HS2 Balfour Beatty

2EE02 EEW - HS2 Phase 2a Early Environmental Works

Site 306 – Geophysics Survey Report

Heritage Non-intrusive Survey Reports Group 008

Document no: 2EE02-BAF-EV-REP-WS04-000018

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Methodology	Project Plan Site Code
Gradiometer (Magnetometer) Survey	2a20UUZNMG

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1 Executive Summary

1.1.1 This document comprises a Final Report for a non-intrusive geophysical survey on the route of the proposed Phase 2a of High Speed Two (HS2) covering land proposed for development or likely to be impacted during the scheme as part of the Early Environmental Works (EEW) package. This report contains the results of a magnetometer survey undertaken on 11th February 2022 at Site 306 within Group 008.

1.1.2 The aim of the survey is to establish the presence/absence, extent and character of detectable archaeological remains within the proposed route of HS2 Phase 2a. The scope of the surveys is dependent upon securing access to the land and for the areas to be suitable for survey.

1.1.3 Site 306 is located 4.5km north-east of Stafford, to the north-west of Tixall Park Pool and west of Ingestre Wood. The site includes four separate parcels connected by corridors to the north and south of Hanyards Lane measuring c. 3.8ha. Only the parcels required geophysical survey totalling approximately 2.0ha.

1.1.4 The central works area of Site 306 partially lies within a Recognised Archaeological Zone (RAZ) which relates to past occupation along the route of Hanyards Lane. Settlement has been recorded at Upper Hanyards since the 13th century and Hanyards Lane acted as a vital conduit between Stafford and Ingestre.

1.1.5 The survey has not identified any anomalies of definite or possible archaeological origin. The results of the survey are limited to linear trend anomalies representing modern agricultural trends or identifying the location of field drains. Occasional discrete low magnitude and dipolar 'spike' anomalies likely have natural or modern causes and are of no archaeological interest.

1.1.6 It remains unclear whether the spread of magnetic disturbance across the central parcel of the Site adjacent Upper Hanyards Farm could be a result of previous activity or since demolished structures associated with the farm or possibly the tipping/infilling of a former extraction site identified in LiDAR and aerial photographs of the site.

1.1.7 The surveys have not recorded any anomalies which could relate to heritage features previously identified in the HS2 ES, Staffordshire HER or from LiDAR data/aerial photographs associated with medieval and post-medieval settlement activity or eighteenth and nineteenth century landscaping, which lead to the designation of Recognised Archaeological Zones (RAZ) 14 and 15 across parts of the Site.

2 Introduction

2.1 Project Background

2.1.1 HS2 is a new railway network proposed by the Government to provide a new link between London, the West Midlands, the East Midlands, South Yorkshire, Leeds and Manchester. HS2 Phase 2a comprises approximately 36 miles of railway starting at Fradley at its southern end and connects with the West Coast Main Line (WCML), south of Crewe, to allow HS2 services to join the existing network and call at Crewe Station.

2.1.2 The overall framework within which archaeological work will be undertaken is set out in the draft Environmental Minimum Requirements (EMR) for HS2 Phase 2a. Accordingly, the nominated undertaker or any contractors will be required to implement certain control measures in relation to archaeology before construction work begins.

2.1.3 The works have been undertaken in accordance with Written Scheme of Investigation (WSI, HS2 2019a) and conform with current best practice and guidance for geophysical surveys as outlined in the Chartered Institute for Archaeologists' (CIfA) Standard and Guidance for archaeological geophysical survey (CIfA 2014) and European Archaeologiae Consilium Guidelines for the use of Geophysics in Archaeology (EAC 2016).

2.1.4 The selection of areas required for geophysical survey included as part of this Early Environmental Works (EEW) package are set out in location specific Written Scheme of Investigations (WSIs) based on Groups containing individual sites. HS2 Ltd has provided each EEW site along the Phase 2a route with a unique identifier Site Code.

2.1.5 Within EEW Group 008 (HS2 2021) the Site Code for geophysical survey is:
• Site 306: 2a20DUPHMG

2.2 Scope of Document

2.2.1 This report presents a brief description of the methodology followed by the detailed survey results and the archaeological interpretation of the geophysical data.

2.3 The Site

2.3.1 The four parcels which constitute Site 306 are situated to the north and south of Upper Hanyards Farm at Brancote roughly 4.5km north-east of Stafford, centred on NGR 405818 321125 (Figure 1). Approximately 1km separates the northern and southernmost parcels at this Site which are connected by access corridors along Upper Hanyards Lane and Fords Bet which are not required for survey. The four parcels requiring geophysical survey total approximately 2.0ha.

2.3.2 The northernmost parcel situated between Ingestre Wood and Lambert's Coppice is an irregular shape occupying the south-western extent of an arable field which contained a young crop at the time of survey. The survey area is bound by a stone wall along its western boundary, woodland to the north and south, and the remainder of the arable field to the east. Modern OS

indicates a gentle north-westward slope from a height of c.140m aOD (above Ordnance Datum), along the southern boundary of the works area, to c.130m aOD, along the northern boundary of the survey area.

2.3.3 The southernmost survey area adjacent to Tixall Park Pool is a sub-rectangular shape occupying the north-west corner of an arable field also under young crop at the time of survey. Tixall Park Pool lies to the south-east and the watercourse leading to it runs through the northern half of the site. Modern Ordnance Survey mapping indicates that there is a north-eastward slope across the site, descending to the course of the tributary stream approximately 270m to the southwest, from a height of c.100m aOD to c.95m aOD.

2.3.4 The survey area adjacent to Upper Hanyards farm is an irregular shape occupying a small sub-rectangular arable field, a parcel of dense woodland and a horse school field. The arable and horse school field contained a fallow maize crop being used as bird cover and short-grazed pasture respectively. The field containing the maize crop was largely unsuitable for survey. Modern OS mapping indicates that this parcel sits on the north-eastern edge of the stream valley. There is a south-westward slope toward the stream from a height of c.129m aOD along the eastern Site area boundary to c.120m aOD along the western works area boundary.

2.3.5 The solid geology across the central and southern parts of the Site is recorded as sandstone (pebbly, gravelly) of the Helsby Sandstone Formation. The bedrock geology of the northmost parcel situated between Ingestre Wood and Lambert's Coppice is recorded as mudstone of the Mercia Mudstone Group. No superficial deposits are recorded across the Site (BGS 2021).

2.3.6 The soils covering the central and southern parcels of the site area classified in Soilscape 6 Association, being described as freely draining slightly acid loamy soils. The soils covering the northernmost parcel adjacent Ingestre Wood are classified in Soilscape 8 Association as slightly acid loamy and clayey soils with impeded drainage (Cranfield University 2020).

2.3.7 Average responses of magnetometer surveys over some sandstones and mudstone are generally poor but results can be very variable depending on the nature and depth of overlying deposits (English Heritage 2008; Table 4). It remains that magnetometry was the most appropriate geophysical technique for evaluating the Site taking account of the limitations noted in Section 4.3 below.

3 Archaeological Background

3.1 Summary of the archaeological resource

3.1.1 The following archaeological background summarises details from the Location Specific Written Scheme of Investigation (LSWSI, HS2 2021) together with information from publicly available online resources and other in-house resources.

3.1.2 The assessment and determination of the significance of archaeological assets is defined by Chapter 10 of the HS2 Ltd EIA Scope and Methodology Report (HS2 2017a).

3.1.3 The Recognised Archaeological Zones (RAZ) represent a high-level indication of likely concentrations of archaeological remains across the Phase 2a route. The location and spatial extent of RAZs has been determined using HS2 Environmental Statement (ES) Cultural Heritage information (HS2 2017b) and subsequent survey data.

