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APPENDIX ES16.1

HERITAGE STATEMENT

AJA
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consultancy | project management | expert witness

Project Reference: WS010005

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009
Regulation 5(2)(a)

Heritage Statement

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[redacted]

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EXECUTIVE SUMMARY: CULTURAL HERITAGE

Authors of the Report
S1.1 The Cultural Heritage Assessment has been written by Andrew Josephs Associates, a consultancy with over 35 years' experience.

Introduction
S1.2 The assessment considers all aspects of cultural heritage, and the potential effects of the proposed scheme upon them, including both direct and indirect effects.

S1.3 The archaeology of the Western Extension Area (WEA) was assessed by geophysical survey (Tigergeo, November 2019 and May 2020) and archaeological trial trenching (MOLA, October 2020).

S1.4 In order to assess potential offsite cultural heritage effects, a study area of 2.5km was selected and analysis of the Zone of Theoretical Visibility (ZTV) was undertaken.

S1.5 Site visits to the WEA and its environs were undertaken in October 2020 and March 2021.

Consultations
S1.6 Consultations were held with Northamptonshire County Council Archaeological Service to agree the scope of field evaluation and mitigation (should consent be forthcoming). We understand that the responsibility for this has now passed to North Northamptonshire Council.

Baseline Conditions

Designated Assets

S1.7 The WEA is situated in a rural landscape, with strong topographical influences and extensive woodland.

S1.8 The following designated assets or groups of assets are situated within approximately 2.5km. None sit within 1km of the WEA:

- Duddington

Duddington Bridge (SM), Church of St Mary (grade II*), 27 Grade II listed structures within a Conservation Area. >1.2km north-west.

- RAF Wittering

Nuclear fissile core stores and buildings and three associated Grade II structures. >1.5km north-east (to listed structures).

- Kings Cliffe

Church of All Saints (I), Hall Farmhouse (II*), over 50 Grade II listed structures within a Conservation Area. >2km south/south-east. Huskissons Lodge (II), 1.85km south.

- Collyweston

Site of manor house and gardens (SM), Collyweston sundial (SM), Church of St Andrew (II*), Collyweston Manor (II) and 26 Grade II listed structures within a Conservation Area. >2km north-north-west of the WEA.

S1.9 The ZTV showed that there is no visual connection between any designated asset and the WEA due to topography and intervening vegetation. This was verified by a site visit in March 2021.

Archaeology and Historic Landscape

Archaeological desk-based assessment

S1.10 Details of investigations, sites and finds lying within 1.5km of the WEA were sourced from the Northamptonshire and Peterborough Historic Environment Records.

S1.11 Few parts of England have been examined in as much detail as this part of Northamptonshire. The combined efforts of David Hall and the former County Archaeologist, Glen Foard, ensured that programmes of desk-based research and field-based examination mapped large numbers of sites and possible sites.

S1.12 Three entries are recorded within the WEA. They comprise an area on the enclosure award map that was probably lawn, a fieldname and a crop mark of a field boundary that appears on the 1950s Ordnance Survey mapping.

S1.13 No archaeological investigations are known to have taken place within the WEA prior to the current project, although it is considered likely that it was fieldwalked by David Hall between 1960 and 1999.

S1.14 Aerial photographs of the WEA were examined as part of the National Mapping Programme.

S1.15 Numerous archaeological sites have been located within the 1.5km study area, notably of Roman date, and including possible settlements, buildings and ironworking located by fieldwalking.

S1.16 A large number of landscape features were identified by the Rockingham Forest Project, published in 2003.

S1.17 An archaeological watching brief was undertaken during soil removal in advance of development of the current ENRMF in 2008. No archaeological deposits or artefacts were identified.

S1.18 An excavation is recorded in Collyweston Great Wood, 900m north-north-east of the WEA. This took place in 1953-4 and identified a Romano-British temple of several periods of construction including hexagonal and octagonal stone buildings, and associated finds.

S1.19 In 2016, an archaeological evaluation (geophysics and trenching) was undertaken at Collyweston Quarry, 1km north west of the WEA. No archaeological remains or artefactual material were encountered.

