

**Archaeological geophysical survey  
at Light Hall Farm, Solihull  
West Midlands  
March 2020 and February 2022**

**Report No. 22/018**

Author: John Walford

Illustrator: Adam Meadows



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<b>Project: Solihull, Light Hall Farm</b>		<b>OASIS No: molanort1-505331</b>	
<b>ACTIVITY TYPE</b>			
Project/Activity type	Geophysical survey		
Reason for investigation	Planning: Pre-application		
Development type	Residential / Housing		
Planning reference ID	-		
<b>PROJECT LOCATION</b>			
National grid ref	SP 127 768		
Site name	Solihull, Light Hall Farm		
<b>REVIEWERS/ ADMIN</b>			
HER for project	Warwickshire HER		
National organisation	Historic England		
<b>WORK UNDERTAKEN</b>			
Methodological summary	Magnetometer survey with a cart-mounted array of Bartington Grad-01-1000L fluxgate gradiometers.		
Previous work?	No	Future works?	Not known
Dates - Start date:	17-03-2020	End date:	10-02-2022
<b>GEOPHYSICS</b>			
Geology	Triassic Mudstone of the Mercia Mudstone Group with drift geology of alluvium and glaciolacustrine deposits of sand, gravel, silts and clays.		
Land use (i.e. arable)	Arable, grassland and pasture		
Survey type	Magnetometer survey		
Size of survey area	c50ha		
Instrumentation	Bartington Grad-01-1000L	Fluxgate – Multiple sensor	
Configuration	Pushed cart survey		
Spatial resolution	Traverse spacing	0.8m	Reading interval 0.25m
Resolution (data values)	0.1nT		
<b>BIBLIOGRAPHY</b>			
Title	Archaeological geophysical survey at Light Hall Farm, Solihull, West Midlands, March 2020 and February 2022		
Author(s)	John Walford		
Publisher / place / date	MOLA Northampton / Northampton / 2022		
Report number	22/018		
Report release delay?	Six months		
<b>PEOPLE</b>			
Organisation	MOLA		
Project manager	John Walford		
Project supervisors	Graham Arkley and Adam Meadows		
Funding body	The Environmental Dimension Partnership (EDP)		
<b>KEYWORDS</b>			
Monuments found/ date	Undated ditch Undated pit		
<b>RESULTS</b>			
Description of outcomes	The survey detected a few possible ditches and pits, but these features were incoherently arranged and widely dispersed, and their archaeological significance was unclear. Other features, including historic field boundaries and modern pipes were also detected.		
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Accession ID	None		
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Paper Archive repository	TBC	Expected date of submission:	TBC
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# Archaeological geophysical survey at Light Hall Farm, Solihull West Midlands March 2020 and February 2022

## ABSTRACT

*MOLA (Museum of London Archaeology) was commissioned to undertake a magnetometer survey across c50ha of land at Light Hall Farm to the south-west of Solihull. The survey detected a few possible ditches and pits, but these features were incoherently arranged and widely dispersed, and their archaeological significance was unclear. Other features, including historic field boundaries and modern pipes were also detected.*

## 1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by The Environmental Dimension Partnership (EDP), on behalf of Taylor Wimpey, to undertake an archaeological geophysical survey of land at Light Hall Farm, 3.5km south-west of Solihull, West Midlands (NGR SP 127 768) (Fig 1). The aim of the survey was to identify and map any archaeological remains which may be affected by a proposed development scheme.

The survey fieldwork was conducted according to a Written Scheme of Investigation (MOLA 2020), taking account of guidelines from the Chartered Institute for Archaeologists and the European Archaeological Council (ClfA 2014 and Schmidt *et al* 2015).

The survey was commissioned in early 2020 and the fieldwork commenced on 17th March that year. However, the Covid-19 lock-down later that month forced a suspension of the fieldwork which, for various reasons, was not resumed until February 2022. During the intervening period the client changed their plans for the land and reduced the required extent of the survey down from 80ha to 50ha.

Approximately 6ha of the land surveyed in 2020 lay outside the revised, 2022 survey area (Fig 1). The results from this 'extra' survey do not feature in the main body of this report but are presented briefly in Appendix 1, for the sake of record.

## 2 BACKGROUND

### 2.1 Location, geology and topography

The survey took place across a block of arable fields and rough grassland located around Light Hall Farm, in the north-western corner of Cheswick Green parish, near Solihull. This land is partially bounded by the B4102 to the west, by Dog Kennel Lane to the north, and by a green lane to the east (Fig 1).

The individual fields in the survey area have been numbered for ease of reference, as shown on the insets to Figures 2 to 7. The numbering starts at Field 17 because Fields 1 to 16 were excluded from consideration when the survey area was reduced.

The survey area lies between 138m and 143m above Ordnance Datum, on a gentle south to south-westerly facing slope that leads down to a flat valley bottom at the

confluence of two small streams. A group of ponds lie along the northern bank of this stream.

The solid geology of the survey area comprises Triassic Mudstone of the Mercia Mudstone Group. This is concealed beneath a suite of Mid-Pleistocene glacial, glaciofluvial and glaciolacustrine deposits (mixed sand, gravel, silts and clays), with a narrow band of geologically modern alluvium in the base of the valley (BGS 2020).