3.1.4 The HS2 Phase 2a GWSI: HERDS document identifies the southern survey area of Site 306 as falling with Recognised Archaeological Zone RAZ14. It covers an area that falls within the historic extent of the landscape parks attached to the Ingestre and Tixall estates. Extensive cropmarks provide evidence of the medieval and post-medieval landscapes that preceded the creation of the extensive parklands in the eighteenth and nineteenth centuries.

3.1.5 The HS2 Phase 2a GWSI: HERDS document identifies the central survey area of Site 306, adjacent to Upper Hanyards Farm, as falling within a Recognised Archaeological Zone (RAZ), specifically RAZ15. RAZ15 relates to past occupation along the route of Hanyards Lane. Documentary evidence cites a settlement within the Upper Hanyards area from the thirteenth century, however, as Hanyards Lane acts as a vital conduit between Stafford and Ingestre earlier activity may have taken place here.

3.1.6 The HS2 ES (2017b) and Staffordshire Historic Environment Record (HER) has identified six known archaeological assets within or immediately adjacent to Site 306, they comprise:

- Upper Hanyards Farm (COY077), a post-medieval farmhouse, adjacent to the central works area, with a complex of modern large agricultural buildings. The farm is set in an open agricultural landscape. Earliest record of a settlement in the Hanyards area comes from the Domesday Book. The farm has also been extant in the earliest mapping of the area. Although the farmhouse is not designated it would likely be of moderate significance.
- Within the works area adjacent to Upper Hanyards Farm, evidence of post-medieval quarrying has been revealed through LiDAR and aerial photography

(HER MST13076 / COY078). These remains would likely be of low significance.

- The HER records documentary evidence for the site of a sandstone quarry at Lower Hanyards in the 19th century (HER MST13075). This is located immediately adjacent to the site access, to the southwest of Lower Hanyards Farm. Associated evidence would be of low significance.
- The northernmost survey area falls with the indicative area of a 17th century landscaped park associated to Ingestre Hall (HER MST5986 / COY144). Extant evidence of the park boundaries and/or landscaping activities would likely be of low significance.
- The southernmost parcel adjacent to Tixall Park Pool, falls within the indicative area of a former 16th century deer park, later a landscaped pleasure park (Tixall Park) associated with Tixall Hall (HER MST5985 / COY149). Extant evidence of the park boundaries and/or landscaping activities would likely be of low significance.
- Extensive cropmarks (COY066) within the footprint of the former Tixall Park (COY149), marking the alignment of enclosure boundaries, presumably removed when the park was created in the early post-medieval period. The southern parcel falls within this area, and evidence is considered to be of low significance.

3.1.7 Ingestre Estate mapping from the 19th century illustrates the northern area of the site as lying on or just within the estate boundary.

3.1.8 The Tixall Estate map of 1833 shows the southern works area as being within parkland and adjacent to the Park Pool, as referred to above as MST5985 / COY149. It also shows the central works area as incorporating fields around Upper Hanyard.

3.1.9 Historic Ordnance Survey (OS) mapping from the late 19th and early 20th century shows a landscape comparable to that seen today, though with the extent of Tixall Park being clearly marked. No other unrecorded assets of potential interest are recorded on available historic mapping.

3.1.10 CA 2: Colwich to Yarlet: Cultural heritage survey report (HS2 2017c) noted that no geophysical survey work has been undertaken within the immediate vicinity of the EEW Group area, nor is any advised to have been subsequently undertake to date.

3.1.11 LiDAR/Remote sensing survey/aerial photography data (HS2 2017c) identified features in the EEW Group area which comprise:

- Aerial Photography ID 97: An area of possible medieval/ post-medieval ridge and furrow has been identified within the southern works area, adjacent to Tixall Park Pool. If extant these remains would likely be of low significance.

- Aerial Photography ID 99: An area of possible post-medieval quarrying within the central works area, adjacent to Upper Hanyards Farm, with a potential spoil-heap bank along the feature's southern extent. If extant these remains would be

of likely be of low significance.

- Aerial Photography ID 100: A large area of possible medieval/ post-medieval ridge and furrow which overlaps with the northern extent of the works area adjacent to Upper Hanyards farm, and with the south, south-western extent of the northern-most works area, adjacent to Lambert's Coppice and Ingestre Wood. If extant these remains would likely be of low significance.

- LiDAR ID 2004: Immediately south-west of the northern-most work area is a faint, sinuous linear feature thought to represent a former post-medieval field boundary. The sinuous nature of the depression may imply that the boundary followed the course of a former water feature. If extant, remains would likely be of low significance.

- LiDAR ID 2156: A large depression within the works area adjacent to Upper Hanyards farm. The feature contains a flat area representing a possible sub-rectangular enclosure or platform, with a bank at the northern edge. Situated to the south of Upper Hanyards Farm. The feature corresponds with the position of a small enclosure and 'Old Quarry' depicted by late 19th and early 20th century Ordnance Survey maps. If extant, remains would likely be of low significance.

4 Methodology

4.1 Magnetometry

Magnetic survey methods rely on the ability of a variety of instruments to measure very small magnetic fields associated with buried archaeological remains. A feature such as a ditch, pit or kiln can act like a small magnet, or series of magnets, that produce distortions (anomalies) in the earth's magnetic field. In mapping these slight variations, detailed plans of sites can be obtained as buried features often produce reasonably characteristic anomaly shapes and strengths (Gaffney and Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Annex 1 and Annex 2 respectively.

4.2 Aims and Objectives

4.2.1 The aims of the survey comprise the following:

- To determine, as far as is reasonably possible, the nature of the detectable archaeological resource within a specified area using appropriate methods and practices; and
- To inform either the scope and nature of any further archaeological work that may be required; or the formation of a mitigation strategy (to offset the impact of the development on the archaeological resource); or a management strategy.

4.2.2 In order to achieve the above aims, the objectives of the geophysical survey are:

- To conduct a geophysical survey covering as much of the specified area as possible, allowing for on-site obstructions;
- To clarify the presence/absence of anomalies of archaeological potential; and
- Where possible, to determine the general nature of any anomalies of archaeological potential.

4.3 Assumptions and limitations

Magnetometry is the most widely used geophysical survey technique in archaeology as it can quickly evaluate large areas and, under favourable conditions, identify a wide range of archaeological features including infilled cut features such as large pits, gullies and ditches, hearths, and areas of burning and kilns and brick structures. It is therefore good at locating settlements of all periods, prehistoric field systems and enclosures and areas of industrial or modern activity, amongst others. It is less successful in identifying smaller features such as post-holes and small pits (except when using a non-standard sampling interval), unenclosed (prehistoric) settlement sites and graves/burial grounds. Magnetometry has the potential to

rapidly confirm the presence/absence of a wide range of potential archaeological remains within the site and was thus chosen as the most appropriate technique in this instance.

4.4 Fieldwork Methodology

4.4.1 The survey was undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid carrying frame. The system was programmed to take readings at a frequency of 10Hz (allowing for a 10-15cm sample interval) on roaming traverses (swaths) 4m apart (Figure 1). These readings were stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system was linked to a Trimble R8s Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point, in accordance with EAC guidelines (EAC 2016).

4.4.2 Unenclosed areas were surveyed using the co-ordinates of the pre-determined Site boundary visible as an outline on the MLGrad601 software during data collection.

4.4.3 MLGrad601 (Geomar Software Inc.) software was used to collect the data.

4.5 Data processing

4.5.1 Data collected using RTK GPS-based methods cannot be produced without minimal processing of the data. The minimally processed data has been interpolated to project the data onto a regular grid and de-striped to correct for slight variations in instrument calibration drift and any other artificial data.

4.5.2 A high pass filter has been applied to the greyscale plots to remove low frequency anomalies (relating to survey tracks and modern agricultural features) to maximise the clarity and interpretability of the archaeological anomalies.