Historical research

S1.20 Due to Covid-19, research in the County Record Office and National Archives at Kew was not possible, but research carried out by the late Anthony Breen as part of a previous planning application was reassessed.

S1.21 The area was formerly royal forest and many of the historic records relating to the forest in medieval and early modern period are held at the National Archives at Kew. Later the land was leased to Earl of Exeter, a member of the Cecil family of Burghley House.

S1.22 The WEA is now located in the north-western corner of the civil parish of King's Cliffe. The western boundary of the WEA follows the line of the parish boundary with Duddington. It was previously an extra-parochial district in Rockingham Forest until 1861, when it was added to King's Cliffe.

S1.23 The northern field of the WEA is marked on Bryant's 1827 'Map of Northamptonshire' as 'Colley Green'. The southern field is named as 'The Short' on Richard Gee's 'Map of the Earl of Exeter' Estate' dated 1800.

S1.24 In 1968 Philip Pettit published his research on the Royal Forests and prepared a map of 'Rockingham Forest in the Seventeenth Century'. 'The Short' is marked on Pettit's map and the field is also mentioned in a petition to *Edward III in 1361.*

S1.25 Though the area was termed Forest it was managed woodland, that would have included clearings, and used for a variety of agricultural and artisan activities. Few of these apart from charcoal burning will leave significant archaeological remains.

S1.26 It is concluded that the land of the WEA would have been open common grazing set within a managed woodland, probably dating back to the medieval period.

Field-based Evaluation

S1.27 Geophysical survey identified only a handful of anomalies, most notably a rectangular enclosure in the northern field.

S1.28 Archaeological trenches were targeted at anomalies identified in the geophysical survey and also blank areas to act as a control. The aim was to provide sufficient information to establish the nature, extent, preservation and potential of any surviving archaeological remains. This would allow recommendations for management of the resource, including preservation *in situ* and further archaeological works if necessary appropriate to the significance of the archaeology.

S1.29 Archaeological features were recorded in only a few of the 51 trenches. The rectangular enclosure was confirmed as Roman and interpreted as related to stock management. One pit related to small-scale charcoal burning was found, together with number of undated ditches.

S1.30 The relationship between the enclosure and the further undated archaeological features remains unclear.

S1.31 The results of the evaluation corroborated the geophysical survey. It identified only a sparse number of archaeological features given the size of the site and there is limited potential to address the research objectives detailed in the regional research agenda.

Predicted Environmental Impacts / Effects and Mitigation

S1.32 In accordance with Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 the significance of an effect was described and assessed. This is achieved using a combination of published guidance and professional judgement.

Direct Effects and Mitigation

S1.33 The nature of mineral extraction results in the total loss of the archaeological resource wherever extraction takes place, and the potential loss or damage in other areas associated with infrastructure and landscaping.

S1.34 The WEA lies within an area rich in archaeology of, in particular, Roman date. This is partly due the high level of field survey carried out in the past 50 years in the locality. However, the results of the evaluation have demonstrated a much lower potential.

S1.35 It is proposed that the two areas of local archaeological interest identified by the evaluation are subject to set-piece soil stripping under the direction of an archaeologist, followed by archaeological excavation. A watching brief will be maintained on the service corridors where disturbance occurs, such as during the removal of the overhead electricity line and construction of its replacement route. This work would be undertaken in advance of development. This approach has been agreed with the County Archaeological Officer.

S1.37 The effects upon archaeology are assessed as of moderate magnitude and slight significance. The effects would be offset by the contribution to archaeological knowledge arising from the excavations.

Indirect Effects

S1.37 Indirect impacts are those that do not physically affect a cultural heritage asset or landscape, but that potentially alter the context or setting. Assessment was undertaken based upon Historic England's GPA3, The Setting of Heritage Assets.

S1.38 The proposed development and restoration would have no adverse effects upon designated cultural heritage assets (a neutral situation) as a result of topography that prevents any visual connection. No assets are situated within 1km of the western extension area and that, coupled with the intervening dense woodland, would prevent any adverse effects upon historical context or from the effects of noise and dust.

S1.39 No mitigation is required.

