Symmetry Park, North Oxford

Archaeological and Heritage Assessment

Prepared by:
The Environmental Dimension Partnership Ltd

On behalf of:
Tritax Symmetry Ltd and Siemens Healthineers (the Applicants)

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Images

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Plans

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Non-technical Summary

S1 This report has been prepared by The Environmental Dimension Partnership Ltd (EDP), on behalf of Tritax Symmetry Ltd and Siemens Healthineers (hereafter referred to as 'the Applicants') and presents an archaeology and heritage assessment of Symmetry Park, North Oxford (hereafter referred to as 'the Site'). The purpose of this report is to inform a planning application for the commercial development of the Site.

S2 This assessment has been prepared to satisfy national planning policy set out in the National Planning Policy Framework (NPPF) and local planning policy. It concludes that the site does not contain any designated heritage assets, such as world heritage sites, scheduled monuments, listed buildings, registered parks and gardens, registered battlefields and conservation areas.

S3 Potential impacts upon the settings of designated heritage assets within 2km of the Site have been considered, and it is concluded that the implementation of the proposed development will not change the existing settings of the Alchester Roman site scheduled monument, the Chesterton and Weston on the Green Conservation Areas, the Middleton Park Registered Park and Garden and listed buildings within the village of Wendlebury and elsewhere. This is due to the lack of a visual and/or functional relationship between these designated heritage assets and the Site, the distances between them, the screening provided by existing hedgerows and trees and/or the A41 and the M40 and proposed mitigation planting.

S4 In terms of non-designated heritage assets, geophysical survey has established the presence of enclosures, probably related to a farmstead or farmsteads within and to the north of the Site. The plan and form of the enclosures suggests that these are of later prehistoric date, perhaps continuing through to the Romano-British period. Given the presence of this archaeological landscape an archaeological evaluation in the form of trial trenching will be required to more fully establish its extent, date, state of preservation and significance.

S5 At least some level of truncation of archaeological remains can be expected to have been caused by medieval ridge and furrow ploughing which has taken place over the entire Site and more recent agricultural use. Should the trial trenching prove the presence of this later prehistoric/Roman agricultural landscape the loss of this landscape could be mitigated by the imposition of a condition imposed on the planning consent requiring further investigation. It is highly unlikely that such archaeological remains will be of sufficient rarity and importance to warrant preservation *in-situ*.

S6 The proposed development will lead to the loss of a historic boundary between the parishes of Chesterton and Wendlebury. This hedged boundary can be regarded as important under the Hedgerow Regulations of 1997 as it marks a boundary between parishes existing before 1850. The loss of this boundary is unavoidable and can be at least partially mitigated by recording prior to the commencement of development.

S7 As such, there is no reason to believe that the proposed development could not meet the requirements of local and national planning policy as far as heritage assets are concerned.

Section 1
Introduction

Introduction and Project Aims

1.1 This Archaeological and Heritage Assessment has been prepared by the Environmental Dimension Partnership Ltd (EDP), on behalf of Tritax Symmetry Ltd and Siemens Healthineers (hereafter referred to as 'the Applicants') to inform planning proposals for the commercial development of land at Symmetry Park, North Oxford, located close to junction 9 of the M40 (hereafter referred to as 'the Site').

1.2 The first aim of this assessment is to identify and assess whether the Site is located within the settings of any designated heritage assets and to determine whether and to what extent the Site contributes to their heritage significance. The potential effects of the proposed development upon that significance are then considered.

1.3 The second aim of this assessment is to consider the available historical and archaeological resource within and around the Site and to establish its likely archaeological significance in accordance with the requirements of the National Planning Policy Framework (NPPF 2021) and local planning policy. The potential effects of the proposed development upon that significance are then considered.

Location, Land Use and Boundaries

1.4 The Site (**Image EDP 1**) measures 19.35 hectares (ha) in size and is approximately centred on National Grid Reference (NGR) 455468 219796.

1.5 The boundary of the Site fronts the A41 road and extends across several open fields that are currently in agricultural use. There are a number of buildings in agricultural or commercial use located in the north east part of the Site.

1.6 The eastern extent of the Site is defined by field boundaries and hedgerows, the Grange Farm Industrial Estate and Lower Grange Farm. The Wendlebury Brook defines the western edge of the Site, flowing from north to south towards a small area of woodland, where its course then changes to flow east across the Site, before passing under the A41.

1.7 Fields within the Site are enclosed by hedgerows having few associated mature trees.

Topography and Geology

1.8 Generally, ground levels fall from north to south-east, from approximately 77.50 metres Above Ordnance Datum (mAOD) to approximately 64.00 mAOD.

1.9 The solid geology under the Site is variable and crossed by bands of the Kellaways Sand Member – Sandstone and Siltstone, the Kellaways Clay Member – Mudstone and the Peterborough Member – Mudstone. An overlying superficial small band of River Terrace Deposits 2 – Sand and Gravel is located west of the industrial estate and a band of river-deposited alluvium aligned north-east to south-west also crosses part of the northern portion of the Site (www.bgs.ac.uk).

Proposed Development

1.10 The description of development is thus:

"Full planning application for the erection of a new high quality combined research, development and production facility comprising of Class B2 floorspace and ancillary office floorspace with associated infrastructure including: formation of signal-controlled vehicular access to the A41 and repositioning of existing bus stops; ancillary workshops; staff gym and canteen; security gate house; a building for use as an energy centre (details of the energy generation reserved for future approval); loading bays; service yard; waste management area; external plant; vehicle parking; landscaping including permanent landscaped mounds; sustainable drainage details; together with the demolition of existing agricultural buildings within the red line boundary; and the realignment of an existing watercourse."

1.11 The proposed development will comprise the following:

- Demolition of agricultural buildings;
- New signal-controlled access from the A41;
- Employment floorspace (Use Class B2);
- Loading bays, service yard, waste management area;
- Facilities management building;
- Security gatehouse;
- A building for use as an energy centre;
- Parking for electric cars, accessible parking, bicycles, cars and motorcycles;
- Landscaping including landscape mounds;
- Re-alignment of Wendlebury Brook within the Proposed Development area; and
- Sustainable drainage.

1.12 The extent of the application site area includes the land needed to undertake construction, the re-alignment of the Wendlebury Brook, and landscaping including landscape mounds. Development would also require the removal of the existing agricultural buildings located within the north-east part of the Site.

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Section 2
Legislation and Planning Guidance

Introduction

2.1 The following section summarises the key legislation and national/local planning policies which are of relevance to this assessment.

Legislation

2.2 The Ancient Monuments and Archaeological Areas Act of 1979 addresses the designation and management of scheduled monuments. Designation of archaeological and historic sites as scheduled monuments applies only to those which are deemed to be of national importance and is generally adopted only if it represents the best means of protection. The contents of the Act do not confer any protection on the 'setting' of scheduled monuments, just their physical remains.

2.3 Section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act of 1990 sets out the statutory duty of local planning authorities (LPA's) where proposed development would affect a listed building or its setting. It states that:

"i*n considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses."*

2.4 Section 69 of the Act requires local planning authorities to define as conservation areas any "*areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance'.* Section 72 gives LPA's a general duty to pay special attention *'to the desirability of preserving or enhancing the character or appearance of that area"*.

2.5 Paragraph 200 of the NPPF (MHCLG, 2021) transposes these sections of the 1990 Act into national planning policy as they come under the category of designated heritage assets. The balancing exercise to be performed, between any harm arising from a development proposal and the benefits which would accrue from its implementation, is then subsequently presented in paragraphs 201 and 202 of the NPPF.

National Planning Policy Framework

2.6 The revised NPPF was published in 2021 and Section 16 sets out the government's approach to the conservation and management of the historic environment through the planning process. The opening paragraph (189) recognises that heritage assets are "*an irreplaceable resource and should be conserved in a manner appropriate to their*

significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations".

2.7 Paragraph 194 concerns planning applications, stating that:

"In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation."

2.8 Paragraph 199 considers the weighting given within the planning decision to impacts on designated heritage assets, stating that:

"When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance."

2.9 Paragraph 200 considers the level of harmful effects on designated heritage assets and states that:

"Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:

a) Grade II listed buildings, or grade II registered parks or gardens, should be exceptional; and

b) Assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional."*

2.10 With regard to the decision-making process, paragraphs 201 and 202 are of relevance. Paragraph 201 states that:

"Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

a) the nature of the heritage asset prevents all reasonable uses of the site;

b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation;

c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and

d) the harm or loss is outweighed by the benefit of bringing the site back into use".

2.11 Paragraph 202 states that: *"Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use".*

2.12 The threshold between substantial and less than substantial harm has been clarified in the Courts. Paragraphs 24 and 25 of *Bedford BC v Secretary of State for Communities and Local Government* [2013] EWHC 2847 are of relevance here in the way they outline the assessment of 'harm' for heritage assets:

"What the inspector was saying was that for harm to be substantial, the impact on significance was required to be serious such that very much, if not all, of the significance was drained away.

Plainly in the context of physical harm, this would apply in the case of demolition or destruction, being a case of total loss. It would also apply to a case of serious damage to the structure of the building. In the context of non-physical or indirect harm, the yardstick was effectively the same. One was looking for an impact which would have such a serious impact on the significance of the asset that its significance was either vitiated altogether [i.e. destroyed] *or very much reduced."*

2.13 In other words, for the 'harm' to be 'substantial', and therefore require consideration against the more stringent requirements of Paragraph 201 of the NPPF compared with Paragraph 202, the proposal would need to result in the asset's significance either being *"vitiated altogether or very much reduced".*

2.14 Paragraph 203 refers to non-designated heritage assets identifying that:

"The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset."

Local Planning Policy

2.15 The Cherwell Local Plan 2011-2031 (adopted 2015) contains Policy ESD 15: *The Character of the Built and Historic Environment* which has the following extracts:

"Successful design is founded upon an understanding and respect for an area's unique built, natural and cultural context. New development will be expected to complement and enhance the character of its context through sensitive siting, layout and high quality design. All new development will be required to meet high design standards. Where development is in the vicinity of any of the District's distinctive natural or historic assets, delivering high quality design that complements the asset will be essential.

New development proposals should:

- *Contribute positively to an area's character and identity by creating or reinforcing local distinctiveness and respecting local topography and landscape features, including skylines, valley floors, significant trees, historic boundaries, landmarks, features or views, in particular within designated landscapes, within the Cherwell Valley and within conservation areas and their setting;*

- *Conserve, sustain and enhance designated and non designated 'heritage assets' (as defined in the NPPF) including buildings, features, archaeology, conservation areas and their settings, and ensure new development is sensitively sited and integrated in accordance with advice in the NPPF and NPPG. Proposals for development that affect non-designated heritage assets will be considered taking account of the scale of any harm or loss and the significance of the heritage asset as set out in the NPPF and NPPG. Regeneration proposals that make sensitive use of heritage assets, particularly where these bring redundant or under used buildings or areas, especially any on English Heritage's At Risk Register, into appropriate use will be encouraged; and*

- *Include information on heritage assets sufficient to assess the potential impact of the proposal on their significance. Where archaeological potential is identified this should include an appropriate desk based assessment and, where necessary, a field evaluation."*

2.16 In addition, saved policies in the Cherwell Local Plan (adopted 1996) include policies C10 and C25.

2.17 Policy C10 is as follows: "*Development which would have a detrimental effect upon the character and appearance of historic landscapes, parks and gardens and battlefields and their settings will normally be resisted*".

2.18 Policy C25 is as follows: *"In considering proposals for development which would affect the site or setting of a scheduled ancient monument, other nationally important archaeological sites and monuments of special local importance, the council will have regard to the desirability of maintaining its overall historic character, including its protection, enhancement and preservation where appropriate".*

Section 3
Methodology

Introduction

3.1 This report has been produced in accordance with the *Standard and Guidance for Historic Environment Desk-Based Assessment* issued by the Chartered Institute for Archaeologists (CIfA, 2020). These guidelines provide a national standard for the completion of desk-based assessments.

3.2 It has also given due regard to the potential for effects on designated heritage assets, in terms of their setting, in line with the five-step process outlined in national guidance (Historic England (HE) 2017) and other relevant documents related to the historic environment (i.e. HE 2015).

Archaeological Methodology

3.3 The assessment involved consultation of readily available archaeological and historical information from documentary, cartographic and aerial photographic sources. The major repositories of information comprised:

- Information on designated heritage assets from the on-line National Heritage List for England, curated by HE;
- Records of known archaeological sites, monuments, artefact findspots and previous archaeological investigations within and around the Site held on the Oxfordshire Historic Environment Record (HER);
- Historic mapping and other relevant documentation held online and by the Oxfordshire History Centre;
- Lidar data acquired from the Environment Agency;
- Aerial photographs held by the Historic England Archive Service; and
- The results of a geophysical survey of the Site and a wider area completed in August 2021.

3.4 The assessment provides a synthesis of relevant information for the Site derived from a search area extending over 1km from its boundary. This allows additional contextual information regarding its archaeological interest and/or potential to be gathered.

3.5 The information gathered from the repositories and sources identified above was checked and augmented through the completion of a walkover of the Site which was carried out in

July 2021. The aim of the walkover was to consider the nature and significance of known and/or potential archaeological remains within the Site, to identify visible historic features and assess possible factors which may affect the survival or condition of archaeological remains.

3.6 The report thereafter concludes with an assessment of the Site's likely archaeological potential, made with regard to current best practice guidelines.

Setting Assessment Methodology

3.7 In addition, this report also considers the nature and significance of any effects on the settings of designated heritage assets located around the Site. In this regard, the Site walkover included visits to designated heritage assets beyond the Site boundary and considered, where appropriate, their significance, setting and the existing contribution made by the land within the Site to their significance.

3.8 The setting assessment process employed current Historic England guidance which is set out in: *Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets* (HE 2017). This provides best practice guidance for the identification and assessment of potential setting issues in the historic environment.

