

GEOPHYSICAL SURVEY REPORT

Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY

Client

Tetra Tech

For

Bugler Homes Ltd

Survey Report

SUMO-25079

OASIS Ref. No.

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Date

05 December 2025



Survey Report SUMO-25079: Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY

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The geophysical interpretation drawings must be used in conjunction with the relevant results section and appendices of this report.

1 EXECUTIVE SUMMARY

SUMO GeoSurveys was commissioned to undertake a geophysical survey of an area outlined for residential development. This survey forms part of an archaeological investigation being undertaken by **Tetra Tech** on behalf of **Bugler Homes Ltd**.

A magnetometer survey of land at Stevenage Road, Hitchin, Hertfordshire has not recorded any magnetic responses that could be interpreted as being of definite archaeological interest. Numerous uncertain responses have been detected which are probably due to variations in the underlying geology, agricultural processes or buried ferrous debris. Magnetically strong positive and negative anomalies along with bands of increased responses have been marked in the survey which have been caused by variations in the underlying geology and alluvial deposits.

2 PROJECT BACKGROUND

2.1 Site details

NGR / Postcode	TL 20169 27834 / SG4 7JY	
Location	The site is located 5km north-west of Stevenage and 2km south-east of Hitchin. The survey area is bounded to the south by Stevenage Road (A602), to the east by Ash Brooke and to the west by Kingshott School.	
HER	Hertfordshire HER	
OASIS Ref. No.	sumogeop1-538261	
District	North Hertfordshire District	
Parish	St. Ippolyts CP	
Topography	Flat	
Land use	Arable	
Geology (BGS 2025)	Bedrock:	Holywell Nodular Chalk Formation and New Pit Chalk Formation - Chalk
	Superficial:	Glaciofluvial Deposits, Mid Pleistocene - Sand and gravel
		Head - Clay, silt, sand and gravel.
		Alluvium - Clay, silt, sand and gravel.
Soils (CU 2025)	Soilscape 5: Freely draining lime-rich loamy soils	
	Soilscape 6: Freely draining slightly acid loamy soils	
Survey method(s)	Magnetometer survey (fluxgate gradiometer)	
Site area	4 ha	

2.2 Archaeological context (TT 2025)

- 2.2.1 The find of a Palaeolithic handaxe has been recorded as located at The Willows, Sunnyside, northwest of the study site (MHT17400, TL19435 28120); a Palaeolithic flint implement is also recorded on the HER at Great Wymondley, placing the find to the northeast of the study site (MHT654, TL2128); likewise a Mesolithic tranche axe is recorded from the same general location (MHT6449, TL2128).
- 2.2.2 To the northeast of the study site, analysis of aerial photographs has indicated the presence of a small circular single ditched enclosure, with no entrance, together with two other ring ditches, interpreted as representing ploughed out barrows, of possible Neolithic/Early Bronze Age date (MHT393, TL2058 2827, EHT1908, TL205 282; MHT1030, TL2051 2813). Further single ditched enclosures have been identified on the east side of Ash Brook (MHT2525, TL2063 2804). To the southeast of the study site, early Iron Age pottery sherds

are recorded from the edge of the former Stutley's gravel pit at Little Wymondley (MHT464, TL207 272).

2.2.3 The nationally significant designated Scheduled Monument site of the Ninesprings Roman Villa is located c.1.2km to the north of the study site's northern boundary (SM ref 1003547, TL20764 29180). To the north of the study site, finds of 'Roman pottery or evidence of occupation' is located at Nine Springs, Hitchin, c.500m south from the Ninesprings villa site (MHT2888, TL2050 2878). Roman artefactual material recorded on the HER comprising a lamp found in 1937, a bone pin 'etc' and a late 2nd century coin (MHT475, TL2128). Finds of pot sherds including a jug and possibly also a Samian dish have also been recorded to the northwest at Whitehill (MHT1212, TL194 285).

2.2.4 The name Hitchin is thought to have Saxon origins relating to a Saxon tribe called Hicce recorded in a 7th century document. The late Saxon manor of Hitchin is recorded in Domesday Book; the Church of St Mary is documented in a 10th century will. The nationally significant designated Scheduled Monument site of Wymondley Motte & Bailey Castle is located c.1.3km to the northeast of the study site's northern boundary (SM ref 101761, TL21549 28510). The nationally significant designated Scheduled Monument site of Wymondley Priory is located c.1.6km to the east of the study site's northern boundary (SM ref 1013338, TL21864 28049, TL22223 28275). To the southwest of the study site, a burial dated to the Middle Saxon period, comprising an inhumation with grave goods including an iron shield boss, belt buckle and knife, of 6th – 7th century date, has been recorded at Pound Farm (MHT1617, TL1924 2745). To the southwest, the church of St Ippolyt was founded in 1087 AD, with alterations dated to the 14th and 15th centuries restoration (MHT4307, TL19794 27125). To the south of the study site, Medieval and later pottery and other finds including oyster shell, iron objects and bones were recorded at the St Ippolyts Junior School site, Ashbrook Lane (MHT12756, TL1981 2716; EHT4725, TL19815 27162).

2.3 ***Aims and objectives***

2.3.1 To locate and characterise any anomalies of possible archaeological interest within the study area.

3 **SURVEY METHODOLOGY AND DATA PROCESSING**

A magnetic survey was proposed by the Planning Authority as the most effective method of locating the type of archaeological anomalies which might be expected at this site.

The survey fieldwork and this report follow the general guidance set out by ClfA (2020) and the European Archaeology Council (EAC) (2016).

3.1 ***Instrumentation***

3.1.1 The magnetic survey was undertaken using the following equipment configuration:

Sensors	Equipment configuration	Traverse interval (m)	Sample interval (m)
4 No. Bartington Grad 601	Cart-based system ATV towed Data is georeferenced by RTK GNSS	1.0	0.25

3.2 ***Survey methodology***

3.2.1 The ATV is fitted with a guidance system (linked to a GNSS system mounted on the ATV) which is used to align the survey profiles and direct the operator. The survey profiles are usually offset from field boundaries, buildings and other metallic features by several metres

to reduce the detrimental effect that these surface magnetic features have on the data. Gaps were also left adjacent to boundaries and surface obstructions to allow the ATV and cart-based system sufficient space to safely pass and turn.

- 3.2.2 The location of the cart-based survey data is converted direct to Ordnance Survey National Grid co-ordinates, using the UK OSTN15 transformation.

3.3 **Data processing and display**

- 3.3.1 The only processes performed on data are the following unless specifically stated otherwise:

Zero Mean Traverse: This process sets the background mean of each traverse within each grid to zero. The operation removes instrument striping effects and edge discontinuities over the whole of the data set.

- 3.3.2 The data was stored direct to a laptop using in-house software which automatically corrects for instrument drift and calculates a mean value for each profile. A positional value is assigned to each data point based on the sensor number and recorded GNSS co-ordinates. The data is gridded using in-house software and parameters are set based on the sensor spacing and mean values. No additional processing is required.

Greyscale raster images (PNG files) are displayed at a range of -1 nT to 2nT, which is 'standard' for archaeological surveys.

- 3.3.3 X-Y trace plots are examined for all the data and overlain onto the greyscale plot to assist in the interpretation, primarily to help identify dipolar / bipolar responses (that will probably be associated with surface / near-surface iron objects) and thermoremanent material. When not displayed in the report, a digital drawing showing the X-Y trace plot is provided in the Archive.

- 3.3.4 A detailed discussion of data processing, display and the general categories of anomaly which have been identified by the survey is provided in the Appendices.

