



DRAFT FOR COMMENT

**ARCHAEOLOGICAL
DESK-BASED
ASSESSMENT**

**Land off Roman Road
Moulton Chapel**

September 2018

**Planning Authority:
South Holland Council**

**Site centred at:
TF 2967 1843**

**Author:
Myk Flitcroft BA MSc CMI*f*A**



**Report Status:
Draft for Comment**

**Issue Date:
24 September 2018**

**CgMs Ref:
MF/24826/01**

© CgMs Limited

No part of this report is to be copied in any way
without prior written consent.

Every effort is made to provide detailed and accurate
information, however, CgMs Limited cannot be held responsible
for errors or inaccuracies within this report.

© Ordnance Survey maps reproduced with the sanction of the
controller of HM Stationery Office.

Licence No: AL 100014723

CgMs Consulting, 140 London Wall, London, EC2Y 5DN
Tel: 020 7583 6767 Fax: 020 7583 2231

CONTENTS

Executive Summary

- 1.0 Introduction and Scope of Study
 - 2.0 Planning Background and Development Plan Framework
 - 3.0 Geology and Topography
 - 4.0 Archaeological and Historical Background, with Assessment of Significance
 - 5.0 Site Conditions, the Proposed Development & Review of Potential Development Impacts on Archaeological Assets
 - 6.0 Summary and Conclusions
- Sources Consulted

APPENDIX ONE: HER Gazetteer

APPENDIX TWO: Geophysical Survey report

LIST OF ILLUSTRATIONS

- Fig. 1 Site Location
- Fig. 2 Heritage Assets
- Fig. 3 OS 1" map, 1824
- Fig. 4 OS 25" map, 1888

LIST OF PLATES

- Plate 1 View east across site, from Braybrooks Way
- Plate 2 View north across site from Roman Road

EXECUTIVE SUMMARY

This archaeological desk-based assessment has been prepared by CgMs Heritage on behalf of Larkfleet Homes, and considers a 3.5ha parcel of land lying to the north of Roman Road, Moulton Chapel, Lincolnshire.

The assessment has been prepared in compliance with the National Planning Policy Framework and emerging Local Plan policy, to identify and provide a description of the significance of archaeological assets on or surrounding the site, the site's archaeological potential, and the likely effects of development.

It incorporates a desk-based review of existing information, based on data obtained from the Lincolnshire Historic Environment Record and Historic England's National Heritage List for England; and the results of a geophysical survey of the site, undertaken in August 2018. A site visit was undertaken as part of the assessment.

The assessment establishes that:

- The proposed development site does not contain any Designated Heritage Assets.
- The site does not contain any currently recorded Non-Designated Heritage Assets. The geophysical survey of the site has not identified any evidence for obvious additional archaeological assets within the site.
- The site has a moderate potential for Iron Age or Roman period field boundaries similar to one previously identified immediately west of the site - but a low potential for more intensive settlement or industrial activity of this period; and nil potential for important archaeological remains of later periods.
- The potential development is anticipated to impact on any evidence for Roman field boundaries that is present within the site, and on former 19th century field features identified from historic maps and the geophysical survey.
- The desk-based assessment and the results of the geophysical survey provide the appropriate evidence to inform decision-making on a planning application for residential development of the site.

1.0 INTRODUCTION AND SCOPE OF STUDY

- 1.1 This below ground archaeological desk-based assessment has prepared by Myk Flitcroft of CgMs Heritage (part of the RPS Group) on behalf of Larkfleet Homes.
- 1.2 The subject of this assessment, also referred to in this report the *study site*, is a 3.5ha parcel of land lying to the north of Roman Road, Moulton Chapel, Lincolnshire. The site is located on the eastern edge of the village of Moulton Chapel, 6.5km south-east of Spalding, Lincolnshire.
- 1.3 This assessment has been prepared in compliance with the National Planning Policy Framework, to identify and provide a description of the significance of archaeological assets on or surrounding the site, and the likely effects of development on that significance.
- 1.4 This study concentrates on identifying any archaeological interest in the site and assessing the potential impact of development on the significance of any identified assets.

PLANNING BACKGROUND AND DEVELOPMENT PLAN FRAMEWORK

- 1.5 National legislation regarding archaeology, including scheduled monuments, is contained in the Ancient Monuments and Archaeological Areas Act 1979, amended by the National Heritage Act 1983 and 2002, and updated in April 2014.
- 1.6 In March 2012, the government published the National Planning Policy Framework (NPPF), which was later revised in July 2018. The NPPF is supported by the National Planning Practice Guidance (NPPG), which was published online 6th March 2014 and last updated 28 July 2017 (<http://planning.guidance.planningportal.gov.uk>).
- 1.7 The NPPF and NPPG are additionally supported by three Good Practice Advice (GPA) documents published by Historic England: GPA 1: The Historic Environment in Local Plans; GPA 2: Managing Significance in Decision-Taking in the Historic Environment (both published March 2015). The second edition of GPA3: The Setting of Heritage Assets was published in December 2017.

National Planning Policy

- 1.8 Section 16 of the NPPF, entitled Conserving and enhancing the historic environment provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. Overall, the objectives of Section 16 of the NPPF can be summarised as seeking the:
- Delivery of sustainable development;
 - Understanding the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment;
 - Conservation of England's heritage assets in a manner appropriate to their significance; and
 - Recognition that heritage makes to our knowledge and understanding of the past.
- 1.9 Section 16 of the NPPF recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. In relation to determination of planning application, Paragraph 189 states that applicants should be required to describe the significance of any heritage assets affected by the proposed

development; and that level of detail supplied by an applicant should be proportionate to the importance of the asset and should be no more than sufficient to review the potential impact of the proposal upon the significance of that asset. On sites where the heritage assets might include archaeological remains, this requires submission of an appropriate desk-based assessment and, where necessary, results of on-site field evaluation.

- 1.10 *Heritage Assets* are defined in Annex 2 of the NPPF as: a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. They include designated heritage assets (as defined in the NPPF) and assets identified by the local planning authority during the process of decision-making or through the plan-making process.
- 1.11 Annex 2 also defines *Archaeological Interest* as a heritage asset which holds or potentially could hold evidence of past human activity worthy of expert investigation at some point.
- 1.12 A *Nationally Important Designated Heritage Asset* comprises a: World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area.
- 1.13 *Significance* is defined as: The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.
- 1.14 *Setting* is defined as: The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.
- 1.15 In short, government policy provides a framework which:
- Protects nationally important designated Heritage Assets;
 - Protects the settings of such designations;
 - In appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions;

- Provides for the excavation and investigation of sites not significant enough to merit *in-situ* preservation.

- 1.16 The NPPG reiterates that the conservation of heritage assets in a manner appropriate to their significance is a core planning principle, requiring a flexible and thoughtful approach. Furthermore, it highlights that neglect and decay of heritage assets is best addressed through ensuring they remain in active use that is consistent with their conservation. Importantly, the guidance states that if complete, or partial loss of a heritage asset is justified, the aim should then be to capture and record the evidence of the asset's significance, and make the interpretation publically available. Key elements of the guidance relate to assessing harm. An important consideration should be whether the proposed works adversely affect a key element of the heritage asset's special architectural or historic interest. Additionally, it is the degree of harm, rather than the scale of development, that is to be assessed. The level of 'substantial harm' is considered to be a high bar that may not arise in many cases. Essentially, whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the NPPF. Importantly, harm may arise from works to the asset or from development within its setting. Setting is defined as the surroundings in which an asset is experienced, and may be more extensive than the curtilage. A thorough assessment of the impact of proposals upon setting needs to take into account, and be proportionate to, the significance of the heritage asset and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.
- 1.17 In considering any planning application for development, the planning authority will be mindful of the framework set by government policy, in this instance the NPPF, by current Development Plan Policy and by other material considerations.

Local Planning Policy

- 1.18 The site is located within South Holland District. The current local planning policy is provided by the South Holland Local Plan 2006, although the District Council is currently producing its new Local Plan (the 'South East Lincolnshire Local Plan') jointly with Boston Borough Council and Lincolnshire County Council. The new Plan was submitted to the Secretary of State for Examination in June 2017.

- 1.19 The policy in the South Holland Local Plan 2006 relating to management of development impacts on archaeological sites (Policy EN12) was not retained after 18 July 2009 following a Direction by the Secretary of State.
- 1.20 The South East Lincolnshire Local Plan is currently in preparation. Consultation on Main Modifications was completed on 28 August 2018. Within the Main Modification draft, the following policy relates to the historic environment:

Policy 29: The Historic Environment

Distinctive elements of the South East Lincolnshire historic environment will be conserved and, where appropriate, enhanced. Opportunities to identify a heritage asset's contribution to the economy, tourism, education and the local community will be utilised including:

- The historic archaeological and drainage landscape of the Fens;
- The distinctive character of South East Lincolnshire market towns and villages;
- The dominance within the landscape of church towers, spires and historic windmills;

To respect the historical legacy, varied character and appearance of South East Lincolnshire's historic environment, development proposals will conserve and enhance the character and appearance of designated and non-designated heritage assets, such as important known archaeology or that found during development, historic buildings, conservation areas, scheduled monuments, street patterns, streetscapes, landscapes, parks (including Registered Parks and Gardens), river frontages, structures and their settings through high-quality sensitive design.

A. Listed Buildings

1. Proposals to change the use of a Listed Building or to alter or extend such a building will be granted where the local planning authority is satisfied that the proposal is in the interest of the building's preservation and does not involve activities or alterations prejudicial to the special architectural or historic interest of the Listed Building or its setting.
2. Proposals involving the demolition of Listed Buildings will not be permitted, unless in an exceptional case, or wholly exceptional case (depending on their grade) where a clear and convincing justification is made in line with national policy⁹.
3. Proposals that affect the setting of a Listed Building will be supported where they preserve or better reveal the significance of the Listed Building.

B. Conservation Areas

Proposals within, affecting the setting of, or affecting views into or out of, a Conservation Area should preserve (and enhance or reinforce it, as appropriate) features that contribute positively to the area's character, appearance and setting. Proposals should:

- 1 Retain buildings/groups of buildings, existing street patterns, historic building lines and ground surfaces;
- 2 Retain architectural details that contribute to the character and appearance of the area;
- 3 Where relevant and practical, remove features which are incompatible with the Conservation Area;
- 4 Retain and reinforce local distinctiveness with reference to height, massing, scale, form, materials and plot widths of the existing built environment;
- 5 Assess, and mitigate against, any negative impact the proposal might have on the townscape, roofscape, skyline and landscape;
- 6 Aim to protect trees, or where losses are proposed, demonstrate how such losses are appropriately mitigated against.

C. Archaeology and Scheduled Monuments

1. Proposals that affect archaeological remains, whether known or potential, designated or non-designated, should take every reasonable step to protect and, where possible, enhance their significance.

2. Planning applications for such development should be accompanied by an appropriate and proportionate assessment to understand the potential for and significance of remains, and the impact of development upon them.
3. If initial assessment does not provide sufficient information, developers will be required to undertake field evaluation in advance of determination of the application. This may include a range of techniques for both intrusive and non-intrusive evaluation, as appropriate to the site.
4. Wherever possible and appropriate, mitigation strategies should ensure the preservation of archaeological remains in-situ. Where this is either not possible or not desirable, provision must be made for preservation by record according to an agreed written scheme of investigation submitted by the developer, undertaken by a suitably qualified person, and approved by the planning authority.
5. Any work undertaken as part of the planning process must be appropriately archived in a way agreed with the local planning authority.