3.9 When assessing the impact of proposals on designated heritage assets, it is not a question of whether there would be a physical impact on that asset, but instead whether change within its '*setting*' would lead to a loss of '*significance*'.

3.10 In simple terms, setting is defined as "*the surroundings in which a heritage asset is experienced*". It must be recognised from the outset that '*setting*' is not a heritage asset and cannot itself be harmed. Its importance relates to the contribution it makes to the significance of the designated heritage asset.

3.11 Historic England guidance identifies that "*change to heritage assets is inevitable, but it is only harmful when significance is damaged*" (HE 2017).

3.12 In that regard, '*significance*' is defined in Annex 2 of the NPPF as "*the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic*".

3.13 As such, when assessing the impact of proposals on designated heritage assets beyond the boundary of a development site, it is not a question of whether setting would be affected, but rather a question of whether change within an asset's '*setting*' would lead to a loss of '*significance*' based on the above 'heritage interest' as defined in the NPPF.

3.14 Set within this context, where the objective is to determine the impact of proposals on designated heritage assets beyond the boundary of a development site, it is necessary to first define the significance of the asset in question and the contribution made to that significance by its '*setting*'. This is in order to establish whether there would be a loss, and

therefore harm, although the guidance identifies that change within a heritage asset's setting need not necessarily cause harm to that asset as change can be positive, negative or neutral.

3.15 The guidance states that the importance of setting "*lies in what it contributes to the significance of the heritage asset or to the ability to appreciate that significance*".

3.16 It goes on to note that:

"*all heritage assets have significance, some of which have particular significance and are designated. The contribution made by their setting to their significance also varies. Although many settings may be enhanced by development, not all settings have the same capacity to accommodate change without harm to the significance of the heritage asset or the ability to appreciate it.*"

3.17 Whilst identifying that elements of an asset's setting can make an important contribution to its significance, the guidance states that:

"*Setting is not itself a heritage asset, nor a heritage designation, although land comprising a setting may itself be designated*'. It continues by adding that: '*conserving or enhancing heritage assets by taking their settings into account need not prevent change; indeed change may be positive.*"

3.18 On a practical level, the HE guidance (2017) identifies an approach to assessing setting which is based on a five-step procedure; i.e.:

- **Step 1**: Identify which heritage assets and their settings are affected;
- **Step 2**: Assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated;
- **Step 3**: Assess the effects of the proposed development, whether beneficial or harmful, on that significance or the ability to appreciate it;
- **Step 4**: Explore ways of maximising enhancement and avoid or minimise harm; and
- **Step 5**: Make and document the decision and monitor outcomes.

3.19 As far as **Step 2** is concerned, the guidance makes the following observations:

"*The second stage of any analysis is to assess whether the setting of a heritage asset makes a contribution to its significance and the extent and/or nature of that contribution…this assessment should first address the key attributes of the heritage asset itself and then consider:*

- *the physical surroundings of the asset, including its relationship with other heritage assets;*

- *the asset's intangible associations with its surroundings, and patterns of use;*
- *the contribution made by noises, smells, etc to significance; and*
- *the way views allow the significance of the asset to be appreciated."*

3.20 Thereafter, the guidance notes that: "*this assessment of the contribution to significance made by setting will provide the baseline for establishing the effects of a proposed development on significance, as set out in 'Step 3' below*".

3.21 Having established the baseline, the following guidance is provided in respect of an assessment of the effect upon '*setting*'; i.e.:

"In general…the assessment should address the attributes of the proposed development in terms of its:

- *location and siting;*
- *form and appearance;*
- *wider effects; and*
- *permanence."*

3.22 In light of the above, the assessment of potential setting effects, employed in the preparation of this report, is concentrated on the following main areas:

- Identifying those heritage assets that could potentially be affected by the proposed development and the manner (if any) in which they would be affected (**Step 1**: set out in **Section 4** of this report);
- Defining the contribution made to their significance by their setting (**Step 2**: set out in **Section 5** of this report);
- Assessing whether the site forms a part of their setting, and therefore whether it contributes to their significance or to an ability to appreciate it (part of **Step 2**); and
- Assessing the potential effects of development on their setting and whether that would result in harm to their significance or to an ability to appreciate it (**Step 3**: set out in **Section 5** of this report).

3.23 **Step 4** of the assessment process is reflected in the development design and **Step 5** of the assessment process is not within the remit of this report.

Section 4
Existing Information

Introduction

4.1 The Site does not contain any designated heritage assets such as such as world heritage sites, scheduled monuments, listed buildings, conservation areas, registered parks and gardens or registered battlefields.

4.2 However, designated heritage assets located within 2km of the Site comprise the scheduled monument of Alchester Roman site, the Chesterton, Weston on the Green and Bicester Conservation Areas, the Middleton Park Registered Park and Garden and listed buildings within the village of Wendlebury and elsewhere (**Plan EDP1**).

4.3 Regarding non-designated heritage assets, there are 71 records of archaeological/ historical sites and artefact findspots recorded on the Oxfordshire HER within an approximate distance of 1km around the Site (**Plan EDP 2**). In addition, there are records of 30 events mostly in the form of archaeological desk-based assessments or fieldwork investigations within this area (**Plan EDP 3**). Those records and events considered relevant to this assessment are discussed below.

Designated Heritage Assets

4.4 The following addresses **Step 1** of the five-step approach to setting assessment described in HE guidance (2017). This identification of designated heritage assets which may potentially be affected by the proposed development was completed through an initial map analysis which was followed by a visual inspection carried out during the Site visit.

4.5 All designated heritage assets located up to 2km from the Site boundary were assessed in order to understand to what degree their setting contributes to their significance, whether the Site forms part of that setting and whether the Site makes a contribution to their significance. This 2km distance from the Site boundary was considered appropriate as the settings of designated heritage assets beyond this distance are highly unlikely to be affected by the proposed development.

Scheduled Monument

4.6 The western boundary of the scheduled monument of Alchester Roman site is located approximately 900m to the east of the Site (**Plan EDP1**). Although scheduled there is little information held on the on-line National Heritage List for England about the monument. However, it is known that the site was a planned Roman settlement about 10.5 ha in size which was located at the junction of the Silchester to Towcester and Cirencester to St. Albans Roman roads. The settlement was enclosed by a defensive rampart and ditch and was occupied throughout the Roman period and preceded by a possible fort with an associated parade ground.

4.7 There have been numerous archaeological investigations within the scheduled area and an analysis of aerial photographs taken in 1996 over the site of the settlement identified roads and streets, wall foundations, houses, shops, workshops, large public buildings, possible temples, ditches, areas of paving and the debris of collapsed buildings. The outline of the town defences has been identified from these aerial photographs along with the possible presence of an earlier fort and extra-mural settlements. The routes of the Roman roads described above were also identified as was the route of an east-west aligned road which ran through the town, identified as a slight ridge which ran from the western rampart (Stoertz 1998, 6-9 and Figure 1). If projected to the west this road would run to the north of Grange Farm crossing the northern portion of the Site (see **Plan EDP2**).

4.8 The designation of this Roman settlement as a scheduled monument means that this Site is of national importance. In this respect, its archaeological interest is the primary source of its heritage significance.

4.9 Its setting contributes a smaller portion towards its overall significance and is mainly focused on the higher ground of Graven Hill to the east and the fields which surround the monument to the west, south and south-east which, although a result of 19th century and later field enclosure, still reflect the nature of the former rural environment which would have existed around the Roman town, and from where the town would have been experienced.

4.10 The routes of the Roman roads which emanate from the town, notably the Cirencester to St. Albans Roman road which is followed by Green Lane to the north of the Site, also contribute to the setting of the scheduled monument as they have a direct functional relationship with the Roman town, as would any buried archaeological remains of Roman farmsteads etc. in the wider landscape.

4.11 Visually, the setting of the scheduled monument is abruptly defined to the north-west and west by the A41 dual carriageway. The Site is located on the opposite side of the A41 and has no visual relationship with the scheduled monument. With no historic or functional association with the town remaining, the Site is not part of the setting of the scheduled monument and makes no contribution to its significance.

4.12 It is notable however that, should any buried archaeological remains be identified in the Site that are contemporary with the town, they could be considered to have an associative relationship with it and thus contribute to a small degree to its significance, in that they form part of the town's historic context.

Conservation Areas

4.13 The southern boundary of the Chesterton Conservation Area is located approximately 925m to the north-east of the Site (**Plan EDP1**). The village of Chesterton is located within a flat landscape at around 70-80m aOD and views out of the conservation area are few, if any, with no sweeping panoramas. The special architectural and historical interest (significance) of the conservation area is set out in the *Chesterton Conservation Area Appraisal* (CDC 2008).

4.14 The conservation area occupies much of the original historic core of the village and the Appraisal separates it into three character areas, namely the Main Village Character Area, the Chesterton Lodge Character Area and the Northern Character Area (CDC 2008, 6 & 16).

4.15 The Main Village Character Area constitutes the core of the late medieval agricultural village built predominantly on the north-eastern side of Akeman Street around St. Marys Church and former manor. It is characterised by its minimal street pattern; the simple form of most of its buildings due to their farming origin; its sparse building density which creates a sense of space; its limestone and stone slate building materials; stone boundary walls; tree cover; hedges and open spaces. Four key views have been identified within this character area in the Appraisal but none of these encompass views towards the Site (CDC 2008, 17-21).

4.16 The Chesterton Lodge Character Area comprises the house, grounds and outbuildings of the former Chesterton Lodge which was built in 1890. The grounds are secluded from view but open up into areas of parkland. Two key views have been identified in the Appraisal but neither encompass views towards the Site (CDC 2008, 22-24).

4.17 The Northern Character Area includes the location of late medieval buildings around a small triangular green. Most of the historic buildings here were present in the mid-18th century and are simple in form with a strong building line along the western road edge. Two key views have been identified in the Appraisal but neither encompass views towards the Site (CDC 2008, 25-27).

4.18 The setting of the conservation area contributes a smaller portion towards its overall significance and is mainly focused on its surrounding fields from where its character and appearance can be appreciated. **Photoviewpoint EDP 14** (see Landscape and Visual Impact Assessment (LVIA)) illustrates the view from the edge of the conservation area in the direction of the site along the route of a Public Right of Way (PROW). This viewpoint illustrates how the development would not be visible in views from the edge of the conservation area and its rural setting of fields to the south would be unaffected.

4.19 Given the distance between the Site and the conservation area and the lack of a visual relationship or any historical functional relationship between the land at the Site and the village, the Site makes no contribution to the setting or significance of the conservation area.

4.20 Also of note is the Weston on the-Green Conservation Area which is located approximately 2km to the south-west of the Site (**Plan EDP1**). This conservation area is sub-divided into six character areas within its Appraisal (CBC, 2009) and its significance largely focuses on its historic layout, its historic buildings including listed buildings, the relationship between these historic buildings and the remainder of the village, and the open spaces within the conservation area. The setting of the conservation area contributes a smaller portion towards its overall significance and is mainly focused on its large, open surrounding fields and approaches to it along PROW from where it is experienced. As such, the conservation

area is a distinct settlement within a rural landscape and can be appreciated as much on the approaches to it and in views across adjacent fields.

4.21 The Site is distant from the conservation area and screened from it by intervening hedgerows, trees and the M40 motorway. As such the land at the site does not form an element of the landscape of large, open fields that lie to the east of the conservation area and from across which views to the conservation area are possible. Nor is it a feature of the walking routes along PROW to the village form the east. Given the distance between the Site and the conservation area, the lack of a visual and functional relationship and the presence of the M40 across the intervening landscape, the Site makes no contribution to the setting or significance of the conservation area.

Registered Park & Garden

4.22 The Grade II listed Registered Park and Garden of Middleton Park is located approximately 2.6km to the north-west of the Site and therefore outside of the 2km study area around the Site (**Plan EDP1**). It comprises a country house with the remains of early 18th century pleasure grounds surrounded by an 18th to early 19th century landscape park. The significance of the designation is bound up in the architectural interest of the buildings within the designation, its historic interest and also the aesthetic interest of its garden design. Views from the south-eastern boundary of the Registered Park and Garden towards the Site are distant and severed by the M40. Therefore, given the distance between the Site and the registered park and garden, the lack of a visual and functional relationship and the presence of the M40, the Site makes no contribution to the setting or significance of the registered park and garden.

Listed Buildings

4.23 The closest listed buildings to the Site are all Grade II listed and lie at distances of between 75m and 425m to the south in the village of Wendlebury (**Plan EDP1**). These consist of the Church of St. Giles (**1046559**), Home Farmhouse (**1193641**), Willow Cottage (**1046519**), Park Farmhouse and Park Farm Cottage (**1046520**), the Red Lion Public House (**1193655**), Elm Tree House (**1286075**), Wendlebury House and Wendlebury Lodge (**1369719**), College Farmhouse with attached railings and retaining walls (**1369720**) and an associated stable (**1046518**).

4.24 For all of these listed buildings, their significance is primarily bound up in the architectural interest of their built form and fabric and the historical interest of the role that they have played in the history of the village. Their settings contribute a smaller portion to their overall significance and are mostly defined by the experience of the buildings from adjacent roadside locations and their overall relationship to the village. Due to the presence of the A41 dual carriage way and its tree lined boundaries as well as garden boundaries and buildings within the village, there are no significant views from any of the buildings of the land at the Site.

4.25 Furthermore, the land at the Site has no historical or functional relationship with any of these listed buildings, being for the most part located in the adjacent parish and associated

with Grange Farm. As such, the Site makes no contribution to the setting or significance of any of the listed buildings within Wendlebury.

4.26 There are also listed buildings present within the Chesterton Conservation Area (**Plan EDP1**). These consist of the Grade II* listed Church of St Mary (**1300898**) and Manor Farm House (**1369747**) and the Grade II listed Thatchover (**1046535**), Ivy Cottage including its front garden area, railings and gate (**1276742**), Chesterton Lodge (**1241627**), stables and coach houses north-west of Chesterton Lodge (**1241628**), 4 Tubbs Lane (**1200194**) and 6 Tubbs Lane (**1046536**).