4 **RESULTS**

4.1 **Probable / Possible archaeology**

- 4.1.1 No magnetic responses have been recorded that could be interpreted as being of archaeological interest.

4.2 **Uncertain**

- 4.2.1 Trends, discrete anomalies plus zones of positive and negative response are visible in the survey which have been assigned to the category of *Uncertain*. They generally lack the defined morphology of anomalies that would usually warrant an archaeological interpretation. The responses have probably been caused by variations in the underlying geology, agricultural processes or buried ferrous debris.

4.3 **Natural**

- 4.3.1 Magnetically strong positive and negative anomalies along with bands of increased responses have been marked in the survey which have been caused by variations in the underlying geology. The variations in magnetic anomalies between the west of the site and the east has likely been caused by alluvial deposits from the adjacent Ash Brook.

4.4 **Ferrous / fired / magnetic disturbance**

- 4.4.1 A strong ferrous anomaly in the centre of the site has been caused by a utility pole; a second pole is also present but hasn't produced a magnetic anomaly. Other ferrous responses close to field boundaries are usually due to adjacent fences and gates. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and are characteristic of small

pieces of ferrous debris in the topsoil. Some fired material (brick / tile) can produce similar responses as can gravels derived from igneous rocks. These types of responses are commonly assigned a modern origin, unless there is strong supporting evidence indicating a different cause. Where isolated responses are grouped together, they are usually categorised as magnetic disturbance and indicate the presence of a concentration of (usually modern) material. Only the most prominent of these are isolated responses and areas of magnetic disturbance are highlighted on the interpretation diagram

5 DATA APPRAISAL AND CONFIDENCE ASSESSMENT

5.1 There is no *a priori* reason why archaeological features would not have been detected.

5.2 It should be noted that a geophysical survey does not directly locate sub-surface features - it identifies variations or anomalies in the background response caused by features. The interpretation of geophysical anomalies is often subjective, and it is rarely possible to identify the cause of all such anomalies. Not all features will produce a measurable anomaly, and the effectiveness of a geophysical survey is also dependant on the site-specific conditions. The main factors that may limit whether a feature can be detected are the composition of a feature, its depth and size and the surrounding material. It is not possible to guarantee that a geophysical survey will identify all sub-surface features.

6 CONCLUSION

6.1 The magnetometer survey has not recorded any magnetic responses that could be interpreted as being of definite archaeological interest. Trends, discrete anomalies plus zones of positive and negative response have been assigned to the category of uncertain. They have probably been caused by variations in the underlying geology, agricultural processes of buried ferrous debris. Magnetically strong positive and negative anomalies along with bands of increased responses have been marked in the survey which have been caused by variations in the underlying geology and alluvial deposits. A strong ferrous response in the centre of the site has been caused by a utility pole.

7 BIBLIOGRAPHY AND REFERENCES

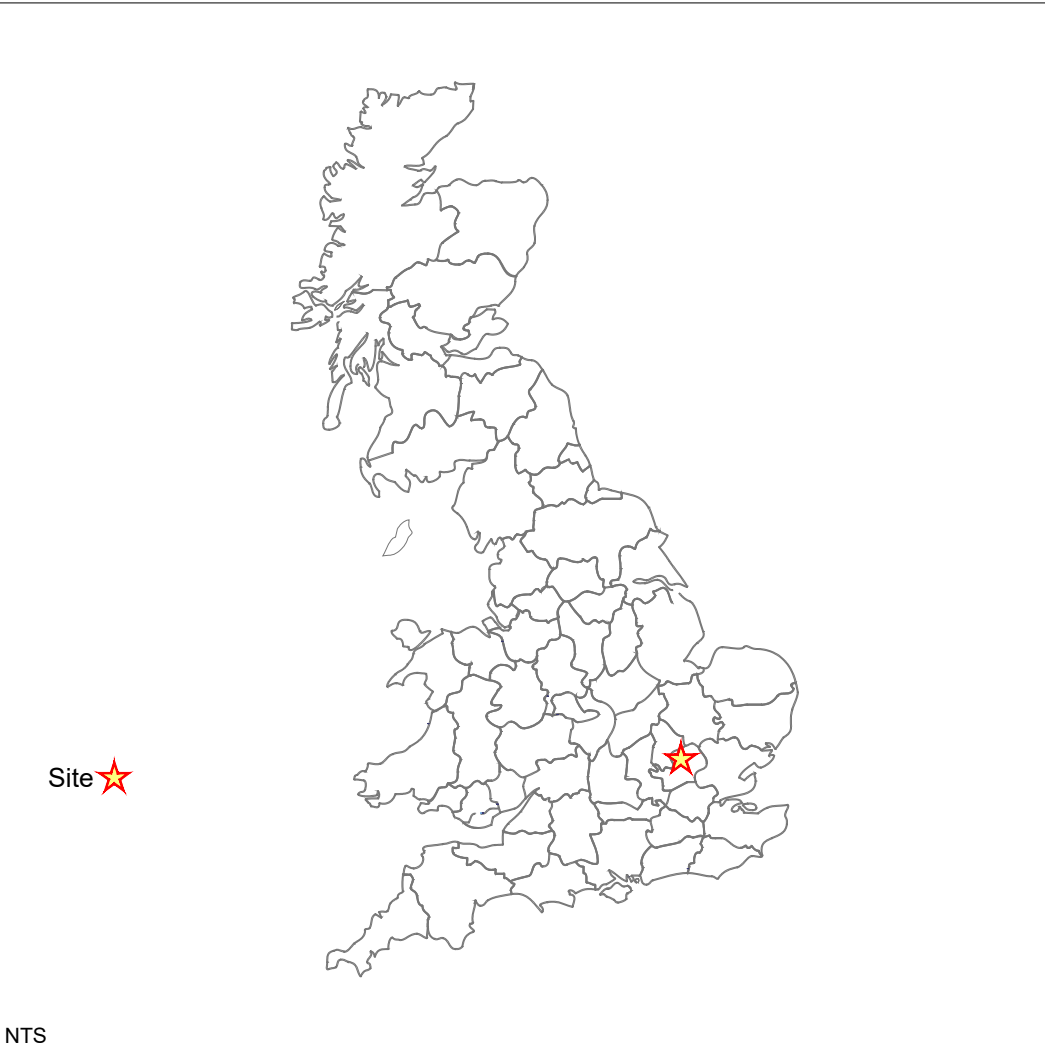
- | | |
|-----------|--|
| BGS 2025 | <i>Geology of Britain Viewer</i> ; British Geological Survey. Website: http://www.bgs.ac.uk/opengeoscience/home.html?Accordion1=1#maps |
| ClfA 2020 | <i>Standard and guidance for archaeological geophysical survey</i> ; ClfA guidance note 2014 (amended 2020). Chartered Institute for Archaeologists, Reading https://www.archaeologists.net/sites/default/files/2023-11/ClfA-SandG-Geophysical-Survey-2020.pdf |
| CU 2025 | <i>Soilscapes Viewer</i> ; LandIS: The Land Information System. Soil data for England and Wales. Website: https://www.landis.org.uk/soilscapes/ |
| EAC 2016 | <i>EAC Guidelines for the Use of Geophysics in Archaeology</i> ; European Archaeological Council, Guidelines 2. |
| TT 2025 | <i>Archaeological Desk Based Assessment Land North of Stevenage Road, Hitchin, SG4 7JY</i> . Tetra Tech, London |