## 2.2 Historical and archaeological background

The following summary is based on background information supplied to MOLA by EDP. Archaeological sites and finds are identified by their Historic Environment Record (HER) number.

An antiquarian record refers to the discovery of flint artefacts at Cheswick Green, north of The Mount, though their precise location and form are unknown (HER 1373).

No prehistoric artefacts have been recovered from within the survey area, although a number of findspots are located c1km to the south. This includes a burnt mound (10999) at Snowhill Drive. The Warwickshire HER describes this as a “*large quantity of heat-shattered stones...in a rear garden*”. This type of feature is most commonly Bronze Age in origin.

Excavations at The Mount in 1953 produced a single sherd of fine grey pottery from a gully. This was interpreted as a possible indicator for a Roman site somewhere nearby to the south (6015).

Light Hall is a Grade II listed mid-18th-century farmhouse (National Heritage List Entry No. 1076770). It is described as a three story, red brick house with tall pilasters, bay windows and a tiled roof. A medieval moated site, deserted around 1500 AD, lies just south of the farmhouse (9108).

The earliest detailed historic map of the survey area dates from 1794 and shows the land which belonged to Light Hall Farm at that time (Warwickshire Record Office ref. CR0347/5). The pattern of fields around the farm is recognisably similar to the present field pattern, though more finely sub-divided. An isolated building is depicted in the corner of a field in the east of the survey area, and the ponds near the stream are also depicted.

The Tanworth in Arden tithe map (1842) shows some amalgamation of fields compared with the 1794 map, and also suggests that the building in the east of the survey area was no longer extant. Later Ordnance Survey maps show a continued amalgamation of fields, but do not add much other information of note.

The only notable modern feature within the survey area is the remains of a Royal Observer Corps monitoring post that was in use during the Cold War (1243). This is located at the eastern edge of the survey area, in the south-eastern corner of Field 18.

### 3 METHODOLOGY

#### 3.1 Fieldwork

The magnetometer survey was undertaken with a Bartington magnetometer cart. This is a two-wheeled, lightweight sensor platform designed to be pushed by hand. It incorporates a bank of Bartington Grad-01-1000L magnetic sensors (fluxgate gradiometers), mounted along a bar aligned crossways to the direction of travel. During the 2020 stage of the survey, the cart had eight sensors at 0.5m spacing but, due to a change of standard practice, the 2022 survey was conducted with only six sensors at 0.8m spacing. Both set-ups are better than minimum 1m spacing required by the EAC guidelines (Schmidt *et al* 2015).

The cart also carries a Leica Geosystems Viva GNSS antenna, mounted on its central axis 1.02m astern of the sensors. The magnetic sensors each output data at a rate of eight readings per second and the GNSS antenna outputs NMEA format data (GGA messages) at a rate of one position per second. These two data streams are compiled into a single raw data file by MultiGrad601 logging software specifically developed for that purpose.

The magnetic sensors were calibrated ('zeroed') at the start of each day's survey to minimise heading errors and offsets in their zero values.

The cart was propelled along straight and parallel traverses across the survey area, with data logging being toggled on and off at the start and end of each traverse to avoid the collection of spurious data whilst turning. Traverse ends were marked with ranging poles to aid even coverage, and the evenness of coverage was further checked by monitoring the positional trace plotted in real time by the MultiGrad601 logging software. The typical speed of coverage was under 1.8m/s, with the effective data resolution thus approximating to better than 0.225m x 0.80m.

#### 3.2 Data processing and presentation

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

The raw survey data exhibited minor striping caused by slight mismatches in the calibration of the individual magnetic sensors (Figs 6 and 7). This was removed in TerraSurveyor by applying the median de-stripe function to runs of data from each sensor.

The processed survey data is presented in this report as greyscale raster images (range of +/-3nT, black to white) which have been rotated and scaled to fit against topographic base-mapping at a scale of 1:2500 (Figs 2 and 3). An interpretive overlay has been produced to highlight notable anomalies for discussion (Figs 4 and 5). The raw data plots are presented at a range of +/- 10nT (Figs 6 and 7).



## **4 SURVEY RESULTS**

### **4.1 Archaeology**

The survey has detected some weak magnetic anomalies which might represent pits and short sections of ditch, but these are very scattered and fragmented features and can only be interpreted tentatively as 'possible archaeology'.

Field 18 contains four very slight linear anomalies which might represent ditches, although none are especially convincing as such. Two lie closely parallel to each other, perhaps defining a trackway. The two others, which are very short, lie at right angles to each other. Nothing has been detected which might relate to the historic building which the 1794 map shows to have stood in this field (location annotated on Fig 5), but it should be noted that pre-modern building remains are often very difficult targets for magnetic survey.

Field 19 contains two linear anomalies, one of which has a right-angled bend. These most probably represent ditches, though an interpretation as drains would also be plausible. Three linear anomalies in the central part of Field 20 may likewise represent ditches, whilst in the south of the same field, beyond the ponds, there are two very small and irregular anomalies which might have an archaeological origin but are too obscure to be interpreted with any certainty.