4.27 Again, the significance of all these listed buildings is primarily bound up in the architectural interest of their built form and fabric and the historical interest of the role that they have played in the history of the village. Their setting contributes a smaller portion to their overall significance and is mostly defined by how they are experienced within the confines of the village. Due to garden boundaries and other buildings around the listed buildings and the fields which lie between the Site and the village there are no views between the Site and any of these buildings and there is no historical or functional relationship with the land within the Site. Therefore, the Site makes no contribution to the setting or significance of any of the listed buildings within Chesterton.

4.28 A Grade II listed road bridge of 18th century date is located approximately 1.2km to the north-east of the Site (**Plan EDP1**: **1200177**). The significance of this listed bridge is primarily bound up with the architectural interest of its built form and fabric. Its setting contributes a smaller portion to its overall significance and is mostly focused on the road and underlying watercourse. It has no visual or functional relationship with the Site due to screening by hedgerows and the fields which lie between the Site and the village. Therefore, the Site makes no contribution to the setting or significance of this listed bridge.

4.29 Further listed buildings are located well away from the Site, notably several in the village of Merton approximately 2.5km to the south of the Site, which are located outside of the 2km study area around the Site (**Plan EDP1**). Their significance is primarily bound up in the architectural interest of their built form and fabric and the historical interest of the role that they have played in the history of the village. Their setting contributes a smaller portion to their overall significance, and they have no visual or functional relationship with the Site due to screening by hedgerows, intervening fields and the presence of the M40 and A41. Therefore, the Site makes no contribution to the setting or significance of any of these listed buildings.

Non-designated Heritage Assets

4.30 The following paragraphs describe the relevant non-designated heritage assets within a 1km study area around the Site. These are discussed by chronological period and illustrated on **Plan EDP 2**. There are no records plotted from within the Site itself on the Oxfordshire HER, although there are numerous from the wider area which suggest a landscape which has been well-utilised for settlement and agriculture from the later prehistoric through to the modern periods.

Neolithic (4000–2350 BC), Bronze Age (2350–800 BC) and Iron Age (800BC – AD42)

4.31 The findspot of a Mesolithic quartzite macehead is recorded approximately 650m to the north of the Site (**M0X5620**) and the findspot of a Neolithic – Bronze Age axehead is recorded close to the western Site Boundary (**M0X5636**). However, only four-figure NGR's are recorded on the HER and their exact findspot locations are unknown. The findspot of a Neolithic stone axe is also recorded from Wendlebury approximately 500m to the east of the Site (**M0X5111**).

4.32 The site of a possible Bronze Age ring ditch has been identified from an aerial photograph approximately 225m to the west of the Site (**M0X5630**) and an isolated Iron Age posthole was found in an archaeological evaluation in 2020 in the field to the north of the Site (**M0X27641**). This evaluation comprised 24 trenches although no other features of archaeological significance were found (TVAS 2020). An Iron Age pit has also been found in an archaeological evaluation in Wendlebury approximately 125m to the south of the Site (**M0X5556**).

4.33 In summary, there is sporadic evidence of later prehistoric activity recorded around the Site on the HER. Adding to this evidence, a geophysical survey completed within the Site and part of its immediate environs in August 2021 suggests that significant Iron Age deposits may survive within the Site. This evidence is examined in detail later in this report.

Romano-British (AD 43–410)

4.34 The western boundary of the scheduled monument of Alchester Roman site is located approximately 900m to the east of the Site (**Plan EDP1**) and this has been described above.

4.35 The Roman settlement was located at the junction of two Roman roads aligned north-south and east-west, the junction of which lay over 1.5km to the east of the Site. The east-west aligned road was known as Akeman Street and ran between Alchester and Cirencester. Part of this road is followed by Green Lane which is located approximately 625m to the north of the Site (**M0X1703**). This road continues eastwards from Alchester towards St Albans. The north-south aligned road ran between Alchester and Dorchester to the south (**M0X304**) and Towcester to the north (**M0X4783**).

4.36 In addition, the route of an east-west aligned road which ran through the Roman settlement, and which has been identified as a slight ridge which ran from the western rampart (has been identified from a study of aerial photographs (Stoertz 1998, 6-9 and Figure 1). If projected to the west this road would run to the north of Grange Farm crossing the northern portion of the Site (**Plan EDP2**).

4.37 A potential Roman agricultural enclosure and boundary ditches have been identified in an archaeological evaluation approximately 1km to the north of the Site (**M0X26993**) and parts of a Roman field system have also been identified at an approximate distance of 1km to the east of the Site (**M0X5141**).

4.38 Just outside of the 1km study area, a late 1st- early 3rd century Roman settlement has been identified in an archaeological evaluation to the east of the Site (**M0X27385**) adjacent to the Alchester to Dorchester Roman road. This forms either an extra mural settlement outside of Alchester or a discrete farming settlement. A possible Iron Age to Roman settlement, field system and trackway has also been identified in a geophysical survey carried out approximately 1.5km to the north-east of the Site (HER ref: **M0X27406** – not illustrated) and evidence of possible buildings or structures of Roman date have been identified through aerial photography over 1km to the west of the Site and between 1.5km and 1.6km to the east (HER refs. **M0X4981**, **M0X5591**, **M0X5592**, **M0X5593** and **M0X5601** – not illustrated).

4.39 Although not within the 1km study area around the Site the presence of these sites, along with cemeteries recorded over 1km to the east, demonstrates that a settled agricultural landscape was in existence around the Roman town of Alchester and that the Site was probably part of this agricultural landscape.

4.40 In addition, finds of artefactual material of Roman date have been found, mostly within the site of Alchester Roman town, and residual Roman pottery has been found in an archaeological evaluation approximately 125m to the south of the Site (**M0X5556**). Roman brooches are recorded on the HER as having been found just to the west of the Site (**M0X12307** and **M0X5611**) and a collection of 25 late Roman coins are recorded as having been found to the north (**M0X11297**). However, only 4-figure NGR's are provided for these in the HER and their exact findspot locations are unknown.

4.41 In summary, there is widespread archaeological evidence for the presence of a broad settled agricultural landscape around the Roman town of Alchester. It is highly likely that the Site was part of this agricultural landscape. This concept is examined later in this report in light of the results of the geophysical survey carried out within the Site and part of its immediate environs in August 2021.

Early Medieval (AD 410–1066) and Medieval (AD 1066-1485)

4.42 No features or artefacts of early medieval or medieval date are recorded on the HER as having been found within or around the Site. However, evidence for medieval settlement on the western side of the village of Wendlebury has been identified in archaeological investigations and aerial photographic analysis approximately 125-175m to the south of the Site (**M0X5556**, **M0X5159** and **M0X24491**). Identified features include 11th-13th century postholes, pits, ditches, wall foundations, a well, metalled surfaces, house platforms, trackways and ridge and furrow. Medieval pottery has also been found in the village (**M0X23299**). There are also documentary references to the presence of a grange owned by Thame Abbey in 1179 in Chesterton and this has been suggested to be located at Grange Farm immediately adjacent to the Site (**M0X5571**). Medieval artefacts are also recorded just to the west of the Site on the HER but, as only four-figure NGR's are provided on the HER, their exact findspot locations are unknown (**M0X12305** and **M0X12761**).

4.43 In summary, there is nothing to suggest that significant archaeological sites of medieval date are located within the Site. It is perhaps more likely that the Site lay within an

agricultural environment associated with Grange Farm and/or the medieval villages of Chesterton and Wendlebury. It is possible that features associated with ploughing and field boundaries may survive but these will have a low archaeological value. Indeed, ridge and furrow ploughing has been identified within the Site from a study of aerial photographs and the geophysical survey completed in August 2021 and this is discussed later in this report.

Post-Medieval (AD 1485–1900) and Modern (AD 1900–present)

4.44 No features or artefacts of post medieval or modern date are recorded on the HER as having been found within the Site and no features of relevance are recorded around the Site. Again, it is likely that the Site lay within an agricultural environment associated with Grange Farm and/or the medieval villages of Chesterton and Wendlebury. Again, it is possible that features of post medieval date associated with ploughing and field boundaries may survive but these will have a low archaeological value.

Undated

4.45 An undated large rectangular enclosure with a possible internal division and pits has been identified from aerial photographs approximately 300m to the north-east of the Site (**MOX26821**), although no associated archaeological features were identified in trial trenches excavated here in 2015.

Previous Archaeological Investigations

4.46 No previous archaeological investigations have been carried out within the Site. However, 30 archaeological events are recorded on the HER within a distance of just over 1km from the Site in the form of desk-based assessments, geophysical surveys, watching briefs and trial trench evaluations. Where relevant, the results of these investigations have been summarised within the HER data described above and in more detail below. Their locations are shown on **Plan EDP3**.

4.47 In 2015 an archaeological evaluation, which consisted of a geophysical survey followed by the excavation of 24 trenches, was carried out in a field adjacent to the northern boundary of the Site (**EOX6672**). As discussed above, an Iron Age posthole was discovered but no other features of archaeological significance were identified. Various geophysical anomalies were investigated but shown to be of non-archaeological origin. The archaeological potential of the investigated area was assessed as low although the area around the Iron Age feature was assessed as having potential of uncertain significance.

4.48 An archaeological evaluation, which consisted of six trenches, was carried out in 2000 approximately 125m to the south of the Site (**EOX124**). An Iron Age pit and residual Roman material were identified but the main focus of activity was represented by medieval features characterised by the presence of structures, ditches, pits, a posthole and yard surfaces. Dating evidence suggests activity dating to between the 11th and 13th centuries. The Site was located within an area containing earthwork platforms and hollow-ways and

is likely to represent the remains of a village, the remains of which may have been abandoned sometime in the 13th century. A medieval trackway was also found in an archaeological watching brief carried out in 2012 approximately 175m to the south of the Site (**E0X3339**).

4.49 A metalled surface potentially associated with the Akeman Street Roman road was identified in an archaeological watching brief during the construction of the M40 approximately 625m to the north of the Site (**E0X1205**) along with undated cobble surfaces elsewhere (**E0X1206**). Part of Akeman Street was also observed in an archaeological watching brief carried out in 1993 approximately 925m to the north-east of the Site (**E0X64**).

4.50 A geophysical survey carried out in 2014 approximately 975m to the north-east of the Site identified the presence of cut features of archaeological potential including a rectilinear enclosure and a linear ditch as well as several possible pits and ditches (**E0X5795**). An archaeological evaluation which consisted of 10 trenches was carried out in 2017 and identified ditches in seven of the trenches (**E0X6136**).

4.51 Evidence for Neolithic activity, a Bronze Age burial, a Middle Iron Age settlement, extensive Roman activity and Anglo-Saxon burials was uncovered in excavations carried out in 1991 during road construction for the A41 although these were mostly evident closer to the Alchester Roman settlement (**E0X2953**).

4.52 Wider afield, archaeological investigations have been carried out within and close to the Roman settlement of Alchester and its extra mural settlement (e.g. **E0X1789**). These are not discussed further as they shed little light on the archaeological potential of the Site.

4.53 Archaeological investigations which did not identify any significant archaeological remains have also been carried out within an approximate distance of 1km around the Site. These consist of an archaeological evaluation carried out in 2014 approximately 675m to the south of the Site (**E0X5783**) and a further evaluation which consisted of 27 trenches carried out in 2009 approximately 800m to the north-east (**E0X2839**).

Cartographic and Aerial Photographic Sources

4.54 The earliest consulted map was a pre-enclosure map of Chesterton parish which dates to 1764-8 (**Plan EDP4**). This shows the site of Grange Farm which consisted of a group of rectangular buildings adjacent to the eastern boundary of the Site. The fields to the south-west of the farm, which all lie within the Site, belonged to Grange Farm and, where legible on the map, are referred to as Hill Ground, Long Close, Dairy Ground, Grand(?) Meadow and Oat (?) Close. Grange Farm itself consisted of six rectangular buildings, one of which was presumably the farmhouse.

4.55 Also of note is the ecclesiastical boundary between the parishes of Chesterton and Wendlebury which crosses the southern portion of the Site. This boundary is presently

followed by a still surviving field boundary. The Ancient Woodland which now lies adjacent to the M40 is also present.

4.56 To the north of the Site the strips of a medieval open field system known as Low Street Field can be seen extending into the northern corridor of the Site. To the east of these are rectangular and sub-rectangular field strips immediately to the west of Little Chesterton and which are the result of the partial enclosure of the medieval open field.

4.57 By the time of the Ordnance Survey map of 1888 the field pattern shown on the preceding pre-enclosure map was still evident (**Plan EDP4**). Also of note is a footpath which runs northwards from St. Giles's Church in Wendlebury, crossing the Site, towards Grange Farm. Grange Farm itself had evolved with the northernmost part consisting of a three-sided range of which the westernmost building is probably the same structure marked here on the preceding 1764-8 map. A small structure is shown to the north of this range and two further buildings, one of which was presumably the farmhouse, are shown to the south.

4.58 The field layout within the Site is unchanged on an Ordnance Survey map of 1920 (not illustrated) and only a few of these field boundaries have since been removed.

4.59 Aerial photographs taken between 1947 and 1974 show most of the Site under ridge and furrow earthworks as demonstrated in a photograph taken in 1974 (**Plan EDP5**). As far as Grange Farm is concerned it was still present on an aerial photograph taken in 1952 with the addition of rectangular buildings to the north of the three-sided range. However, by 1966 the buildings to the south, including the likely site of the farmhouse, had been demolished and replaced with rectangular buildings. By 1974 the two existing sheds to the south of the range had been built and by 1989 the existing shed to the east had also been constructed and further buildings have since been built to the west. This three-sided range with its central courtyard still survives. However, its former rural setting has been compromised by the construction of the sheds to the west, south and east and the loss of its associated buildings including the farmhouse.