8 ARCHIVE

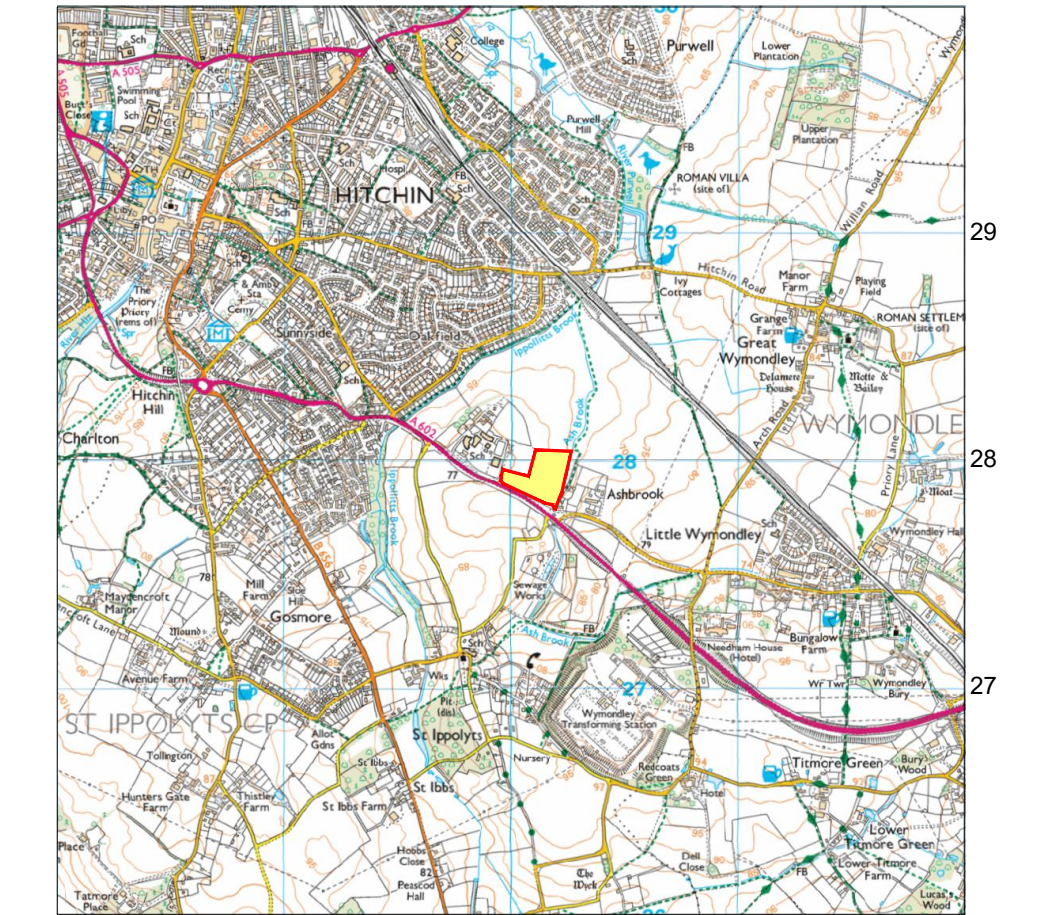
- 8.1.1 The minimally processed data, data images, X-Y traces and a copy of this report are stored in **SUMO GeoSurveys'** digital archive, on an internal RAID configured NAS drive in the Eckington Office. These data are also backed up to the Cloud for off-site storage.