Combined and cumulative effects

S1.40 Due to distance and the physical isolation of the WEA resulting from strong local topography and extensive woodland, there would be no predicted cumulative or combined effects of the proposed development in relation to heritage.

Conclusion

S1.41 Having regard to the baseline conditions and the nature of the proposed development, there would be no residual effects upon known cultural heritage assets. The proposed development accords with national cultural heritage policy, and in particular, Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, the National Planning Policy Framework, updated in 2019 and the National Policy Statement for Hazardous Waste 2013.

1. INTRODUCTION

1.1 SCOPE OF THIS REPORT

1.1.1 This Heritage Statement, written by Andrew Josephs Associates, presents the findings of the cultural heritage assessment for a proposed western extension by Augean South Ltd (Augean) to the East Northants Resource Management Facility (ENRMF), Stamford Road, PE8 6XX. The existing site comprises an active hazardous waste and low-level radioactive waste landfill site together with a waste treatment and recovery facility.

1.1.2 Cultural heritage is represented by a wide range of features that result from past human use of the landscape. These include historic structures, many still in use, above ground and buried archaeological monuments and remains of all periods, and artefacts of anthropological origin. In its broadest form cultural heritage is represented by the landscape and townscape itself and the setting of the assets that lie within them. The report considers both direct and indirect effects upon cultural heritage. Indirect effects can occur as a result of changes to the setting of a landscape or asset, whether permanent or temporary. This is particularly relevant to designated cultural heritage assets, such as Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens.

1.1.3 A glossary of terms and archaeological periods used in this report is included at **Appendix A**.

1.2 THE PROPOSED DEVELOPMENT

1.2.1 The full description of the development is contained within the Environmental Statement and Development Consent Order Application documents.

1.2.2 The existing ENRMF site is an established operational landfill site which accepts hazardous waste and low-level radioactive waste. The site also includes an established waste treatment and recovery facility.

1.2.3 The existing ENRMF site is the subject of a Development Consent Order (DCO) which was granted in July 2013 and amended in June 2018. The ENRMF DCO specifies the completion and restoration of the site by 31 December 2026. In order to secure continuity of its operations beyond that date, Augean is submitting an application for a new DCO for an extension of timescales and an extension to the west of the existing site, together with an increase in the throughput of the waste treatment and recovery facility and overall into the site.

1.2.4 The western extension area is centred on National Grid Reference (NGR) TL 00308 99890 and extends to 26.8 hectares. **Figures 1 and 2** show the location of the application area and the western extension area.

1.3 SOILS, GEOLOGY AND LANDFORM

1.3.1 Soils, geology and landform are summarised in **Table 1**, below.

Table 1 Soils, geology and landform of the western extension area

Soilscapes Classification	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
Superficial 1:50000 BGS	Till, Mid Pleistocene - Diamicton (TILMP), recorded in southern field only
Bedrock 1:50000 BGS	Blisworth Limestone Formation - Limestone (BWL) in northern field, northern part, Lower Lincolnshire Limestone Formation - Limestone (LLL) in a broad band crossing the southern field, the remainder Rutland Formation - Argillaceous Rocks With Subordinate Sandstone And Limestone (RLD)
Topography	Southern field level, slight northwards dip, before rising again to a higher level in the northern field
Hydrology	Impeded drainage
Current Land Use	Agricultural - Mixed
Historic Land Use	Agricultural - Mixed

1.4 AUTHORSHIP

1.4.1 This Heritage Statement has been written by Andrew Josephs and Ian Meadows of Andrew Josephs Associates, a consultancy specialising in archaeology and cultural heritage founded in 2002. Contributions have also been made by Tigergeo who carried out geophysical survey and MOLA Northampton who undertook trial-trenching.

1.4.2 Andrew Josephs (BA Hons Archaeology and Environmental Studies) has extensive experience of all periods and facets of cultural heritage, including the authorship of over 800 Heritage Statements under the EIA Regulations. He was previously Principal Consultant (Director of Heritage and Archaeology) at AMEC and Wardell Armstrong, where he started in 1992, becoming one of the UK's first consultants in the post-PPG16 era of developer-funded archaeology. Prior to 1992, he worked as a field archaeologist and researcher for universities and units in the UK, Europe and

the USA, where he pioneered the use of satellite imagery made available by the US military to discover sites in the deserts of Arizona, that were then verified on foot. He graduated with a BA (Honours) in Archaeology and Environmental Studies in 1985. He lectures widely on heritage and was previously visiting lecturer in Environmental Impact Assessment at the University of Nottingham.