Field 23 contains three short parallel linear anomalies which apparently represent part of a regular set of ditches or drains. These are associated with some small discrete anomalies which may represent pits. One other possible pit and one possible ditch lie further north in the same field.

Field 26 contains a small cluster of discrete positive anomalies which might represent pits and, to their west, three linear anomalies which might represent sections of ditch.

Field 27 contains one very subtle circular anomaly (Fig 2 inset) which, if a genuine feature and not just a chance pattern within the data, could conceivably represent a small ring ditch. It also contains one indeterminate ditch or drain in its south-western corner.

### **4.2 Old field boundaries**

A number of linear anomalies are interpreted as old field boundary ditches. Most of these have been positively identified by reference to historic maps, though a few are inferred interpretations based on their general character, position and relationship to known boundaries.

Many of the boundaries are represented by weak or intermittent linear anomalies, arising from the backfilled boundary ditches. In places these are augmented by linear scatters of magnetic dipoles, likely to indicate small pieces of scrap metal that accumulated at the edges of the fields or were dumped into the backfill of the ditches.

A small irregular positive anomaly close to the northern tip of Field 20 lies on the line of an otherwise undetected historic field boundary. Its significance is unclear, but it may indicate a small patch of magnetic debris within the backfilled ditch, or perhaps some other patch of disturbance such as a burnt-out tree bole.

### 4.3 Ridge and furrow and later cultivation

Sets of weak, parallel linear anomalies arising from historic ploughing occur in a number of fields. Those in Field 27 can be confidently attributed to medieval or later ridge and furrow, as they exhibit the broad spacing and gentle curves that are typical of that form of cultivation. Those in Field 21 probably also relate to ridge and furrow, though the evidence is less clear cut.

Other plough marks in Fields 22 and 23 are narrow and closely spaced, suggesting they are more recent than the ridge and furrow. Broader, but similarly straight lines in Fields 18 and 19 may represent either ploughing or field drains and are probably also post-medieval.

### 4.4 Trackways

An intense double linear anomaly in the north-western corner of Field 22 corresponds to the former line of the trackway to Light Hall Farm, as depicted on late 19th- to mid 20th-century Ordnance Survey maps.

Two very intense bands of magnetic noise extend south-east from Light Hall Farm, arising from the hardcore beds of two converging modern tracks. A similar response curving across the middle of Field 20 marks a former extension of one of the tracks, (confirmed by a 1945 aerial photograph of the site, viewable on Google Earth).

Another farm track extending across the south of Field 22, is also visible on the 1945 aerial photograph. The remains of this are represented by a diffuse spread of magnetic noise, presumably due to the track-bed material having been scattered by modern ploughing.

### 4.5 Modern services

#### ***Pipes***

A very intense linear anomaly with a broad negative halo represents a metal pipeline crossing the southern parts of Fields 19 and 20. Further pipes pass along the edges of Fields 25 and 26. The magnetic response in this area is quite complex and hard to disentangle, but it appears that one large metal pipe and three smaller pipes or drains are present.

No other definite examples of buried pipes or cables have been identified, but a few of the anomalies interpreted as 'uncertain' (sect 4.7, below) may relate to such features.

#### ***Overhead cables***

Five sets of overhead cables cross the site. One set of these is supported on metal pylons, each of which is marked in the data by a very large positive magnetic halo. The remainder are supported on wooden poles, which are typically marked by weak and diffuse magnetic dipoles arising from their metal fittings. A number of other notable ferrous anomalies lie along the route of the overheads but do not correspond to extant poles. It is possible that some of these indicate the buried footings of removed poles.

Some narrow bands of spurious data occur under the overhead lines in Field 27. These are the result of magnetic interference from the transmitted current activating a 50Hz filter on the dataloggers.

#### **4.6 Ferrous objects**

Small magnetic dipoles are widespread throughout the survey data, as is typical on most rural sites. Such anomalies are caused by metal (iron or steel) objects, most of which will be trivial pieces of agricultural scrap and other rubbish in the ploughsoil. Only a representative sample are highlighted on the interpretation figures.

There are a few areas where the magnetic dipoles are very densely clustered, forming patches of magnetic noise. Such noise is usually indicative of recently disturbed or made-up ground with a high content of modern rubbish - for instance infilled ponds, patches of hardcore consolidating boggy ground, or building rubble.

#### **4.7 Uncertain**

A few linear anomalies in Fields 26 and 27 do not appear to be archaeological in origin but are otherwise difficult to interpret with confidence. Possible causes might include a variety of drains, utility trenches, un-mapped field boundaries or other features related to modern cultivation.

### **5 CONCLUSION**

The survey results provide only very slight hints of archaeological remains in the survey area and nothing has been identified which is clear and substantial enough to be characterised as an archaeological 'site'. Taken at face value, that would indicate that the survey area is relatively devoid of archaeology. However, it is important to note that some other features - particularly the ridge and furrow - are also evidenced by very slight magnetic anomalies, and that implies that the local soils are only marginally favourable for magnetic survey.

Nothing has been detected which might relate to the remains of the historic building depicted in the south of Field 18 on the 1794 map (Fig 5). However, building remains are often very difficult targets for magnetic survey, so this finding should not be taken as conclusive proof of absence.