- 8.1.2 The Grey Literature will be archived with OASIS and the relevant HER within a period of 12 months.

9 COPYRIGHT

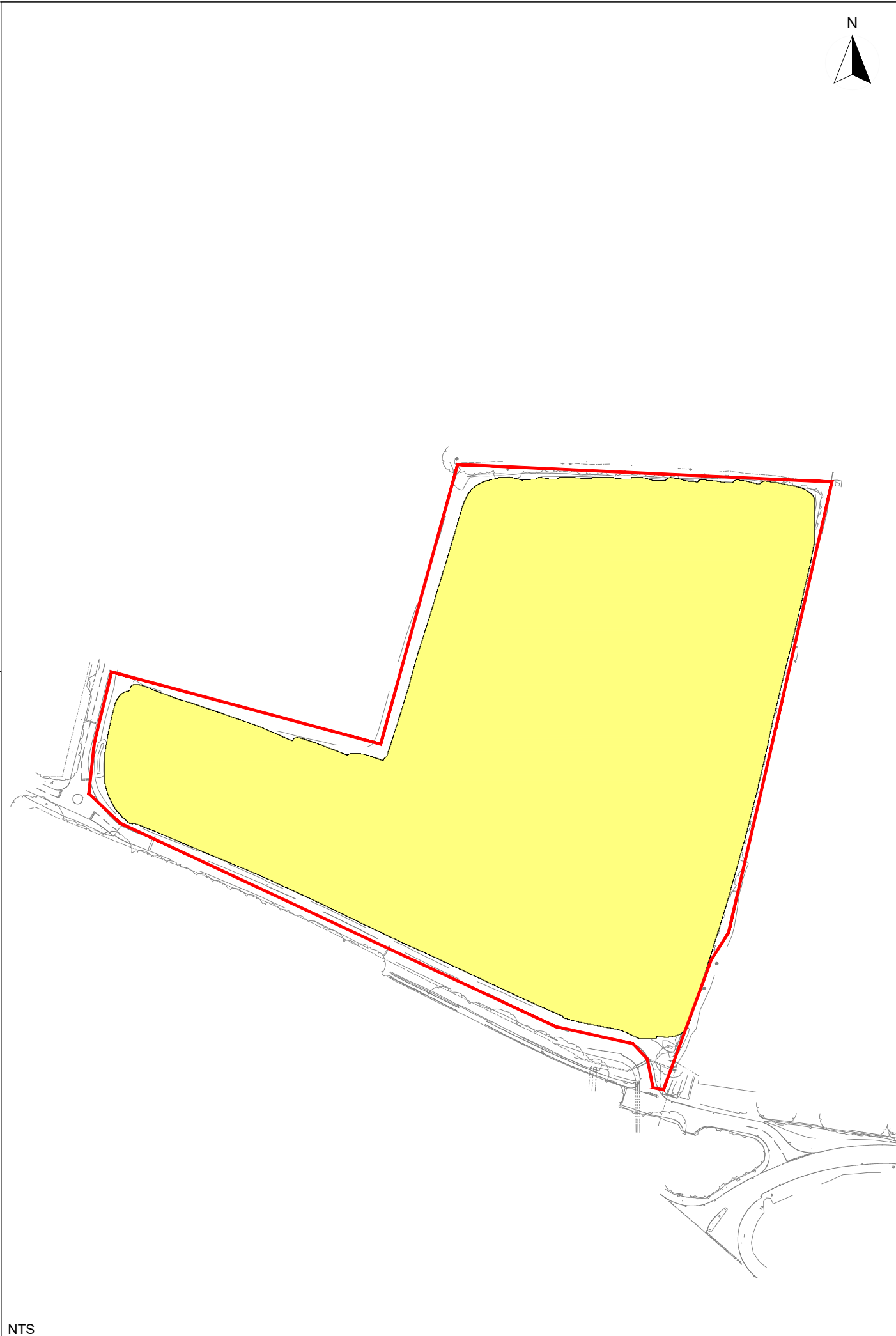
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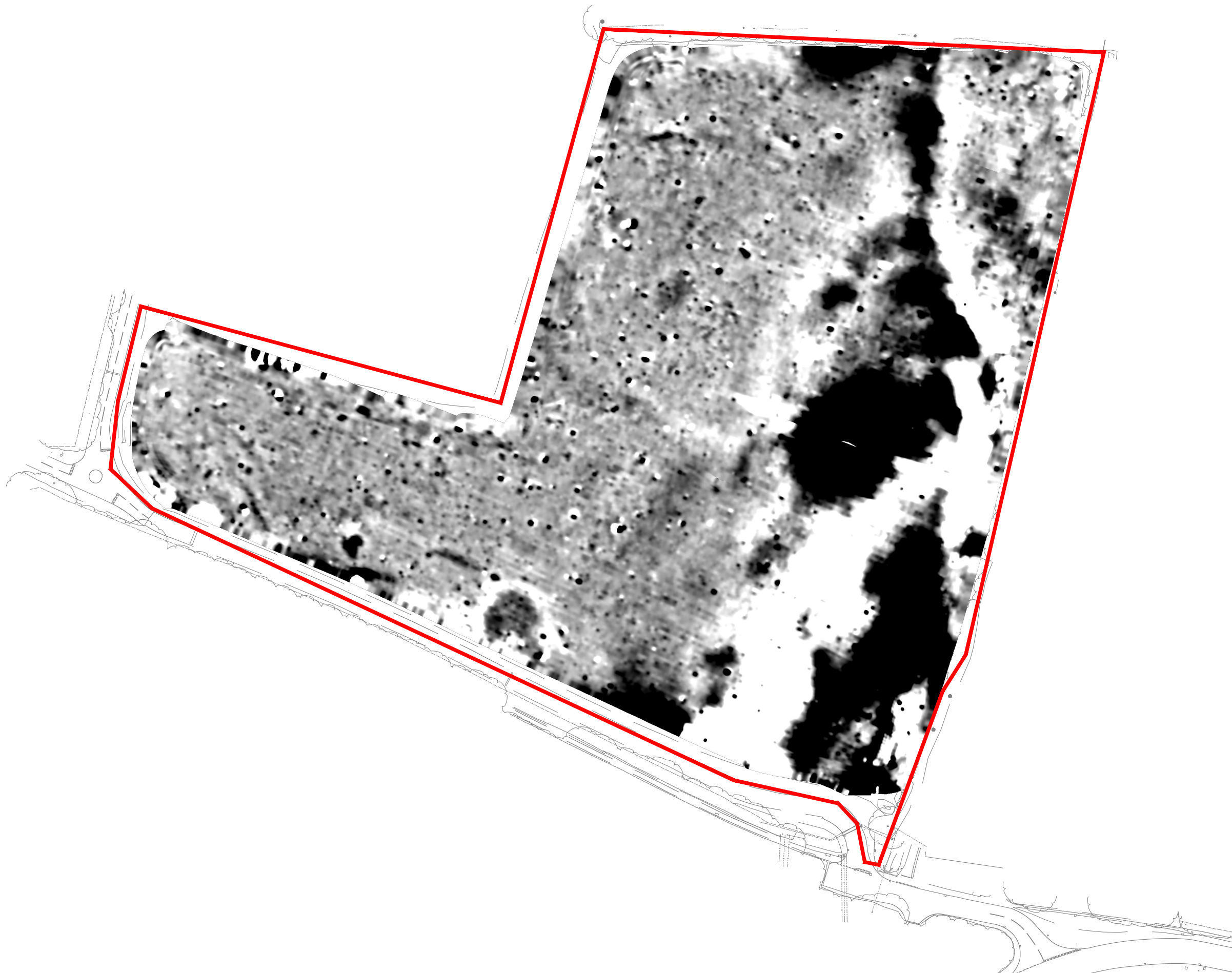
NTS