1.4.3 Ian Meadows (BA Archaeology and Geology, Dip.Mus) is an archaeologist with over 30 years' experience in a variety of professional areas. He was Senior Project Officer with Northamptonshire Archaeology (now MOLA) from 1992 until 2014 when he joined AJA. Ian is highly experienced project manager of large landscape projects such as long running quarries. Ian has a particular interest in the Roman period and is currently Director of the excavations at Irchester Roman town.

In addition to his fieldwork he is engaged in regular outreach sessions to both professional and amateur groups as part of his role dealing with both adults and children. He has been teaching archaeology and landscape history to adults and children since the late 1980's, previously being engaged as a tutor by Cambridge University, Anglia Ruskin University, Bath University and the WEA and feels it is important to disseminate the information derived from projects to a wider audience.

1.5 CONSULTATIONS

1.5.1 Advice in relation to the scope of this assessment was provided by the late Lesley Anne Mather and Liz Mordue of Northamptonshire County Council. A Brief was prepared to guide the trial-trenching. A summary of consultations is reproduced at **Appendix B**.

1.5.2 The Inspectorate provided comments on the cultural heritage section of the Scoping Report. These comments have all been addressed in this Assessment, as set out below, **Table 2**.

Table 2 Response to Inspectorate's Comments on Scoping

Points	Inspectorates Comments on Scoping	Our response
Methodology for the assessment of the setting of heritage assets	The Scoping Report notes that potential impacts on the setting of designated heritage assets will be assessed but provides no details of how such assessment will be undertaken. The ES should detail the assessment methodology applied to the setting of heritage assets. The assessment should be undertaken in conjunction with the landscape and visual impact assessment and appropriate cross-references between the aspect chapters should be included. The assessment should make reference to the ZTV Modelling undertaken for the landscape and visual impact assessment. The Applicant should also seek to agree any photo viewpoint locations with relevant statutory consultation bodies, such as Historic England and the local authority archaeological advisor, as appropriate. Depending on the results of the further investigation it may also be necessary to consider impacts on settings of non-designated heritage assets too.	The approach adopted in this assessment is based on Historic England GPA3. The ZTV was examined and there are no viewpoints of the western extension area from any designated assets, and this was verified by field survey. Viewpoints were chosen from each of the groups of assets to illustrate this.
Results of geophysical survey	The Inspectorate notes reference to the geophysical survey that has been undertaken to date, including the presence of a rectangular enclosure in the northern part of the Proposed Development. The ES should be accompanied by the geophysical data and interpretation.	This is included at Appendix C.
Published guidance	The Scoping Report mentions the EIA Regulations 2017, National Planning Policy Framework 2019, and *The Setting of Heritage Assets:*	

	Historic Environment Good Practice Advice in Planning Note 3 (2nd Edition) (Historic England 2017). The ES should also refer to the Design Manual for Roads and Bridges (DMRB) *LA 104 Environmental Assessment and Monitoring*, and *LA 106 Cultural Heritage Assessment* (2020), *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists 2014, revised 2017), and *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (Historic England 2008). Other relevant regional sources include *The Archaeology of the East Midlands: An Archaeological Resource Assessment and Research Agenda* (2006, revised 2012), *The Northamptonshire National Mapping Programme* (2003, revised 2008), and *Mapping Ancient Landscapes in Northamptonshire* (Deegan and Foard 2008).	These are referred to along with other regional sources.
Proposed cultural heritage assessment methodology	Appendix C of the Scoping Report outlines the proposed cultural heritage assessment methodology. In paragraph C6 of Appendix C there is a matrix setting out categories of sensitivity, in paragraph C8 one illustrating criteria for assessing magnitude of change, and paragraph C9 a matrix for assessing significance. The system for assessing sensitivity and significance of effect on heritage assets is different to standard matrixes based on that used in the Design Manual for Roads and Bridges (e.g. DMRB – *LA 104 Environmental Assessment and Monitoring*, Table 3.8.1). The proposed matrix in C9 appears to place greater emphasis on non-significant effects, whilst having no Slight and no Medium/Moderate impacts at all. The Applicant should ensure that the assessment the ES addresses impacts fairly and does not disproportionally favour the reporting of non-significant effects.	This is acknowledged and the assessment uses the DMRB methodology is used.
Relevant heritage legislation	The Scoping Report does not mention key heritage legislation including The Ancient Monuments and Archaeological Areas Act 1979, The Planning (Listed Buildings and Conservation Areas) Act 1990, The Burial Act 1997, and The Treasure Act 1996. The ES should also refer to these.	These are included

