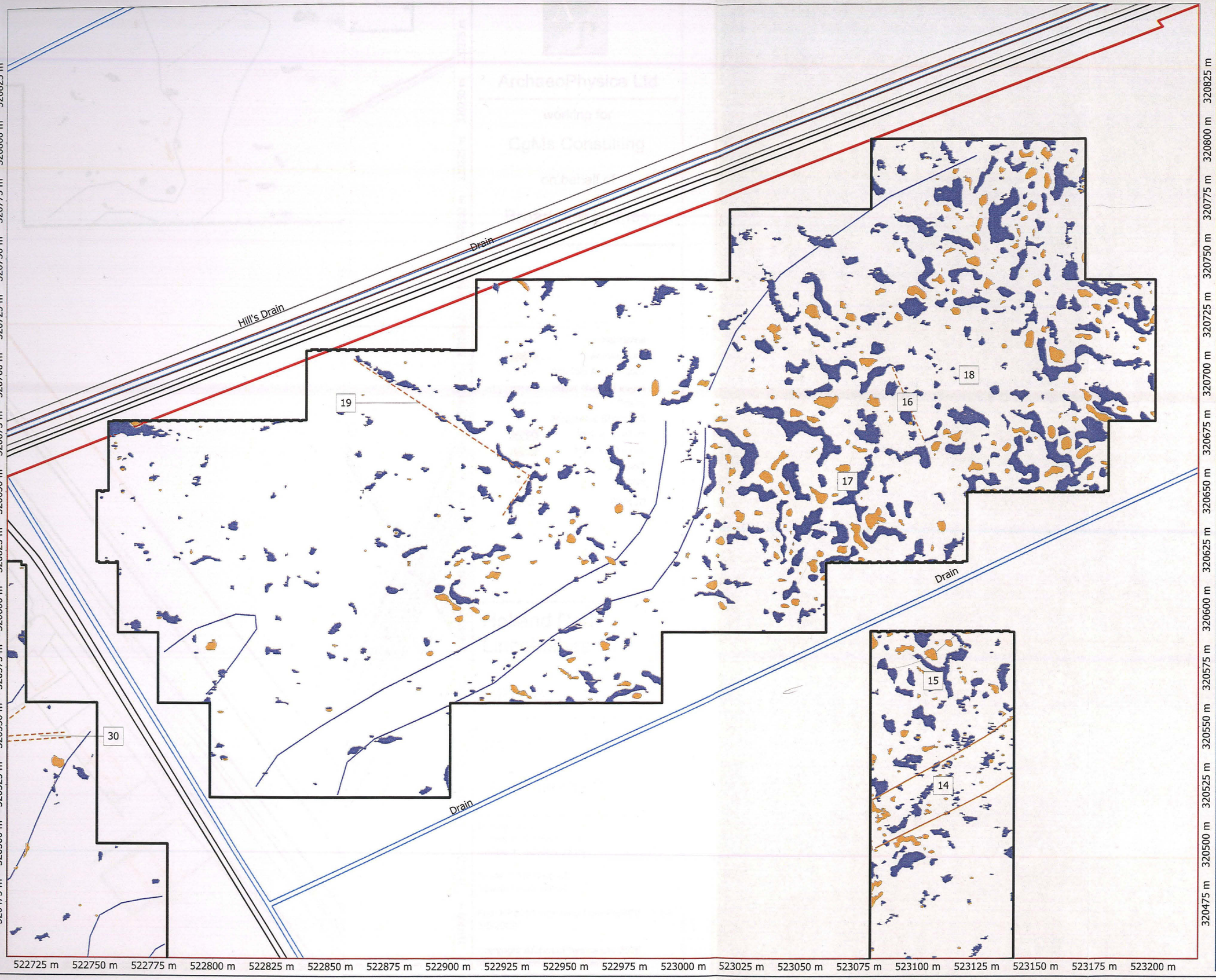
Interpretation - A

Orthographic
Centre X: 523133.30 m
Centre Y: 319630.10 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
8/5/2009

Map base provided by client



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Features

Archaeology

Possible Archaeology

Major channel edges

Drains

Magnetic Strength

PSG < -5 nT/m

PSG > 10 nT/m

Project

Extent

text Field ID

Holland Park Lincolnshire

HPL081

DWG 18

Interpretation - B

Orthographic
Centre X: 522965.64 m
Centre Y: 320654.63 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
8/5/2009

