Archaeology South-East

ASE

Detailed Magnetometer Survey on
Land South Of Moat Road, Headcorn, Kent TN27 9NT.

NGR: 582862 144365

Site Code: AMR 17
OASIS ID: archaeol6-278497

ASE Project No: 170072
ASE Report No: 2017110

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Abstract

Archaeology South-East was commissioned by Southern Water to conduct a magnetometer survey on a site totalling approximately 0.5 hectares of land south of Moat Road, Headcorn, Kent. The work was undertaken on the 3rd March 2017.

Evidence for possible archaeological features was represented by weak positive anomalies. Although these could have an archaeological origin, they may equally be the result of the natural geology.

Statement of Indemnity

Geophysical survey is the collection of data that relate to subtle variations in the form and nature of soil and which relies on there being a measurable difference between buried archaeological features and the natural geology. Geophysical techniques do not specifically target archaeological features and anomalies noted in the interpretation do not necessarily relate to buried archaeological features. As a result, magnetic and earth resistance detail survey may not always detect sub-surface archaeological features. This is particularly true when considering earlier periods of human activity, for example those periods that are not characterised by sedentary social activity.

CONTENTS

1.0 INTRODUCTION

1.1 Site background

1.1.1 Archaeology South-East (ASE) were commissioned by Southern Water to undertake a magnetometry survey on land south of Moat Road, Headcorn, Kent, hereafter 'the site' (centred on NGR 582862 144365; Figure 1).

1.1.2 Southern Water are proposing to install approximately 350m of new 300mm diameter sewer and upgrade several sections of the existing sewer network. Construction will be open dig and auger bore for siphon section under the river. It is also proposed to upgrade the storm pumps at the water pumping station (WPS) and storm pump delivery rising mains within the WPS compound may also be required.

1.1.3 Consultation between Southern Water and ASE established that the majority of the scheme involves the on-line replacement of an existing sewer beneath roads (King Road, and Mill Bank) where archaeological potential is negligible due to previous disturbance. However, a 120m section of new pipeline runs through an agricultural field between Moat Road and the WPS where potential for archaeological remains to survive is higher. In order to test the potential, it is proposed to undertake a programme of fieldwork comprising geophysical survey followed by trial trench evaluation.

1.1.4 According to the online British Geological Survey 1:50,000 mapping, the site northern third of the site lies within the Weald Clay Formation with the River Terrace Deposits present to the west and alluvium to the north.

1.1.5 ASE prepared a Written Scheme of Investigation (WSI) for the geophysical survey on behalf of Southern Water for onward submission to the Kent County Council (KCC) Archaeologist prior to the commencement of fieldwork.

1.1.6 All work was carried out in accordance with the WSI, as well as the relevant Chartered Institute for Archaeologists (CIfA) procedural documents (CIfA 2014a and 2014b).

1.2 Aims and Objectives

1.2.1 The general aim of the programme of geophysical survey was to obtain a better understanding of the archaeological potential of the site. This work will inform decisions to be made as to the need, nature and scope of any further intrusive investigations and/or mitigation measures that may be required.

1.2.2 The geophysical survey comprised a detailed magnetometer survey within all accessible areas shown on Figure 2. The survey aimed to detect any anomalies of archaeological origin that are within the boundaries of the survey area. The features detected were naturally limited to those features that produce a measurable response to the instrumentation used.

1.3 Scope of report

1.3.1 The scope of this report is to detail the findings of the survey. The project was conducted by Chris Russel and Lucy May. The project was managed by Neil

Griffin (fieldwork) and Jim Stevenson (post-fieldwork).

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 HER data

2.1.1 A 500m radius search of the KCC Historic Environment Record (HER) has been requested on 1st March 2017 the results of which will be included within the subsequent geophysical survey report and/or subsequent report/WSI for trial trenching. A summary of readily available sources consulted when ASE provided initial advice to Southern Water is provided below (ASE 2017).