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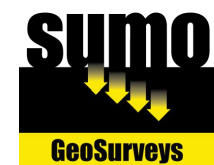
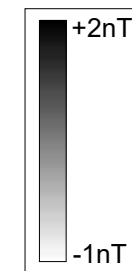


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KEY	
	Site boundary
	Survey area
Title:	Site Location
Client:	Tetra Tech
Project:	SUMO-25079: Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY
Scale:	As shown
Fig No:	01



NOTES

1. The Ordnance Survey co-ordinates obtained for this survey were measured using the UK OSTN15 transformation. This transformation should be taken into account if the survey data is relocated.
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Title:
Magnetic Gradient Data - Greyscale Plot

Client:
Tetra Tech

Project:
SUMO-25079: Land at Stevenage Road, Hitchin,
Hertfordshire, SG4 7JY

Scale: 1:1200@A3
0 30 60 meters

Fig No:
02



NOTES

- 1. The Ordnance Survey co-ordinates obtained for this survey were measured using the UK OSTN15 transformation. This transformation should be taken into account if the survey data is relocated.
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KEY

	Uncertain origin (discrete anomaly / trend)
	Uncertain origin (positive response / negative response)
	Natural (e.g. geological / pedological)
	Ferrous and / or fired material



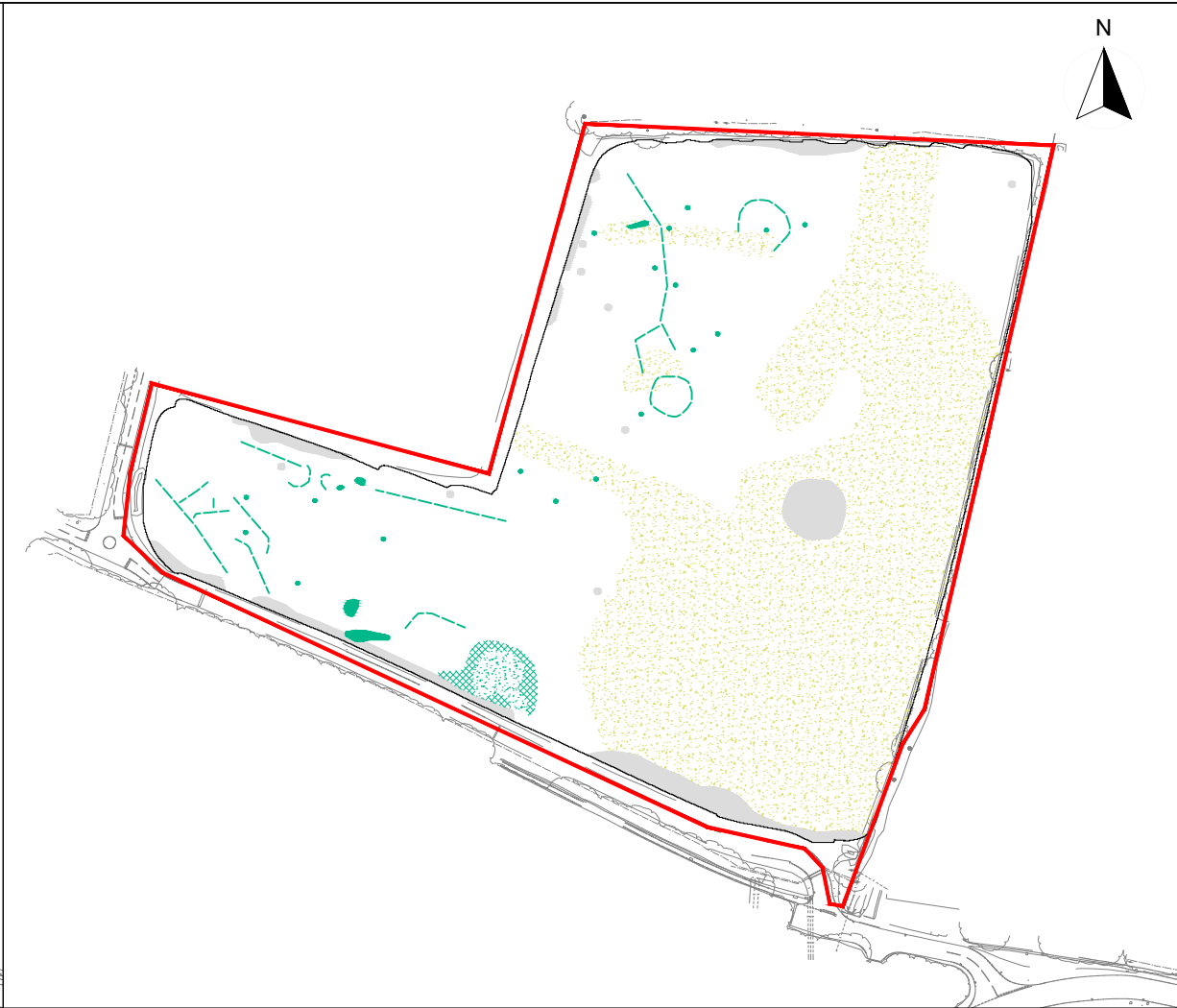
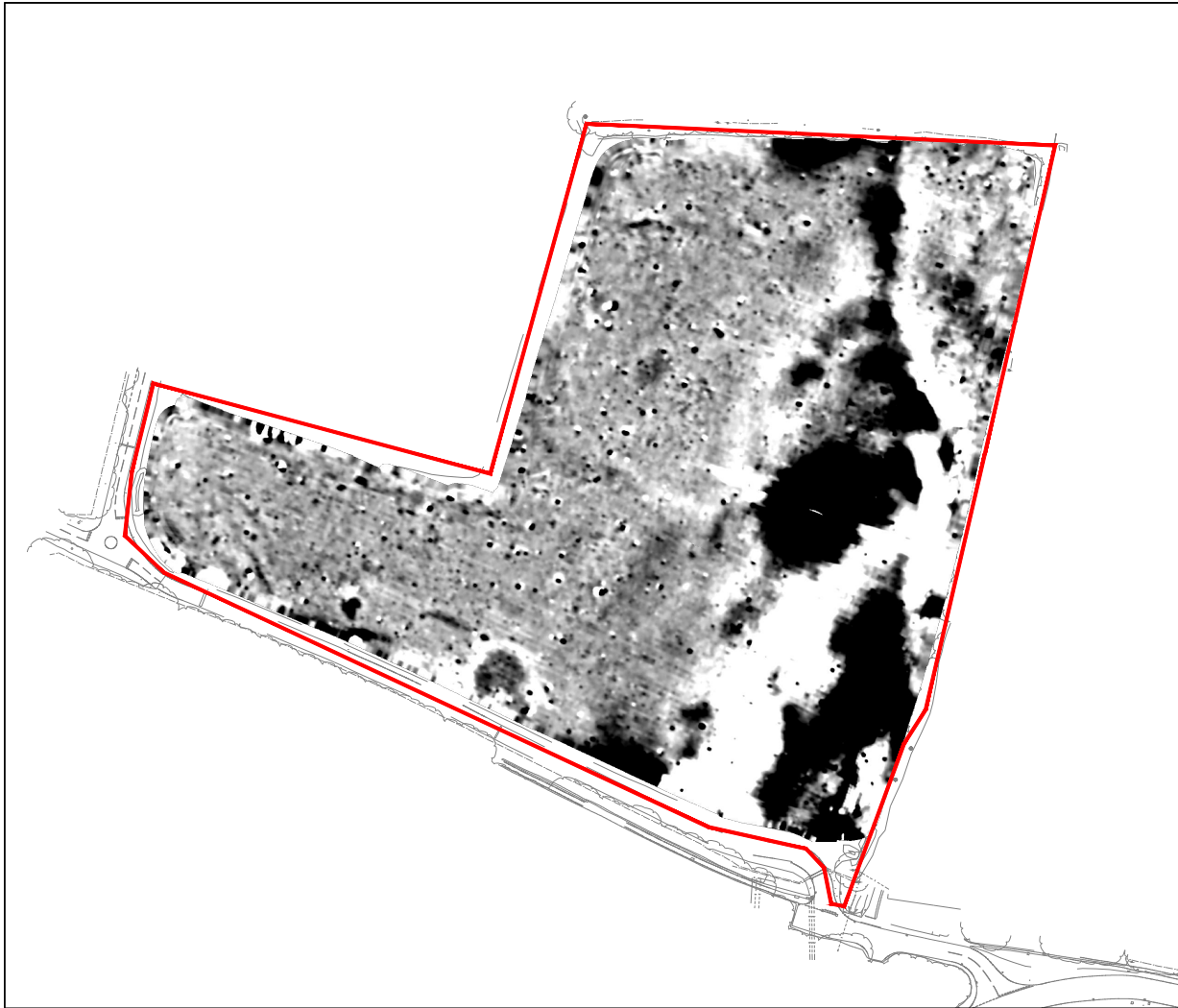
Title:
Magnetic Gradient Data - Interpretation

Client:
Tetra Tech

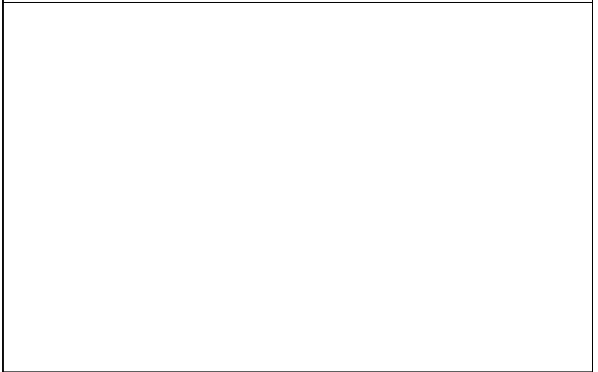
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SUMO-25079: Land at Stevenage Road, Hitchin,
Hertfordshire, SG4 7JY