D. Registered Parks and Gardens

Proposals that cause substantial harm to a Registered Park or Garden, or its setting will not be permitted, unless in an exceptional case, where a clear and convincing justification is made in line with national policy

E. Enabling Development

Proposals for enabling development adjacent to, or within the setting of, a heritage asset and used to secure the future of a heritage asset through repair, conservation, restoration or enhancement will only be permitted where:-

1. it will not materially harm the heritage values of a heritage asset or its setting;
2. it avoids detrimental fragmentation of management of the heritage asset;
3. it will secure the long-term future of the place and, where applicable, its continued use for a sympathetic purpose;
4. it is necessary to resolve problems arising from the inherent needs of the heritage asset rather than the circumstances of the present owner or the purchase price paid
5. sufficient subsidy is not available from any other source;
6. it is demonstrated that the amount of enabling development is the minimum necessary to secure the future of the heritage asset and that its form minimises harm to other public interests; and
7. the public benefit of securing the future of the heritage asset through such enabling development decisively outweighs the dis-benefits of breaching other policies within the Local Plan and national policy

F. Development Proposals

Where a development proposal would affect the significance of a heritage asset (whether designated or non-designated), including any contribution made to its setting, it should be informed by proportionate historic environment assessments and evaluations (such as heritage impact assessments, desk-based appraisals, field evaluation and historic building reports) that:

1. identify all heritage assets likely to be affected by the proposal;
2. explain the nature and degree of any effect on elements that contribute to their significance and demonstrating how, in order of preference, any harm will be avoided, minimised or mitigated;
3. provide a clear explanation and justification for the proposal in order for the harm to be weighed against public benefits; and
4. demonstrate that all reasonable efforts have been made to sustain the existing use, find new uses, or mitigate the extent of the harm to the significance of the asset; and whether the works proposed are the minimum required to secure the long term use of the asset.

- 1.21 The study site is identified as Site **Mou042** in the South East Lincolnshire Local Plan. No additional policy requirements relating to archaeology are identified.

- 1.22 In line with relevant planning policy and guidance, this desk-based assessment seeks to clarify the site's archaeological potential and the need or otherwise for additional mitigation measures.

2.0 GEOLOGY AND TOPOGRAPHY

Geology

- 2.1 The British Geological Survey records the bedrock geology of the study site and surrounding area as mudstone and siltstone of the West Walton Formation. This is overlain by alluvial clay and silt of the Tidal Flat Deposits (BGS).
- 2.2 Previous archaeological investigations on the site immediately west of the study site (the "Fen Gate development site") in 2000 established that alluvial silts were present directly beneath the modern topsoil; the depth of these silts was not established as none of the archaeological features extended exposed underlying deposits, but the alluvium as at least 0.4m thick (APS 2003, 3).

Topography

- 2.3 The area is flat, low-lying, and lies at approximately 3m OD.

3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND WITH ASSESSMENT OF SIGNIFICANCE

Timescales used in this report:

Prehistoric

Palaeolithic	900,000	-	12,000	BC
Mesolithic	12,000	-	4,000	BC
Neolithic	4,000	-	1,800	BC
Bronze Age	1,800	-	600	BC
Iron Age	600	-	AD 43	

Historic

Roman	AD	43	-	410
Saxon/Early Medieval	AD	410	-	1066
Medieval	AD	1066	-	1485
Post Medieval	AD	1486	-	1799
Modern	AD	1800	-	Present

Introduction

- 3.1 This chapter reviews the available archaeological evidence for the study site and the archaeological/historical background of the general area, and, in accordance with NPPF, considers the potential for any as yet to be discovered archaeological evidence on the study site.
- 3.2 What follows comprises a review of known archaeological assets within a 1km radius of the study site based on information provided from the Lincolnshire Historic Environment Record (HER) and Historic England's National Heritage List for England (NHLE); together with a historic map regression exercise charting the development of the study area from the 19th century onwards until the present day.
- 3.3 Chapter 5 subsequently considers the site conditions and assesses the potential impact of the proposed development on the archaeological potential identified below.

Known Heritage Assets (Designated)

- 3.4 There are no Designated Heritage Assets within the study site.
- 3.5 Historic England's National Heritage List for England identifies three Listed Buildings as the only Designated Heritage Assets within 1km of the study site (locations indication in Figure 2):
- Chapel of St James (List Entry No 1359293; Grade II*)
 - Windmill south of Roman Road (List Entry No. 1064467; Grade II)
 - Snake Hall (List Entry No. 1147269; Grade II)
- 3.6 Desk-based review of these assets, confirmed by a site visit on 30 August 2018, established that none of these assets have the potential to be affected by development within the study site. They are not considered further in this assessment report.

Known Heritage Assets (Non-Designated)

- 3.7 There are no Non-Designated Heritage Assets recorded within the study site.
- 3.8 The Lincolnshire Historic Environment Record identified xx monuments (i.e. potential heritage assets) within the 1km search area around the study site. A gazetteer of HER Monuments is included as Appendix One and their locations indicated in Figure 2.
- 3.9 These assets are discussed as relevant in the paragraphs below to establish the archaeological context of the study site and its potential for the presence of additional – as yet undiscovered – buried archaeological remains.

Review of Previous Archaeological Work

- 3.10 The Lincolnshire HER contains no records of archaeological work within the study site prior to preparation of the current assessment.
- 3.11 A partial programme of archaeological observation and recording ('watching brief') was undertaken during construction of the residential development immediately west of the study site in 2000-2001 (APS 2003; *HER event reference ELI4007*). The Watching Brief identified two phases of field boundary and drainage ditches cut into earlier alluvial deposit. Although none of the ditches could be dated by finds, the

report suggested a possible Roman period date because of extensive cropmark evidence for Roman enclosures in the area around Moulton Chapel.

- 3.12 Archaeological investigation work elsewhere in Moulton Chapel has been relatively small scale, and largely limited to archaeological monitoring (watching brief) during small-scale development. This has however included sites a short distance to the east (68 Roman Road, in 2005; *HER ELI8699*), and to the southwest (Jolly Farmer Public House, 2010; *HER ELI10614*). No archaeological features were observed in work on the former site; on the latter undated ditches were identified. Archaeological monitoring of residential development further west, at Woodgate Road in 2015 (*HER ELI12840*) also recorded only modern features only.
- 3.13 A gazetteer of recorded archaeological interventions/investigations within the 1km search area is included within Appendix One.

Geophysical Survey of Study Site (2018)

- 3.14 A geophysical survey of the study site was commissioned in August 2018 to inform this assessment (Magnitude Surveys, 2018).
- 3.15 Despite the watching brief results to the west, the survey did not identify any clear evidence for archaeological features within the study site. The results mainly reflect natural changes in the northern part of the site and agricultural activity in the southern half. The agricultural activity is represented by drains, former field boundaries and weak ploughing trends. A strong ferrous anomaly also has been identified in the location of a former pond (identifiable on early OS maps).
- 3.16 Minor curvilinear and discrete anomalies were identified in the southern part of the study site, although the survey report considered that none of these had characteristics which suggested they were certainly archaeological in origin.
- 3.17 The geophysical report included as Appendix Two to this assessment report.

Archaeological Context of study site

Prehistoric (Bronze Age & earlier)

- 3.18 The Lincolnshire HER records no sites or finds of prehistoric date within the 1km search area around the study site.
- 3.19 In part, the absence of recorded sites may reflect the depositional history of the fenland area, with the prehistoric land surface - and any early archaeological features - overlain by alluvial silts deposited in the late prehistoric and Roman periods.
- 3.20 Nevertheless, the absence of any evidence for such a buried land surface or masked archaeological features in the previous archaeological investigations to the west and east of the study site may indicate the study site has a low potential for the presence of prehistoric sites.

Iron Age & Roman

- 3.21 Previous research, based largely on fieldwalking and mapping of soil and crop marks from aerial photographs, has identified an extensive and densely-exploited Iron Age and Roman landscape of settlements, droveways, enclosures and industrial sites in the area around Moulton Chapel (Phillips 1970). Within the 1km search area around the study site, the Lincolnshire HER identifies a series of elements or parts of this landscape: HER 20355, 20365, 22116, 22117, 23573, 24052 (areas confirmed as Roman on the basis of finds or morphology); HER 20341, 20343, 20353, 20354, 20370, 23573, 23822 (undated, but almost certainly other parts of this landscape).
- 3.22 This landscape was accessed and connected to the wider region beyond the Fens by a possible Roman road orientated east-west; this road line passes immediately south of the study site and is followed by the present day road "Roman Road". The interpretation of this road as being of Roman origin has some plausibility but is unconfirmed, and it is possible that represents a later, Medieval or Post-Medieval, droveway.
- 3.23 HER Monument reference 23822 relates to the undated pit and ditches recorded on the Fen Gate development site immediately west of the study site. On that site, the archaeological monitoring recorded a sequence of (undated) field boundary and drainage ditches on a north-east – south-west alignment (APS 2003, 5-6) which is broadly consistent with the general grain of the Iron Age/Roman landscape. The

ditches typically showed evidence of numerous cleaning and re-cutting of alluvial infills, suggesting repeated effort to keep the ditch system functioning over a relatively long period, but produced no finds or other dating evidence.

- 3.24 The absence of any Roman period finds from these features is somewhat surprising, given the general ubiquity of discarded ceramics and other finds in the vicinity of Roman period settlement & industrial sites, but could be explained if the Fen Gate development site and the current study site lay some distance from any focus of Roman activity, within the wider landscape of ditched fields and enclosures.
- 3.25 The geophysical survey commissioned as part of the current assessment of the study site similarly failed to identify any magnetically-enhanced anomalies which might be evidence of archaeological features. This may represent a true absence of features, or a lack of sufficient magnetic enhancement to allow features to be distinguished from the surrounding deposits. However such a lack of magnetic enhancement would also strongly suggest that the study site lies away from concentrations of occupation or industrial activity.
- 3.26 Despite the extensive evidence for Iron Age & Roman period activity in the general area around Moulton Chapel, on the basis of the geophysical survey of the study site and the findings on the adjacent Fen Gate development site, the study site is assessed as having no more than a moderate potential for the presence of Iron Age/Roman period features.
- 3.27 Evidence for Roman settlement, industry, or other intensive use of the land is considered very unlikely to be present, and any further features within the study site are anticipated to represent simple field boundaries or drains, similar to those previously recorded on the adjacent Fen Gate development site, and with similar minimal potential for finds or dating evidence.

Anglo-Saxon/Early Medieval & Medieval

- 3.28 The Lincolnshire HER data search included no sites or finds of Anglo-Saxon/Early Medieval date within the 1km search area. HER entries relating to Medieval activity are limited to two potential sites identified from aerial photographs which do not share the general orientation of the Roman landscape: possible enclosures and a drive road at Clarks Farm (HER 20549) and possible enclosure in Moulton Fen (HER 22129); and a single sherd of pottery (HER 22119) from the western side of the current settlement of Moulton Chapel.

- 3.29 As outlined above (paragraph 3.22), the line of the present day road, Roman Road, may have formed a droveway during the Medieval period.
- 3.30 The archaeological investigation on the adjacent Fen Gate development site recorded one probable cultivation furrow, which truncated one of the earlier boundary ditches and which may imply a Medieval date, and a number of later ditches – although dating is again hampered by the lack of finds (APS 2003, 5). This would suggest that the Fen Gate development site and the current study site lay outside any settlement area in this period and formed part of the strip cultivation fields.
- 3.31 The study site is assessed as having no potential for the presence of important Anglo-Saxon / Early Medieval or Medieval remains. Further evidence for Medieval strip cultivation within the study site has no archaeological interest.