The survey has detected a number of former field boundaries of post-medieval date. Most of these will be of little archaeological interest, but there is one in the south-west of Field 27 (Fig 4) which appears on the 1794 map and perhaps deserves closer consideration. It defines a strip of ground along the road frontage, and it would be reasonable to speculate whether such an awkwardly narrow area would have served an agricultural purpose or whether it might have had some other function such as a roadside building plot.

Apart from the few possible archaeological features, the survey has mapped a number of modern features, including several pipelines. These should be noted as obstructions to any archaeological excavations or other groundworks which might subsequently occur.

## 6 BIBLIOGRAPHY

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Schmidt, A, Linford, P, Linford, N, David, A, Gaffney, C, Sarris, A, and Fassbinder, J, 2015 *Guidelines for the use of geophysics in archaeology: Questions to ask and points to consider*, European Archaeological Council

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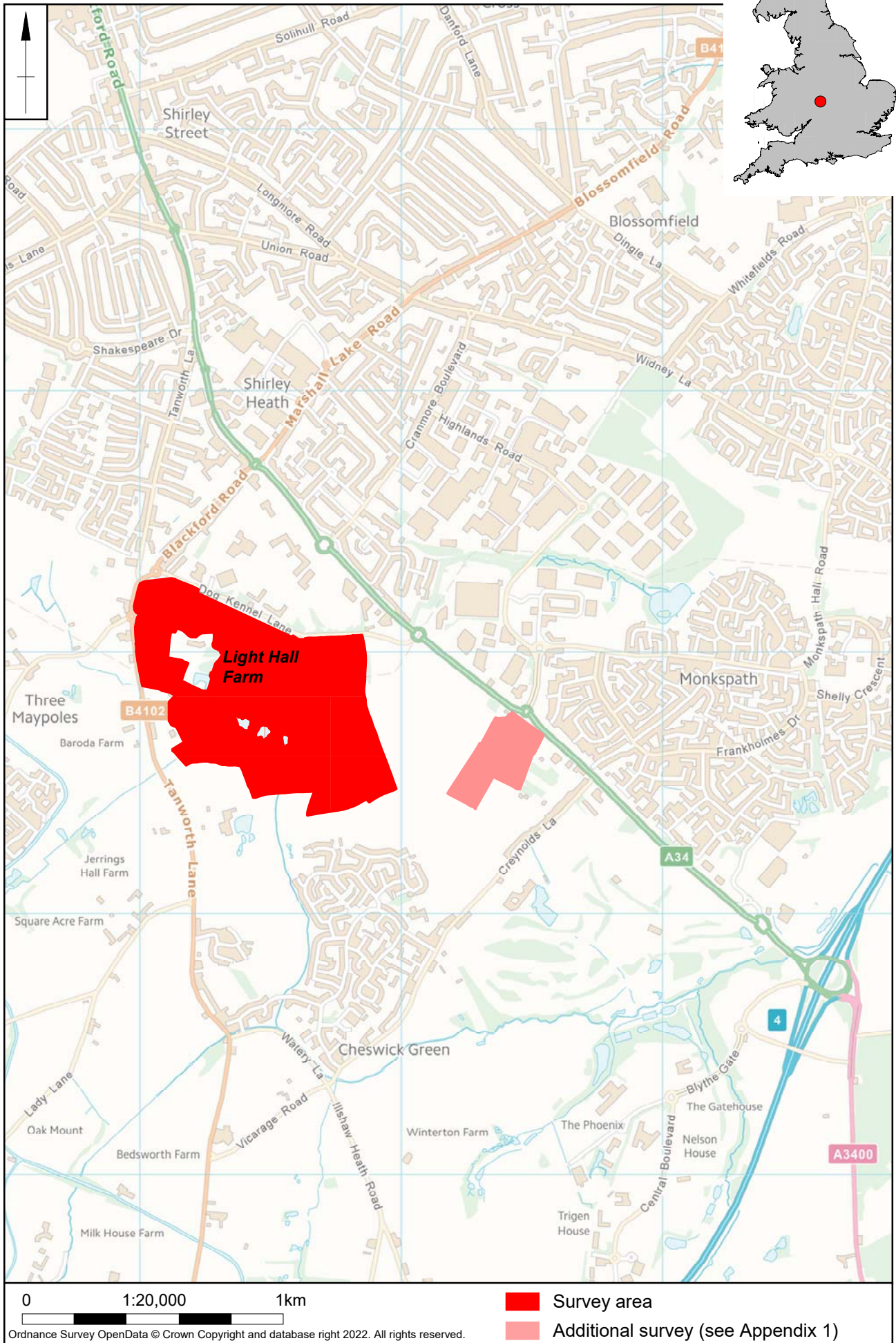
18th March 2022