2.2 Background

2.2.1 The WPS site lies just to the west of the Headcorn Conservation Area and does not contain any designated heritage assets. Cartographic sources indicate that in 1890 the area of the WPS comprised a field. The field is located adjacent to the boundary of a Grade II*Listed Building - Headcorn Manor, which is located c. 50m from the St. Peter and St Pauls Church.

2.2.2 A narrow river, connected to a pond at Moat Farm located north of the site, is indicated to the west of WPS and feeds into the River Beult, located to the south of the WPS. The pond at Moat farm is fed by the narrow river, which has clearly been re-routed to create a moat in this area.

2.2.3 The WPS is extant at the site by c. 1900 and very little, if any changes are seen in the cartographic sources to the WPS site or the immediate surrounding area from this time.

2.2.4 The Historic Town Survey of Headcorn, compiled in 2004, states that Headcorn is situated at 20m OD in the Low Weald, to the north of the river Beult. The village stands on a bed of Weald clay with alluvium around the rivers Beult and Sherway and their tributaries, and beds of river gravels. This geological sequence is also predicted by the BGS, that indicates that the site is formed of Weald Clay Formation, overlaid by superficial deposits of Alluvium and River Terrace Deposits.

2.2.5 There is limited access to the Historic Environment Record data online, however, c. 20 records are accessible within 500m of the WPS. These generally refer to medieval/early post medieval buildings in Headcorn. Reference to the discovery of a Neolithic polished axe head, c. 300m south of the WPS is also noted.

2.2.6 Online references to the discovery of four Palaeolithic flint hand axes found just north of the village is also noted, originating from the river gravel terrace.

2.2.7 Evidence is also reported of a probable farmstead that dates from the Iron Age/early Roman period, discovered by fieldwork undertaken by the Kent Archaeological Society between 1993–95 in the south of the parish. Evidence for iron smelting, in the form of iron slag, and a small cemetery with three Roman cremations in pottery vessels is reported to have been found as well as a number of ditches and part of an Iron Age date roundhouse.

2.3 The Archive

2.3.1 The digital and paper archive derived from this project will be housed at Archaeology South-East's Sussex offices and will be combined with any additional archive generated in the event of further fieldwork being required.

3.0 SURVEY METHODOLOGY

3.1 Geophysical survey

3.1.1 A fluxgate gradiometer (magnetometry) survey was undertaken across a single parcel of land, as depicted on Figure 2 (NGR 582862 144365). The work was undertaken on Friday 3rd March 2017. The weather was overcast and damp with light rain early on.

3.2 Applied geophysical instrumentation

3.2.1 The Fluxgate Gradiometer employed was the Bartington Instrumentation Grad 601-2. The Grad 601-2 has an internal memory and a data logger that store the survey data. This data is downloaded into a PC and is then processed in a suitable software package.

3.2.2 30m x 30m grids were set out on site using arbitrary co-ordinates and geo-referenced using a GPS (see below). Each grid was surveyed with 1m traverses; samples were taken every 0.25m.

3.2.3 Data was collected along north-south traverses in a zigzag pattern beginning in the south west corner of each grid, following the contours of the site.

3.3 Instrumentation used for setting out the survey grid

3.3.1 The survey grid for the site was geo-referenced using a Leica Viva Smartrover. The GPS receiver collects satellite data to determine its position and uses the mobile phone networks to receive corrections, transmitting them to the RTK Rover via Bluetooth to provide a sub centimetre Ordnance Survey position and height. Each surveyed grid point has an Ordnance Survey position; therefore the geophysical survey can be directly referenced to the Ordnance Survey National Grid.

3.4 Data processing

3.4.1 All of the geophysical data processing was carried out using TerraSurveyor published by DW Consulting. Minimally processed data was produced using the following schedule of processing. The first process carried out upon the data was to apply a DESPIKE to the data set which removes the random ‘iron spikes’ that occur within fluxgate gradiometer survey data. A ZERO MEDIAN TRAVERSE was then applied to survey data. This removes stripe effects within grids and ensures that the survey grid edges match.