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Broadgate Homes

Features
- Archaeology
- Possible Archaeology
- Major channel edges
- Drains

Magnetic Strength
- PSG < -5 nT/m
- PSG > 10 nT/m

Project
- Extent
- text — Field ID

Holland Park Lincolnshire

HPL081

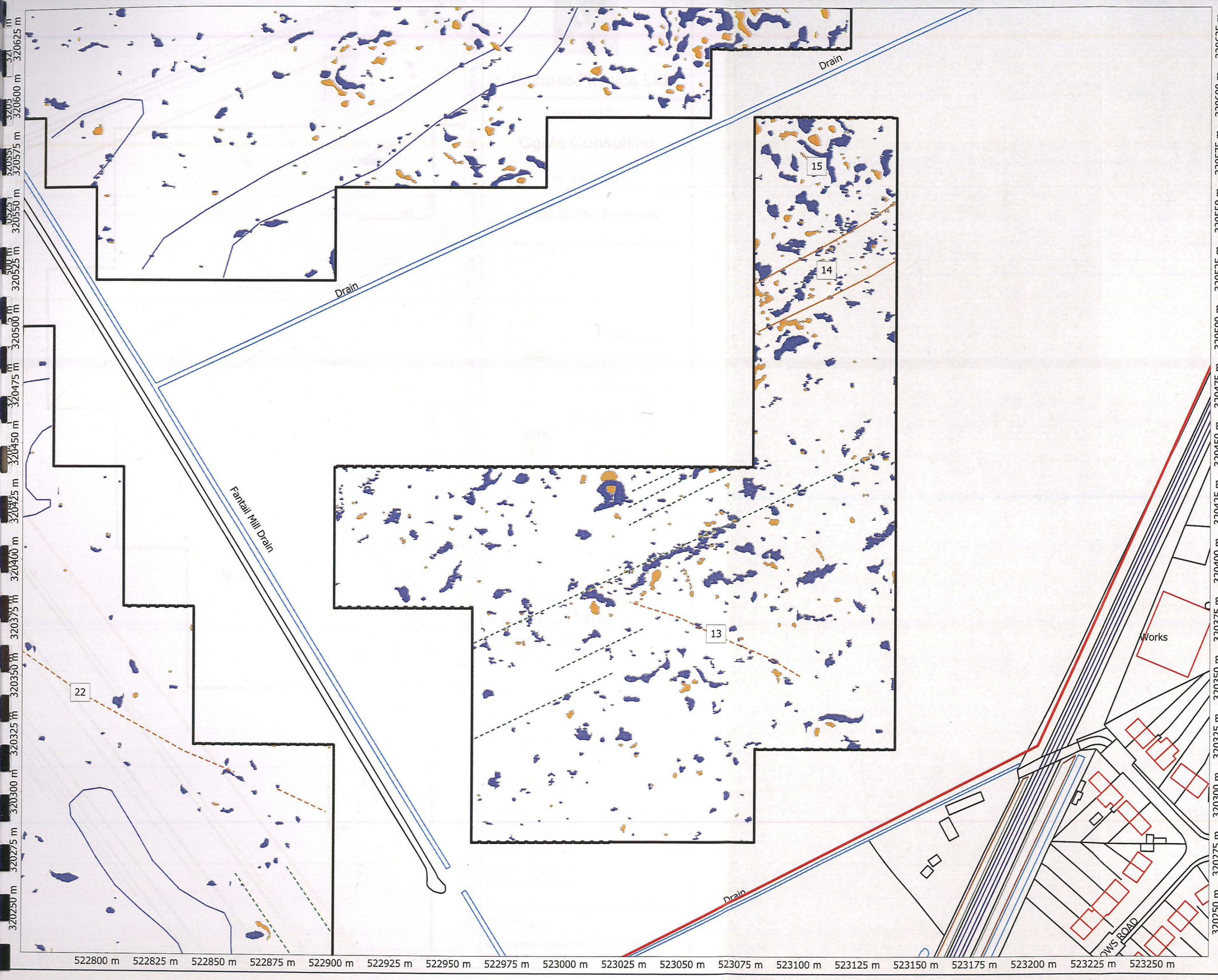
DWG 19

Interpretation - C

Orthographic
Centre X: 522844.73 m
Centre Y: 320088.98 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
8/5/2009