## APPENDIX 1

### Additional survey results

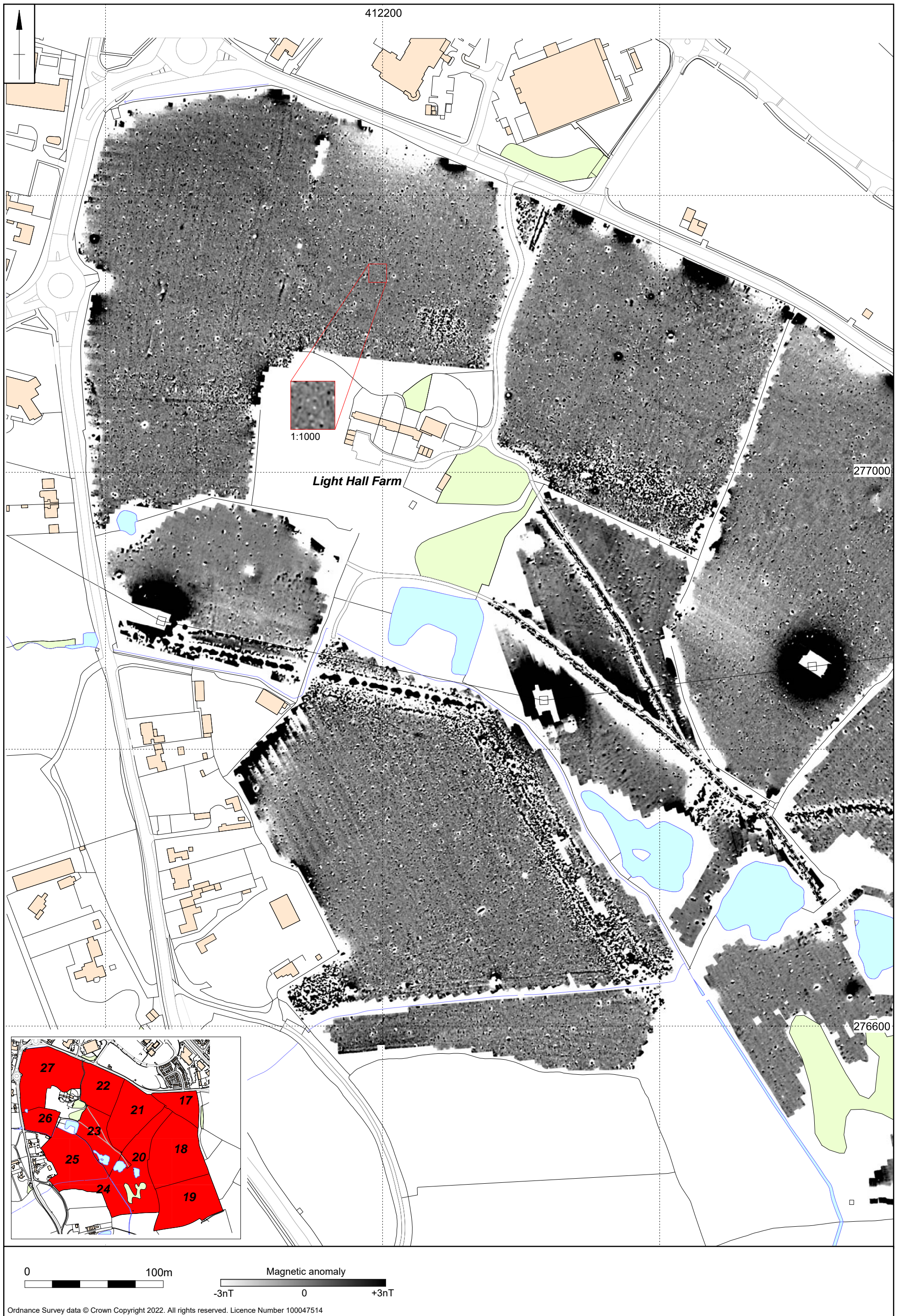
On the commencement of this survey, in March 2020, MOLA surveyed three small fields in the eastern portion of the survey area as then defined. These were centred on NGR SP 134 766 and had a combined extent of c6ha (Fig 1). When the survey area was re-defined in 2022 these fields were excluded, and as a result they are not discussed in the main body of this report. However, it was thought worthwhile to mention them in this appendix in order to provide a record of the work and to make the results available for future consideration.

The data from all three fields (Fig 8) is extremely noisy, containing a great abundance of small magnetic dipoles. This type of magnetic response is usually an indication that the fields have been manured with 'green waste' - a coarse form of compost which often contains small contaminating pieces of metallic debris and other rubbish. Little can be discerned through this noise apart from a small number of linear anomalies which cannot be interpreted with confidence but may indicate drains, field boundaries or other recent agricultural features of very limited interest (Fig 9).