1.6 RELEVANT LEGISLATION, POLICY AND GUIDANCE

Historic Environment Statutory Legislation

1.6.1 The importance of cultural heritage is clearly recognised at both national and local levels. **Table 3** summarises the statutory legislation relating to the historic environment relevant to this study.

Table 3 Historic Environment Statutory Legislation

Legislation	Key Issues
Burial Act (1857)	Under Section 25 of the 1857 Act, it is a criminal offence to remove human remains from any place of burial without a licence from the Ministry of Justice.
Ancient Monuments and Archaeological Areas Act (1979)	It is a criminal offence to carry out any works on or near to a Scheduled Ancient Monument without a Scheduled Monument Consent.
Protection of Military Remains Act (1986)	The Act outlines the criteria for designating a military crash site. Certain activities are prohibited at protected sites, without the authority of the Secretary of State.
Planning (Listed Buildings and Conservation Areas) Act (1990)	No works can be carried out in relation to a listed building without listed building consent. Designation of an area as a 'conservation area' introduces general controls over demolition and development within that area.
Treasure Act (1996)	The 1996 Act defines 'Treasure' as any object that is at least 10% gold or silver, associated coins or groups of coins which are over 300 years old, objects formerly classed as 'treasure trove' (i.e. deliberately deposited items with a high content of gold or silver) and any objects found in association with the above. Any find of 'Treasure' must be reported to the local Coroner.
Hedgerow Regulations (1997)	It is against the law to remove most countryside hedgerows without permission. A local authority can prohibit the removal of an 'important' hedgerow. The 1997 Regulations define the criteria for determining whether a hedgerow is important, and these include historical and archaeological criteria.

National Policy and Guidance

1.6.2 In accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 the potential effects of the proposed development have been described and assessed. This is achieved using a combination of the following published guidance and professional judgement.

- National Planning Policy Framework, updated 2019. Department for Communities and Local Government.
- *National Policy Statement for Hazardous Waste: a framework document for planning decisions on nationally significant hazardous waste infrastructure* 2013. DEFRA.
- Planning Practice Guidance: *Conserving and Enhancing the Historic Environment* http://planningguidance.planningportal.gov.uk
- Design Manual for Roads and Bridges, 2020, LA104 Environmental Assessment and Modelling; LA 106 Cultural Heritage Assessment (2020)
- Historic England[1] 2008. *Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment.*
- Historic England 2017. *The Setting of Heritage Assets (GPA3**)***
- Historic England 2019. Statements of Heritage Significance (HEAN12)
- Historic England 2020 Mineral Extraction and Archaeology (HE Advice Note 13)
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists 2014, revised 2017)

National Planning Policy Framework

1.6.3 National planning policy on how cultural heritage should be assessed is given in the National Planning Policy Framework, updated in 2019. This covers all aspects of heritage and the historic environment, including listed buildings, Conservation Areas, registered parks and gardens, battlefields and archaeology.

Of particular relevance to this application are:

[1] Historic England includes its former name English Heritage

189. 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.

190. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.

191. Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the deteriorated state of the heritage asset should not be taken into account in any decision.

192. In determining applications, local planning authorities should take account of:

a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;

b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and

c) the desirability of new development making a positive contribution to local character and distinctiveness.

Considering potential impacts

193. 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.