3.5 Data presentation

3.5.1 Data is presented using images exported from TerraSurveyor into Autocad software and inserted into the geo-referenced site grid. Data is presented as raw and processed data greyscale plots.

4.0 GEOPHYSICAL SURVEY RESULTS

4.1 Description of site

4.1.1 The survey area was comprised of approximately 0.5 hectares of short grass pasture between Moat Road and a small water treatment works. The site comprised a narrow strip of a much larger field. To the immediate east was a roughly metalled access track and beyond that residential properties. The site was bounded to the north by Moat Road and more residential properties. Agricultural land was located to the south and west.

4.2 Survey limitations

4.2.1 No physical obstructions were encountered within the survey area (Figures 2 and 7). However, the effectiveness of magnetometer surveys depends on a contrast between the absolute magnetic susceptibility of the topsoil to the underlying subsoil (Clark 1996). Features may also be difficult to detect where there has been significant primary silting and development of significant overburden. The site lies over mudstone geology. An average response to magnetometer is possible, although results may be variable (English Heritage 2008).

4.3 Introduction to results

4.3.1 The results should be read in conjunction with the figures at the end of this report. The types of features likely to be identified are discussed below.

4.3.2 *Positive Magnetic Anomalies*
Positive anomalies generally represent cut features that have been in-filled with magnetically enhanced material.

4.3.3 *Negative Magnetic anomalies*
Negative anomalies generally represent buried features such as banks or compacted ground that have a lower magnetic signature in comparison to the background geology.

4.3.4 *Magnetic Disturbance*
Magnetic disturbance is generally associated with interference caused by modern ferrous features such as fences and service pipes or cables.

4.3.5 *Magnetic Debris*
Low amplitude magnetic debris consists of a number of dipolar responses spread over an area and is indicative of ground disturbance.

4.3.6 *Dipolar Anomalies*
Dipolar anomalies are positive anomalies with an associated negative response. These anomalies are usually associated with discreet ferrous objects or may represent buried kilns or ovens.

4.3.7 *Bipolar Anomalies*
Bipolar anomalies consist of alternating responses of positive and negative magnetic signatures. Interpretation will depend on the strength of these responses; modern pipelines and cables typically produce strong bipolar responses.

4.3.8 *Thermoremanence*
Thermoremanence is most commonly encountered through the magnetizing of clay through the firing process although stones and soils can also acquire thermoremanence.

4.3.9 Magnetism from ferromagnetic materials (iron) and from thermoremanence are forms of permanent magnetism and in most cases a magnetometer will not enable the separation of anomalies into the two categories. The interpretation of these anomalies into either category relies on field strength within an area. Magnetic anomalies due to iron normally rise and fall rapidly, forming a 'spike' in the data.

4.4 Interpretation of fluxgate gradiometer results (Figures 3-6)

4.4.1 The interpretation of fluxgate gradiometer results should be read in conjunction with the figures at the end of the report. Specific examples of anomaly types may be numbered in the figures and text but not all anomalies are numbered.

4.4.2 Evidence of possible archaeological activity within the survey results is somewhat lacking. There is a group of weak positive anomalies in the south of the survey area (light green, Figure 5) that are ovoid in nature. These may represent buried archaeology but are more indicative of geological features.

4.4.3 Magnetic disturbance relating to nearby services and extant metal fences are visible along the northern extent of the survey area and in the very south, (coloured brown; Figure 5). There is also disturbance associated with the adjacent track in the east.

5.0 CONCLUSIONS

5.1 Discussion

5.1.1 Evidence for possible archaeological features was represented by weak positive anomalies (coloured green on Figure 5) in the south of the survey area. Though they could have an archaeological origin, they are more indicative of natural geology. The features are not represented on either modern or historic cartography.

Bibliography

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CIfA 2014b, *Code of Conduct*

Clark, A. 1996. *Seeing Beneath the Soil.* (2nd edition). London: Routledge.