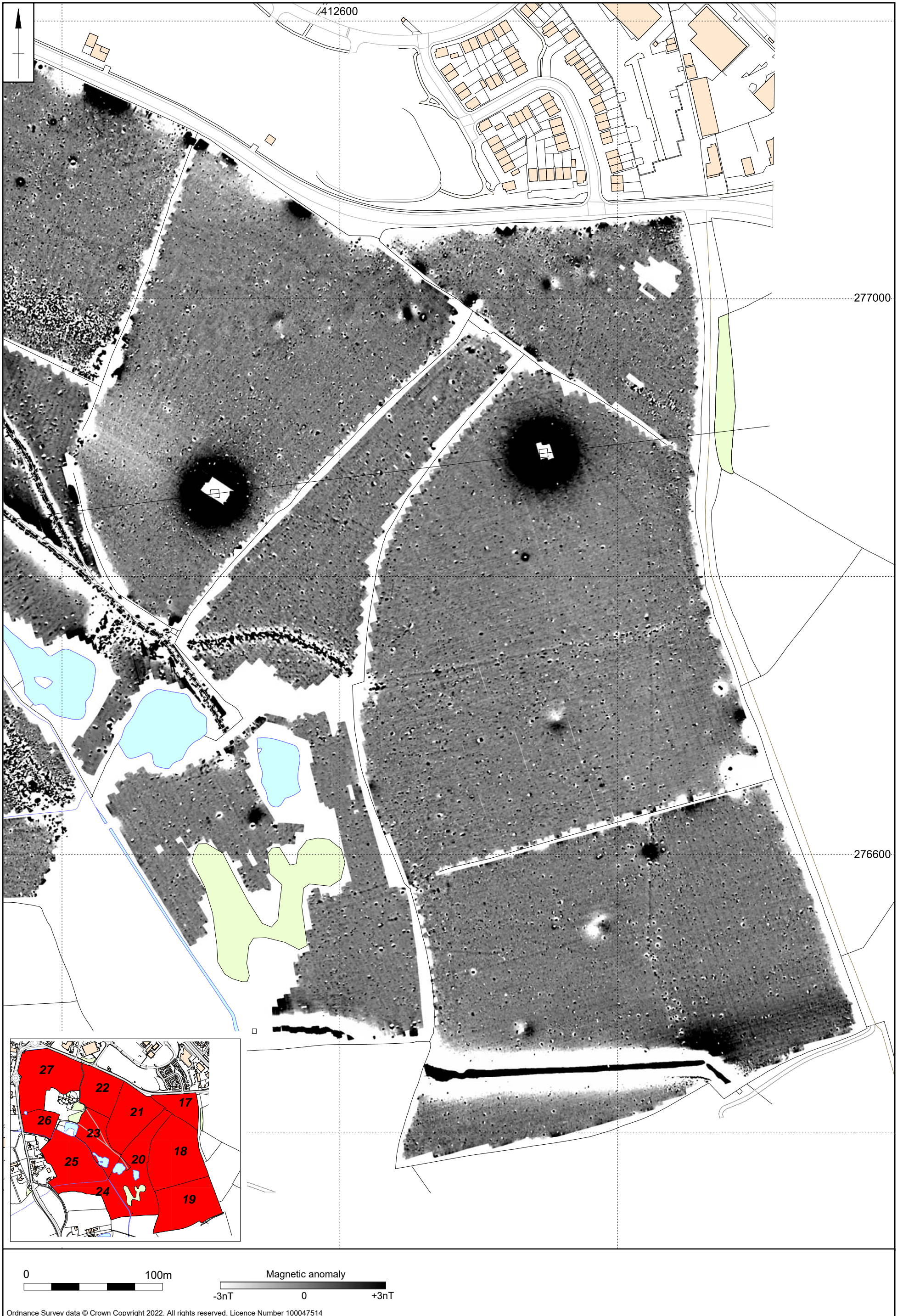
Scale 1:20,000 (A4)