4.60 An aerial photograph taken in 1989 shows a works compound within the southern part of the Site accessed from the A41 (**Plan EDP5**). This is presumably associated with the construction of the M40 which was in the process of being built. Ridge and furrow earthworks can again be seen within the Site directly to the east of the compound, to the north and west of Grange Farm and to the south of the A41. This compound was still present on another aerial photograph taken in 1991 and traces of it still survived on a photograph taken in 1994.

4.61 Lidar coverage is available for the Site and east-west aligned ridge and furrow can be observed within the Site in the field directly south of Grange Farm and also within the northern corridor. Ridge and furrow can also be observed directly to the east of the Site in the fields north of Grange Farm and elsewhere. No cropmarks indicating the presence of any archaeological sites were observed.

Historic Landscape Characterisation

4.62 The Oxfordshire Historic Landscape Characterisation records the southern part of the Site as under category HOX2104. This is an area of pre-18th century piecemeal enclosure, subdivided in the late 19th century and further re-organised in modern times with the creation of the A41, and the loss of internal field divisions.

4.63 The remainder of the Site is recorded under category HOX2105 which is an area of pre-18th century piecemeal enclosure, sub-divided in the late 19th century and where a small number of internal boundaries have been straightened subsequently, but the overall character remains that of the 19th century reorganisation.

4.64 Neither of these historic landscape types is particularly rare and the overall historic landscape value of the Site is low.

Site Walkover

4.65 The Site was the subject of a walkover in July 2021. At the time of this walkover most of the Site was under long grass which had yet to be cut for sileage and no earthworks or features of archaeological significance were identified. Selected photographs are shown in **Plates 1** - **4**.

Geophysical Survey

4.66 A geophysical survey covering the Site and the remaining parts of the fields across which the Site lies, totalling approximately 35 ha, was surveyed in July and August 2021 and the report on the results is included as **Appendix EDP 1**. The survey covered the Site plus the remining parts of the fields that the Site lies across and therefore includes area that are not within the Site boundary. The survey identified groups of enclosures of likely later prehistoric date.

4.67 The northernmost group is located to the north-west of the Site boundary and to the west of the existing agricultural trackway which also lies within the Site and is therefore located outside the Site (see Appendix 1, DWG 03b). This group comprises two potential later prehistoric enclosures represented by probable enclosures [8] and [9]. Enclosure [8] is circular and about 18m in diameter whereas enclosure [9] measures approximately 26m x 17m with a possible west-facing entrance. The eastern and southern ditch of enclosure [9] lies within an area [10] of locally strong magnetic anomalies possibly suggesting a habitation or industrial focus to the enclosure. Just to the east of enclosure 10 a linear anomaly [7] was identified for a length of 20m and which may be part of a ditched boundary.

4.68 To the south, a further group of anomalies were identified partially within and just to the north of the Site. Linear anomalies [15] and [20] appear to represent the north-western and north-eastern sides of a large enclosure which measures at least 110m across but are

only partly located within the Site at their eastern end. Part of a possible entrance into the northern part of the enclosure may be defined by linear [17] which almost entirely located within the Site. A north-east to south-west linear [16] which is located just north of the Site boundary, was detected to the north of this.

4.69 Located on the very edge of the Site boundary are a group of circular anomalies [25], [26] and [27]. Of these only the eastern edge of the group is located within the Site. To the east are a cluster of further small oval, circular and linear anomalies including [22], [23], [24], [21] and [19]. This group lie within the Site and also within an area of locally strong magnetic anomalies [18] again possibly suggesting an activity focus here such as remains related to settlement. Although these responses appear to pass beyond the eastern edge of the field in which they are located, their continuation was not seen in the survey of the adjacent field to the east that is also within the Site.

4.70 Further to the south is a large oval-shaped anomaly [33] and [42] which measures over 130m from east to west and about 90 m north to south. Only the far eastern part of the possible enclosure is located within the Site boundary with most of the feature in the centre of the field to the west. The possible enclosure contains a series of smaller curved and circular anomalies [32], [37] and [39] all of which are located outside the Site boundary. These lie either side of sub-rectangular anomalies [40] and [36], which also lies beyond the Site boundary. It is possible that a funnel-shaped south-facing entrance into the enclosure is represented by the south-eastern turn of the east end of anomaly [42] and another [43]. Two sides of a possible rectilinear enclosure [44] were identified just to the east of this possible entrance. All of these features are located outside of the Site.

4.71 To the south-east of this anomaly group are a group of further oval and linear anomalies [48], [47] and [46] which are almost all located within the Site, aside from their south-west part. An isolated circular anomaly was identified to the west [45] which is located outside of the Site.

4.72 In summary, the form of these groups of enclosures gives the impression that the buried remains of a later prehistoric agricultural settlement are present that may have continued into the Romano-British period. It is not clear whether the enclosure groups identified above were contemporary or successive, but they generally share a north-west to south-east alignment.

4.73 Otherwise, the survey also identified an extensive area of buried debris within the southernmost field within the Site which relates to the works compound seen here on the aerial photograph of 1989 described above. The works required to construct the compound are likely to have damaged, if not destroyed, any archaeological features beneath.

Section 5
Assessment

Introduction

5.1 In accordance with paragraph 189 of the NPPF (see above), this section assesses the potential for the development proposals to affect the significance of designated and non-designated heritage assets. This section also sets out the archaeological potential of the site based on the evidence presented in **Section 4**.

Designated Heritage Assets

5.2 The proposed development will not result in any direct effects to any designated heritage assets.

5.3 The maximum height of the proposed building will be 13.95m and, accordingly, will have some degree of visibility within the wider landscape. The proposed building's visibility is illustrated in a series of Photoviewpoint montages produced by EDP. The creation of a bund with native landscape planting within the north-south aligned corridor of the Site will ensure that views of the building will not be possible looking south-west from the Chesterton Conservation Area. Similarly, planting on the A41 boundary will further restrict any views of the Site, across the dual carriageway, from the listed buildings within the village of Wendlebury.

5.4 From the Weston-on-the Green Conservation Area the proposed building, located 2km to the east, would be just about visible in distant views from the eastern edge of the conservation area (see **Photoviewpoints EDP 1** and **2**). Located at a distance from the conservation area the proposed development would not impose upon the landscape of large open fields which surrounds the village, and which is a key characteristic of its setting. The village would retain a countryside setting and its present openness and visibility in the landscape would not be affected.

5.5 Likewise, the proposed development would not affect any of the PRoW which approach the village from the east and which allow for an experience of it's landscape setting and, as stated in the Appraisal '*illustrate the historic connections of the village to the surrounding farmland*'.

5.6 As such, the imposition of a distant modern building into the views to the east from the edge of the conservation area, which include large agricultural buildings anyway (such as in **Photoviewpoint EDP 1**), would have little relevance to the characteristics of the conservation area's setting to the east that contribute to its character and appearance. In this respect, following development it is assessed that the character and appearance of the conservation area would be preserved.

5.7 For most of the listed buildings within the villages of Wendlebury and Chesterton, the development will not affect their architectural or historical interest or change their settings which are mostly defined by the experience of the buildings from adjacent streets and open spaces within their respective villages.

5.8 An exception is with regard to the Grade II listed Church of St. Giles (**1046559**: **Image EDP 2** and **3**). The church is located on the western edge of the village of Wendlebury and is adjacent to agricultural fields and the hedged boundary of the A41. **Photoviewpoint EDP 15** illustrates a view from the land adjacent to the church demonstrating how, as stated previously, at present, the land at the Site is not visible from the church and has no relevance to its setting.

5.9 Following development, the Viewpoint illustrates how the top of the proposed building would be visible above the hedgerow. In this respect, it would represent the imposition of a modern building into the setting of the church albeit set back from the church and separated from it by the intervening hedgerow and the A41 which is a dual carriageway. In this respect, it would not compete with the church's prominence or dominate it, but it would change the character of the surrounding landscape to a very small degree. Located at the edge of a rural village the church's historic setting comprised agricultural fields and hedgerows and the proposed building would impose upon the surviving elements of that landscape to a very minor degree. Consequently, the proposed development is assessed as resulting in a very minor degree of harm to the significance of the listed building.

5.10 Regarding the other listed buildings in Wendlebury and Chesterton, due to the retention of elements in the landscape that would serve to screen the development, there would continue to be a lack of visual relationship between these designated heritage assets and the Site. The proposed development will not impose upon their settings and will not result in any significant change to the way in which they can be appreciated as heritage assets or to their overall significance. As such, no other harmful effects to heritage assets have been identified.

Non-designated Heritage Assets

5.11 The geophysical survey has established the presence of enclosures, probably related to a farmstead or farmsteads, within and to the north of the Site. The plan and form of the enclosures suggests that these are of later prehistoric date, perhaps continuing through to the Romano-British period. This settlement appears to peter out to the north of the northernmost enclosures encountered in the geophysical survey, which accords with the limited data from a 2015 archaeological evaluation carried out in a field adjacent to the northern boundary of the Site (**Plan EDP3**: **EOX6672**). However, the discovery of an Iron Age pit in an archaeological evaluation approximately 125m to the south of the Site in 2000 (**Plan EDP3**: **EOX124**) suggests that this Iron Age landscape continued to the south of the Site into Wendlebury. The lack of a more formal Romanised landscape within the geophysical survey may suggest that this settlement ceased to exist at some point after the establishment of Alchester Roman town.

5.12 Given the presence of this archaeological landscape, an archaeological evaluation in the form of trial trenching will be required in order to more fully establish its extent, date, state of preservation and significance. However, at least some level of truncation can be expected to have been caused by medieval ridge and furrow ploughing, which covered most if not all of the Site, along with modern ploughing. Should the trial trenching prove the presence of this later prehistoric/Roman agricultural landscape the loss of this landscape could be mitigated by the imposition of a condition imposed on the planning consent requiring further investigation. It is highly unlikely that such archaeological remains will be of sufficient rarity and importance to warrant preservation *in-situ*.

5.13 Therefore, although the proposed development will result in the loss of archaeological remains, there is no reason to believe that this could not be suitably mitigated through a suitable scheme of archaeological investigation secured as a condition on any successful planning consent.

5.14 The proposed development will lead to the loss of a historic boundary between the parishes of Chesterton and Wendlebury. This hedged boundary can be regarded as important under the Hedgerow Regulations of 1997 as it marks a boundary between parishes existing before 1850. The loss of this boundary is unavoidable and can at least be partially mitigated by recording prior to the commencement of development.

5.15 The proposed development will have no physical impact on the 3-sided courtyard arrangement of former barns/storage/stabling which form part of the surviving remnant of Grange Farm to the east of the Site. This range is now bounded to the west, south and east by large modern buildings and its former rural setting has been compromised by their construction and the loss of its associated buildings including the farmhouse. Its significance as a non-designated heritage asset will be unaffected by the proposed development of the Site.

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Section 6
Conclusions

6.1 This Archaeological and Heritage Assessment concludes that the site does not contain any world heritage sites, scheduled monuments, registered parks and gardens, registered battlefields or listed buildings, which would require preservation *in situ* or preclude development within the site.

6.2 Potential impacts upon the settings of designated heritage assets within an approximate distance of 2km from the site have been considered. The assessment concludes that the proposed development will only result in a single impact upon a designed heritage asset comprising a very minor degree of less-than-substantial harm to the Grade II listed building Church of St. Giles (**1046559**). This harm would be at the far lower end of the spectrum of 'less than substantial harm' and, in accordance with Paragraph 196 of NPPF, should be '*weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use'.*

6.3 In terms of non-designated heritage assets, geophysical survey has established the presence of anomalies, probably related to the buried remains of farmsteads within and to the north and west of the Site. The plan and form of the anomalies suggests they are enclosures of a later prehistoric date, perhaps continuing through to the Romano-British period. Given the presence of this archaeological landscape an archaeological evaluation in the form of trial trenching will be required to more fully establish its extent, date, state of preservation and significance. However, at least some level of truncation can be expected to have been caused by medieval ridge and furrow ploughing which took place over most if not all of the Site along with modern ploughing.

6.4 Should the trial trenching prove the presence of this later prehistoric/Roman agricultural landscape the loss of this landscape could be mitigated by the imposition of a condition imposed on the planning consent requiring further investigation. It is highly unlikely that such archaeological remains will be of sufficient rarity and importance to warrant preservation *in-situ*.

6.5 The proposed development will lead to the loss of a historic boundary between the parishes of Chesterton and Wendlebury. This hedged boundary can be regarded as important under the Hedgerow Regulations of 1997 as it marks a boundary between parishes existing before 1850. The loss of this boundary is unavoidable and can at least be partially mitigated by recording prior to the commencement of development.

6.6 The proposed development will have no physical impact on the 3-sided courtyard arrangement of former barns/storage/stabling which form part of the surviving remnant of Grange Farm to the east of the Site. This range is now bounded to the west, south and east by large modern buildings and its former rural setting has been compromised by their construction and the loss of its associated buildings including the farmhouse. Its significance as a non-designated heritage asset will therefore be unaffected by the proposed development of the Site.

6.7 As such, there is no reason to believe that the proposed development, as far as heritage assets are concerned, could not meet the requirements of local and national planning policy.

Section 7
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List of Consulted Websites

https://historicengland.org.uk/listing/the-list/

List of Consulted Maps

1764-8 Pre-enclosure map of Chesterton Parish
1888 First Edition Ordnance Survey Map
1900 Second Edition Ordnance Survey Map
1923 Third Edition Ordnance Survey Map

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Images

Image EDP 1: General view across the Site looking west, illustrating its appearance.

Image EDP 2: View toward the Church of St Giles from the roadside to the east illustrating its churchyard setting and fields to the south.

Image EDP 3: View of the Church of St Giles from the west illustrating how it is experienced from an adjacent field with trees to the north.