4.5.3 The data has also been clipped to remove extreme values and to improve data contrast.

4.5.4 MultiGrad601 (Geomar Software Inc.) software was used to export the survey data files.

4.5.5 Terrasurveyor V3.0.37.0 (DWConsulting) software was used to process and export graphical plots the data.

5 Geophysical Survey Results and Interpretation

5.1 Gradiometer survey results and interpretation

5.1.1 The magnetometer survey was carried out on the 11th February 2022 and covered an area of 2.0ha.

5.1.2 Fully processed (greyscale) data, minimally processed data (XY trace plot) and interpretative plans are presented at a scale of 1:1,100 in Figures 2 – 10 inclusive.

5.1.3 The magnetic background where visible is homogenous across the four parcels likely a result of the underlying mudstone and sandstone geologies.

5.1.4 In the northernmost parcel faint linear and curvilinear trend anomalies identify agricultural trends parallel to the modern field boundaries. Other slightly higher magnitude linear anomalies likely identify field drains. Discrete spike anomalies are also randomly spread throughout and magnetic disturbance at the north-western boundary is caused by a low electric fence.

5.1.5 The central parcel west of Upper Hanyards Farm has recorded a large spread of magnetic disturbance across both fields. The spread of magnetic 'noise' possibly identifies an area of tipping/infilling to improve the drainage or level parts of the field. The survey team did not identify anything on the surface of this pasture field to account for the magnetic response.

5.1.6 At the southern parcel adjacent Tixall Park Pool findings are limited to discrete spike anomalies and magnetic disturbance at the north-western boundary close to a track.

6 Discussion

6.1.1 The survey has not identified any anomalies of definite or possible archaeological origin. The results of the survey are limited to linear trend anomalies representing modern agricultural trends or identifying the location of field drains.

6.1.2 It remains unclear whether the spread of magnetic disturbance across the central survey area adjacent Upper Hanyards Farm could be a result of previous activity or since demolished structures associated with the farm or possibly the tipping/infilling of a former extraction site identified in LiDAR and aerial photographs of the site (HS2 2017c; LiDAR ID 2156).

6.1.3 No magnetic anomalies have been detected in any of the parcels which could represent ridge and furrow or former park boundaries and/or landscaping activities associated with the neighbouring Tixall or Ingestre Estates previously identified in LiDAR data and/or aerial photographs.

6.2 The surveys at this Site have not recorded any anomalies which could relate to heritage features previously identified in the HS2 ES, Staffordshire HER or from LiDAR data/aerial photographs associated with medieval and post-medieval settlement activity or eighteenth and nineteenth century landscaping which lead to the designation of RAZ's 14 and 15.

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Annex 1: Magnetometer survey

Magnetic susceptibility and soil magnetism

Iron makes up about 6% of the earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haematite. These minerals have a weak, measurable magnetic property termed magnetic susceptibility. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms so that by measuring the magnetic susceptibility of the topsoil, areas where human occupation or settlement has occurred can be identified by virtue of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently comes to fill features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of the topsoil, subsoil and rock, into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected.

The magnetic susceptibility of a soil can also be enhanced by the application of heat. This effect can lead to the detection of features such as hearths, kilns, or areas of burning.

Annex 2: Geophysical Interpretation

Most anomalies are termed 'positive'. This means that they have a positive magnetic value relative to the magnetic background on any given site. However, some features can manifest themselves as 'negative' anomalies that, conversely, means that the response is negative relative to the mean magnetic background.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended. It should be noted that anomalies interpreted as modern in origin might be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories that are used in the graphical interpretation of the magnetic data:

Isolated dipolar anomalies (iron spikes)

These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being introduced into the soil during manuring.

Areas of magnetic disturbance

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.

Lightning-induced remnant magnetisation (LIRM)

LIRM anomalies are thought to be caused in the near surface soil horizons by the flow of an electrical current associated with lightning strikes. These observed anomalies have a strong bipolar signal which decreases with distance from the spike point and often appear as linear or radial in shape.

Linear trend

This is usually a weak or broad linear anomaly of unknown cause or date. These anomalies are often caused by agricultural activity, either ploughing or land drains being a common cause.

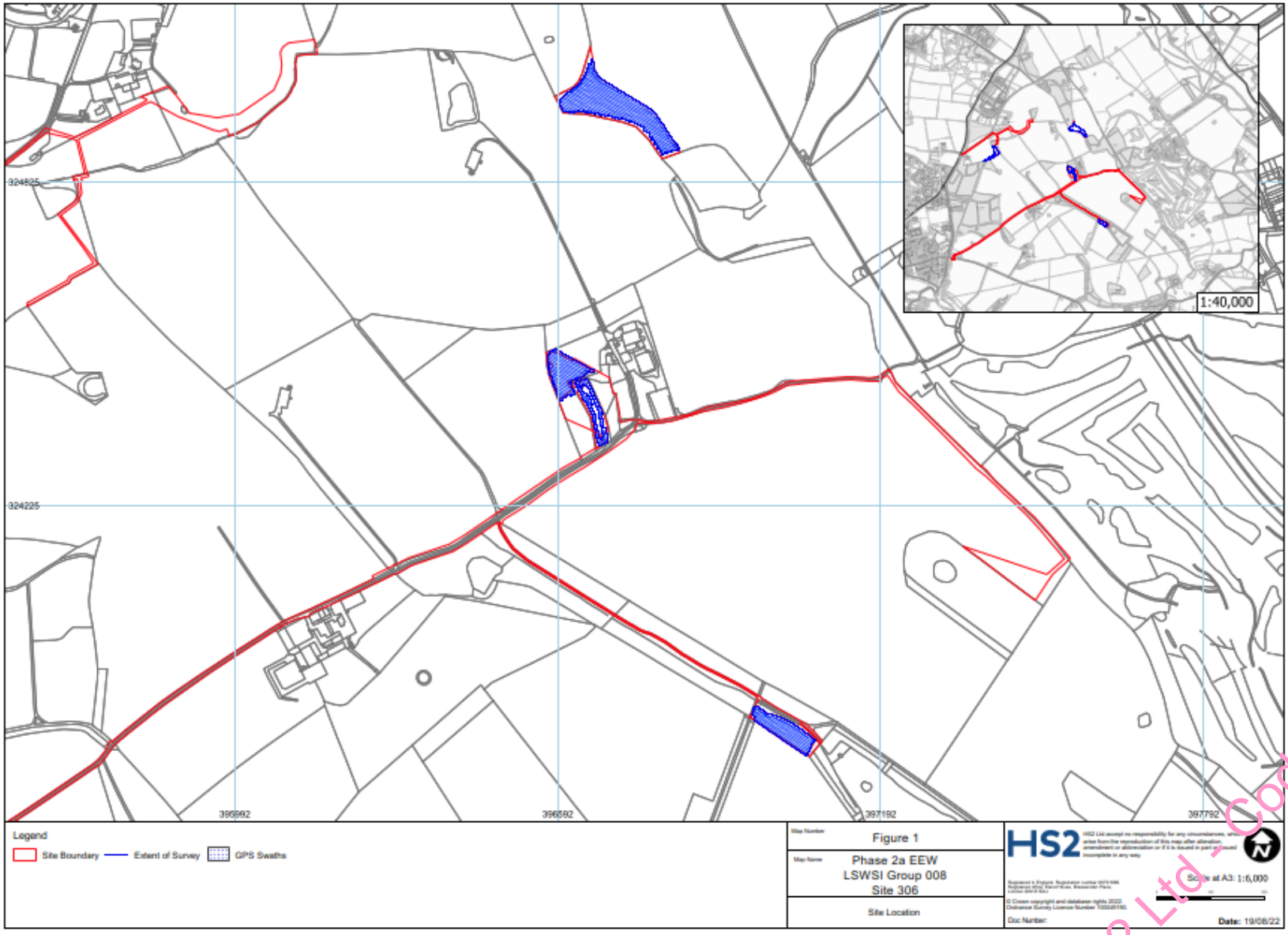
Areas of magnetic enhancement/positive isolated anomalies