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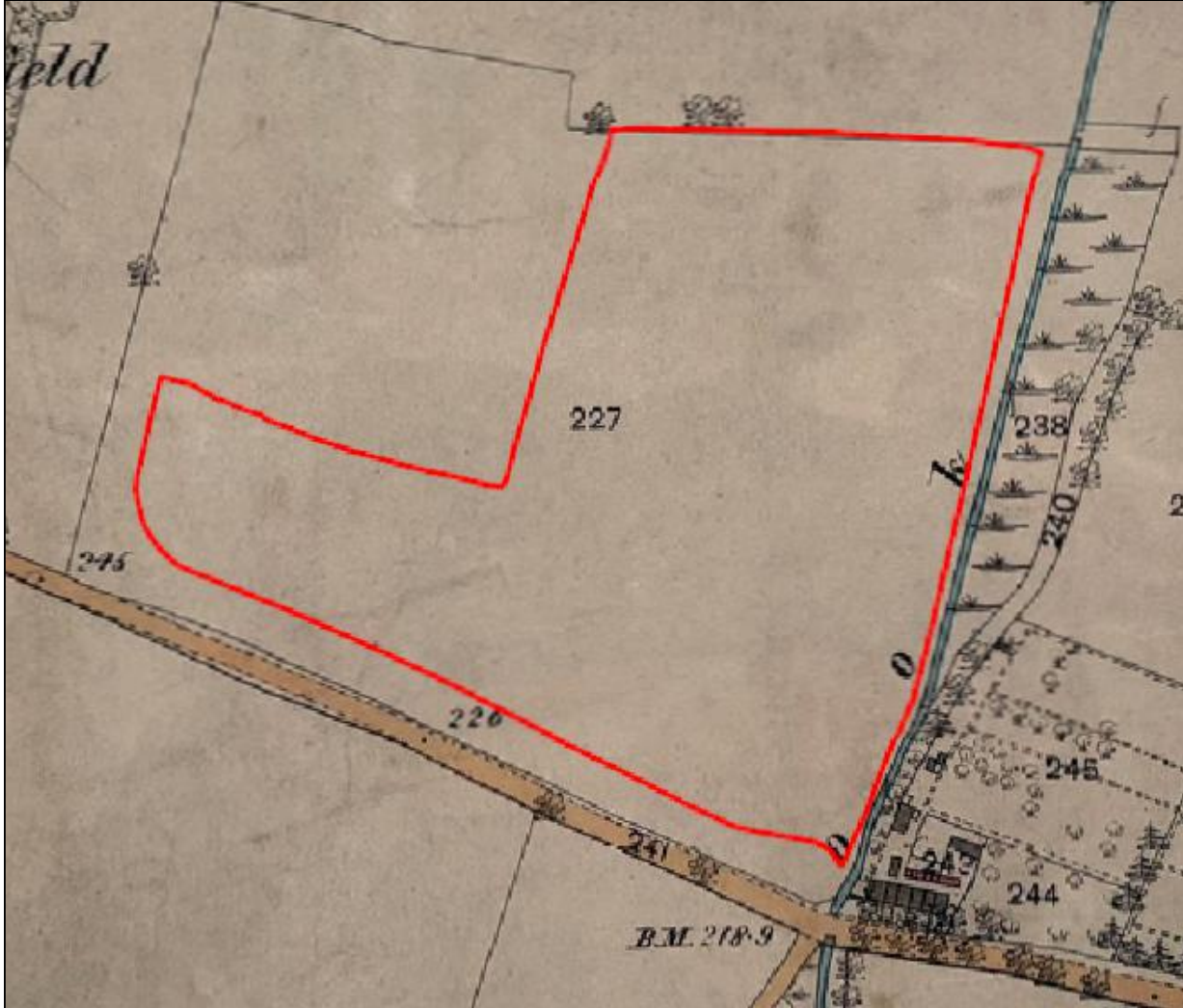
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03



- ### NOTES
1. The Ordnance Survey co-ordinates obtained for this survey were measured using the UK OSTN15 transformation. This transformation should be taken into account if the survey data is relocated.
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KEY	
	Uncertain origin (discrete anomaly / trend)
	Uncertain origin (positive response / negative response)
	Natural (e.g. geological / pedological)
	Ferrous and / or fired material

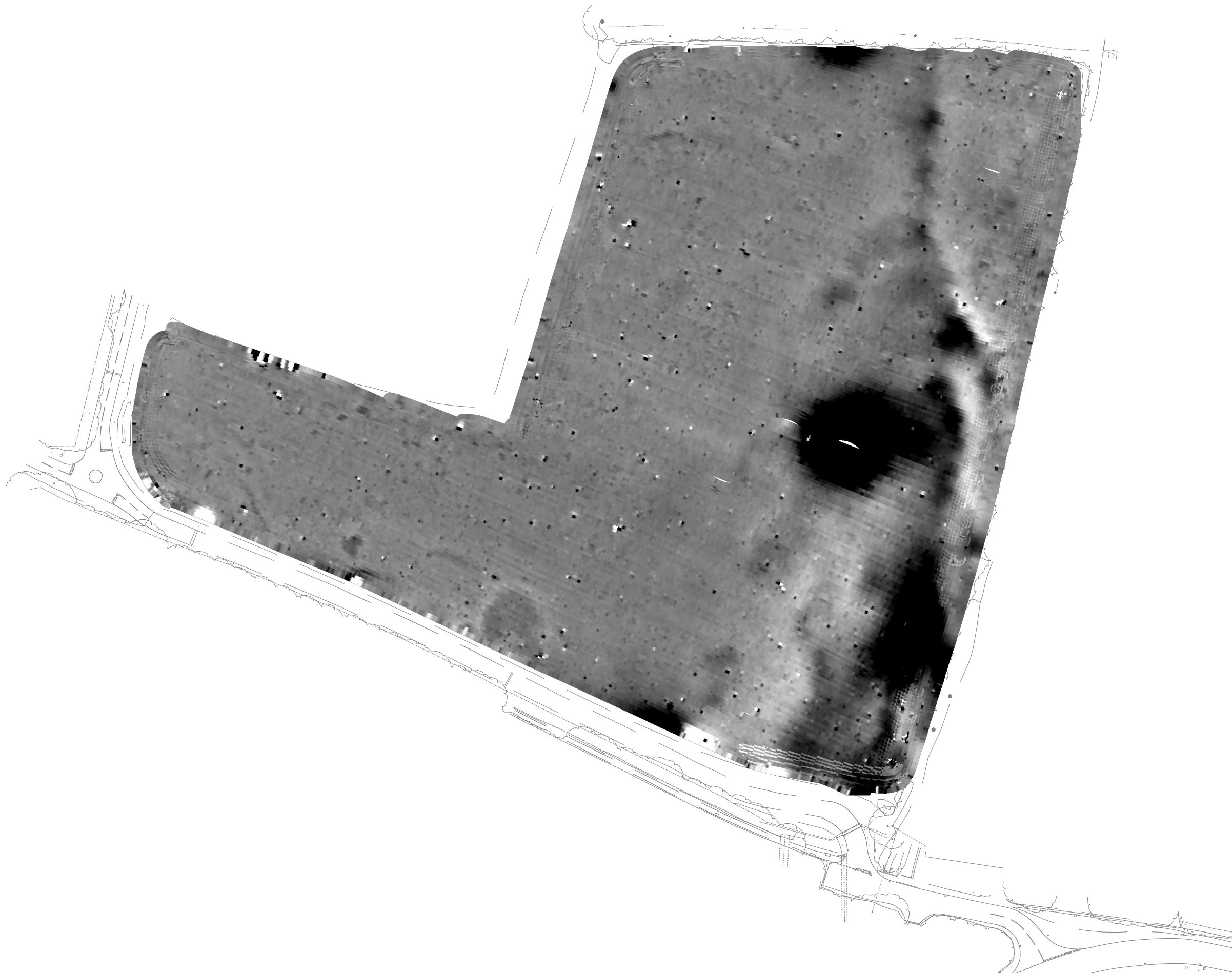


Title:
Greyscale Plot / Interpretation / 1881 Ordnance Survey Map (TT 2025) / 2025 Aerial Image

Client:
Tetra Tech

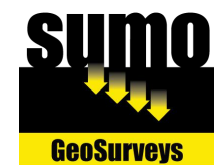
Project:
SUMO-25079: Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY

Scale: NOT TO SCALE / AS SHOWN	Fig No: 04
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NOTES

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Title:
Minimally Processed Magnetic Gradient Data -
Greyscale Plot