Appendix EDP 1
Geophysical Survey Report

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TIGERGEO

Junction 9, M40, Bicester

Geophysical Survey Report
(Magnetic – Archaeology)

Version 2.2

Project code: BIC211

OASIS: tigergeo1-427650

Produced for: Tritax Symmetry Oxford North

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REGISTERED ORGANISATION CIfA

29th October 2021

Environmental Geophysics – Survey, Research and Consultancy

TIGERGEO

Junction 9, M40, Bicester

Digital data

Item and version	Sent to	Sent date
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Audit

Version	Author	Checked	Date
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TIGERGEO

Non-Technical Summary

A survey was commissioned by Tritax Symmetry Oxford North to prospect a parcel of land to the north of Junction 9 of the M40 near Bicester, for buried structures of archaeological interest. Survey was undertaken using an ATV-towed and GNSS-tracked array of magnetometers on a non-magnetic platform.

This report represents a subset of this wider survey, for which a separate report (Tigergeo 2021:2) is available.

In the southern and western parts four groups of ditch fills have a typical prehistoric character and seem to have been discrete enclosed farmsteads dispersed across the landscape. They lack direct magnetic evidence for settlement but this is implied by both their layout and the presence of slightly more magnetic regions typical of the by-products of habitation and small scale industry.

Within the southernmost field an extensive area of buried debris seems to relate to late 20th century use of the site and this masks any magnetic traces of previous activities.

Table of Contents

Drawing	**Title**
DWG 01	Site Location
DWG 02, a-g	Magnetic Data
DWG 03, a-g	Interpretation
DWG 04	Selected Data Extracts - XY Plotting

1 Introduction

TigerGeo was commissioned by Tritax Symmetry Oxford North to undertake a geophysical survey of a parcel of land to the north of Junction 9 of the M40 near Bicester to prospect for features of archaeological interest prior to proposed development, working with the archaeologists of the Environmental Dimension Partnership (EDP). The scope of the work was set out in a Written Scheme of Investigation that was submitted to and approved by Richard Oram, the local authority's planning archaeologist (TigerGeo, 2021).

2 Context

2.1 Location

The survey area is located to the east and immediately to the north of Junction 9 of the M40 carriageway. It extends as far north as Akeman Street Roman Road, while its northeast extent is defined by field boundaries bordering Greystone Court and Grange Farm, and the A41 forms its southeast boundary.

Country	England
County	Oxfordshire
Nearest Settlement	Chesterton and Wendlebury
Central Co-ordinates	455379, 219949
Survey Area (ha)	35 ha was surveyed, including the whole of fields partially impacted upon by the proposed development (c. 19 ha)

2.2 Environment

The below information is taken from the British Geological Survey (BGS), historic mapping and aerial imagery and provides a basic summary of the survey area.

Soilscapes Classification	Freely draining lime-rich loamy soils (5) (northern tip) Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (18) (most of site)
Superficial 1:50000 BGS	River Terrace Deposits, 2 - Sand And Gravel (RTD2) (small area to the W of main buildings) Alluvium - Clay, Silt, Sand And Gravel (ALV) (along W edge, and watercourse N of S field)
Bedrock 1:50000 BGS	Cornbrash Formation - Limestone (CB) (northern tip) Kellaways Sand Member - Sandstone And Siltstone, Interbedded (KLS) (centre) Kellaways Clay Member – Mudstone (KLC) (south and east) Peterborough Member - Mudstone (PET) (southern tip)
Topography	Mostly fairly flat, with a slight fall to the south-west
Hydrology	Freely draining (northern tip) Impeded drainage (most of site) Stream along the western side of survey area (adjacent to motorway) which turns eastwards to cross the southern part of the proposed survey area
Current Land Use	Agricultural – Pastoral
Historic Land Use	Agricultural - Mixed
Vegetation Cover	Grass
Sources of Interference	Agricultural buildings, post and wire fences, agricultural and other debris, services, and traffic along adjacent roads

2.3 Archaeology

The survey area lies in a rich archaeological landscape with previously recorded heritage assets from the prehistoric period through to the post-medieval period.

There is a scattering of prehistoric activity with a possible Bronze Age ring ditch identified to the west (MOX5630). An Iron Age posthole has been found in an archaeological evaluation to the east (MOX27641) close to the site of a cropmark of a large rectangular enclosure (MOX26821). Iron Age features have also been found to the south (MOX5556).

There is evidence for extensive Roman activity in the wider environs with the Alchester Roman site (SAM 1006365) approximately 1km to the east. There is evidence for activity extending west, beyond the designated area, and a road heading out from the town has been recorded passing by a large bath house. The road extends towards the proposed survey area and immediately to the east, cropmarks recorded by the Historic England Photographic Unit show two parallel ditches extending from it. It seems likely that the western road continues into the survey area and beyond, where the cropmarks of a trackway and a potential Roman settlement have been identified to the west (MOX4981).

Immediately to the east of the central part of the survey area is Grange Farm. This is strongly suspected to be the site of a medieval grange (MOX5571) and earthworks identified from LiDAR data may relate to medieval activity.

There is no evidence of an earlier field system on the available historic maps, with late 19th and early 20th centuries Ordnance Survey maps showing only minor modification of the field boundaries within the survey area. The southern field partly lost a boundary after 1955, before the construction of the motorway, and the drain from Grange Farm towards the large pond now adjacent to the M40 carriageway, disappears from mapping in the 1970s.

In the southern field near the entrance, a small structure is shown only on the 1993 Ordnance Survey mapping. There are visible remains of this and a short surfaced roadway linking this to the gate onto the A41.

3 Discussion

3.1 Introduction

The following paragraphs represent an interpretive summary of the survey. The numbers in square brackets refer to individual anomalies described in detail in the catalogue below and shown on DWG 03.

3.2 Data

Data quality is everywhere sufficient and limited only by localised minor increases in background noise levels due to hard ground and long vegetation. Magnetic contrast is low but background magnetic susceptibility is evidently high enough to permit the detection of enclosure ditch fills also ridge and furrow cultivation away from obvious sources of strong susceptibility enhancement.

3.3 Geology

The sand and gravel deposits are perhaps more extensive than mapped if the widespread presence of small dipolar anomalies typical of magnetic erratics is indicative. Some of these will no doubt also be due to small ferrous objects lost from agricultural machinery over the years. However, the muted background texture would also be typical of sandy soils.

The transition between the Kellaways Sand and Clay members is not evident within the data which could imply that it is having little effect upon the detectability of features of interest or that the actual transition is beyond the site boundary.

The soils have a moderately high iron content (4.0%) recorded in the British Geological Survey 5km G-Base data but the character of the data would suggest it to be locally lower with a corresponding theoretical reduction of the natural background magnetic susceptibility.

Central to the western edge of the site there is an area of soil with slightly different magnetic character that might indicate an alluvial fill.

3.4 Land use

Pastoral land, depending upon how long it has been so, may have reduced background magnetic susceptibility, and in any case the lack of ploughing will mean that less magnetic material has been brought close to the surface than would be expected in a recently cultivated soil. The discontinuous nature of the anomalies mapped by this survey could be as much to do with variations of susceptibility as survival of the features. The same survey undertaken while the land was in arable production might yield a different result.

There are few signs of the earthworks of ridge and furrow so it is assumed that this has been ploughed flat or mechanically levelled in some other way. This being the case, the frequently more magnetic bases of the furrows may have been obliterated, hence their near absence from the magnetic data.

3.5 Archaeology

Although there are signs of past activity within the site, the time depth and variety of buried features appears to be low, judging by the characters of the individual anomalies. There is good evidence for ditch fills but little convincing evidence for pits or hearths, thus the direct evidence for settlement is low but for enclosure is high. Most of the anomalies represent enhanced magnetic susceptibility and are most likely fills and there are few convincing reduced susceptibility sources within an archaeological content. An exception to this is the linear strongly reduced gradient anomaly [5] towards the northern end of the site which would be typical of a stony structure or void, and which common sense would suggest to have been a farm road. However, it appears on no maps and could be of any date, including Roman.

There are four sets of likely prehistoric enclosures, the central two being enclosed settlement of some sort and the southern and northernmost maybe remnants of two more.

The northernmost comprises two potential later prehistoric enclosures represented by probable ditch fills [8] and [9] with a short linear [7] (20 m long) anomaly immediately to the east which may be part of a ditched boundary. The enclosure implied by [8] is circular and of about 18 m diameter and that of [9] measures approximately 26 x 17 m with a possible west-facing entrance. The eastern and southern ditch of probable fill [9] lies within an area [10] of locally strong magnetic anomalies possibly suggesting a habitation or industrial focus to the enclosure, although there is no direct evidence for settlement.

To the south are probable ditch fills [15] and [20] which appear to represent the north-western and north-eastern sides of a large enclosure which measures at least 110m across. Part of a possible entrance into the northern part of the enclosure may be defined by a probable ditch fill [17]. A north-east to south-west linear ditch fill [16], potentially a field boundary was detected to the north of this.

Several smaller enclosures were detected to this south of these enclosure ditches and may once have been within the larger enclosure. The northern part of a small enclosure or hut circle ditch fill [25] measures 12 – 13 m across and may have been replaced by a larger enclosure defined by probable fill [27] measuring approximately 22m across in both directions. A possible focus of activity exists at [26] within the northern part of [27]. To the east further small enclosures defined by ditch fills [22] and [23] have potential diameters of 14 m and 9 m and could potentially be hut circles with an adjacent linear anomaly [24] which was detected for about 26 m. Further small oval enclosures just to the north-east are represented by ditch fills [21] and [19] which respectively measure 14 x 18 m and 14 m north to south, the eastern edge not being detected. These small enclosures lie within an area of locally strong magnetic anomalies [18] again possibly suggesting an activity focus here. Although these ditch fills pass beyond the eastern edge of the field their continuation was not seen in the survey of the adjacent field. A possible second focus exists at [26] within the apparently detached group of enclosures [25] and [27].

Further to the south is a large oval-shaped enclosure represented by probable ditch fills [33] and [42] which measures over 130 m from east to west and about 90 m north to south. This contains a series of smaller enclosures represented by fills [32], [37] and [39], the latter two having the appearance of possible huts measuring about 11 m across. They lie either side of sub-rectangular enclosures represented by ditch fills [40] and [36], each about 16 m across at their widest visible point, although [36] may extend to the outside edge of the complex in which case it measures about 32 m radially and encloses another possible hut [35] again of about 11 m diameter. The whole of enclosure [40] is within an area of stronger magnetic anomalies that would suggest a possible activity focus here.

A short stretch of linear ditch fill [38] was observed to the south of enclosure ditch [40]. It is possible that a funnel-shaped south-facing entrance into the enclosure is represented by the south-eastern turn of the east end of ditch fill [42] and another length of fill at [43]. However, the eastern end of [33] to the north of this does not turn southwards to meet [43] and so the eastern end of the enclosure was not detected.

Two sides of a possible rectilinear enclosure [44] were identified just to the east of this possible entrance.

To the southeast of this probable settlement are a group of further enclosures including one represented by enclosure ditch fill [48] which measures approximately 25 m east to west and 30 m north to south, with a possible corridor entrance on its southeast side. This enclosure contains two internal divisions and an area [47] of locally strong magnetic anomalies at the northern end again possibly suggests an activity focus here. Further possible ditch fills were identified immediately to the north [46] and an isolated potential ring ditch of about 9 m diameter was identified to the west at [45].

In summary, the form of these groups of enclosures gives the impression that an Iron Age agricultural settlement is present that may have continued into the Romano-British period. It is not clear whether the enclosure groups identified above were contemporary with or successive to each other.

Along the western margins of the site there are spreads of debris, e.g. [30], of unknown origin. In the case of [28] and [29] these are maybe agricultural infilling of hollows.

South of the farm buildings there is a possible linear ditch fill [58].

3.6 Catalogue

ID	Data Class	Anomaly Class	Form Class	Feature Class	Feature Sub-Class	Comments
4	VMG	Texture	Linear - continuous	Fill		Uncertain, seems unlikely to be natural and it crosses a field boundary. Whether this relates to a non-magnetic feature, e.g. a utility, or something else is not known
5	VMG	Reduced	Linear - continuous	Structure		This could not be seen on the surface due to long grass but there was a band of harder ground bounding an area of higher land to the east. Together with the character of the anomaly this band is thought to be the buried remains of a formal track or road
6	FIELD_ NOTE	Observation	Area	Earthwork		This area of ground was higher than the rest of the field, apparently bounded to the west by [5] and more irregular than elsewhere
7	VMG	Enhanced	Linear - continuous	Fill	Ditch	Possible ditch fill, like associated with [9] to the west
8	VMG	Enhanced	Linear - continuous (group)	Fill	Ditch	A small circular enclosure, maybe once surrounding a hut and part of a complex with [9]
9	VMG	Enhanced	Linear - continuous (group)	Fill	Ditch	A second small enclosure within the same group as [8] with a possible west-facing entrance. It may have a habitation or industrial focus given the more strongly magnetic character of the fill at [10]
10	VMG	Enhanced	Area	Highlight		More magnetic region of [9]
11	VMG	Enhanced	Linear - continuous	Fill		May be a southern continuation of the alignment at [1] and therefore predate the field boundary
12	VMG	Enhanced	Linear - continuous (group)	Agricultural ?	?	
13	VMG	Enhanced	Linear - continuous (group)	Agricultural		May be land drains or similar, They cross a modern field boundary but are parallel to an older one that has been removed
14	VMG	Strong variable	Linear - continuous (group)	Ferrous		Uncertain, could be a buried pipe or similar utility