English Heritage 2008. *Geophysical Survey in Archaeological Field Evaluation 2nd Edition* Swindon: English Heritage

Acknowledgements

Archaeology South-East would like to thank Southern Water for commissioning the survey.

HER Summary

HER enquiry number	N/A					
Site code	AMR 17					
Project code	170072					
Planning reference						
Site address	Land south of Moat Road, Headcorn.					
District/Borough	Kent					
NGR (12 figures)	582862 144365					
Geology	Weald Clay Formation: Mudstone					
Fieldwork type					**Survey**	
Date of fieldwork	3rd March 2017					
Sponsor/client	Southern Water					
Project manager	Neil Griffin					
Project supervisor	Chris Russel					
Period summary						
Project summary	*Archaeology South-East was commissioned by Southern Water to conduct a magnetometer survey on a site totalling approximately 0.5 hectares of land south of Moat Road, Headcorn, Kent. The work was undertaken on the 3rd March 2017.* *Evidence for possible archaeological features was represented by weak positive anomalies (coloured green on Figure 5). Though they could have an archaeological origin, they may equally be the result of the natural geology.*					
Museum/Accession No.	N/A					

OASIS ID: archaeol6-278497

Project details	
Project name	Detailed Magnetometer Survey on Land South Of Moat Road, Headcorn, Kent
Short description of the project	Archaeology South-East was commissioned by Southern Water to conduct a magnetometer survey on a site totalling approximately 0.5 hectares of land south of Moat Road, Headcorn, Kent The work was undertaken on the 3rd March 2017.Evidence for possible archaeological features was represented by weak positive anomalies. Though they could have an archaeological origin, they may equally be the result of the natural geology.
Project dates	Start: 03-03-2017 End: 03-03-2017
Previous/future work	Not known / Not known
Any associated project reference codes	AMR 17 - Sitecode
Any associated project reference codes	170072 - Contracting Unit No.
Type of project	Recording project
Site status	None
Current Land use	Grassland Heathland 2 - Undisturbed Grassland
Monument type	NONE
Significant Finds	NONE None
Prompt	Planning condition
Solid geology	WEALD CLAY
Drift geology	Unknown
Techniques	Magnetometry
Project location	
Country	England
Site location	KENT MAIDSTONE HEADCORN A detailed magnetometry survey on land south of Moat Road, Headcorn,Kent.
Postcode	TN27 9NT
Study area	0.5 Hectares
Site coordinates	TQ 582862 144365 50.907086583542 0.251609167297 50 54 25 N 000 15 05 E Point
Height OD / Depth	Min: 20m Max: 20m
Project creators	
Name of Organisation	Archaeology South East
Project brief originator	Southern Water
Project design originator	ASE