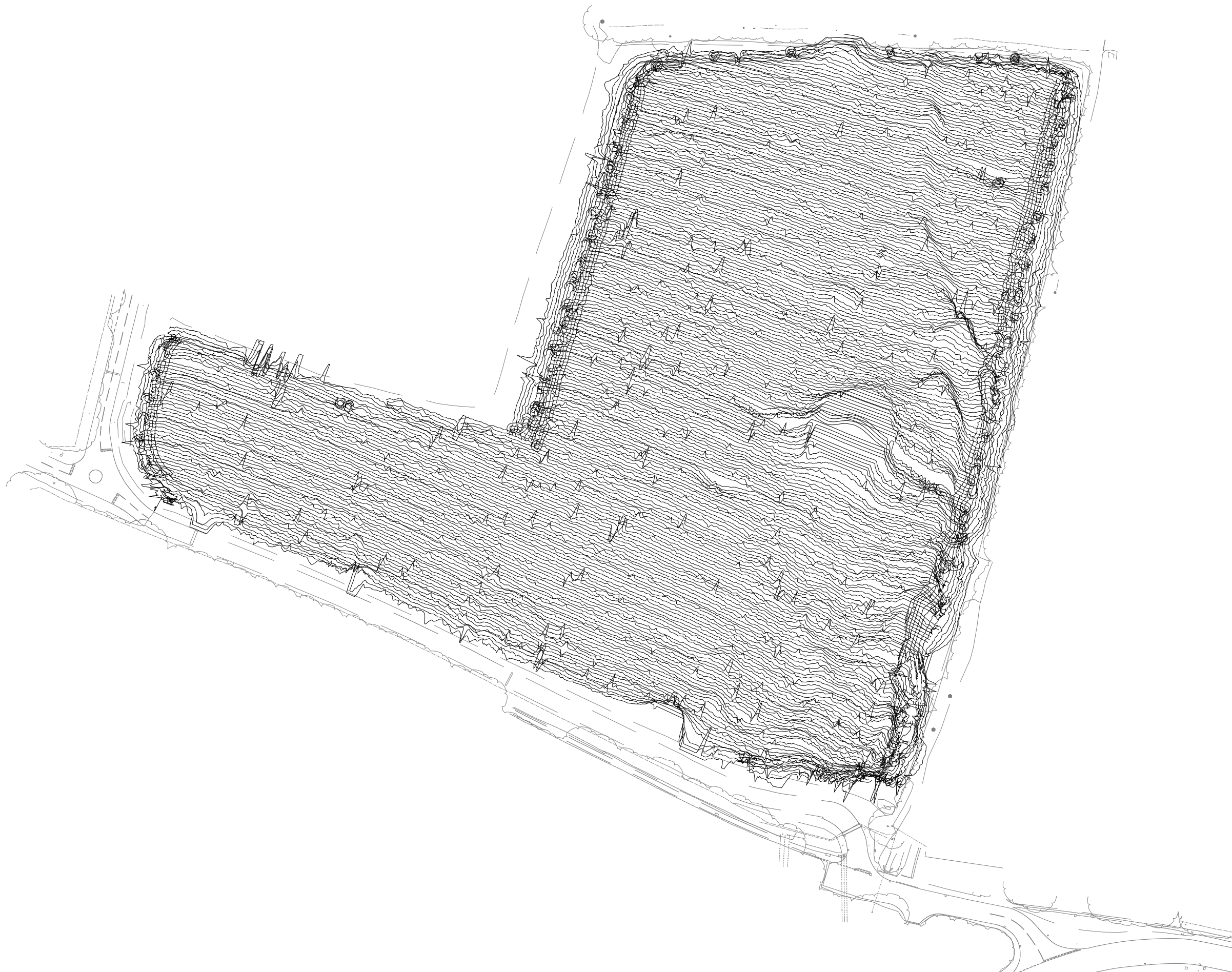
Client:

Tetra Tech

Project:
SUMO-25079: Land at Stevenage Road, Hitchin,
Hertfordshire, SG4 7JY

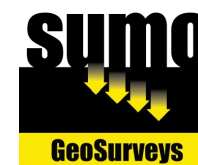
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Fig No:
05



NOTES

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Title: Magnetic Gradient Data - X-Y Trace Plots (clipped at +/-15nT)

Client: Tetra Tech

Project: SUMO-25079: Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY

Scale: 1:1200@A3
0 30 60 meters

Fig No: 06

Appendix A - Technical information: Magnetic survey

Instrumentation:

Fluxgate gradiometers were used for the magnetic survey. These are systems that have two fluxgate magnetometers a set distance apart in a vertical sensor each of which measures the vertical component of the earth's magnetic field. The difference in measurements between the two magnetometers indicates the gradient of the earth's magnetic field.

Generally, features up to 1 m deep may be detected using fluxgate gradiometers, though strongly magnetic objects may be visible at greater depths and features / material that produce relatively weak magnetic responses may only be detected at shallower depths.

Data points and survey grids are georeferenced using using an RTK GNSS (Real-Time Kinematic Global Navigation Satellite System) to an accuracy usually in the order of +/- 0.05 m, and at all times better than 0.1 m. Positional data is converted to the Ordnance Survey National Grid co-ordinates, using the UK OSTN15 transformation.

SUMO GeoSurveys utilise Bartington or Foerster fluxgate gradiometers in several different configurations, depending on the client's requirements, survey objectives and site specific conditions. These include:

Bartington cart system

Cart survey: Four Grad601 sensors, with a sensor spacing of 1.0 m, are mounted on a non-magnetic cart. Readings are taken at nominal 0.125 m intervals. The sensors and an on-board RTK GNSS are connected to a control unit / data logger which allows each data point to be geo-referenced and related to Ordnance Survey National Grid. Readings are triggered at time intervals so the speed of survey can affect how often a reading is taken but the frequency a reading is taken and the speed of survey are set so that on average a reading will be taken at the required interval or better.

Bartington Grad 601-2

Hand-held: In this configuration two paired sensors, connected to a control unit / data logger, are carried by hand. The sensor are spaced 1 m apart and readings are taken at 0.25 m centres along traverses. Regular 30 m grids are set out across the survey area and the data is collected over these.

Foerster cart system (MACS)

Cart survey: A multi-sensor array cart system (MACS) utilising 4 or 8 Foerster 4.032 Ferex CON 650 gradiometers that are mounted on a non-magnetic cart. Readings are taken at between 0.1 and 0.15 m intervals. The sensors and an on-board RTK GNSS are connected to a control unit / data logger (an Eastern Atlas digitiser) which allows each data point to be geo-referenced and related to Ordnance Survey National Grid. Readings are triggered at time intervals so the speed of survey can affect how often a reading is taken but the frequency a reading is taken and the speed of survey are set so that on average a reading will be taken at the required interval or better.

Foerster cart system (MACS)

Cart survey: A multi-sensor array cart system (MACS) utilising 4 Foerster 4.032 Ferex MG-10-550 gradiometers that are mounted on a non-magnetic cart. Readings are taken at between 0.1 and 0.15 m intervals. The sensors and an on-board RTK GNSS are connected to a control unit / data logger which allows each data point to be geo-referenced and related to Ordnance Survey National Grid. Readings are triggered at time intervals so the speed of survey can affect how often a reading is taken but the frequency a reading is taken and the speed of survey are set so that on average a reading will be taken at the required interval or better.

Data processing

The processing sequence used for the data will depend on the instrument and configuration used.

Bartington Grad601 cart survey data

Zero Mean	This process sets the background mean of each traverse to zero. The operation
Traverse	removes striping effects and edge discontinuities caused by individual sensors having slightly different values when zeroed or where striping errors occur due to instrument drift or are a product of data collection.