Post Medieval & Modern (including map regression exercise)

- 3.32 The Lincolnshire HER search records twenty-three Post-Medieval and Modern assets within the search area. The recorded assets include the Post-Medieval settlement of Moulton Chapel itself (HER 20372); a number of extant and former buildings within the settlement (HER 20371, 22124, 25679, 25773); individual Post-Medieval features recorded in the archaeological watching brief at the Jolly Farmer public house (HER 25679); and seventeen extant/former 19th century farmsteads in the landscape around the village – none within or close to the study site.
- 3.33 None of the sites add to the understanding of the study site's archaeological potential. They detailed in Appendix 1 and shown in Figure 2, but do not require further description or discussion.
- 3.34 The earliest published map showing the study site area in any detail is the Ordnance Survey 'Old Series' (1" to the mile) map, published in 1824 (Figure 3). This shows the study site lying to the north-east of the settlement focused on the crossroads at Moulton Chapel. The map does not show any details within the study site and no land divisions in the landscape other than the main roads and principal fenland drains.
- 3.35 The 1st edition of 'County Series' OS map, published 1888 (Figure 4) again shows the study site lying to the north-east of Moulton Chapel's built area. The study site is formed by two regular rectilinear fields and part of a third to the south; a small field pond is indicated at the junction of the three fields. Evidence for these field boundaries and the pond were recorded in the geophysical survey of the study site.

- 3.36 Subsequent editions of the OS maps from the 1900s and 1930s show no change within the study site or its immediately surrounding area throughout the first half of the 20th Century.
- 3.37 The 1950s mapping shows the removal of the field boundaries within the study site and surrounding area to create a single large field (although the field pond appears to be retained, and only not shown from 1970s mapping onwards). The most significant later change to the local landscape is the residential development of the Fen Gate site (now Braybrooks Way & St James Way) directly to the west, which took place at the start of the 21st century.
- 3.38 The study site appears to have lain in agricultural land outside the settlement throughout the Post-Medieval and Modern periods.
- 3.39 Other than the former field boundaries and field pond recorded on the early OS maps, the site is considered to have nil potential for the presence of archaeological features of these periods. The field boundaries and field pond have minimal archaeological interest and would not meet the criteria to be considered heritage assets.

Assessment of Significance

- 3.40 As identified by desk based work and the geophysical survey, archaeological potential by period and the likely significance of any archaeological remains which may be present is summarised in table form below:

Period:	Identified Archaeological Potential and Significance:
Prehistoric	Low Potential for sites or finds (any evidence will be buried at beneath alluvial silts & sands)
Iron Age /Roman	Moderate Potential for field boundary ditches & other landscape evidence; Low Potential for settlement or other intensive activity
Anglo-Saxon	Nil Potential
Medieval	Nil Potential
Post Medieval	Nil Potential
Modern	Nil potential: Former 19 th century field boundaries and pond within site However such features have no appreciable archaeological interest

- 3.41 Any additional evidence within the study site for elements of the extensive Iron Age & Roman landscape known to survive around Moulton Chapel would have archaeological

value because of its potential to provide information on the nature of local activity in this period, and aid understanding of how the landscape was utilised and managed throughout the Roman period. The low-lying nature of the land, and the potential for enhanced survival of archaeological deposits under waterlogged conditions within the alluvial silts, would increase the archaeological value of surviving remains in this area.

- 3.42 However, the geophysical survey results and the evidence from the adjacent Fen Gate development site strongly suggest that evidence within the study site will be limited to finds-poor field boundaries and drainage ditches, which would make very little contribution to understanding of this landscape and its heritage significance.

4.0 SITE CONDITIONS, THE PROPOSED DEVELOPMENT & REVIEW OF POTENTIAL DEVELOPMENT IMPACTS ON ARCHAEOLOGICAL ASSETS

Site Conditions

- 4.1 A site visit was made on 30 August 2018.
- 4.2 The site comprises a single agricultural field, lying east of existing development on Braybrooks Way and north of Roman Road (Plates 1 & 2).
- 4.3 No archaeological features or finds were identified during the site visit.

Proposed Development

- 4.4 The site is proposed for residential development, in line with the allocation in the South East Lincolnshire Local Plan.
- 4.5 No details of layout or design were available at the time this assessment was prepared.

Review of Potential Development Impacts on Heritage Assets

- 4.6 The assessment above has not identified any known heritage assets within the study site.
- 4.7 Based on the assessment of potential provided above, the site is considered to have a moderate potential for the presence of Roman period boundary ditches, similar to those previously recorded to the west. The geophysical survey of the study site did not identify any clear evidence for such features, although it is possible that a number of the few 'undetermined' features may prove to have an archaeological explanation and represent former boundary ditches.
- 4.8 The construction techniques employed in modern development are such that the features identified in the geophysical survey, and any other near-surface archaeological remains which might be present within the site, would not survive the development process. Subject to foundation design & ground conditions, any early archaeological features beneath the alluvial silt & sand may not be affected by groundworks and excavation for footings for new dwellings.

5.0 **SUMMARY AND CONCLUSIONS**

- 5.1 The study site has been assessed for its below ground archaeological potential.
- 5.2 Desk-based review of existing information confirms that the study site does not contain any Designated Heritage Assets. Development within the site will not affect the significance of any Designated Heritage Asset in the surrounding area.
- 5.3 The study site does not contain any currently recorded Non-Designated Heritage Assets,
- 5.4 Field boundary ditches of probable Roman date have previously been recorded immediately west of the site (HER ref 23822). However geophysical survey undertaken as part of the current assessment has not identified any evidence for further similar remains within the study site.
- 5.5 As identified by desk based work and the geophysical survey, archaeological potential by period and the likely significance of any archaeological remains which may be present is summarised in table form below:

Period:	Identified Archaeological Potential and Significance:
Prehistoric	• Low Potential for sites or finds. <i>Any features present will be overlain and sealed by deposits of alluvial silt & sand</i>
Iron Age & Roman	• Moderate Potential for field boundary ditches & other landscape evidence (<i>limited archaeological interest</i>); • Low Potential for settlement or other intensive activity
Anglo-Saxon	• Nil Potential
Medieval	• Nil Potential
Post Medieval	• Nil Potential
Modern	• Nil potential: <i>Former 19th century field boundaries and pond within site However such features have no appreciable archaeological interest</i>

- 5.6 The potential development is anticipated to impact on any evidence for Roman field boundaries currently present within the study site, and on the former 19th century field features identified from historic maps and the geophysical survey.
- 5.7 The desk-based assessment and the results of the geophysical survey provide the appropriate evidence to inform decision-making on a planning application for residential development of the site.

SOURCES CONSULTED

1. General

Lincolnshire Historic Environment Record
Lincolnshire Record Office

2. Internet

British Geological Survey –
<http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>
British History Online – <http://www.british-history.ac.uk/>
Domesday Online – <http://www.domesdaybook.co.uk/>
Historic England: The National Heritage List for England –
<http://www.historicengland.org.uk/listing/the-list/>
Portable Antiquities Scheme – www.finds.org.uk

3. Bibliographic

Archaeological Project Services *Archaeological Watching Brief on Development on Land at Fen Gate, Moulton Chapel, Spalding, Lincolnshire (MCF00)*. March 2003.
APS Report No: 40/03

Chartered Institute for Archaeologists *Standard & Guidance for historic environment desk based assessment* 2014, revised 2017

Ministry of Housing, Communities and Local Government *National Planning Policy Framework* July 2018

Historic England (formerly English Heritage) *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* 2008 (new draft 2017)

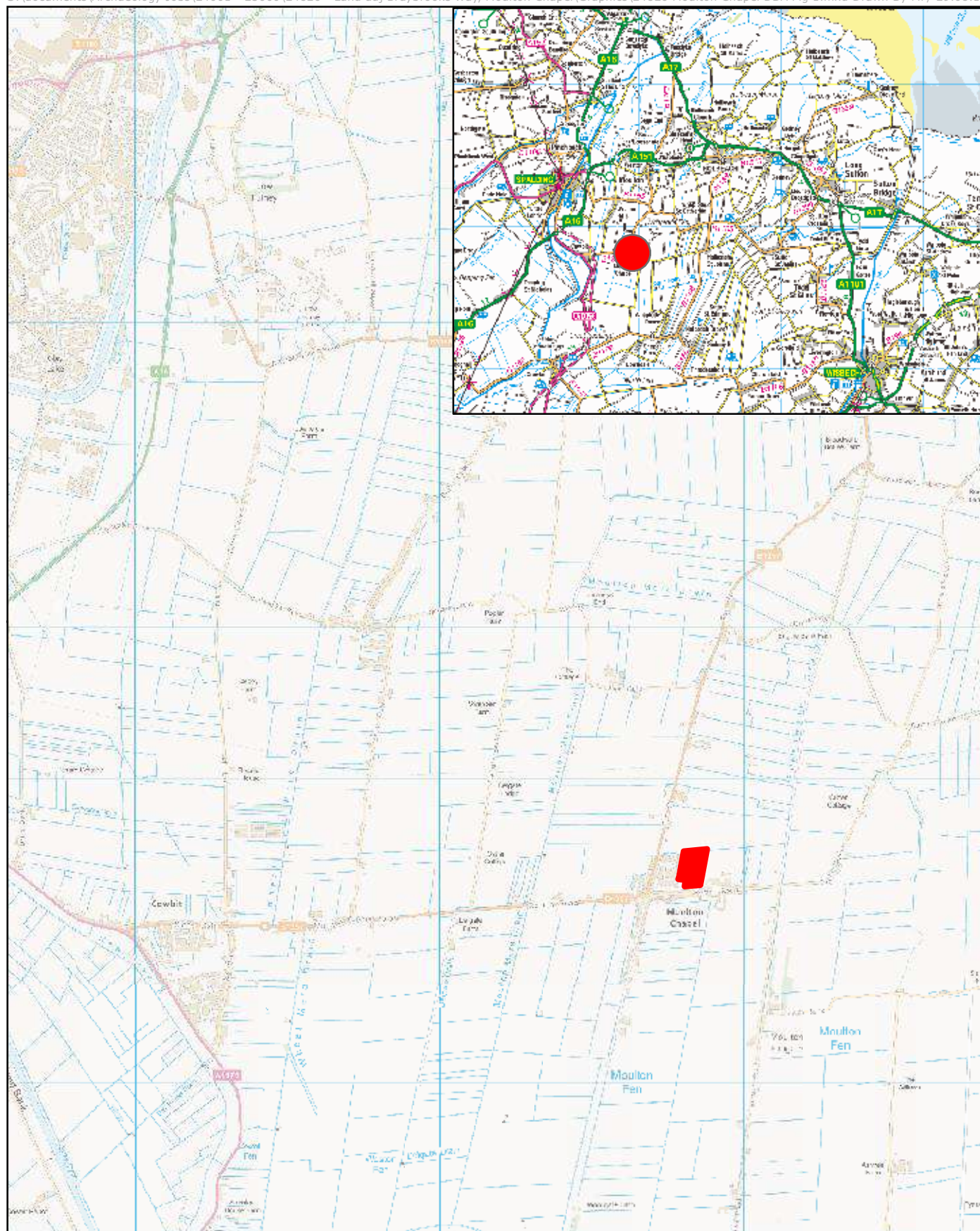
Historic England *Historic Environment Good Practice Advice in Planning: 2 Managing Significance in Decision-Taking in the Historic Environment* July 2015