Project director/manager	Neil Griffin
Project supervisor	Chris Russel
Type of sponsor/funding body	Southern Water
Name of sponsor/funding body	Southern Water
Project archives	
Physical Archive Exists?	No
Digital Archive recipient	local museum
Digital Contents	"none"
Digital Media available	"Geophysics","Survey"
Paper Archive Exists?	No
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Detailed Magnetometer Survey on Land South Of Moat Road, Headcorn, Kent TN27 9NT.
Author(s)/Editor(s)	Russel,C
Other bibliographic details	report No:2017110
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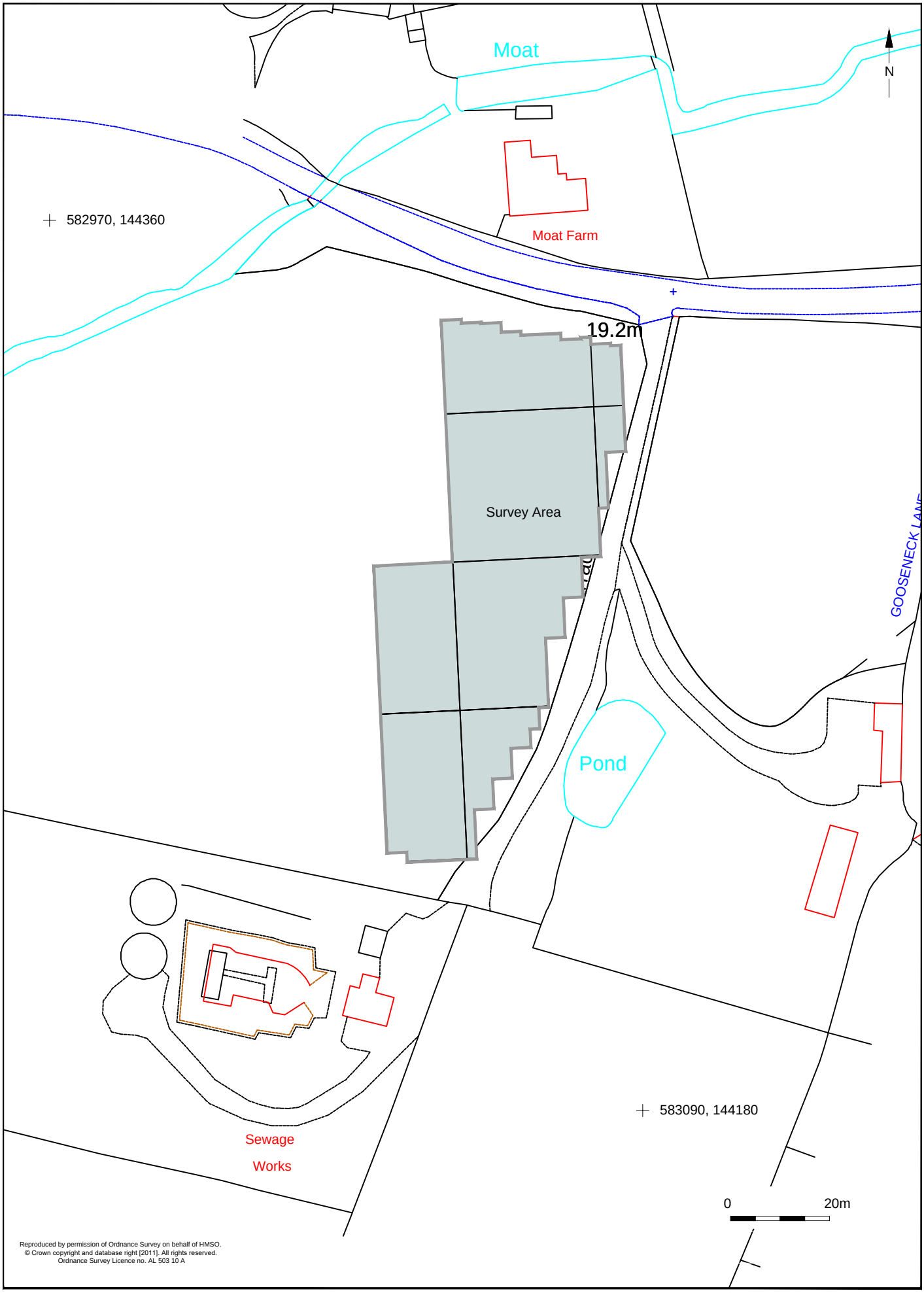
Issuer or publisher	ASE
Place of issue or publication	portslade
Entered by	chris russel (c.russel@ucl.ac.uk)
Entered on	7 March 2017