194. 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;

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.*

195. 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; and

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

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.

196. 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.

197. 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.

198. Local planning authorities should not permit the loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

199. Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

Planning Practice Guidance (PPG) Conserving and Enhancing the Historic Environment

1.6.4 Planning Practice Guidance (PPG) Conserving and Enhancing the Historic Environment was published in April 2014 as a companion to the NPPF, replacing previous Circulars and other supplementary guidance. In respect of heritage decision-making, the PPG stresses the importance of determining applications on the basis of significance, and explains how the tests of harm and impact within the NPPF are to be interpreted.

1.6.5 In particular, the PPG includes the following in relation to the evaluation of significance and harm:

"*Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and importance of the significance of a heritage asset, and the contribution of its setting, is very important to understanding the potential impact and acceptability of development proposals.*

Whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the policy in the National Planning Policy Framework. In general terms, substantial harm is a high test, so it may not arise in many cases. For example, in determining whether works to a listed building constitute substantial harm, an important consideration would be whether the adverse impact seriously affects a key element of its special architectural or historic interest. It is the degree of harm to the asset's significance rather than the scale of the development that is to be assessed. The harm may arise from works to the asset or from development within its setting.

While the impact of total destruction is obvious, partial destruction is likely to have a considerable impact but, depending on the circumstances, it may still be less than substantial harm or conceivably not harmful at all, for example, when removing later inappropriate additions to historic buildings which harm their significance. Similarly, works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all. However, even minor works have the potential to cause substantial harm."

National Policy Statement for Hazardous Waste, 2013

1.6.6 The NPS requires (at paragraph 5.8.8) that: "*The ES should 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, the ES should include an appropriate desk-based assessment and, where necessary, a field evaluation."

Historic England: The Setting of Heritage Assets (GPA3)

1.6.7 This Good Practice Advice Note published in 2017 observes that amongst the Government's planning objectives for the historic environment is that conservation decisions are based on the nature, extent and level of a heritage asset's significance and are investigated to a proportionate degree. Historic England recommends the following broad approach to assessment, undertaken as a series of steps that apply proportionately to complex or more straightforward cases:

- Step 1: identify which heritage assets and their settings are affected;
- Step 2: assess whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s);
- Step 3: assess the effects of the proposed development, whether beneficial or harmful, on that significance;
- Step 4: explore the way to maximise enhancement and avoid or minimise harm;
- Step 5: make and document the decision and monitor outcomes.

These steps (where appropriate) have been followed in the assessment below.

Local Planning Policy

1.6.8 The East Northamptonshire Planning Policy relevant to the Historic Environment is set out below:

Policy EN14: Designated Heritage Assets

In considering proposals that affect a designated heritage asset or its setting, a Conservation Area or a registered Historic Park and Garden or archaeological remains, great weight will be given to the asset's conservation.

Development proposals that sustain and enhance the character, appearance and significance of designated heritage assets (and their settings), and that put them to viable uses consistent with their conservation, will be supported.

Proposals that would lead to harm to the significance of a designated heritage asset or its setting will not be supported, unless a clear and convincing justification of public benefit can be demonstrated to outweigh that harm, in terms of:

a) the importance of the asset;
b) the scale of harm; and
c) where the nature and level of the public benefit of the proposal demonstrably outweighs the harm or loss.

Policy EN15: Non-Designated Heritage Assets

Development affecting a non-designated heritage asset[90] where it is designed sympathetically having regard to the significance of the asset, its features, character and setting will be supported. Development should seek to enhance the character of the non-designated heritage asset whether or not it is included in a local list.

The assessment of proposals for the demolition or total loss of a non-designated heritage asset will take into account the significance of the asset and the scale of harm or loss.

Whether a site, feature or structure is considered to be a non-designated heritage asset will be guided by the criteria set out in Table 10.

Regional Research Agenda and Themes

1.6.9 The Archaeological Research Framework for the East Midlands[2] was published in March 2006 (revised 2012). Since its publication it has proved to be a valuable document summarising what is known about the region and identifying themes and research aims.

1.6.10 Other regional publications include *The Northamptonshire National Mapping Programme* (2003, revised 2008), and *Mapping Ancient Landscapes in Northamptonshire*[3] (2008).