ID	Data Class	Anomaly Class	Form Class	Feature Class	Feature Sub-Class	Comments
15	VMG	Enhanced	Linear - continuous (group)	Fill	Ditch	A large. maybe sub-rectangular, enclosure measuring at least 110 m east to west and enclosing a number of smaller ones. Overall it would suggest a former farmstead although much is self evidently not apparent within the magnetic data
16	VMG	Enhanced	Linear - continuous	Fill	Ditch	
17	VMG	Enhanced	Linear - continuous	Fill	Ditch	
18	VMG	Enhanced	Area	Highlight		Enclosure ditch fill [19] and an area extending west across part of [21] is more magnetic than others nearby which might suggest some sort of activity focus
19	VMG	Enhanced	Linear - continuous	Fill	Ditch	Small enclosure associated with enhanced magnetic field strength and maybe a site of habitation or similar activity
20	VMG	Enhanced	Linear - continuous	Fill	Ditch	See [15] which appears to be the same feature
21	VMG	Enhanced	Linear - continuous	Fill	Ditch	A small enclosure, similar to [19] in the immediate vicinity
22	VMG	Enhanced	Linear - continuous	Fill	Ditch	An annular anomaly, maybe a drip gully or similar feature
23	VMG	Enhanced	Linear - continuous	Fill	Ditch	Small enclosure. part of a complex with [22] etc.
24	VMG	Enhanced	Linear - continuous	Fill	Ditch	
25	VMG	Enhanced	Linear - continuous	Fill	Ditch	Small enclosure
26	VMG	Enhanced	Area	Highlight		More strongly magnetic region of [27] and maybe evidence for some kind of settlement or industrial focus
27	VMG	Enhanced	Linear - continuous	Fill	Ditch	Small enclosure, maybe with an east-facing entrance
28	VMG	Strong variable	Area	Debris		An approximately circular patch of debris, about 13 m diameter, could be fill within a former hollow or the site of a rubbish burning
29	VMG	Strong variable	Area	Debris		An approximately circular patch of debris, about 8 m diameter, could be fill within a former hollow or the site of a rubbish burning
30	VMG	Strong variable	Area	Debris		An elongated area of increased quantities of magnetic debris, no obvious origin

ID	Data Class	Anomaly Class	Form Class	Feature Class	Feature Sub-Class	Comments
31	VMG	Strong variable	Area	Debris		An approximately circular patch of debris, about 15 m diameter, could be fill within a former hollow or the site of a rubbish burning
32	VMG	Enhanced	Linear - continuous	Fill	Ditch	Small enclosure
33	VMG	Enhanced	Linear - continuous	Fill	Ditch	A large oval (> 100m east to west) enclosure contains a discrete complex of smaller ones that in combination look like a single farmstead or settlement, with a (locally) strongly magnetic core typical of settlement or industrial activity. The eastern extent is unknown. See also [42]
34	VMG	Enhanced	Linear - continuous	Fill	Ditch	Possible enclosure ditch but uncertain layout, maybe also part of the circuit of [33] and [42] but maybe overlapping from the west
35	VMG	Enhanced	Linear - continuous	Fill	Ditch	Possible drip gully or similar feature
36	VMG	Enhanced	Linear - continuous	Fill	Ditch	Ditch fill radial to [33] and [42] and likely an internal division terminating at the central knot of small enclosures [37] etc.
37	VMG	Enhanced	Linear - continuous (group)	Fill	Ditch	Part of a complex of small enclosures that with [39] and [40] define the core of the site and likely to have been for agricultural and habitation purposes
38	VMG	Enhanced	Linear - continuous	Fill	Ditch	Possible radial ditch, similar to [36]
39	VMG	Enhanced	Linear - continuous (group)	Fill	Ditch	See also [37] and [40]
40	VMG	Enhanced	Linear - continuous	Fill	Ditch	An irregular enclosure defined by ditch fills slightly more magnetic than evident locally and likely to have been a focus within the larger enclosure. It's association with more magnetic ground [41] implies settlement or industrial activity
41	VMG	Strong enhanced	Area	Highlight		
42	VMG	Enhanced	Linear - continuous	Fill	Ditch	See [33] which appears to be the same feature
43	VMG	Enhanced	Linear - continuous	Fill	Ditch	
44	VMG	Enhanced	Linear - continuous (group)	Fill?	Ditch?	

ID	Data Class	Anomaly Class	Form Class	Feature Class	Feature Sub-Class	Comments
45	VMG	Enhanced	Linear - continuous	Fill	Ditch	Possible small ring-ditch, no associated features although complexes with enclosure ditches [42] and another focus at [46] - [48] are nearby
46	VMG	Enhanced	Linear - continuous (group)	Fill	Ditch	Fragments of an enclosure
47	VMG	Strong enhanced	Area	Highlight		Possible focus within [48]
48	VMG	Enhanced	Linear - continuous (group)	Fill	Ditch	A tight knot of enclosures with a more magnetic region [47] implies some sort of settlement activity alongside [46]. This seems to be the core of something larger that has not been detected
49	VMG	Strong enhanced	Linear - continuous	Utility?	?	
50	VMG	Strong variable	Linear - continuous	Utility?	Pipe?	Probable pipe. maybe laid along a track and passing through or adjacent to the southern gateway into the field
51	VMG	Strong enhanced	Linear - continuous	Fill?	?	Amongst the strongly variable magnetic field from buried debris there are some discrete magnetic sources and this long linear one seems to have been along or maybe actually the boundary of the complex. There is an adjacent ditch and this may have been a similar (maybe earlier?) line of the same structure
52	VMG	Strong enhanced	Discrete (group)	Structure		A grid of ferrous type responses define a rectangular area. Could these be pile caps once supporting a raft? There is nothing to see here today
53	VMG	Strong enhanced	Discrete (group)	Structure		Another (adjacent) example of [52]
54	VMG	Strong variable	Area	Structure		Probable underground structure
55	VMG	Enhanced	Linear - continuous	Fill?	?	Possible ditch fill within the mass of magnetic debris, uncertain
56	VMG	Reduced	Linear - continuous	Structure		At a high dynamic range the mass of magnetic debris resolves into discrete areas separated by less magnetic regions, in this case bounded by a linear feature
57	VMG	Strong variable	Area	Fill?	?	There is boggy ground here and this anomalous area could be debris within a former hollow or drainage feature
58	VMG	Enhanced	Linear - continuous	Fill?	?	

3.7 Conclusions

A number of discrete probable settlements have been found and mapped and these may be individual farming establishments, two of which seem to be within larger enclosures. The magnetic mapping does not seem to represent the full extent or complexity of these sites, however there is every reason to suppose the activity foci within each has been found. They seem to be of Iron Age date, based entirely upon plan form , and to have been separate sites rather than nodes within a continuum of features.

The time depth of the site appears to be limited with all features fitting into the broad temporal categories of the probable farmsteads, medieval ridge and furrow and modern era structures.

Of the ridge and furrow that is thought to have covered the wider area, none now survives as earthworks and very little has magnetic expression within the landscape.

3.8 Caveats

Geophysical survey is reliant upon the detection of anomalous values and patterns in physical properties of the ground, e.g. magnetic, electromagnetic, electrical, elastic, density and others. It does not directly detect underground features and structures and therefore the presence or absence of these within a geophysical interpretation is not a direct indicator of presence or absence in the ground. Specific points to consider are:

- some physical properties are time variant or mutually interdependent with others;
- for a buried feature to be detectable it must produce anomalous values of the physical property being measured;
- any anomaly is only as good as its contrast against background textures and noise within the data.

TigerGeo will always attempt to verify the accuracy and integrity of data it uses within a project but at all times its liability is by necessity limited to its own work and does not extend to third party data and information. Where work is undertaken to another party's specification any perceived failure of that specification to attain its objective remains the responsibility of the originator, TigerGeo meanwhile ensuring any possible shortcomings are addressed within the normal constraints upon resources.

4 Methodology

4.1 Soil properties

Magnetic survey for any purpose relies upon the generation of a clear magnetic anomaly at the surface, i.e. strong enough to be detected by instrumentation and exhibiting sufficient contrast against background variation to permit diagnostic interpretation. The anomaly itself is dependent upon the chemical properties of a particular volume of ground, its magnetic susceptibility and hence induced magnetic field, the strength of any remanent magnetisation, the shape and orientation of the volume of interest and its depth of burial. Finally the choice and configuration of measurement instrumentation will affect anomaly size and shape.

Sites present a complex mixture of these factors and for some the causative affects are not known. However, depth of burial and size are usually fairly constrained and background susceptibility can be estimated (or measured). The degree of remanent magnetisation is harder to predict and depends on both the natural magnetic properties of the soil and any chemical processes to which it has been subjected. Fortunately heat will raise the susceptibility of most soils and topsoil tends to be more magnetic than subsoil, by volume.

It is hard to draw reliable conclusions about what sort of geology is supportive of magnetic survey as there are many factors involved and in any case magnetic response can vary across geological units as well as being dependent upon post-deposition and erosional processes. In general a relatively non-magnetic parent material contrasting with a magnetisable erosion product, i.e. one which contains iron in the form of oxides and hydroxides, will allow archaeological structures to exhibit strong magnetic contrast against their surroundings and especially if the soil has been heated or subjected to certain processes of fermentation. In the absence of either, magnetic enhancement becomes entirely reliant upon the geochemistry of the soil and enhancement will often be weaker and more variable.

Analysis of the British Geological Survey (BGS) Geochemical Atlas (G-Base) for total soil iron reveals that for England and Wales 50% of the samples (the interquartile range) lie between 1.9% and 3.6% percentage iron with the median at 2.7%.

The principal magnetic iron mineral is the oxide magnetite which sometimes occurs naturally but is more often formed during the heating of soil. Subsequent cooling yields a mixture of this, non-magnetic oxide haematite and another magnetic oxide, maghaemite. Away from sources of heat, other magnetic iron minerals include the sulphides pyrite and greigite while in damp soils complex chemistry involving the hydroxides goethite and lepidocrocite can create strong magnetic anomalies. There are thus a number of different geochemical reaction pathways that can both augment and reduce the magnetic susceptibility of a soil. In addition, this susceptibility may exhibit depositional patterns unrelated to visible stratigraphy.

Most structures of archaeological interest detected by magnetic survey are fills within negative or cut features. Not all fills are magnetic and they can be more magnetic or less magnetic than the surrounding ground. In addition, it is common for fills to exhibit variable magnetic properties through their volume, basal primary silt often being more magnetic than the material above it due to the increased proportion of topsoil within it. However, a fill containing burnt soil may be much more magnetic than this primary silt and sometimes a feature that has contained standing water can produce highly magnetic silts through mechanical depositional processes (depositional remanent magnetisation, DRM).

A third structural factor in the detection of buried structures is the depth of topsoil over the feature. As fills sink, the hollow above accumulates topsoil and hence a structure can be detected not through its own magnetisation but through the locally deeper topsoil above it. The volume of soil required depends upon the magnetic susceptibility of the soil but just a few centimetres are often sufficient. Such a thin deposit can, however, easily be lost through subsequent erosion by natural factors or ploughing.

4.2 Instrumentation

Instrumentation plays a significant part in the performance of magnetic survey in an archaeological context and it is the instrument configuration that governs the form and strength of an anomaly. Vertical gradiometers are insensitive to laminar structures, e.g. broad lenses of topsoil within the upper fills of features but they have a high lateral resolution. Their response is strongly governed by the depth of a

material below the lower sensor and hence topsoil with a significant payload of magnetic debris can appear as a mass of noise..

The array system is designed to be non-magnetic and to contribute virtually nothing to the magnetic measurement, whether through direct interference or through motion noise.

4.3 Survey

Measured variable	Vertical gradient of vertical component of magnetic flux density / nT/m
Instrument	Array of Sensys FGM650-3 sensors with a Mercury6508 digitiser
Configuration	Gradiometric transverse array (4 sensors, ATV towed)
Sensitivity	0.1 nT @ 200 Hz (manufacturer's specification)
QA Procedure	Continuous observation
Spatial resolution	1.0m between lines, 0.15m fixed along line interval (live stacking)

The system continuously displays all incoming data as well as line speed and spatial data resolution per acquisition channel during survey. Rest mode system noise is therefore easy to inspect simply by pausing during survey, and the continuous display makes monitoring for quality intrinsic to the process of undertaking a survey.

4.4 Processing

All data processing is minimised and limited to what is essential for the class of data being collected, e.g. reduction of orientation effects, suppression of single point defects (drop-outs or spikes) etc. The processing stream for this data is as follows:

Process	**Software**	**Parameters**
Measurement & GNSS receiver data alignment	Proprietary	
Temporal reduction, regional field suppression	Proprietary	Bandpassed 0.3 – 5.0s
Gridding	Surfer	Kriging, 0.25m x 0.25m
Smoothing	Surfer	Gaussian lowpass 3x3 data (0.75m)

Potential field processing procedures are used where possible on gridded data from the above processing, allowing simulation of vertical gradient data, separation of deep and shallow magnetic sources, etc. where relevant. The initial processing uses proprietary software developed in conjunction with the multisensor acquisition system. Gridded data is ported as data surfaces (not images) into Manifold GIS for final imaging, contouring and detailed analysis. Specialist analysis is undertaken using proprietary software.

4.5 Interpretation

4.5.1 Introduction

Numerous sources are used in the interpretive process, which takes into account shallow geological conditions, past and present land use, drainage, weather before and during survey, topography and any previous knowledge about the site and the surrounding area. Old Ordnance Survey mapping is consulted and also older sources if available. Geological information (for the UK) is sourced only from British Geological Survey resources and aerial imagery from online sources. LiDAR data is usually sourced from the Environment Agency or other national equivalents, SAR from NASA and other topographic data from original survey.

Information from nearby surveys is consulted to inform upon local data character, variations across soils and near-surface geological contexts. Published data from other surveys may also be used if accompanied by adequate metadata.

Interpretation of magnetic data is undertaken using total intensity data, vertical pseudo-gradient and where relevant, shallow field, component models in parallel although for clarity only a subset of these may be presented in the report.

4.5.2 The contribution from geology and soils

On some sites, e.g. some gravels and alluvial contexts, there will be anomalies that can obscure those potentially of archaeological interest. They may have a strength equal to or greater than that associated with more relevant sources, e.g. ditch fills, but can normally be differentiated on the basis of anomaly form coupled with geological understanding. Where there is ambiguity, or relevance to the study, these anomalies will be included in this category.

Not all changes in geological context can be detected at the surface, directly or indirectly, but sometimes there will be a difference evident in the geophysical data that can be attributed to a change, e.g. from alluvium to tidal flat deposits, or bedrock to alluvium. In some cases the geophysical difference will not exactly coincide with the geological contact and this is especially the case across transitions in soil type.