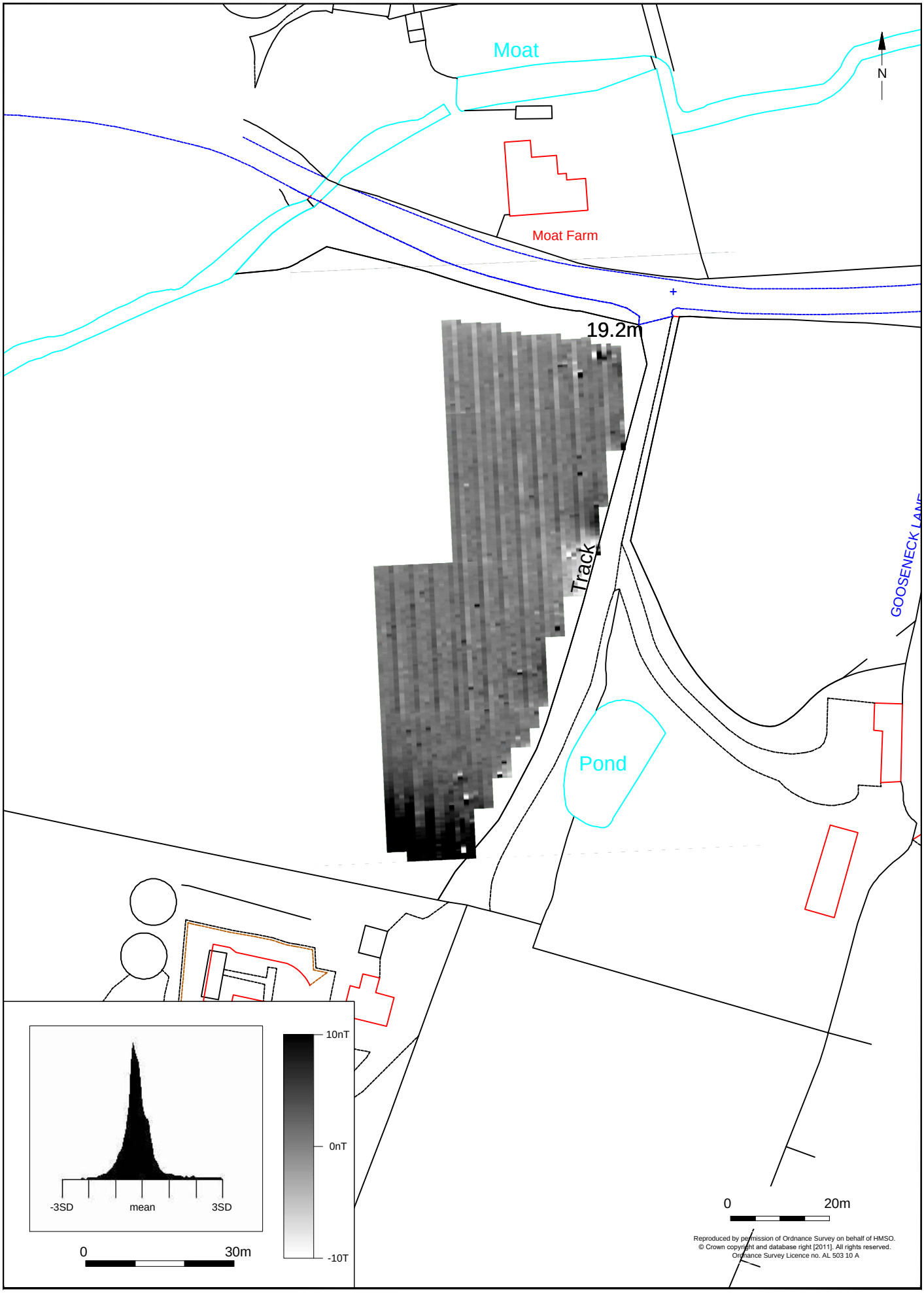
OASIS:

Please e-mail Historic England for OASIS help and advice

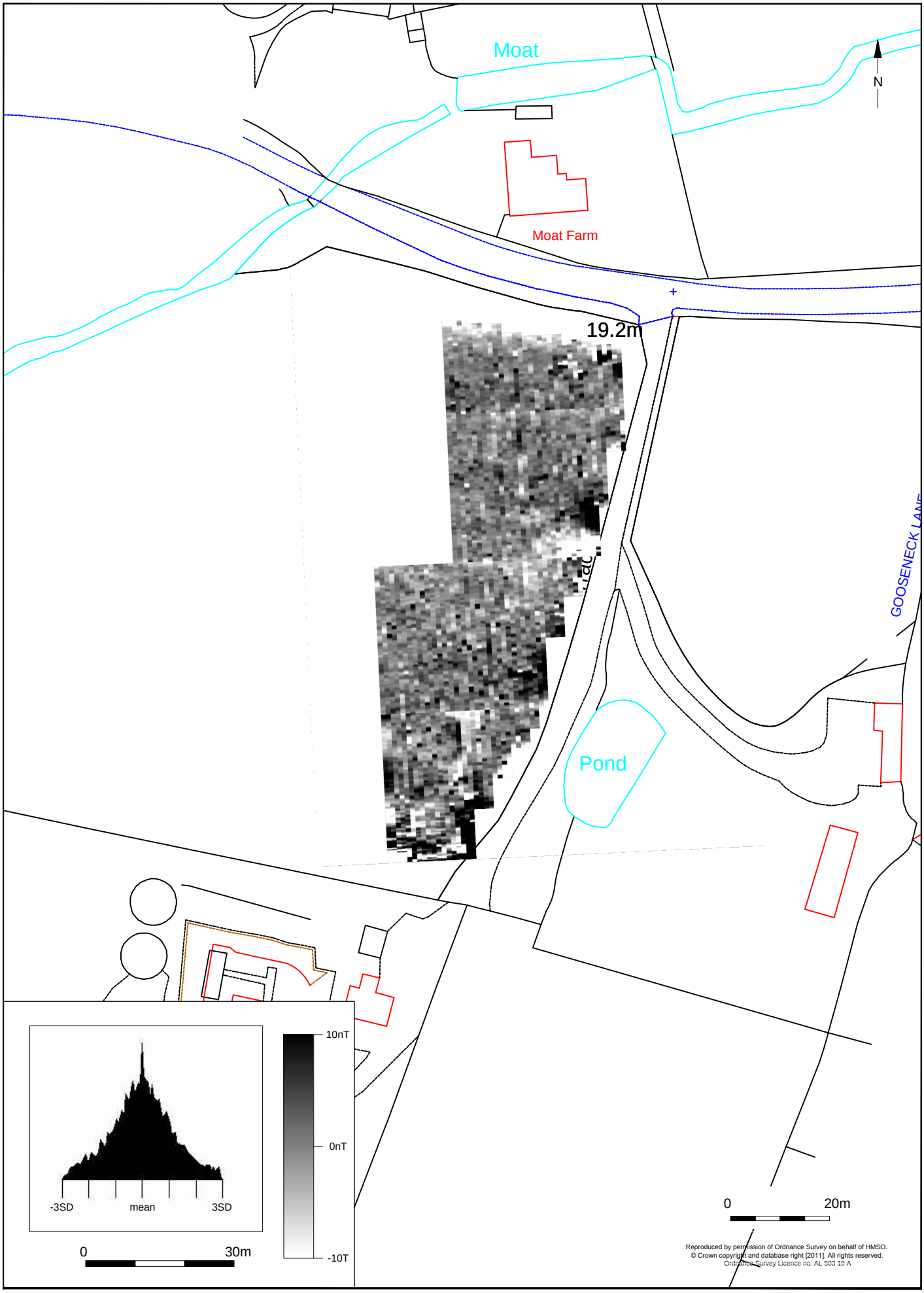
© Archaeology South-East		Land south of Moat Road, Headcorn	Fig. 1
Project Ref: 170072	March 2017	Site location	
Report Ref: 2017110	Drawn by: JC		



© Archaeology South-East		Moat Road, Headcorn, Kent	Fig. 2
Project Ref: 170072	March 2017	Location of geophysics survey area	
Report Ref: 2017110	Drawn by: JC		



© **Archaeology South-East**		Moat Road, Headcorn, Kent	Fig. 3
Project Ref: 170072	March 2017	Raw data	
Report Ref: 2017110	Drawn by: JC		