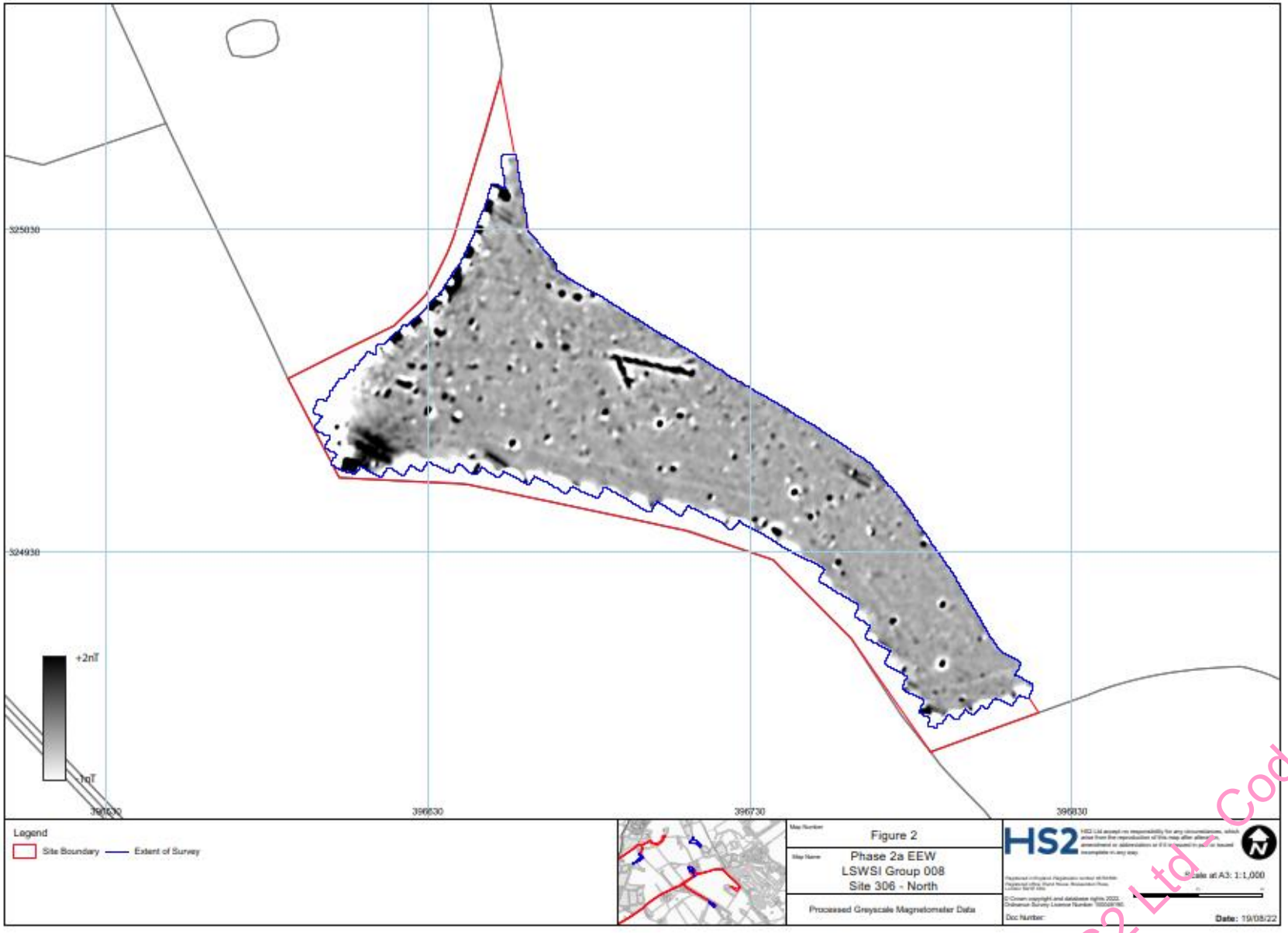
Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response (sometimes only visible on an XY trace plot) on two or three successive traces. In neither instance is there the intense dipolar response

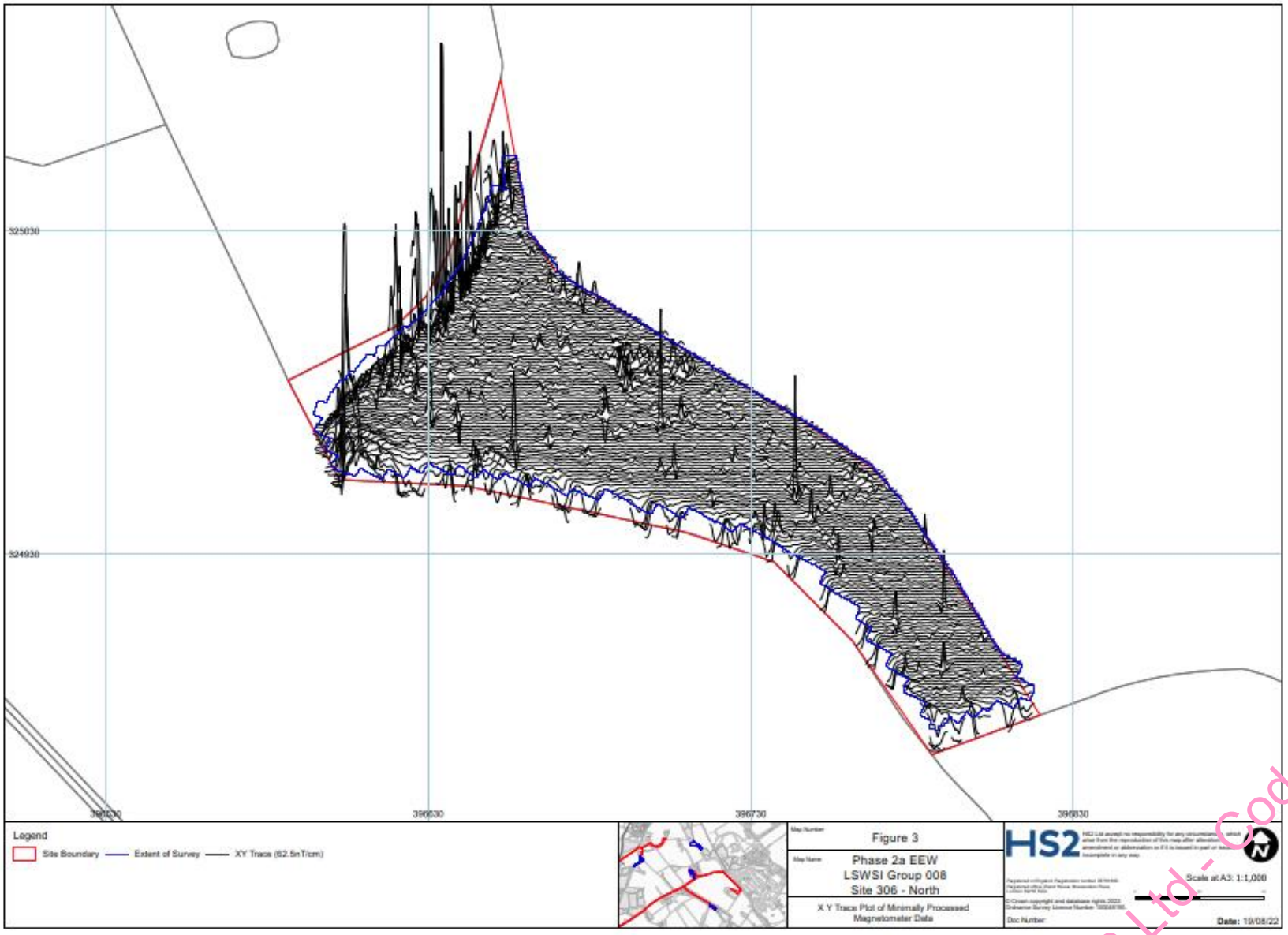
characteristic exhibited by an area of magnetic disturbance or of an 'iron spike' anomaly (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post-holes or by kilns. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