Geophysical data varies in character across areas, due to a range of factors including soil chemistry, near surface geology, hydrology and land use past and present. These all contribute to the texture of the data, i.e. a background character against which all other anomalies are measured.

4.5.3 Agricultural inputs

Coherent linear dipolar enhancement of magnetic field strength marking ditch fills, narrow bands of more variable magnetic field or changes in apparent magnetic susceptibility, are all included within the category of former field boundaries if they correlate with those depicted on the Tithe Map or early Ordnance Survey maps. If there is no correlation then these anomaly types are not categorised as a field boundaries.

Banded variations in apparent magnetic susceptibility caused by a variable thickness of topsoil, depositional remanent magnetisation of sediments in furrows or susceptibility enhancement through heating (a by product of burning organic matter like seaweed) tend to indicate past cultivation, whether ridge-based techniques, medieval ridge and furrow or post medieval 'lazy beds'. Modern cultivation, e.g. recent ploughing, is not included.

In some cases it is possible to identify drainage networks either as ditch-fill type anomalies (typically 'Roman' drains), noisy or repeating dipolar anomalies from terracotta pipes or reduced magnetic field strength anomalies from culverts, plastic or non-reinforced concrete pipes. In all cases identification of a herring bone pattern to these is sufficient for inclusion within this category.

4.5.4 Features of archaeological interest

Any linear or discrete enhancement of magnetic field strength, usually with a dipolar character of variable strength, that cannot be categorised as a field boundary, cultivation or as having a geological origin, is classified as a fill potentially being of archaeological interest. Fills are normally earthen and include an often invisible proportion of heated soil or topsoil that augments local magnetic field strength. Inverted anomalies are possible over non-earthen fills, e.g. those that comprise peat, sand or gravel within soil. This category is subject to the 'habitation effect' where, in the absence of other sources of magnetic material, anomaly strength will decrease away from sources of heated soil and sometimes to the extent of non-detectability.

Former enclosure ditches that contained standing water can promote enhanced volumetric magnetic susceptibility through depositional remanence and remain detectable regardless of the absence of other sources of magnetic enhancement.

Anything that cannot be interpreted as a fill tends to be a structure, or in archaeological terms, a feature. This category is secondary to fills and includes anomalies that by virtue of their character are likely to be of archaeological interest but cannot be adequately described as fills. Examples include strongly magnetic bodies lacking ferrous character that might indicate hearths or kilns. In some cases anomalies of ferrous character may be included.

On some sites the combination of plan form and anomaly character, e.g. rectilinear reduced magnetic field strength anomalies, might indicate the likely presence of masonry, robber trenches or rubble foundations. Other types of structure are only included if the evidence is unequivocal, e.g. small ring ditches with doorways and hearths. In some circumstances a less definite category may be assigned to the individual anomalies instead.

It is sometimes possible to define different areas of activity on the basis of magnetic character, e.g. texture and anomaly strength. These might indicate the presence of middens or foci within larger complexes. This category does not indicate a presence or absence of discrete anomalies of archaeological interest.

4.6 Glossary

Acronym / term	Type	Definition
A	Physical quantity	SI unit Amp of electric current
BGS	Organisation	British Geological Survey
CIfA	Organisation	Chartered Institute for Archaeologists
dB	Physical quantity	Decibel, unit of amplification / attenuation
DRM	Process	Depositional Remanent Magnetisation
EAGE	Organisation	European Association of Geoscientists and Engineers
EGNOS	Technology	European Geostationary Navigation Overlay Service
ERT	Technology	Electrical resistivity tomography
ETRS89	Technology	European Terrestrial Reference System (defined 1989)
ETSI	Organisation	European Telecommunications Standards Institute
EuroGPR	Organisation	European Ground Penetrating Radar Association, the trade body for GPR professionals
G-BASE	Data	British Geological Survey Geochemical Atlas
GeolSoc	Organisation	Geological Society of London, the chartered body for the geological profession
GNSS	Technology	Global Navigation Satellite System
GPR	Technology	Ground penetrating radar
GPS	Technology	Global Positioning System (US)
inversion	process	A combination of forward and backward modelling intended to construct a 2D or 3D model of the physical distribution of a variable from data measured on a 1D or 2D surface. It is fundamental to ERT survey
IP	Physical quantity	Induced polarisation (or chargeability) units mV/V or ms
m	Physical quantity	SI unit metres of distance
mbgl	Physical quantity	Metres below ground level
MHz	Physical quantity	SI unit mega-Hertz of frequency
MS	Physical quantity	Magnetic susceptibility, unitless
mS	Physical quantity	SI unit milli-Siemens of electrical conductivity
nT	Physical quantity	SI unit nano-Tesla of magnetic flux density
OFCOM	Organisation	The Office of Communications, the UK radio spectrum regulator
Ohm	Physical quantity	SI unit Ohm of electrical resistance
OS	Organisation	Ordnance Survey of Great Britain
OSGB36	Data	The OS national grid (Great Britain)
OSTN15	Technology	Current coordinate transformation from ETRS89 to OSGB36 co-ordinates
RDP	Physical quantity	Relative Dielectric Permittivity, unitless
RTK	Technology	Real Time Kinematic (correction of GNSS position from a base station)
s	Physical quantity	SI unit seconds of time
TMI	Physical quantity	Total magnetic intensity (measured flux density minus regional flux density)
TRM	Process	Thermo-Remanent Magnetisation
V	Physical quantity	SI unit Volt of electric potential
WGS84	Data	World Geodetic System (defined 1984)

4.7 Bibliography

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4.9 Archiving and dissemination

An archive is maintained for all projects, access to which is permitted for research purposes. Copyright and intellectual property rights are retained by TigerGeo on all material it has produced, the client having full licence to use such material as benefits their project. Where required, digital data and a copy of the report can be archived in a suitable repository, e.g. the Archaeology Data Service, in addition to our own archive.

The archive contains all survey and project data, communications, field notes, reports and other related material including copies of third party data (e.g. CAD mapping, etc.) in digital form. Many are in proprietary formats while report components are available in PDF format.

The client will determine the distribution path for reporting, including to the end client, other contractors, the local authority including the Historic Environment Record etc., and will determine the timetable for upload of the project report to the OASIS Grey Literature library or supply of report or data to other archiving services, taking into account end client confidentiality.

TigerGeo reserves the right to display data rendered anonymous on its website and in other marketing or research publications.

5 Supporting information

5.1 Standards and quality (archaeology)

TigerGeo is developing an Integrated Management System (IMS) towards ISO certification for ISO9001, ISO14001 and OHSAS18001/ISO45001. For work within the archaeological sector TigerGeo has been awarded CIfA (Chartered Institute for Archaeologists) Registered Organisation status.

A high standard of client-centred professionalism is maintained in accordance with the requirements of relevant professional bodies including the Geological Society of London (GeolSoc) and the Chartered Institute for Archaeologists (CIfA). Senior members of TigerGeo are professional members of the GeolSoc (FGS), CIfA (MCIfA & ACIfA grades) and other appropriate bodies, including the European Association of Geoscientists and Engineers (EAGE) Near Surface Division (MEAGE) and the Institute of Professional Soil Scientists (MISoilSci).

In addition TigerGeo is a member of EuroGPR and all ground penetrating and other radar work is in accordance with ETSI EG 202 730.

The management team at TigerGeo have almost 50 years of combined experience of near surface geophysical project design, survey, interpretation and reporting, based across a wide range of shallow geological contexts. Added to this is the considerable experience of our lead geophysicists in a variety of commercial and academic roles. All geophysical staff have graduate and in many cases also post-graduate relevant qualifications pertaining to environmental geophysics from recognised centres of academic excellence.

During fieldwork there is always a fully qualified (to graduate or post-graduate level) supervisory geophysicist leading a team of other geophysicists and geophysical technicians, all of whom are trained and competent with the equipment they are working with. Data processing and interpretation is carried out by a suitably qualified and experienced geophysicist under the direct supervision and guidance of the Senior Geophysicist. All work is monitored and reviewed throughout by the Senior Geophysicist who will appraise all stages of a project as it progresses.

Data processing and interpretation adheres to the scientific principles of objectiveness and logical consistency. A standard set of approved external sources of information, e.g. from the British Geological Survey, the Ordnance Survey and similar sources of data, in addition to previous TigerGeo projects, guide the interpretive process. Due attention is paid to the technical constraints of method, resolution, contrast and other geophysical factors.

There is a strong culture of internal peer-review within TigerGeo, for example, all reports pass through a process of authorship, technical review and finally proof-reading before release to the client. Technical queries resulting from TigerGeo's work are reviewed by the Senior Geophysicist to ensure uniformity of response prior to implementing any edits, etc.

Work is undertaken in accordance with the high professional standards and technical competence expected by the Geological Society of London and the European Association of Geoscientists and Engineers.

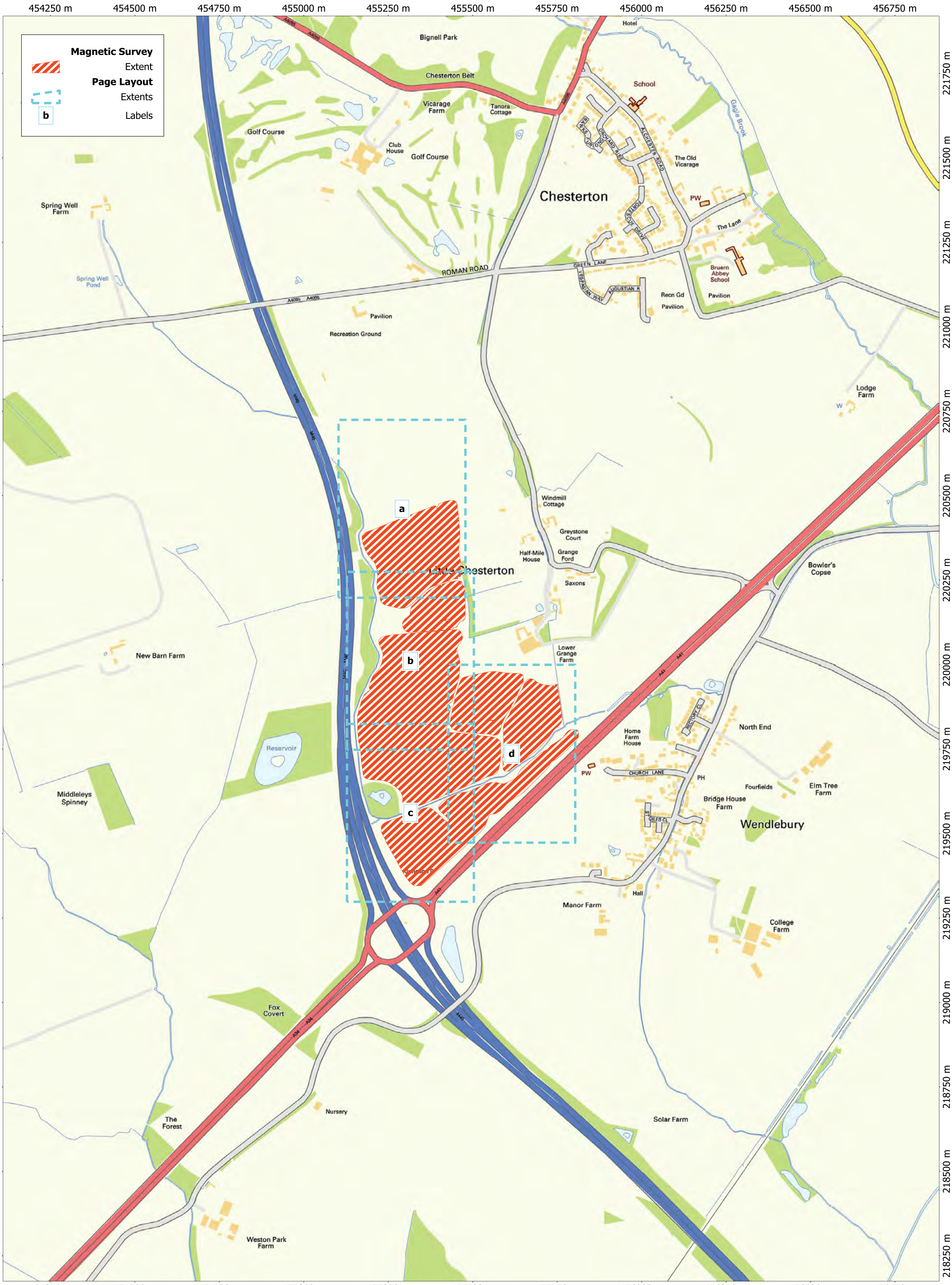
All work for archaeological projects is also conducted in accordance with the following standards and guidance:

- David et al, "Geophysical Survey in Archaeological Field Evaluation", English Heritage, 2008;
- "Standard and guidance for Archaeological Geophysical survey", Chartered Institute for Archaeologists, 2014 (Updated 2016);

and TigerGeo meets with ease the requirements of English Heritage in their 2008 Guidance "Geophysical Survey in Archaeological Field Evaluation" section 2.8 entitled "Competence of survey personnel".