Historic England *Historic Environment Good Practice Advice in Planning: 3 The Setting of Heritage Assets* December 2017

Phillips, C.W. *The Fenland in Roman Times* 1970

4. Cartographic

1824	Ordnance Survey Old Series 1" map
1888	Ordnance Survey County Series 25" map
1891	Ordnance Survey County Series 6" map
1904	Ordnance Survey County Series 25" map
1905-1906	Ordnance Survey County Series 6" map
1938-1952	Ordnance Survey County Series 1:10,560 map
1958-1959	Ordnance Survey 1:10,560 map
1975-1976	Ordnance Survey 1:2,500 map
1979	Ordnance Survey 1:10,000 map
1979-1991	Ordnance Survey 1:10,000 map



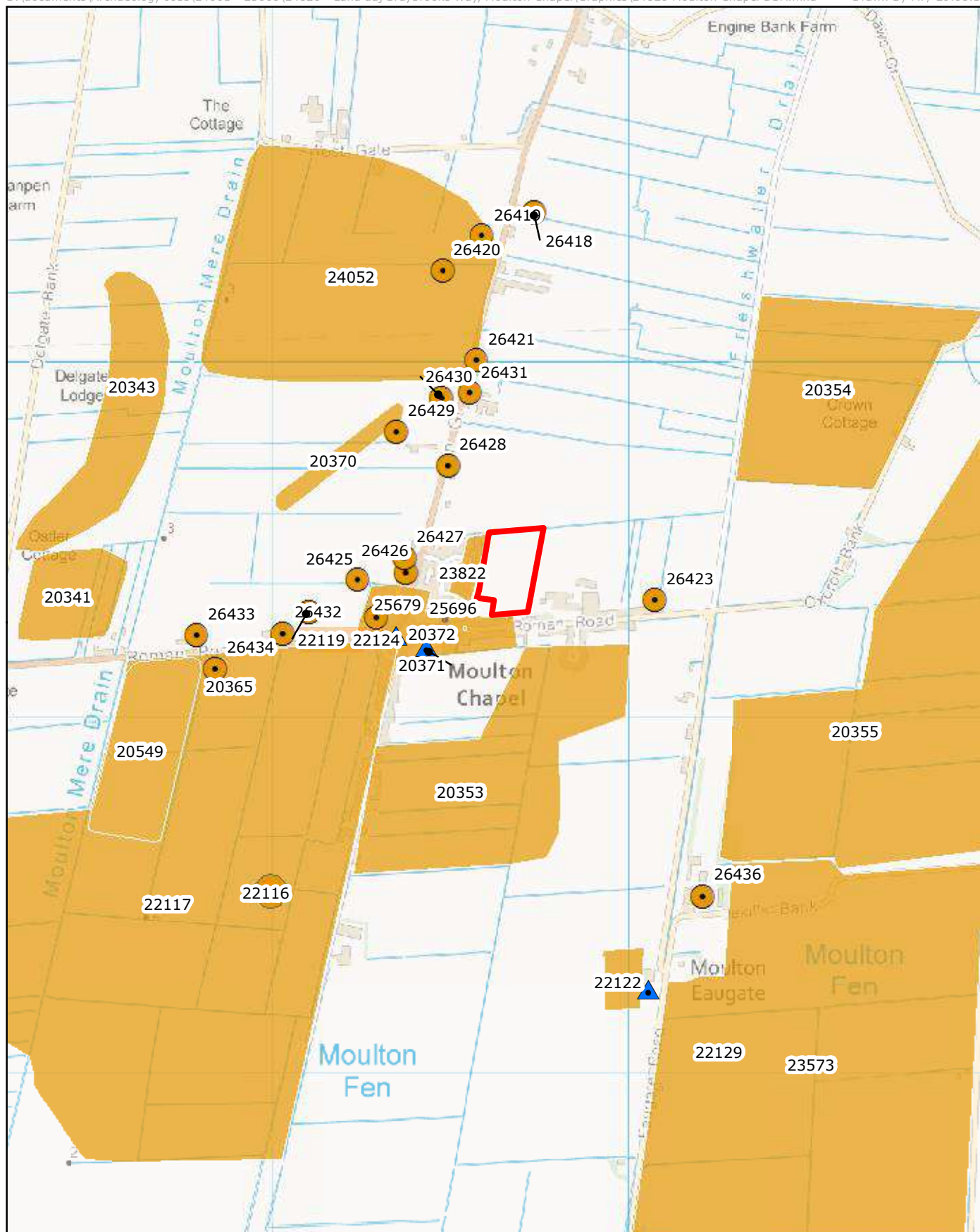
Study Site



Scale at A4: 1:35,000



Figure 1:
Site Location



Study Site



Listed Building (designated asset)



HER Monument (point)

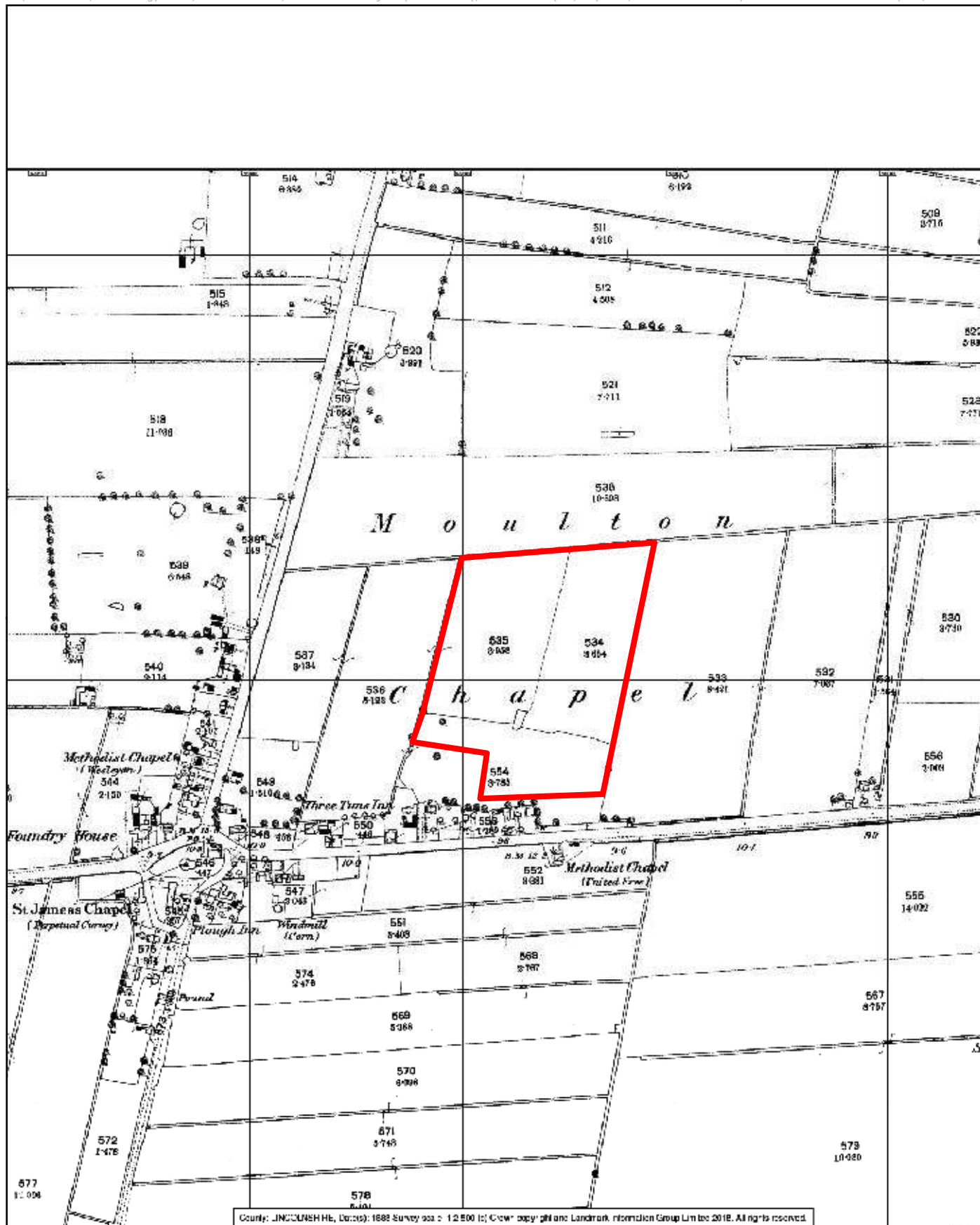


HER Monument (area)



Scale at A4: 1:15,000

Figure 2:
Heritage Assets



Study Site



Scale at A4: 1:5,000

Figure 4:
OS 25" map1888



Plate 1 View east across site, from Braybrooks Way



Plate 2 View north across site from Roman Road

APPENDIX ONE:

GAZETTEER OF LINCOLNSHIRE HER MONUMENTS within 1km

HER Number	Name & Description	Location	Date
	Monuments		
20341	Undated Cropmarks From aerial photos	TF 284 183	Undated
20343	Double-Ditched Linear Feature Recorded from aerial photos	TF 285 188	Undated
20353	Undated cropmarks, Moulton May be part of a field system with trackways and watercourses	TF 294 177	Unknown
20354	Undated cropmarks, Moulton It may be part of a field system	TF 306 189	Unknown
20355	Romano British settlement, Moulton Cropmarks including enclosures and ditches representing a large compact probably Romano-British settlement	TF 310 182	Roman
20365	Romano British pottery scatter, Clark's Farm, Moulton	TF 288 180	Roman
20370	Undated linear feature, west of St Albans House, Moulton Straight linear feature visible as cropmark on aerial photos	TF 291 187	Unknown
20371	Windmill, Moulton Chapel, Moulton Site of Post-medieval post-mill, replaced in 19 th century by tower windmill. Converted into a dwelling in 2000s	TF 294 181	Post Medieval Modern
20372	Post medieval settlement of Moulton Chapel, Moulton	TF 294 182	Post Medieval to Modern
20549	Possible medieval enclosures and field boundaries, south west of Clark's farm, Moulton Features recorded as cropmarks on aerial photos	TF 286 179	Medieval
22116	Romano British pottery, Moulton A small scatter of pottery which includes a quern fragment	TF 289 175	Roman
22117	Romano British settlement/field system complex, Moulton Enclosures, pits and ditches interpreted as field boundaries – recorded from aerial photos	TF 287 174	Roman
22119	Medieval pottery fragment, Moulton Chapel Possibly a fine type of green glazed ware	TF 291 183	Medieval
22122	Moat, Snake Hall, Moulton 'Moat' recorded on 1 st edition OS map; most recently in use as a rubbish pit	TF 299 172	Unknown
22124	St James Church, Moulton Chapel, Moulton Church of England Chapel of Ease. Rebuilt in the octagonal Dutch style in 1722 in brick	TF 293 182	Post Medieval to Modern
22129	Possible medieval ditched enclosures, Moulton Recorded from aerial photos	TF 304 163	Medieval
23573	Cropmarks east of Eaugate Road and north of South Holland Main Drain, Moulton Cropmarks of irregular enclosures and drove road. These features may have originally been a Romano British settlement	TF 304 163	Undated ?Roman
23822	Possible Romano British ditches, Fen Gate, Moulton Chapel Undated ditches, but possibly RB field boundary & drainage ditches	TF 295 184	Undated ?Roman
24052	Prehistoric or Romano British settlement, Moulton Ring ditches, enclosures, curvilinear and linear boundary ditches were identified from aerial photos	TF 292 192	Iron Age to Roman
25679	Moulton Chapel Methodist Church, Fen Gate, Moulton Chapel Extant chapel	TF 293 183	Modern
25696	Undated features on land at the Jolly Farmer public house, Moulton Chapel Undated pits containing occasional charcoal & brick fragments	TF 294 182	Unknown
25697	Post medieval drainage ditch on land at the Jolly Farmer public house, Moulton Chapel Feature also identifiable on 19 th century maps	TF 294 182	Post Medieval to Modern
25773	Site of a United Free Methodist Chapel at Moulton Chapel Former Chapel, demolished after 1950	TF 295 182	Modern
26418	Harrox Farm, Moulton Partially extant 19 th century farmstead	TF 297 194	Modern
26419	Tabeal Farm, Moulton Partially extant 19 th century farmstead	TF 295 193	Modern
26420	Valentines Farm, Moulton Redeveloped 19 th century farmstead	TF 295 193	Modern
26421	Unnamed farmstead, Moulton Partially extant 19 th century farmstead	TF 295 190	Modern
26423	Unnamed farmstead, Moulton	TF 300 183	Modern