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Broadgate Homes

Features
- Archaeology
- Possible Archaeology
- Major channel edges
- Drains

Magnetic Strength
- PSG < -5 nT/m
- PSG > 10 nT/m

Project
- Extent
- text — Field ID

Holland Park Lincolnshire

HPL081

DWG 20

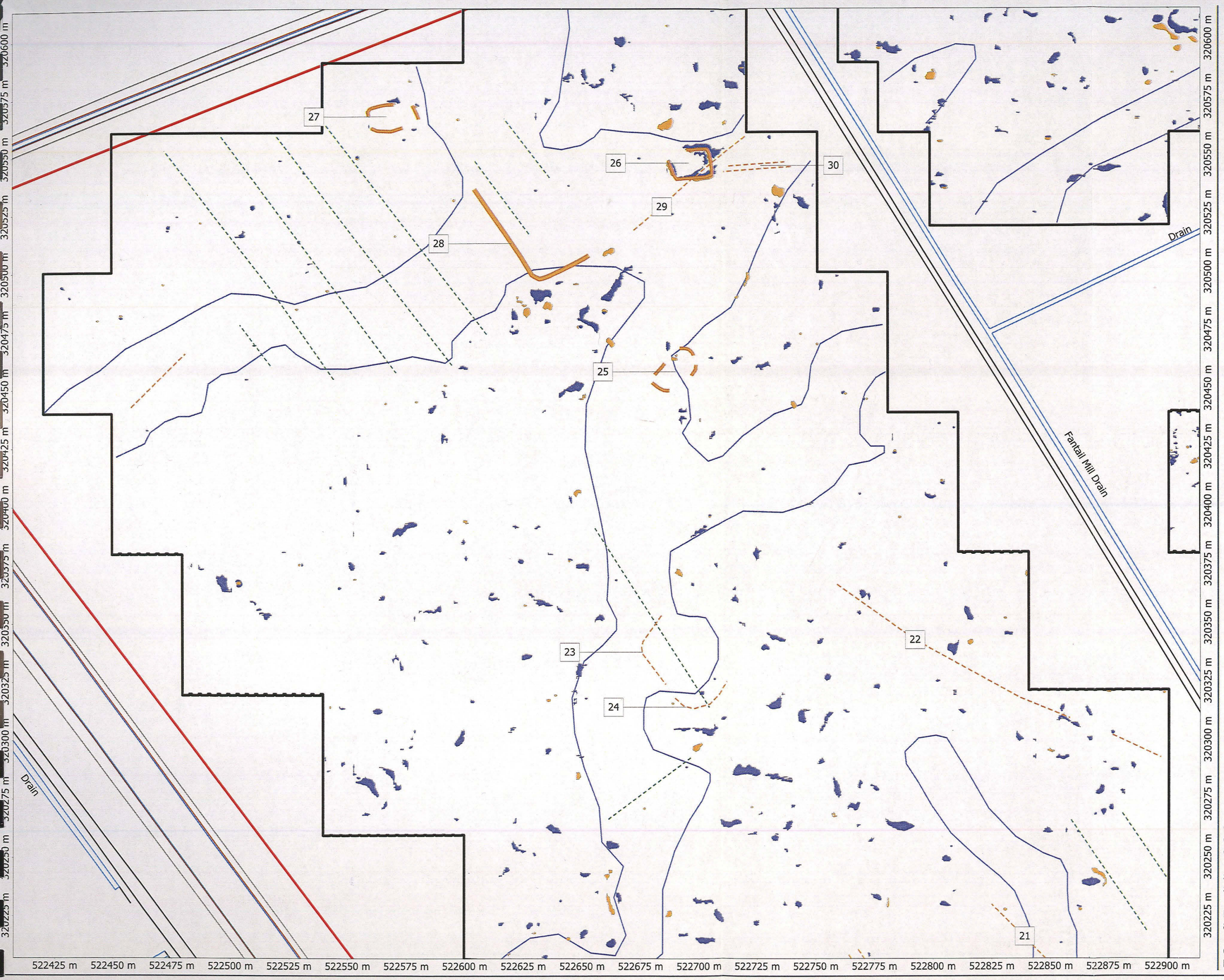
Interpretation - D

Orthographic
Centre X: 523020.67 m
Centre Y: 320434.26 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
8/5/2009

Map base provided by client



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Features
- Archaeology
- Possible Archaeology
- Major channel edges
- Drains

Magnetic Strength
- PSG < -5 nT/m
- PSG > 10 nT/m

Project
- Extent
- text — Field ID

Holland Park
Lincolnshire

HPL081

DWG 21

Interpretation - E

Orthographic
Centre X: 522660.57 m
Centre Y: 320410.00 m

Scale: 1:1500 @ A3
Spatial Units: Meter

File: HPL081 rept.map from PERSEPOLIS
8/5/2009

Map base provided by client