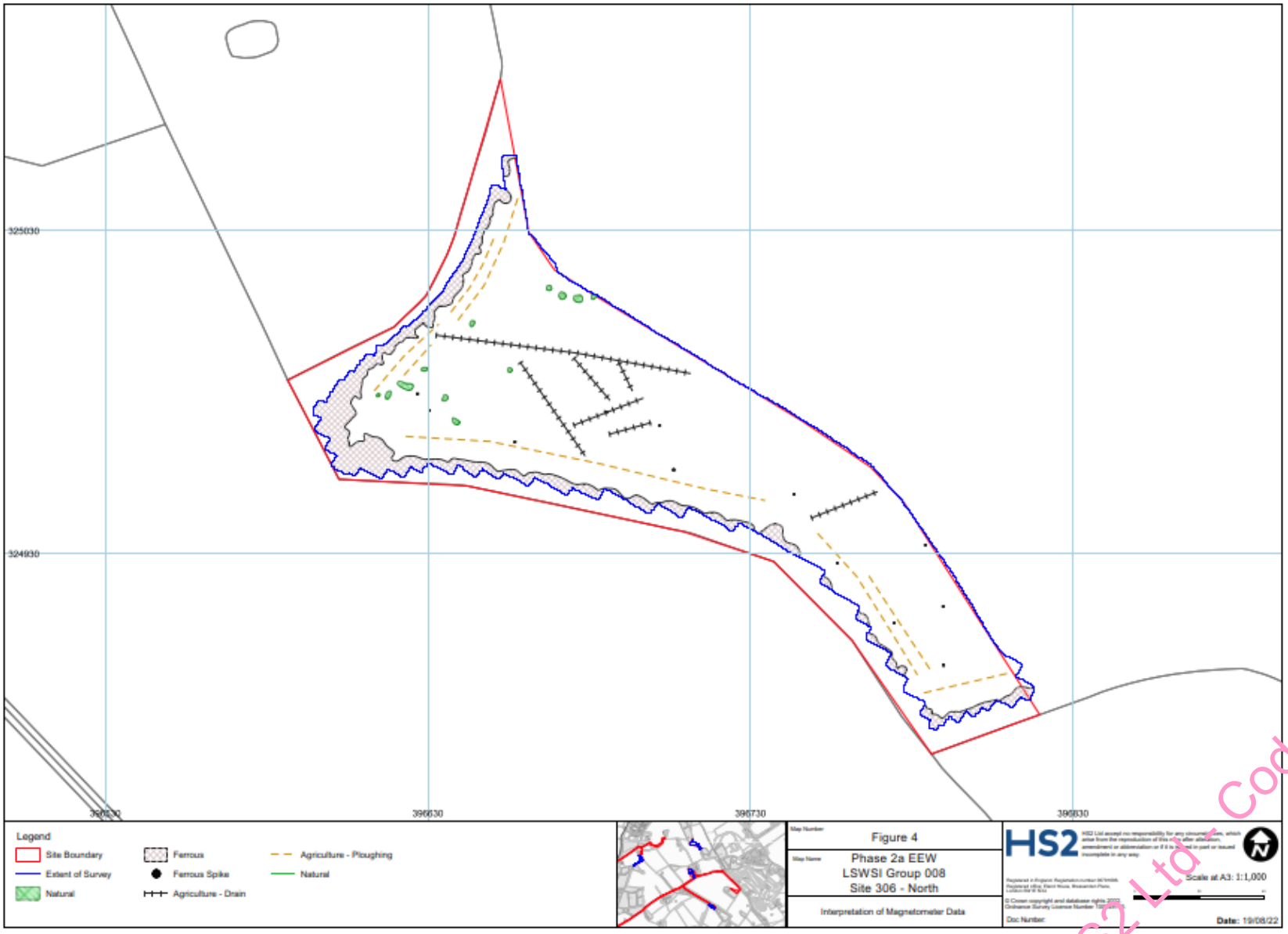
Linear and curvilinear anomalies

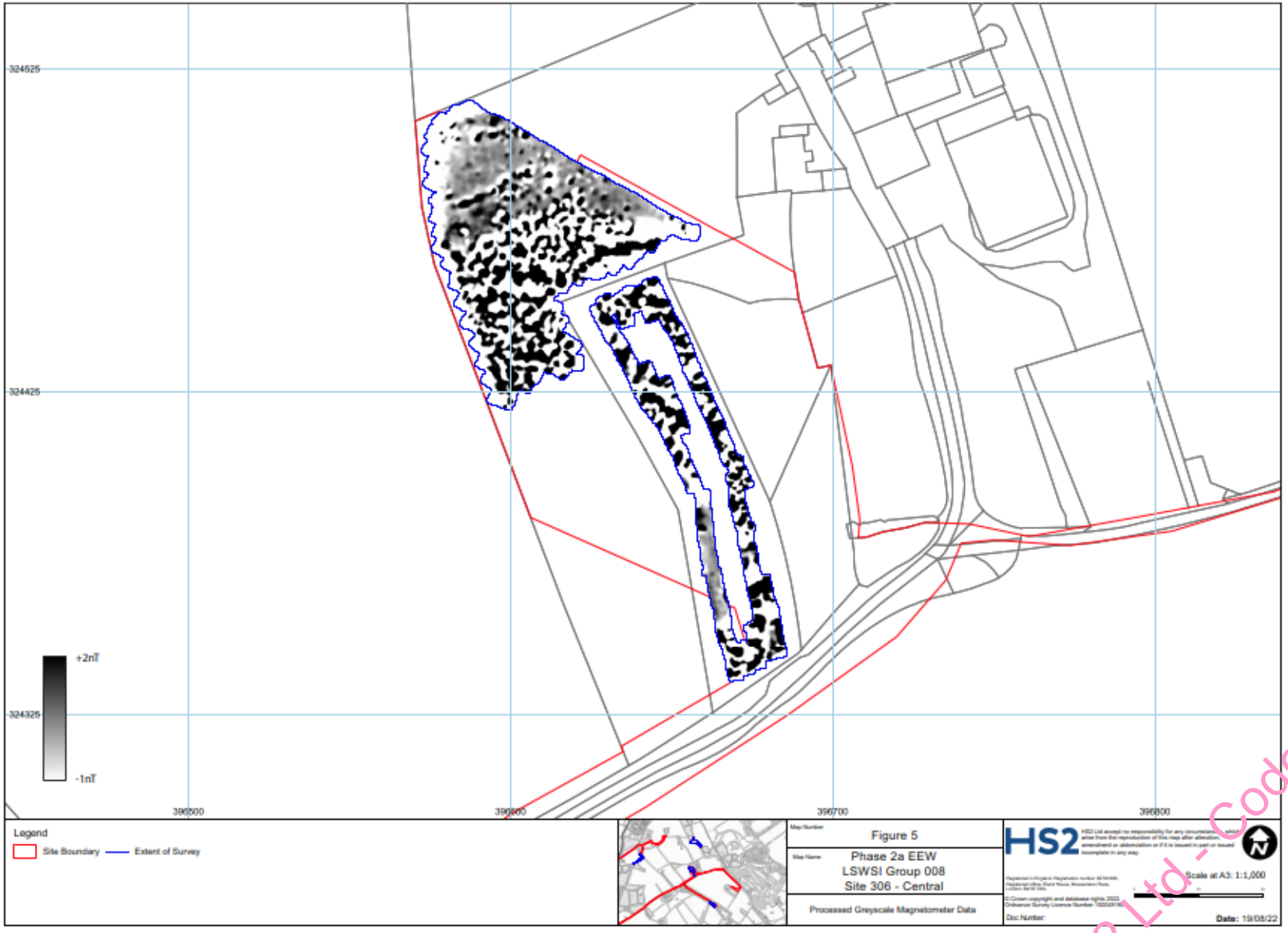
Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches

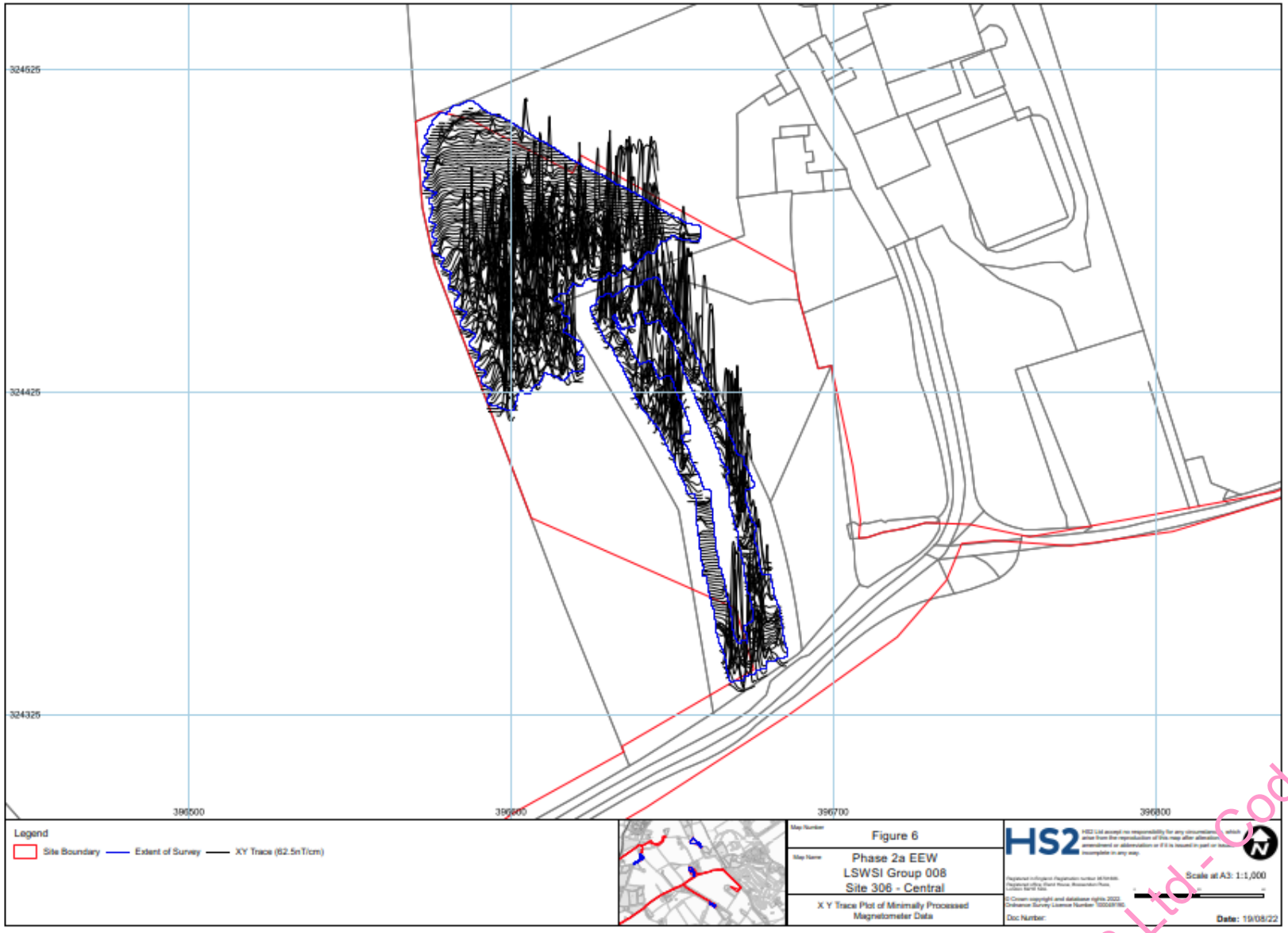


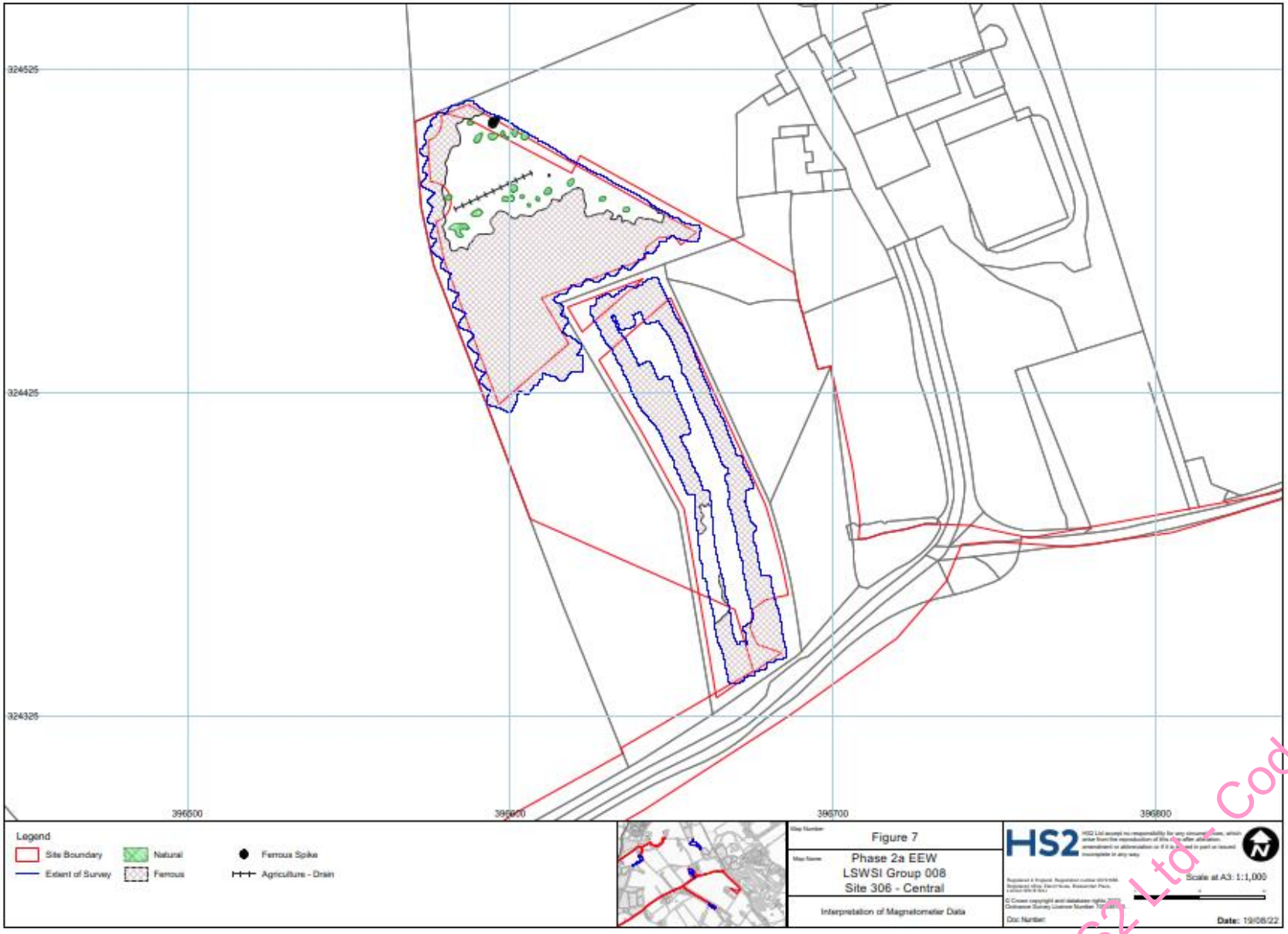


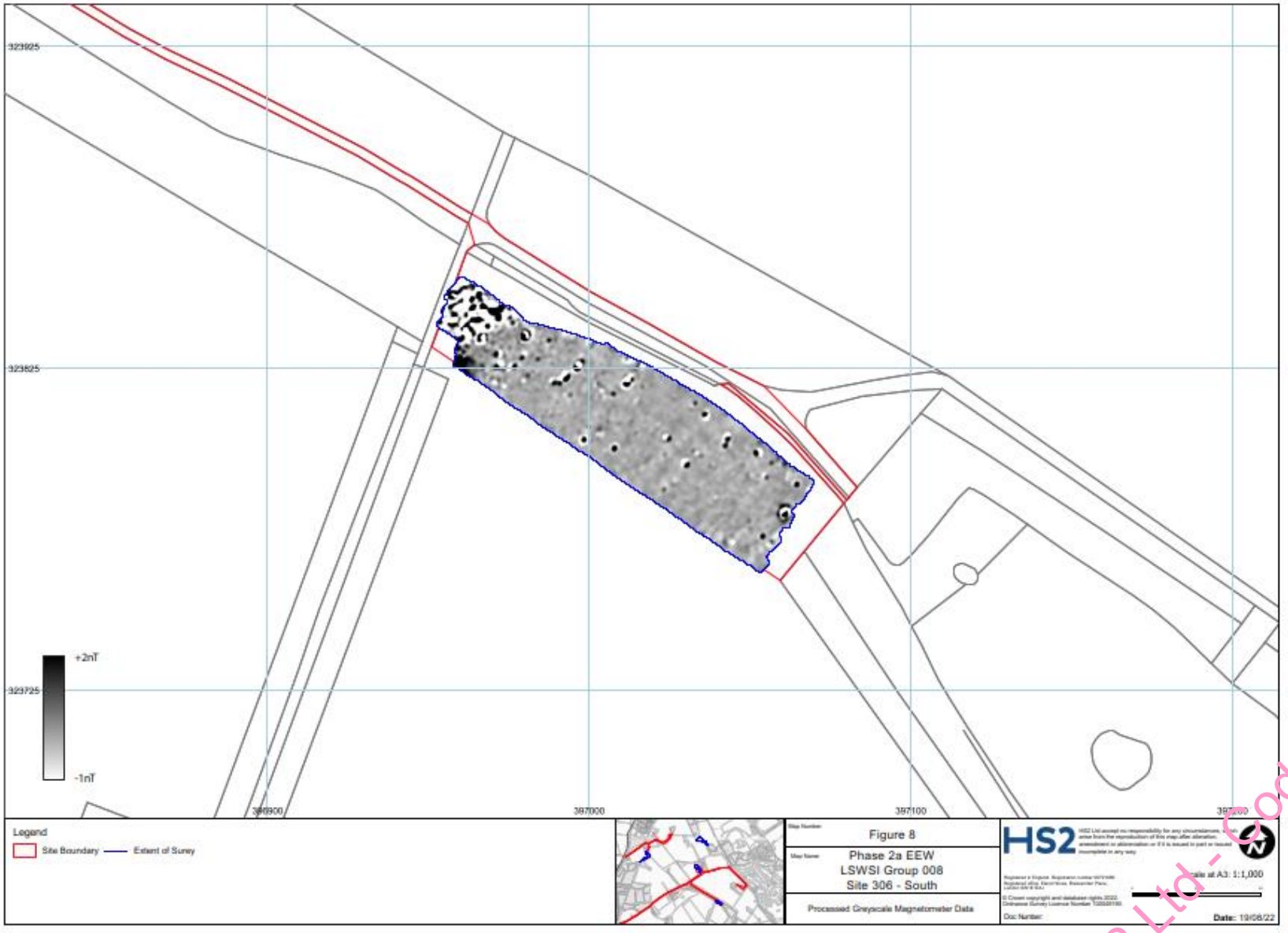


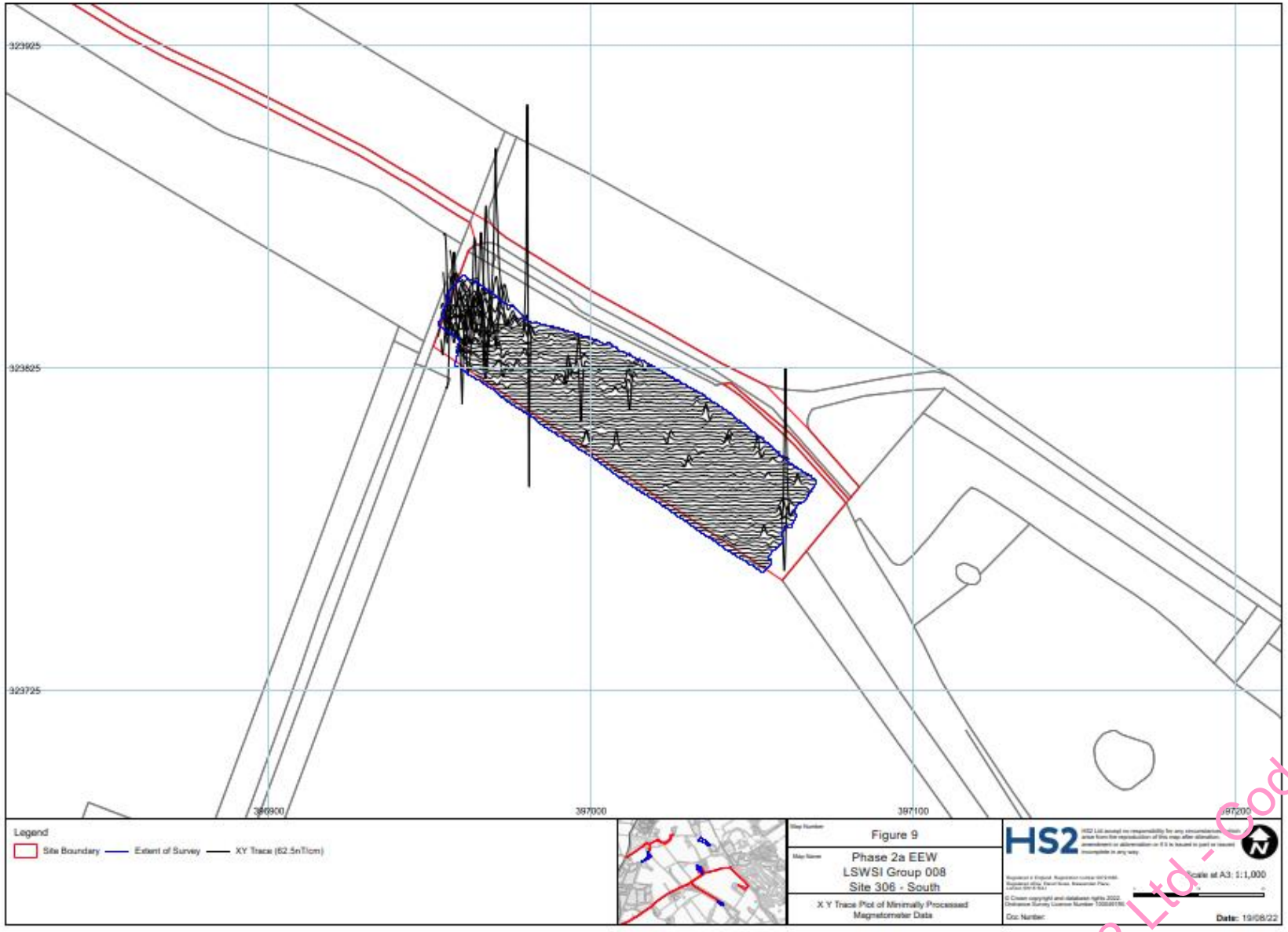


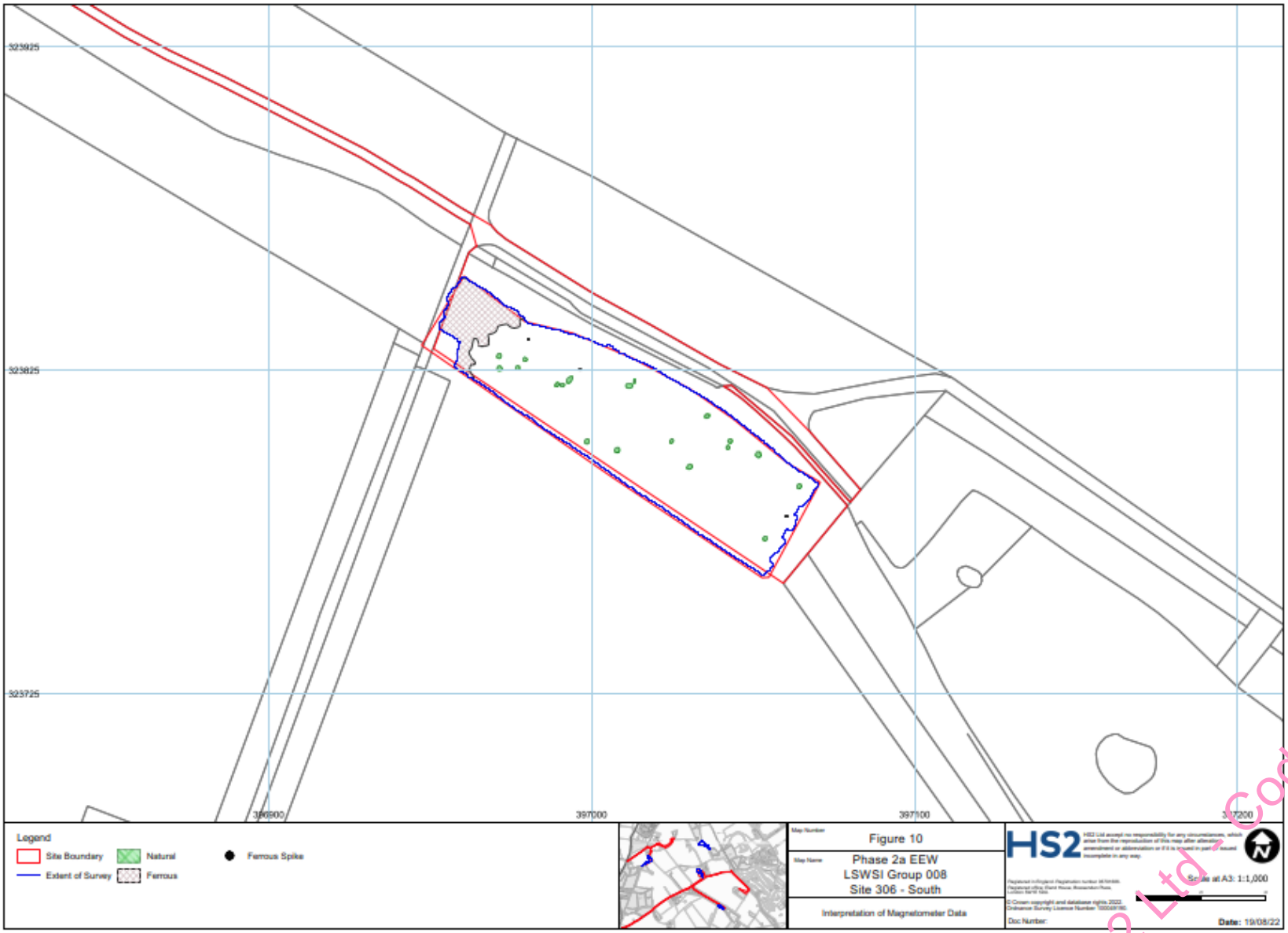












Annex 3: OASIS Form

Project Details:

Project name	Geophysical Survey at Group 008 Site 306
Type of project	Geophysical Survey, MAGNETOMETRY SURVEY
Project description	The survey was undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid carrying frame. The system was programmed to take readings at a frequency of 10Hz (allowing for a 10-15cm sample interval) on roaming traverses (swaths) 4m apart. These readings were stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system was linked to a Trimble R8s Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point, in accordance with EAC guidelines (EAC 2016). The survey has not identified any anomalies of definite or possible archaeological origin. The results of the survey are limited to linear trend anomalies representing modern agricultural trends or identifying the location of field drains. Occasional discrete low magnitude and dipolar 'spike' anomalies likely have natural or modern