	Site of demolished 19 th century farmstead		
26424	Foundry House, Moulton Site of demolished 19 th century farmstead	TF 292 182	Modern
26425	Unnamed farmstead, Moulton Site of demolished 19 th century farmstead	TF 292 183	Modern
26426	Unnamed farmstead, Moulton Site of demolished 19 th century farmstead	TF 293 184	Modern
26427	Unnamed farmstead, Moulton Site of demolished 19 th century farmstead	TF 293 184	Modern
26428	Willow Tree Farm, Moulton Partially extant 19 th century farmstead	TF 294 187	Modern
26429	St Alban's House, Moulton Redeveloped 19 th century farmstead	TF 293 188	Modern
26430	Ebenezer Farm, Moulton 19 th century farmstead	TF 294 189	Modern
26431	Victory Farm, Moulton 19 th century farmstead	TF 295 189	Modern
26432	Unnamed farmstead, Moulton 19 th century farmstead	TF 290 182	Modern
26433	White House, Moulton Partially extant 19 th century farmstead	TF 287 182	Modern
26434	Clarks Farm, Moulton 19 th century farmstead	TF 288 181	Modern
26436	Crown Hall Farm, Moulton Partially extant 19 th century farmstead	TF 302 175	Modern
	Event/Activity		
ELI2202	Watching Brief, Water pipeline between Moulton Chapel and Whaplode - 1996	TF 304 155	
ELI4007	Watching brief on land at Fen Gate, Moulton Chapel - 2001	TF 294 184	
ELI8699	Watching brief at Greystones, 68 Roman Road, Moulton Chapel - 2005	TF 297 183	
ELI10386	Site visit to nonconformist chapel, Fen Gate, Moulton Chapel - 2010	TF 293 183	
ELI10614	Watching brief at the Jolly Farmer Public House, 28 Roman Road, Moulton Chapel - 2010	TF 294 182	
ELI11883	Site visit to the site of United Free Methodist Chapel in Moulton Chapel - 2010	TF 295 182	
ELI12840	Watching Brief, The Plough Inn, Woodgate Road, Moulton Chapel - 2015	TF 293 181	

APPENDIX TWO:

GEOPHYSICAL SURVEY REPORT



**magnitude
surveys**

**Geophysical Survey Report
of
Land off Roman Road
Moulton Chapel**

**For
CgMs Heritage (Part of RPS Group Plc)**

**On Behalf Of
Larkfleet Homes Ltd**

Magnitude Surveys Ref: MSTF357

August 2018



**magnitude
surveys**

Unit 17, Commerce Court

Challenge Way

Bradford

BD4 8NW

01274 926020

info@magnitudesurveys.co.uk

Version	Purpose/Revision	Author	Interpretation/Figures	Approved By	Date Issued
Draft 1.0	Initial draft to line manager	Julia Cantarano, Ingénieur PCIfA	Julia Cantarano, Ingénieur PCIfA	Chrys Harris BA MSc PhD	20 August 2018
Draft 1.1	Minor corrections to text and figures	Marta Fortuny BA MA	Marta Fortuny BA MA	Chrys Harris BA MSc PhD	22 August 2018
Final 2.0	No further edits			Chrys Harris BA MSc PhD	24 August 2018

Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c. 3.5ha area of Land off Roman Road in Moulton Chapel. A fluxgate magnetometer survey was successfully completed. The geophysical results mainly reflect natural changes in the northern part of the site and agricultural activity in the southern half. The agricultural activity is represented by drains, former field boundaries and weak ploughing trends. A strong ferrous anomaly also has been identified in the location of a former pond. Several anomalies were marked as 'Undetermined' in origin, as an archaeological, modern or natural origin could not be ascribed with confidence. However, their juxtaposition against other types of anomalies identified on the site supports potential natural and agricultural origins.

Contents

Abstract	2
List of Figures	4
1. Introduction	5
2. Quality Assurance	5
3. Objectives.....	5
4. Geographic Background.....	6
5. Archaeological Background.....	6
6. Methodology.....	7
6.1. Data Collection.....	7
6.2. Data Processing.....	7
6.3. Data Visualisation and Interpretation	8
7. Results.....	9
7.1. Qualification	9
7.2. Discussion	9
7.3. Interpretation	9
7.3.1. General Statements.....	9
7.3.2. Magnetic Results - Specific Anomalie.....	10
8. Conclusions	11
9. Archiving	11
10. Copyright.....	11
11. References.....	12

List of Figures

Figure 1:	Site Location	1:25,000 @ A4
Figure 2:	Location of Survey Area	1:2,500 @ A3
Figure 3:	Magnetic Total Field	1:1,250 @ A3
Figure 4:	Magnetic Gradient	1:1,250 @ A3
Figure 5:	Magnetic Interpretation	1:1,250 @ A3
Figure 6:	Magnetic Interpretation Over Satellite Imagery	1:2,000 @ A3
Figure 7:	Magnetic Interpretation Over Historic Maps	1:2,000 @ A3
Figure 8:	Magnetic XY Trace Plot	1:1,250 @ A3

List of Anomaly Numbers

- [1a] Drains
- [1b] Field boundary?
- [1c] Mapped former field boundary
- [1d] Mapped former pond
- [1e] Enhanced natural deposit
- [1f] Undetermined. Natural, agricultural or archaeological origin possible.

1. Introduction

- 1.1. Magnitude Surveys Ltd (MS) was commissioned by CgMs Heritage (Part of RPS Group Plc) on behalf of Larkfleet Homes Ltd to undertake a geophysical survey on a c.3.5ha area of Land off Roman Road, Moulton Chapel, Spalding, Lincolnshire (TF 29670 18435).
- 1.2. The geophysical survey comprised hand-pulled, GNSS-positioned fluxgate magnetometer survey.
- 1.3. The survey was conducted in line with the current best practice guidelines produced by Historic England (David et al., 2008), the Chartered Institute for Archaeologists (CIfA, 2014) and the European Archaeological Council (Schmidt et al., 2015).
- 1.4. The survey commenced on 13 of August 2018 and took 1 day to complete.

2. Quality Assurance

- 2.1. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society of Archaeological Prospection).
- 2.2. Director Graeme Attwood is a Member of CIfA, as well as the Secretary of GeoSIG, the CIfA Geophysics Special Interest Group. Director Finnegan Pope-Carter is a Fellow of the London Geological Society, the chartered UK body for geophysicists and geologists, as well as a member of GeoSIG, the CIfA Geophysics Special Interest Group. Director Chrys Harris has a PhD in archaeological geophysics from the University of Bradford and is the Vice-Chair of the International Society for Archaeological Prospection.
- 2.3. All MS managers have relevant degree qualifications to archaeology or geophysics. All MS field and office staff have relevant archaeology or geophysics degrees and/or field experience.

3. Objectives

- 3.1. The geophysical survey aimed to assess the subsurface archaeological potential of the survey area.

4. Geographic Background

4.1. The site is located on the eastern edge of the village Moulton Chapel, 6.5km south-east of the market town Spalding (Figure 1). Survey was undertaken over a flat arable field, bounded to the south by housing off Roman Road, to the west by housing off Wiles Avenue and Braybrooks Way. Further agricultural fields bounded the site to the north and east (Figure 2).

4.2. Survey considerations:

Survey Area	Ground Conditions	Further Notes
1	Flat. Wheat stubble.	A ditch delimits the area from another field in the north. The rest of the boundaries were comprised of mixed fencing, apart from the south-west which was a hedge.

4.3. The underlying geology comprises mudstone and siltstone from the West Walton Formation. Superficial deposits consist of tidal flat deposits – clay and silt (British Geological Survey, 2018).

4.4. The soils consist of loamy and clayey soils of coastal flats with naturally high groundwater (Soilscapes, 2018).

5. Archaeological Background

5.1. The following archaeological background summaries information identified from an HER search report dated 9/8/18 (provided by CgMs Heritage).

5.2. An extensive number of undated cropmarks has been recorded within the site's environs (MLI20370, MLI20353, MLI20354, MLI20341, MLI20343, MLI22129).

5.3. Prehistoric or Romano-British settlement activity has been identified 800m northwest of site (24052) and 600m northwest (MLI90792) from the site.

5.4. Romano-British settlement activity has been recorded from various ditches, ring ditches, farmstead, enclosures and field systems located 1km east (MLI20355) and c.600m southwest (MLI22117). Possible ditches (MLI84091/23822) were identified in an archaeological watching brief immediately west of site. Pottery artefacts from the same period have been recorded within the site's environs (MLI22116, MLI20365, 20364).

5.5. Medieval activity is recorded as enclosures and field boundaries 900m southwest (MLI22117) and 1km southeast (MLI22129).

6. Methodology

6.1.Data Collection

6.1.1. Geophysical prospection comprised the magnetic method as described in the following table.

6.1.2. Table of survey strategies:

Method	Instrument	Traverse Interval	Sample Interval
Magnetic	Bartington Instruments Grad-13 Digital Three-Axis Gradiometer	1m	200Hz reprojected to 0.125m

6.1.3. The magnetic data were collected using MS' bespoke hand-pulled cart system OR hand-carried GNSS-positioned system].

6.1.3.1. MS' cart system was comprised of Bartington Instruments Grad 13 Digital Three-Axis Gradiometers. Positional referencing was through a multi-channel, multi-constellation GNSS Smart Antenna RTK GPS outputting in NMEA mode to ensure high positional accuracy of collected measurements. The RTK GPS is accurate to 0.008m + 1ppm in the horizontal and 0.015m + 1ppm in the vertical.

6.1.3.2. Magnetic and GPS data were stored on an SD card within MS' bespoke datalogger. The datalogger was continuously synced, via an in-field Wi-Fi unit, to servers within MS' offices. This allowed for data collection, processing and visualisation to be monitored in real-time as fieldwork was ongoing.

6.1.3.3. A navigation system was integrated with the RTK GPS, which was used to guide the surveyor. Data were collected by traversing the survey area along the longest possible lines, ensuring efficient collection and processing.