Site location Fig 1



Scale 1:2500

Magnetometer survey results (West) Fig 2



Scale 1:2500

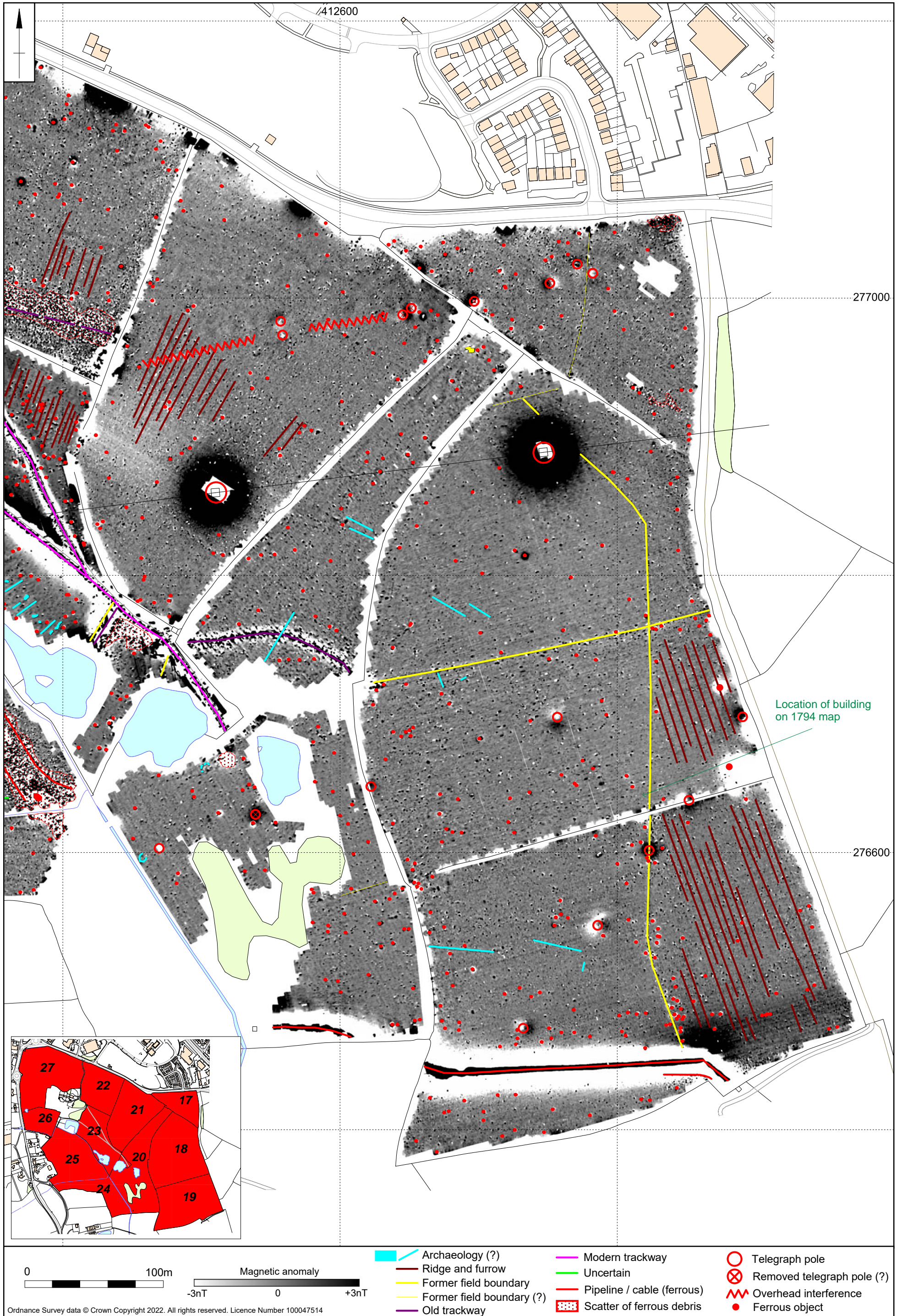
Magnetometer survey results (East) Fig 3