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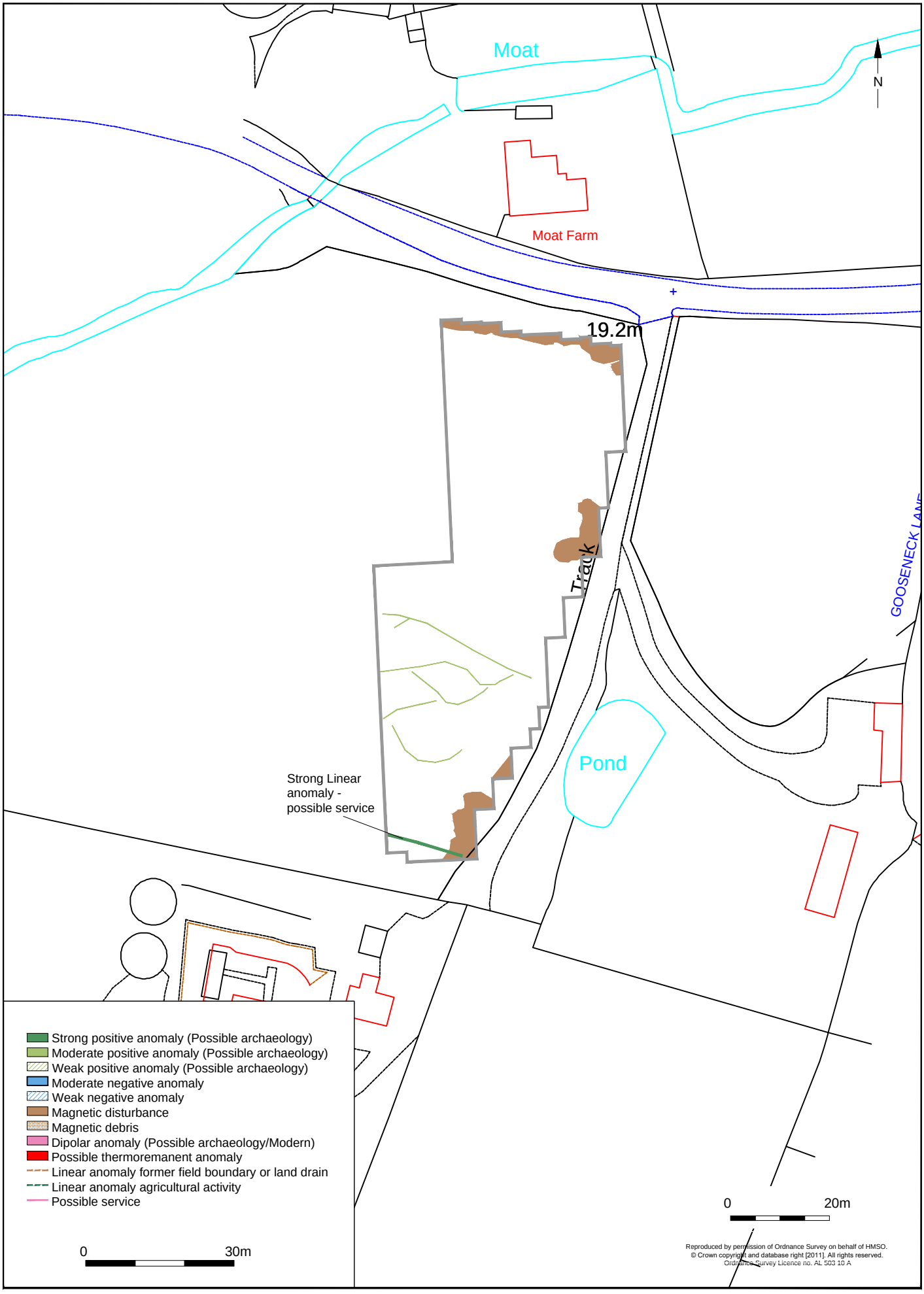
Project Ref: 170072	March 2017	Processed data	
Report Ref: 2017110	Drawn by: JC		



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Project Ref: 170072	March 2017	Interpretation	
Report Ref: 2017110	Drawn by: JC		

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