6.2.Data Processing

6.2.1. Magnetic data were processed in bespoke in-house software produced by MS. Processing steps conform to Historic England's standards for "raw or minimally processed data" (see sect 4.2 in David et al., 2008: 11).

Sensor Calibration – The sensors were calibrated using a bespoke in-house algorithm, which conforms to Olsen et al. (2003).

Zero Median Traverse – The median of each sensor traverse is calculated within a specified range and subtracted from the collected data. This removes striping effects caused by small variations in sensor electronics.

Projection to a Regular Grid – Data collected using RTK GPS positioning requires a uniform grid projection to visualise data. Data are rotated to best fit an orthogonal grid projection and are resampled onto the grid using an inverse distance-weighting algorithm.

Interpolation to Square Pixels – Data are interpolated using a bicubic algorithm to increase the pixel density between sensor traverses. This produces images with square pixels for ease of visualisation.

6.3.Data Visualisation and Interpretation

6.3.1. This report presents the gradient of the sensors' total field data as greyscale images, as well as the total field data from the upper and/or lower sensors. The gradient of the sensors minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figure 8). XY trace plots visualise the magnitude and form of the geophysical response, aiding in anomaly interpretation.

6.3.2. Geophysical results have been interpreted using greyscale images and XY traces in a layered environment, overlaid against open street maps, satellite imagery, historic maps, LiDAR data, and soil and geology maps. Google Earth (2018) was consulted as well, to compare the results with recent land usages.

7. Results

7.1. Qualification

7.1.1. Geophysical results are not a map of the ground and are instead a direct measurement of subsurface properties. Detecting and mapping features requires that said features have properties that can be measured by the chosen technique(s) and that these properties have sufficient contrast with the background to be identifiable. The interpretation of any identified anomalies is inherently subjective. While the scrutiny of the results is undertaken by qualified, experienced individuals and rigorously checked for quality and consistency, it is often not possible to classify all anomaly sources. Where possible an anomaly source will be identified along with the certainty of the interpretation. The only way to improve the interpretation of results is through a process of comparing excavated results with the geophysical reports. MS actively seek feedback on their reports as well as reports of further work in order to constantly improve our knowledge and service.

7.2. Discussion

7.2.1. The geophysical results are presented in consideration with satellite imagery (Figure 6) and historic maps (Figure 7).

7.2.2. The fluxgate magnetometer survey has responded well to the conditions of the survey area. The site is generally quiet in nature. The northern half of the site mostly shows natural changes in the soils and superficial geology, while the southern half is dominated by agricultural activity. The natural changes are observed in the form of wavy bands running on E-W and NW-SE alignments through the site; these correlate with cropmarks (Google Earth, 2018) indicative of the geological processes (4.3).

7.2.3. Anomalies related to agricultural activity are noted by field drains, former field boundaries, and weak ploughing trends. Further linear anomalies have been classified as 'Agricultural' in origin and may represent unmapped boundaries or ploughing features. A strong ferrous anomaly towards the centre of the site's southern end matches the location of a former pond.

7.2.4. No anomalies have been classified as 'archaeological' in origin; however, several anomalies have been marked as 'Undetermined', as their origin is ambiguous. Given the context of these 'Undetermined' responses among the other agricultural and natural responses, a similar origin for these responses is considered more likely than an archaeological source. Still, there is not enough context to determine their specific origin or relative date.

7.3. Interpretation

7.3.1. General Statements

7.3.1.1. Geophysical anomalies will be discussed broadly as classification types across the survey area. Only anomalies that are distinctive or unusual will be discussed individually.

- 7.3.1.2. **Undetermined** – Anomalies are classified as Undetermined when the anomaly origin is ambiguous through the geophysical results and there is no supporting or correlative evidence to warrant a more certain classification. These anomalies are likely to be the result of geological, pedological or agricultural processes, although an archaeological origin cannot be entirely ruled out. Undetermined anomalies are generally not ferrous in nature.
- 7.3.1.3. **Ferrous (Discrete/Spread)** – Discrete ferrous-like, dipolar anomalies are likely to be the result of modern metallic disturbance on or near the ground surface. A ferrous spread refers to a concentrated deposition of these discrete, dipolar anomalies. Broad dipolar ferrous responses from modern metallic features, such as fences, gates, neighbouring buildings and services, may mask any weaker underlying archaeological anomalies should they be present.

7.3.2. Magnetic Results - Specific Anomalies

- 7.3.2.1. **Drains/Agricultural** – The drainage anomalies [1a] are located in the south-east of the field, occurring c. 21-23m apart on a north-south alignment. The nature of the response suggests fired or metalled material. The drains [1a] run parallel and perpendicular to other agricultural features. To the north and south [1b] run on an east-west direction. [1b] are composed of two linear, parallel anomalies. Historic maps (Figure 7) record similar configurations for field divisions. The double linear response of [1b] could indicate a similar type of feature.
- 7.3.2.2. **Agricultural** – A mapped historic field boundary [1c] has been detected towards the centre of the site (Figure 6). This may continue down into the south; although no boundary is recorded in this location. The continuation of [1c] into the south is also obscured by the overwhelming response of [1d], a large ferrous anomaly that corresponds to a former pond on historic maps. North-west of the former pond is a small area of magnetic disturbance may relate to agricultural activity, as it occurs along the possible former boundary [1b] located north of the drains (see section 7.3.2.1).
- 7.3.2.3. **Agricultural** – Several further weak, linear responses have been classified as 'Agricultural' in origin due to their similarity in response to [1b and 1c]. Many of these also occur near the field edges, over areas of repeated tractor movement (Figure 6).
- 7.3.2.4. **Natural** – The site presents an enhanced natural background, particularly visible as a band crossing the middle of the site along an east-west direction. Most of the anomalies are weak in magnetic response, with a few stronger, discrete anomalies of stronger magnitude (e.g. [1e]). When analysing the magnetic total field (Figure 4), [1e] can be observed as a stronger response within a coherent natural pattern. It may exhibit a more enhanced magnetic response or occur at a shallower depth compared to the rest of the geological responses, which could explain why it still appears stronger than the other natural responses in the magnetic gradient (Figure 3).

- 7.3.2.5. **Undetermined** – A few linear and discrete anomalies have been characterised as ‘Undetermined’ in the southern half of the site. A curvilinear response [1f] corresponds with a similar cropmark visible in satellite imagery (see 2005 in Google Earth, 2008), but the origin of this cropmark is unclear.

8. Conclusions

- 8.1. A fluxgate magnetometer survey has been successfully completed across the site. Agricultural activity and anomalies classified as ferrous and natural have been identified. Several curvilinear and discrete responses have also been classified as ‘Undetermined’. There are no unique aspects of these ‘Undetermined’ responses to suggest a specific archaeological origin; an agricultural, natural or modern origin for these anomalies is also plausible.
- 8.2. Agricultural activity has been identified in the form of drains, ploughing trends, former field boundaries, and potential unmapped boundaries. The fill of a former bound has been detected as well.
- 8.3. Ferrous responses are mainly limited to the edges of the field and can be associated with modern metallic features.
- 8.4. An enhanced band of natural depositions is evident on an east-west alignment through the northern half of site. These are well correlated with cropmarks indicative of geological processes.

9. Archiving

- 9.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report.
- 9.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to the any dictated time embargoes.

10. Copyright

- 10.1. Copyright and the intellectual property pertaining to all reports, figures, and datasets produced by Magnitude Services Ltd. is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

11. References

British Geological Survey, 2018. Geology of Britain. [Moulton Chapel, Lincolnshire]. [<http://mapapps.bgs.ac.uk/geologyofbritain/home.html/>]. [Accessed 20/08/2018].

Chartered Institute for Archaeologists, 2014. Standards and guidance for archaeological geophysical survey. ClfA.

David, A., Linford, N., Linford, P. and Martin, L., 2008. Geophysical survey in archaeological field evaluation: research and professional services guidelines (2nd edition). Historic England.

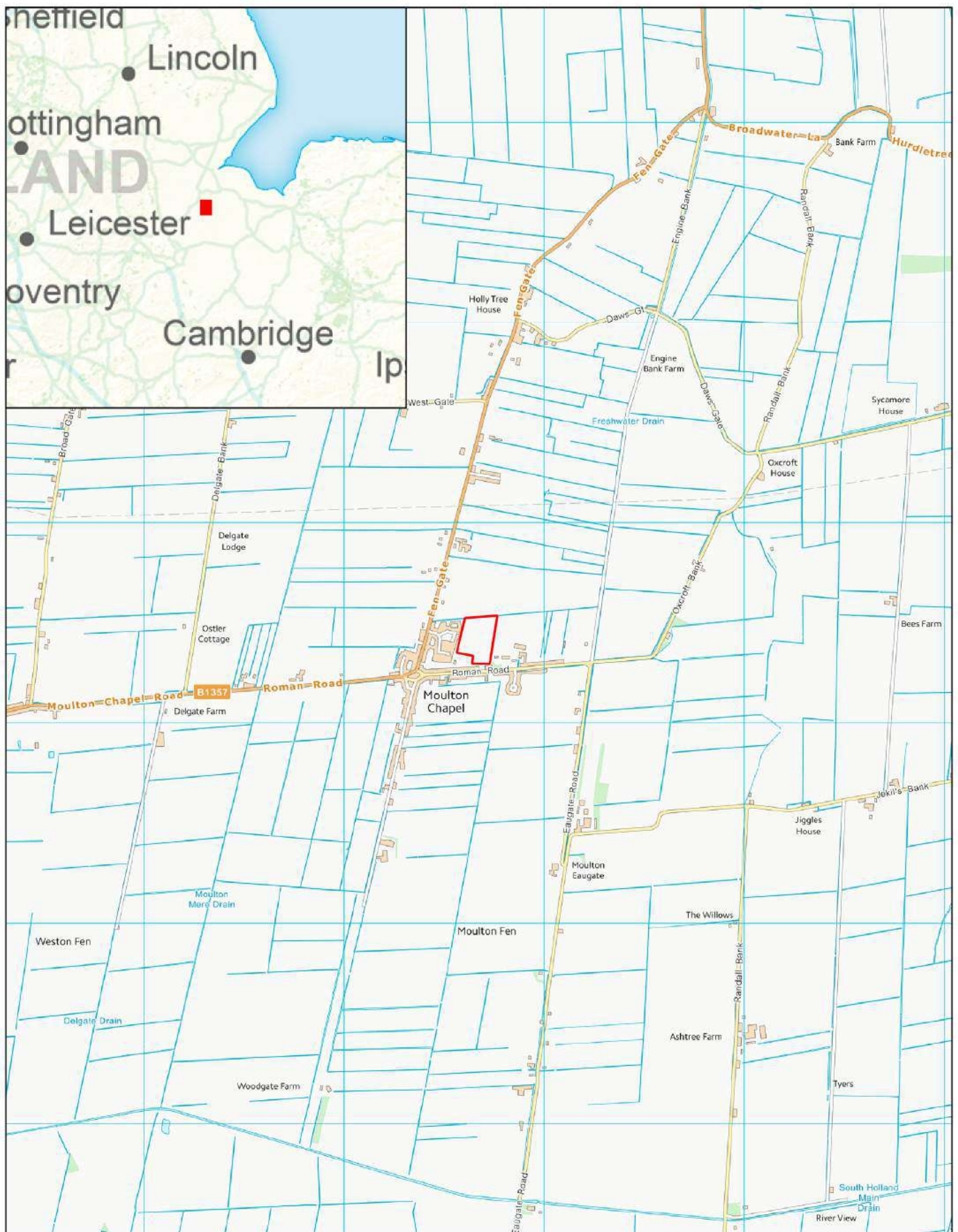
Google Earth, 2018. Google Earth Pro V 7.1.7.2606.