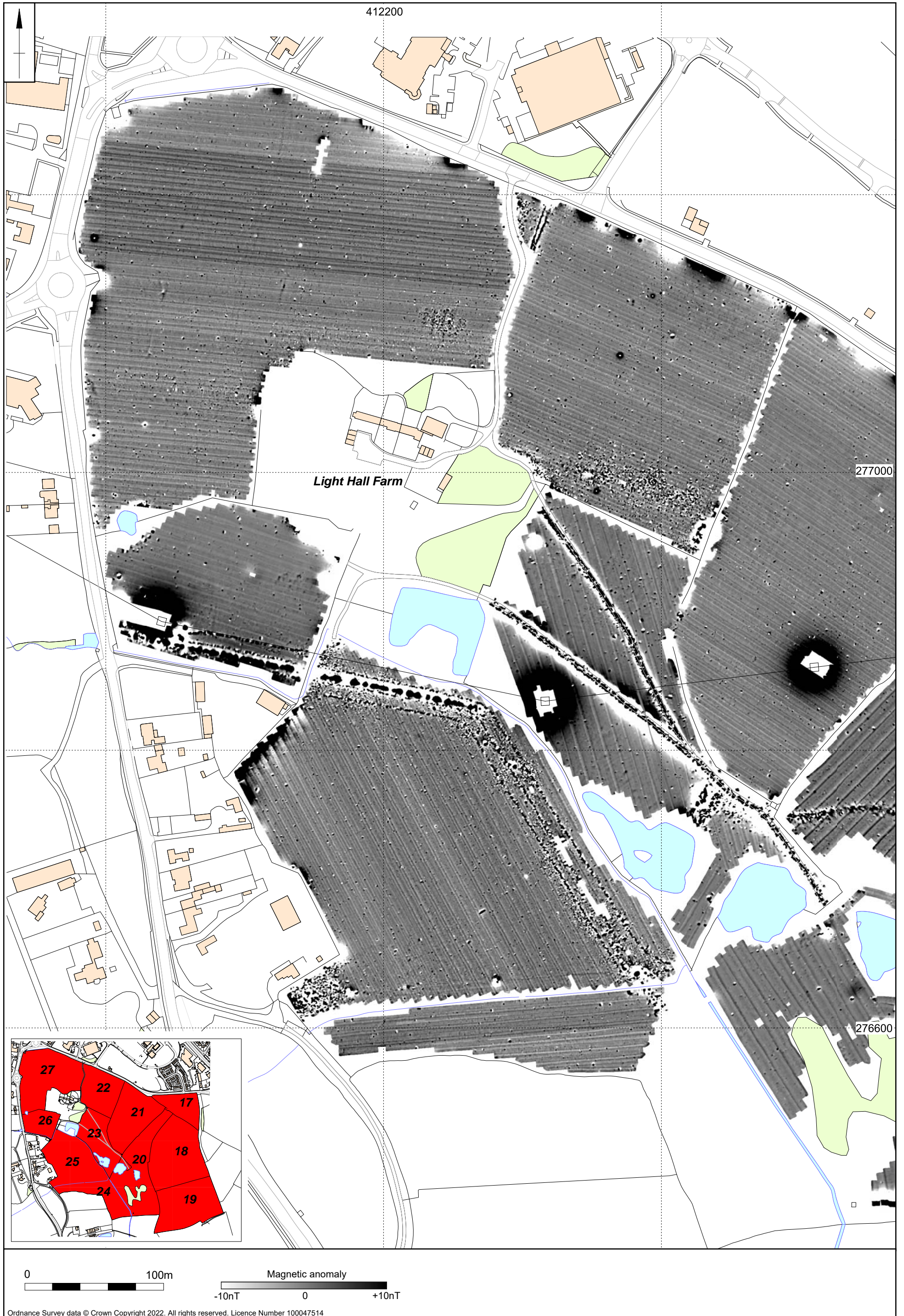
Scale 1:2500

Magnetometer survey interpretation Fig 4



Scale 1:2500

Magnetometer survey interpretation Fig 5



Scale 1:2500

Unprocessed magnetometer survey results (West) Fig 6





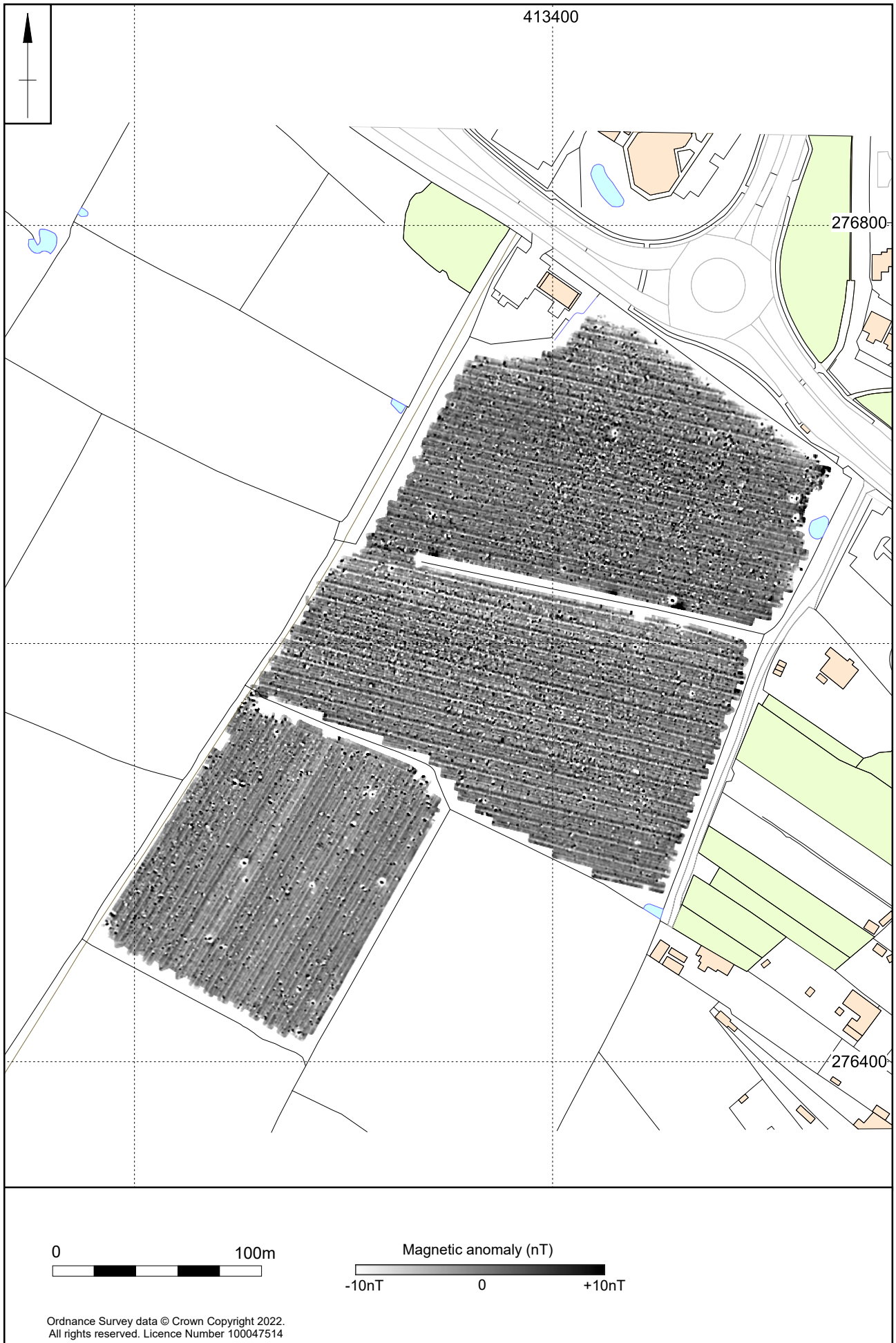
Scale 1: 2500

Magnetometer survey results (additional) Fig 8



Scale 1: 2500

Magnetometer survey interpretation (additional) Fig 9



Scale 1: 2500

Unprocessed magnetometer survey results (additional) Fig 10



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