Bartington Grad601-2 hand-held data

Zero Mean	This process sets the background mean of each traverse within each grid to zero.
Traverse	The operation removes striping effects and edge discontinuities caused by individual sensors having slightly different values when zeroed or where striping errors occur due to instrument drift or are a product of data collection.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors or stagger can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

Foerster cart system (MACS)

ealdec	This process decodes the raw data and converts it to a csv file. Positional values are assigned to each data point based on data from the GNSS and the offset of each sensor relative to the GNSS.
Ealmat.m	This is the equivalent of a zero mean traverse, wherein the data is normalised and a drift correction applied for each probe.
Ealgrid.m	This grids the data by merging each profile file. Parameters are set by based on the sensor spacing and resolution required.

Foerster cart system (MACS)

Zero Mean	This process sets the background mean of each traverse to zero. The operation
Traverse	removes striping effects and edge discontinuities caused by individual sensors having slightly different values when zeroed or where striping errors occur due to instrument drift or are a product of data collection.

Display

Greyscale plot	A greyscale plot of magnetic data is a visual representation of magnetic field strength variations over a given area. Magnetic gradient measurements are converted into a two-dimensional image where different shades of grey correspond to different magnetic values. This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly, all values below the given range are represented by the minimum intensity shade. In this instance black is used for the maximum intensity values and white for the minimum.
X-Y trace plot	An X-Y trace plot of magnetic data is a visual representation of magnetic field strength variations over a given area. Magnetic gradient measurements along a single traverse are displayed as a graph where the X-axis represents the distance along a traverse and the Y-axis is the measured magnetic gradient value at that point. Plots for each traverse are stacked to produce the X_Y trace plot for an area. The main advantage of the shape of individual anomalies can be viewed, and if required the full range of data can be viewed, although the data is often clipped at +/- 15 nT to +/- 20 nT.

Interpretation Categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall*, etc.) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the magnetic gradient data.

<i>Archaeology / probable archaeology</i>	This term is used when the form, nature and pattern of the responses are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
<i>Possible archaeology</i>	These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth or plough damage.
<i>Industrial / Burnt / fired</i>	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal- working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
<i>Ridge and furrow</i>	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity.
<i>Uncertain origin</i>	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of <i>Possible Archaeology / Natural</i> or (in the case of linear responses) <i>Possible Archaeology / Agriculture</i> ; occasionally they are simply of an unusual form.
<i>Former field boundary (probable and possible)</i>	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
<i>Agriculture (ploughing)</i>	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes. The general orientation of the cultivation regime is shown but, for the sake of clarity, each individual anomaly has not been shown.
<i>Agriculture (land drain)</i>	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
<i>Natural (e.g. geological / pedological)</i>	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
<i>Magnetic disturbance</i>	Areas of strong dipolar / bipolar anomalies, usually related to a spread / concentration of modern magnetic including ferrous and fired (e.g. brick or tile rubble) material.
<i>Service (e.g. pipe, cable or drain)</i>	Magnetically strong anomalies, usually forming linear alignments are indicative of ferrous pipes cables. Sometimes other materials (e.g. pvc) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
<i>Ferrous</i>	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

Appendix B - Technical information: Magnetic theory

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTeslas (nT) in an overall field strength of 48,000 (nT), can be accurately detected.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning, soil formation, weathering, erosion and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns; material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

A magnetic survey is carried out using a magnetometer which can measure these small changes in magnetic properties, which are referred to as anomalies. Magnetometers can either measure the total field or the gradient. Measuring the gradient of the earth's magnetic field can suppress any diurnal or regional effects and makes the instrument sensitive to smaller, localised anomalies, which is critical for archaeological surveys. The total field or magnetic gradient are measured in Tesla (T) with the small variations detected in archaeological surveys recorded in nanoTesla (nT).

Factors affecting the magnetic survey may include soil type, local geology, previous human activity and disturbance from modern services (pipes, cables or drains) or other modern material / activity.

Appendix C - OASIS Summary

OASIS ID (UID)	sumogeop1-538261
Project Name	Magnetometry Survey, Geophysical Survey at Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY
Sitename	Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY
Sitecode	SUMO-25079
Project Identifier(s)	SUMO-25079 Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY
Activity type	Magnetometry Survey, Geophysical Survey, MAGNETOMETRY SURVEY
Planning Id	
Reason For Investigation	Planning requirement
Organisation Responsible for work	SUMO Geophysics Ltd.
Project Dates	27-Nov-2025 - 27-Nov-2025
Location	Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY NGR: TL 20123 27934 LL: 51.93695248252401, -0.25407620865588 12 Fig: 520123,227934
Administrative Areas	Country: England County/Local Authority: Hertfordshire Local Authority District: North Hertfordshire Parish: St Ippolyts
Project Methodology	Data was collected using a cart carrying four paired Bartington magnetic sensors. Four sensors mounted 1m horizontally apart and very accurately aligned to nullify the effects of the earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background. Each data point is geographically referenced using an on-board Trimble RTK survey grade GPS system. Readings were taken at 0.125m centres along traverses 1.0m apart. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background.
Project Results	The magnetometer survey has not recorded any magnetic responses that could be interpreted as being of definite archaeological interest. Trends, discrete anomalies plus zones of positive and negative response have been assigned to the category of uncertain. They have probably been caused by variations in the underlying geology, agricultural processes of buried ferrous debris. Magnetically strong positive and negative anomalies along with bands of increased responses have been marked in the survey which have been caused by variations in the underlying geology and alluvial deposits. A strong ferrous response in the centre

	of the site has been caused by a utility pole.
Keywords	
Funder	Private or public corporation Tetra Tech
HER	Hertfordshire HER - unRev - STANDARD
Person Responsible for work	Darcy Hooper
HER Identifiers	
Archives	

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Appendix D – Data Management Plan & Archive Selection Strategy

Data Management Plan

Project ID / OASIS ID

SUMO-25079 / sumogeop1- 538261

Project Name

Land at Stevenage Road, Hitchin, Hertfordshire, SG4 7JY

Project Description

Detailed magnetic survey over approx. 4ha

Client

Tetra Tech

Project Manager

Darcy Hooper

Field Leader

Baeli Fern

Date DMP created

10/11/2025

Date DMP last updated

03/12/2025

Version

2

Technique - data

Detailed magnetic survey.

Manual – cart - other

ATV towed magnetometers.

Documentation and metadata

All documentation and data produced are stored on SUMO servers in a specific job file.

Data storage, access and back-up

- SUMO Secure server during the project life set up in a RAID configuration (a RAID configuration incorporates a level of data redundancy meaning if a single hard drive in fails data can still be restored).

- Snap shots of the data will be made at several intervals during the day to allow data to be restored for up to 30 days if changed / deleted.
- Once the final report has been completed data will be moved onto NAS drive set up in a RAID configuration.
- All data is backed up to an off-site location (Cloud storage).

Archive Selection Strategy

Digital Data

Selection

It is proposed that only the final version of all born digital documents (reports, images and CAD files) will be selected for inclusion in the Preserved Archive. All raw and processed survey data will be included in the preserved archive. Below is what will constitute the selected archive:

- Raw data in XYZ format .csv and .png plus .pgw world file
- Processed data as .png plus .pgw world file
- Final survey report .pdf
- CAD and Vector graphics (interpretations) in .dwg format

De-selected digital data

The de-selected material will be retained on the SUMO Secure server and Cloud storage.

Documents

Not applicable – no archive

Materials

Not applicable – no archive



- Archaeological Geophysics
- Engineering Geophysics
- Measured Building Services
- Utility and Topographic Services
- Aerial Surveys
- Rail Surveys

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