Olsen, N., Toffner-Clausen, L., Sabaka, T.J., Brauer, P., Merayo, J.M.G., Jorgensen, J.L., Leger, J.M., Nielsen, O.V., Primdahl, F., and Risbo, T., 2003. Calibration of the Orsted vector magnetometer. *Earth Planets Space* 55: 11-18.

Schmidt, A. and Ernenwein, E., 2013. Guide to good practice: geophysical data in archaeology. 2nd ed., Oxbow Books, Oxford.

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. EAC Guidelines 2. European Archaeological Council: Belgium.

Soilscapes, 2018. [Moulton Chapel, Lincolnshire]. Cranfield University, National Soil Resources Institute [<http://landis.org.uk>]. [Accessed 20/08/2018].



MSTF357 - Land off Roman Road, Moulton Chapel

Figure 1 - Site Location

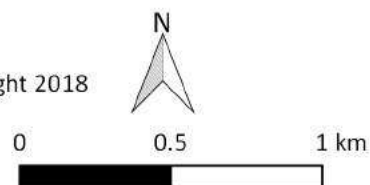
1:25,000 @ A4

Copyright Magnitude Surveys Ltd 2018

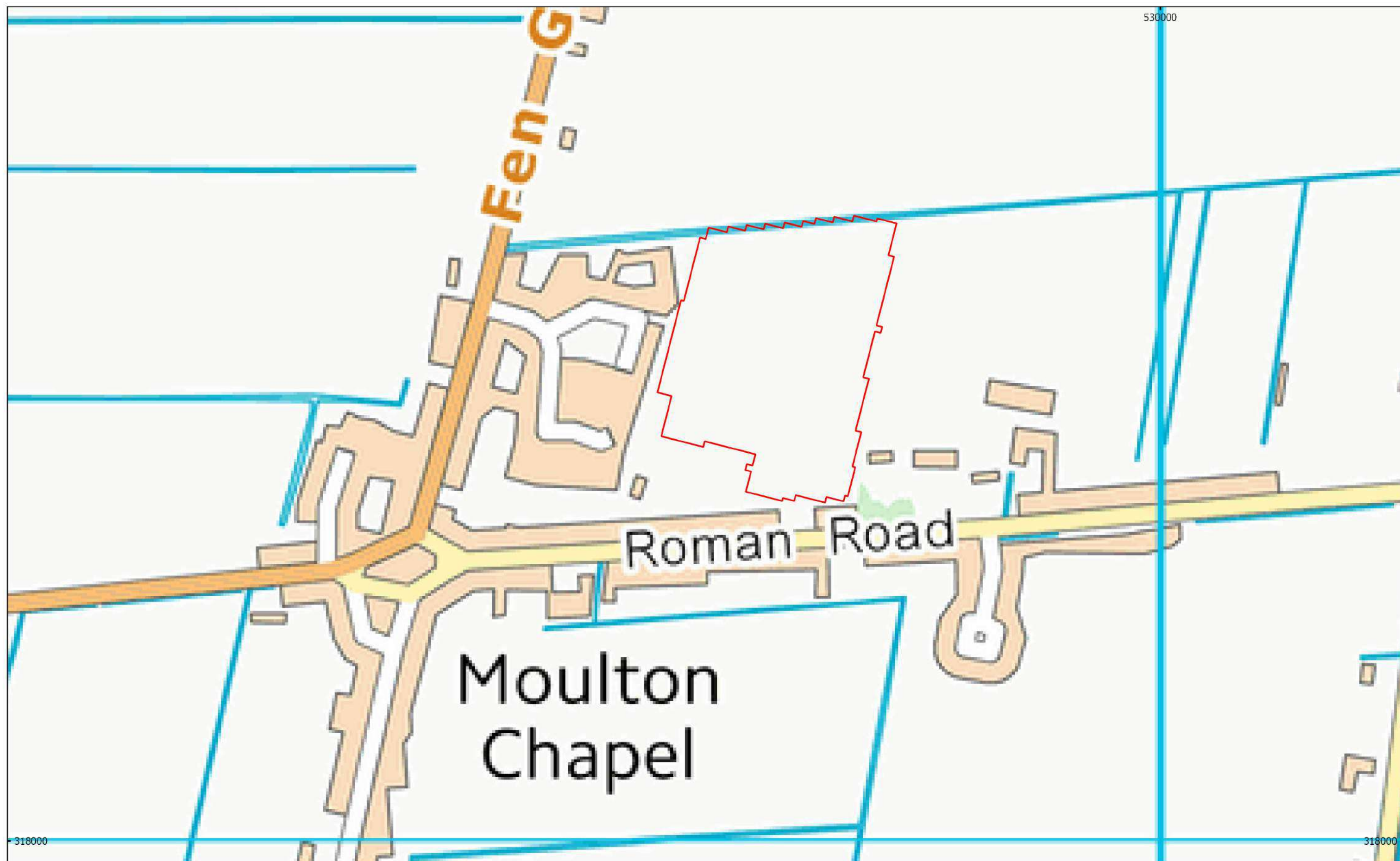
Contains Ordnance Survey data © Crown Copyright and database right 2018

OS (100056946)

 Site Boundary

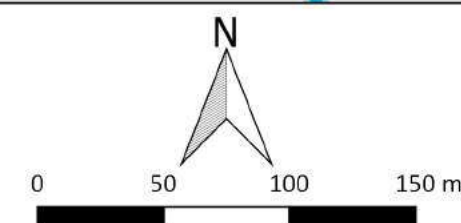


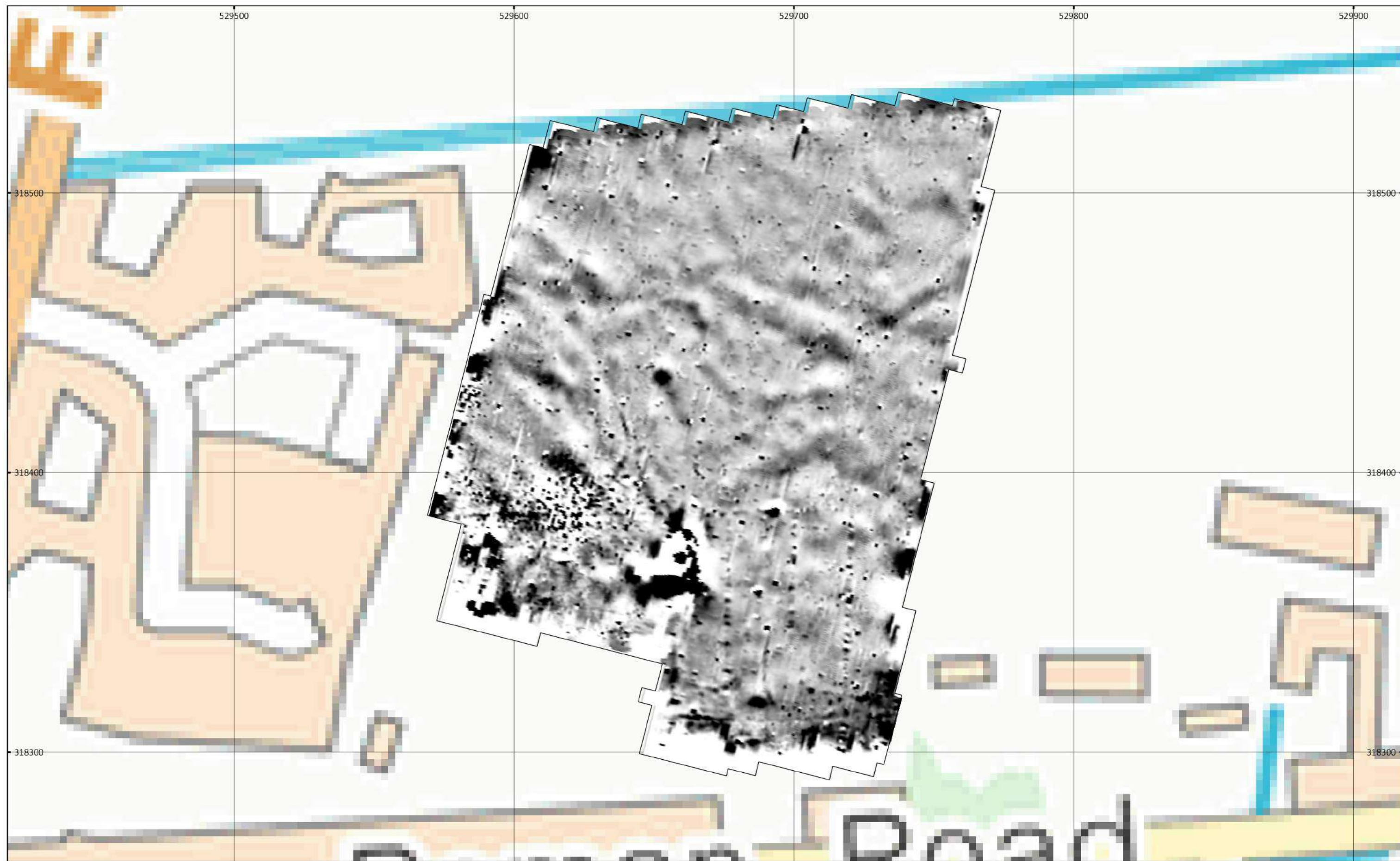
**magnitude
surveys**



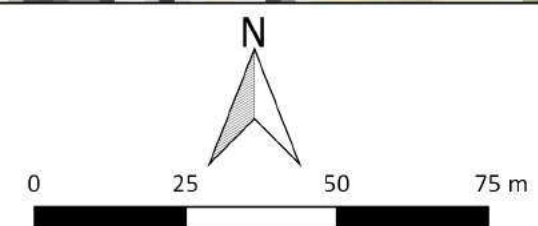
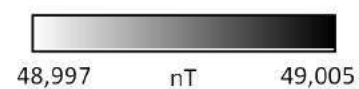
MSTF357 - Land off Roman Road, Moulton Chapel
 Figure 2 - Location of Survey Area
 1:2,500 @ A3
 Copyright Magnitude Surveys Ltd 2018
 Contains Ordnance Survey data © Crown Copyright and database right 2018
 OS (100056946)

 Survey Extent





MSTF357 - Land off Roman Road, Moulton Chapel
Figure 3 - Magnetic Total Field (Lower Sensor)
1:1,250 @ A3
Copyright Magnitude Surveys Ltd 2018
Contains Ordnance Survey data © Crown Copyright and database right 2018
OS (100056946)





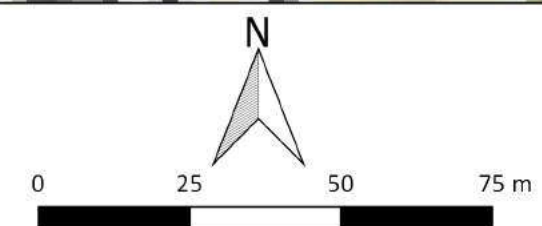
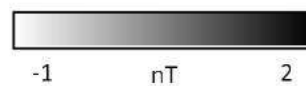
MSTF357 - Land off Roman Road, Moulton Chapel

Figure 4 - Magnetic Gradient

1:1,250 @ A3

Copyright Magnitude Surveys Ltd 2018

Contains Ordnance Survey data © Crown Copyright and database right 2018
OS (100056946)