5.2 Key personnel

Martin Roseveare, MSc BSc(Hons) MEAGE FGS MCIfA	**Senior Geophysicist, Director**
Martin specialised (MSc) in geophysical prospection for shallow applications and since 1997 has worked in commercial geophysics. Elected a GeolSoc Fellow in 2009 he is now working towards achieving CSci. A member of the European Association of Geoscientists & Engineers, he has served on the EuroGPR and CIfA GeoSIG committees and on the scientific committees of the 10th and 11th Archaeological Prospection conferences. He has reviewed papers for the EAGE Near Surface conference, was a technical reviewer of the Irish NRA geophysical guidance and is a founding member of the ISSGAP soils group. Professional interests include the application of geophysics to agriculture and the environment, e.g. groundwater and geohazards. He is also a software writer and equipment integrator with significant experience of embedded systems.	
Anne Roseveare, BEng(Hons) DIS MISoilSci	**Operations Manager, Environmental Geophysicist, Data Analyst**
On looking beyond engineering, Anne turned her attention to environmental monitoring and geophysics. She is a Member of the British Society of Soil Science / Institute of Professional Soil Scientists (BSSS/IPSS) and has specific areas of interest in soil physics & hydrology, agricultural applications and industrial sites. Working in shallow geophysics since 1998, Anne is a founding member of the ISSGAP soils group, also was the founding Editor of the International Society for Archaeological Prospection (ISAP). Specifications, logistics, health and safety, data handling & analysis are integral parts of her work, though she is happily distracted by the possibilities of discovering lost cities, hillwalking, dance and good food.	
Daniel Lewis, MA BA(Hons) ACIfA	**Consultant Archaeologist**
Daniel studied archaeology at the University of Nottingham and worked in field archaeology for many years, managing urban and rural fieldwork projects in and around Herefordshire. When the desk became more appealing he jumped into the world of consulting, working on small and large multi-discipline projects throughout England and Wales. At the same time, he returned to University, gaining an MA in Historic Environment Conservation. With experience in the heritage sector since 1998, Daniel has a diverse portfolio of skills. Here he ensures that geophysical work within the heritage sector is well grounded in archaeology. His spare time includes much running up mountains.	
Alexandra Gerea, MSc, BSc, PhD Candidate	**Environmental Geophysicist**
Alexandra has a BSc in Geophysics and an MSc in Applied Geo-biology and is in the final stages of a PhD in the UK after living in Portugal for six months working on her master's degree. Since 2008 she has used most mainstream processing applications across electrical, magnetic and radar methods. She combines a love of nature and science and is currently studying plant roots in agricultural environments using geophysical methods. When not doing that she enjoys travelling, hiking, nature, yoga, books, foreign languages and cats. A few years ago she found a passion for electronics and started building different devices including intelligent gardening systems and coding in Python.	



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DWG 02 Magnetic Data - Overview

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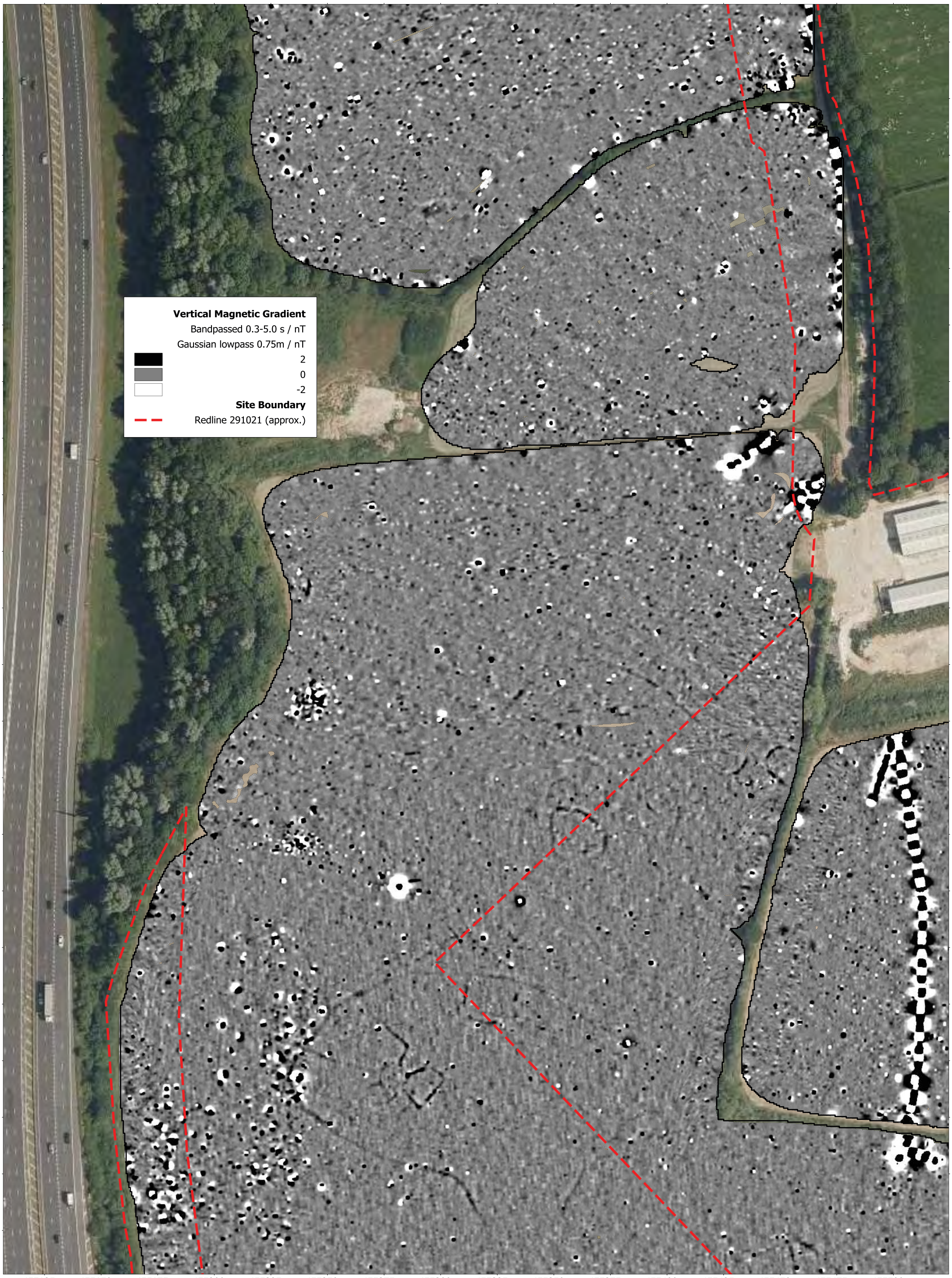

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Site Boundary
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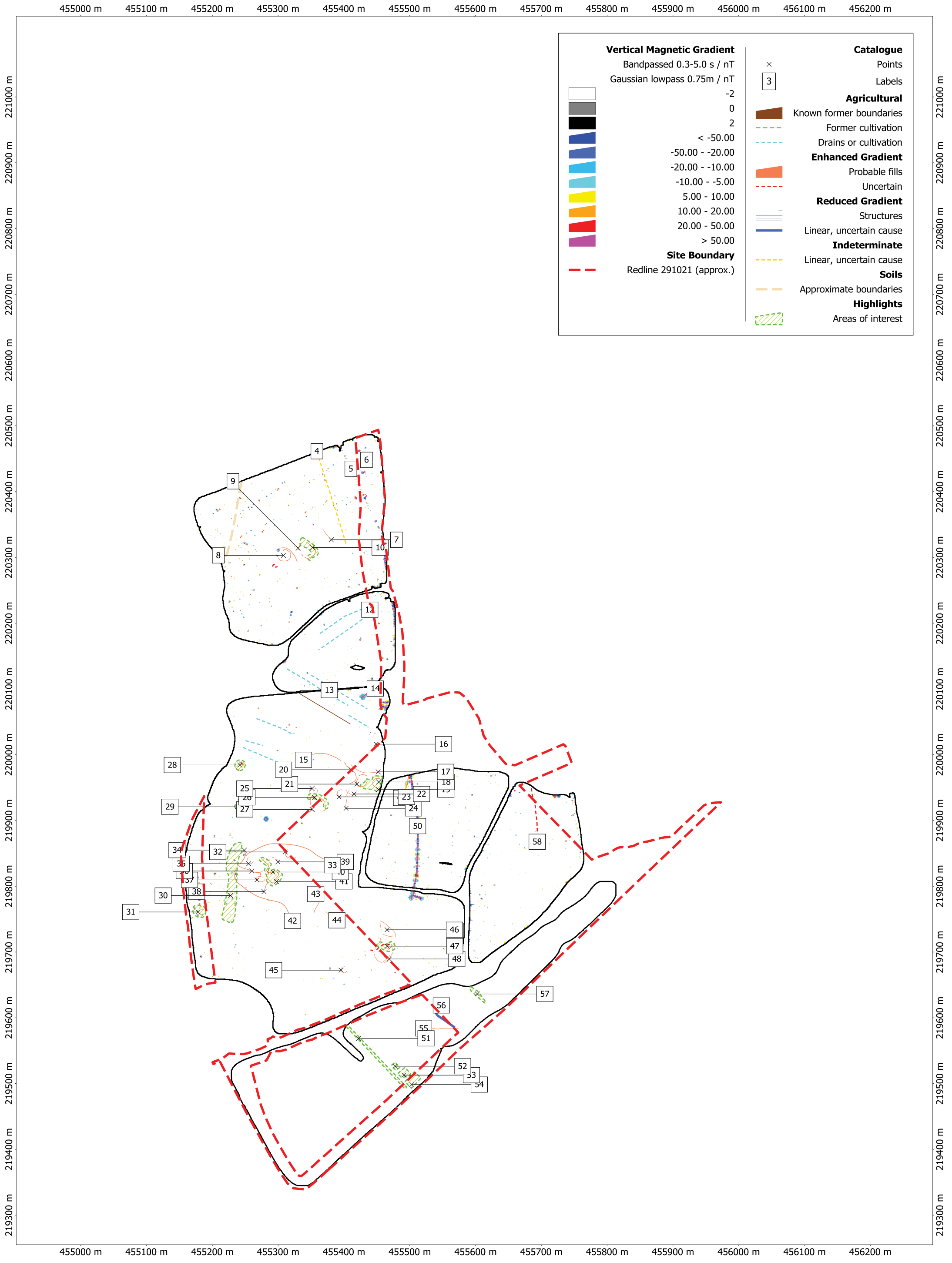

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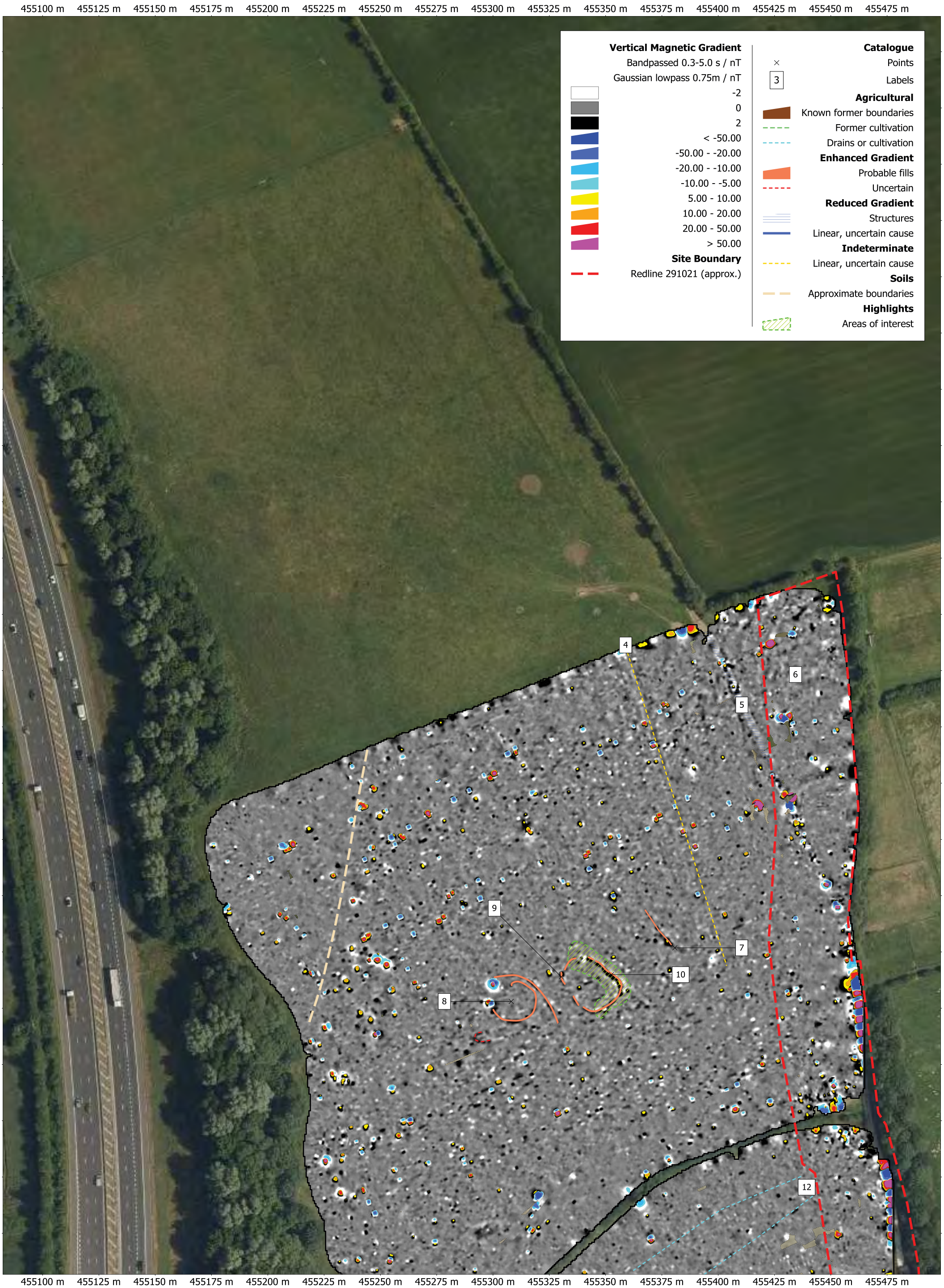

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Site Boundary
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Catalogue
Points
Labels

Agricultural
Known former boundaries
Former cultivation
Drains or cultivation

Enhanced Gradient
Probable fills
Uncertain

Reduced Gradient
Structures
Linear, uncertain cause

Indeterminate
Linear, uncertain cause

Soils
Approximate boundaries

Highlights
Areas of interest

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DWG 03b Interpretation

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