causes and are of no archaeological interest. It remains unclear whether the spread of magnetic disturbance across the central parcel of the Site adjacent Upper Hanyards Farm could be a result of previous activity or since demolished structures associated with the farm or possibly the tipping/infilling of a former extraction site identified in LiDAR and aerial photographs of the site. The surveys have not recorded any anomalies which could relate to heritage features previously identified in the HS2 ES, Staffordshire HER or from LiDAR data/aerial photographs associated with medieval and post-medieval settlement activity or eighteenth and nineteenth century landscaping,

		which lead to the designation of Recognised Archaeological Zones (RAZ) 14 and 15 across parts of the Site.			
Project dates		**Start:** 11-Feb-2022		**End:** 11-Feb-2022	
Previous work		N/A			
Future work		N/A			
Project Code:	Group 008 Site 306	**HER event no.**			

		NMR no.		**OASIS form ID:**	hs2headl1-509421
		SM no.			
Planning Application Ref.					
Site Status	None				
Land use	Arable and Pasture				
Monument type	N/A		**Period**	N/A	

Project Location:

Site Address	The northernmost parcel situated between Ingestre Wood and Lambert's Coppice The southernmost survey area adjacent to Tixall Park Pool is a sub-rectangular shape occupying the north-west corner of an arable field The survey area adjacent to Upper Hanyards farm is an irregular shape occupying a small sub-rectangular arable field, a parcel of dense woodland and a horse school field			**Postcode**	
County	Staffordshire	**District**	Stafford	**Parish**	Tixall, Hopton and Coton
Study Area	2ha	**Height OD**	Between 95 and 140m Above Ordnance Datum	**NGR**	SJ 96697 24962 SJ 96630 24432 SJ 97016 23815

Project Creators:

Name of Organisation	HS2 Headland Archaeology (UK) Ltd		
Project brief originator	HS2	**Project design originator**	HS2

Project Manager	Alistair Webb	**Project Supervisor**	Matt Berry
Sponsor or funding body	Balfour Beatty	**Type of Sponsor**	Client

Project Archive and Bibliography:

Physical archive	N/A	**Digital Archive**	Geophysical survey and report	**Paper Archive**	N/A
Report title	Phase 2a Heritage Non-intrusive Surveys Report: Group 008 Site 306 Geophysics survey report			**Date**	31/10/2022
Author	Headland Archaeology	**Description**	PDF/A	**Report ref.**	