MSTF357 - Land off Roman Road, Moulton Chapel

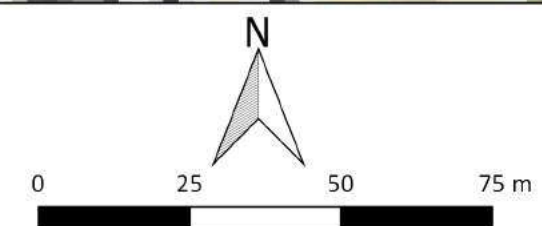
Figure 5 - Magnetic Interpretation

1:1,250 @ A3

Copyright Magnitude Surveys Ltd 2018

Contains Ordnance Survey data © Crown Copyright and database right 2018
OS (100056946)

- | | |
|----------------------|-----------------------|
| Agricultural (Weak) | Undetermined (Weak) |
| Agricultural (Trend) | Undetermined (Strong) |
| Drain | Undetermined (Trend) |
| Ferrous (Dipolar) | Natural (Strong) |
| Ferrous (Spread) | Natural (Weak) |
| | Collection artefact |

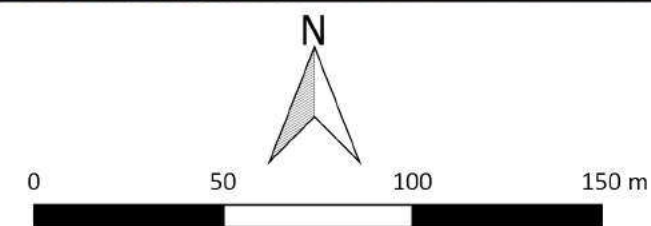


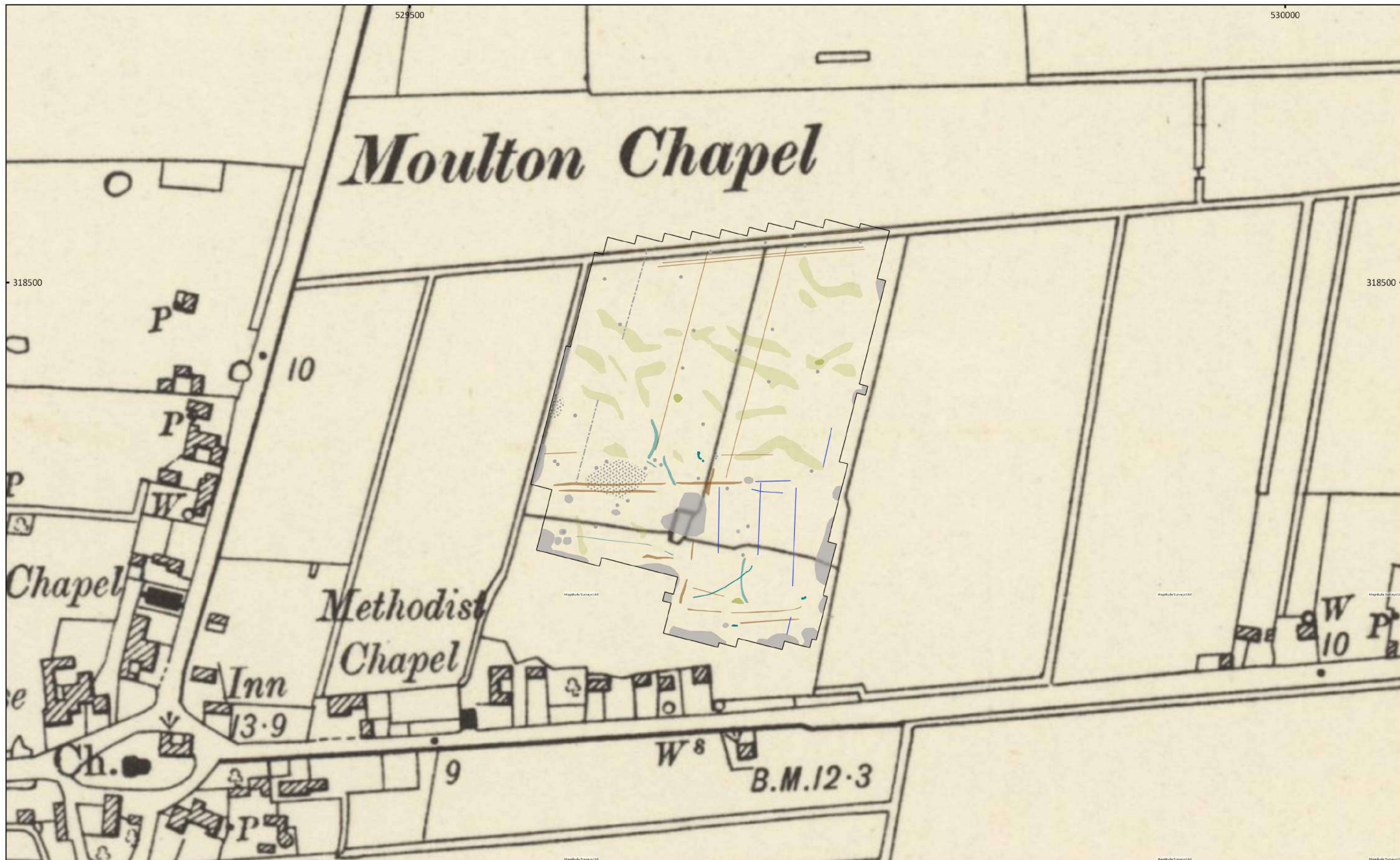
magnitude
surveys



MSTF357 - Land off Roman Road, Moulton Chapel
 Figure 6 - Magnetic Interpretation Over Satellite Imagery
 1:2,000 @ A3
 Copyright Magnitude Surveys Ltd 2018
 Contains satellite imagery © 2018 Bing Satellite

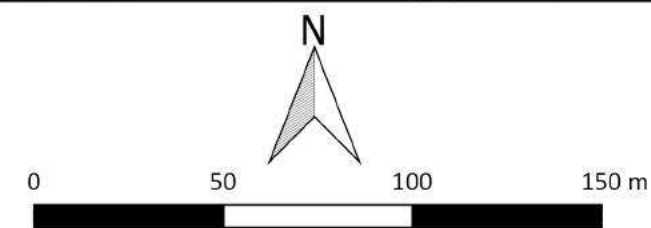
- | | |
|----------------------|-----------------------|
| Agricultural (Weak) | Undetermined (Weak) |
| Agricultural (Trend) | Undetermined (Strong) |
| Drain | Undetermined (Trend) |
| Ferrous (Dipolar) | Natural (Strong) |
| Ferrous (Spread) | Natural (Weak) |
| | Collection artefact |

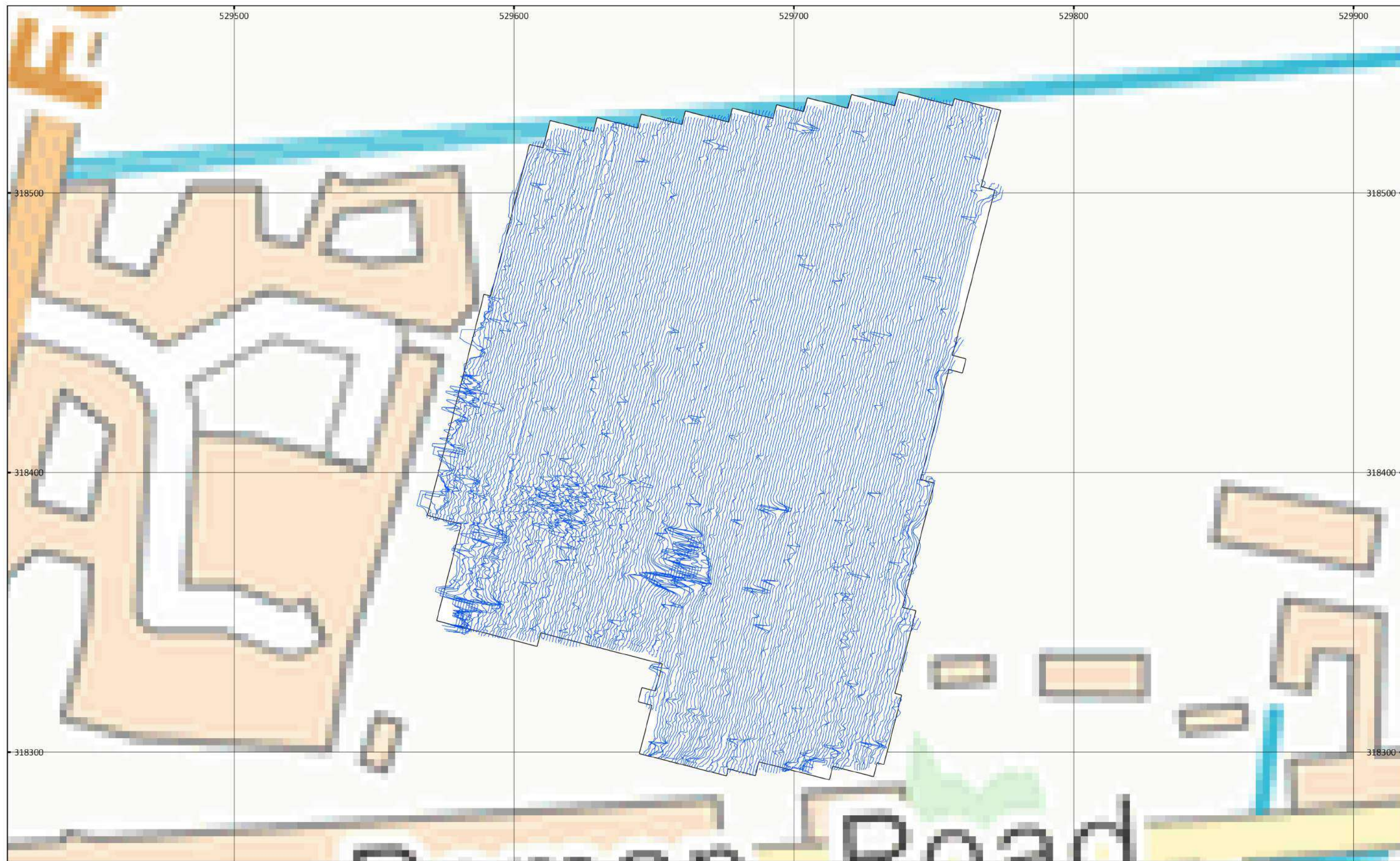




MSTF357 - Land off Roman Road, Moulton Chapel
 Figure 7 - Magnetic Interpretation Over Historic Maps
 1:2,000 @ A3
 Copyright Magnitude Surveys Ltd 2018
 Contains historic maps: Ordnance Survey, 6" 2nd edition c. 1882-1913 ©
 National Library of Scotland

- | | |
|---|---|
| Agricultural (Weak) | Undetermined (Weak) |
| Agricultural (Trend) | Undetermined (Strong) |
| Drain | Undetermined (Trend) |
| Ferrous (Dipolar) | Natural (Strong) |
| Ferrous (Spread) | Natural (Weak) |
| Collection artefact | |





MSTF357 - Land off Roman Road, Moulton Chapel
Figure 8 - XY Trace Plot
25nT/cm at 1:1,250 @ A3
Copyright Magnitude Surveys Ltd 2018
Contains Ordnance Survey data © Crown Copyright and database right 2018
OS (100056946)