1.7 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

1.7.1 Four criteria have been considered in evaluating the significance of the residual effects of the proposed development, taking into account any proposed mitigation measures.

Type of Impact

1.7.2 Impacts may be beneficial, adverse, neutral (i.e. no discernible effect) or none. They may be permanent or temporary, of long, medium or short duration, direct or indirect. They may also be cumulative or combined with other effects occurring in the vicinity.

1.7.3 Direct impacts have a physical effect upon an archaeological site, structure or cultural heritage asset. This may lead to the partial or total destruction of that asset.

1.7.4 Indirect impacts of development upon scheduled monuments, listed buildings, parks and gardens and other designated assets of the cultural heritage landscape are more difficult to assess. Consideration should include the context (or setting) of a cultural heritage asset (or place) and how we should assess its significance. Contextual relationships may be visual, but can also be, for example, functional, historical or intellectual.

Likelihood of the impact occurring

1.7.5 An assessment is made as to the likelihood of the identified impact occurring. Probability is considered as certain, likely, unlikely or not known.

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[2] Knight, D; Vyner, B; Allen, C (2012) *East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (University of Nottingham/York Archaeological Trust)

[3] Deegan, A and Foard, G (2008) *Mapping Ancient Landscapes in Northamptonshire*

Sensitivity

1.7.6 Five categories of sensitivity are identified. These are expanded upon in **Table 4**, below.

Table 4 Definitions of sensitivity

Value (Sensitivity) of receptor/resource	**Definition**
Very high	Sites and settings of *international importance*, for example World Heritage Sites.
High	Sites and settings of *national importance*. Scheduled Monuments. Registered Battlefields. Grade I and Grade II* Listed Buildings and Registered Historic Parks and Gardens. Sites may also be discovered as a result of new research that are also of national importance and are candidates for scheduling.
Medium	Sites and settings of *regional importance*. Archaeological sites and features that are not considered sufficiently important or well-preserved to be protected as Scheduled Monuments. Grade II Listed Buildings and Grade II Registered Historic Parks and Gardens. Conservation Areas.
Low	Archaeological sites and structures, and other components of the historic environment that contribute to the local landscape. Locally designated assets.
Negligible	Archaeological sites and structures, and other components of the historic environment of very low importance.

Magnitude

1.7.7 The magnitude of change to a cultural heritage asset or landscape is considered in terms of its vulnerability, its current condition and the nature of the impact upon it. With respect to sub-surface archaeology, there may be a degree of uncertainty of the magnitude of change, and where this is the case it is noted. Magnitude is assessed as major, moderate, minor, negligible or no change and the criteria used in this assessment are set out in **Table 5**, below.

Table 5 Criteria for Assessing Magnitude of Change[4]

Magnitude of impact (change)		Typical description
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Assessing significance

1.7.8 The four criteria are considered together to reach a conclusion upon the significance of residual effects taking into account any mitigation measures. They may be beneficial or adverse or neutral (i.e. no change to the existing situation). In some cases it may not be possible to quantify the significance of an effect, for example due to a gap in information, and this is noted.

1.7.9 **Table 6** presents a matrix of the inter-relationship of environmental value (sensitivity) with magnitude that leads to a conclusion on the significance of an effect.

[4] Source: Design Manual for Roads and Bridges, 2020, LA104 *Environmental Assessment and Modelling,* page 14

Table 6 Inter-relationship of sensitivity with magnitude[5]

	Magnitude of impact (degree of change)					
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Environmental value (sensitivity)	**Very high**	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligi-ble	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

Significance and decision-making

1.7.10 Finally, the suggested relevance of the significance of an effect in relation to decision making is set out in DMRB 2020 and this is presented in **Table 7.**

Table 7 Significance categories and decision making[6]

Significance category	Typical description
Very large	Effects at this level are material in the decision-making process.
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors.
Slight	Effects at this level are not material in the decision-making process.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

[5]/[4] Source: Design Manual for Roads and Bridges, 2020, LA104 *Environmental Assessment and Modelling,* page 15

Source: Design Manual for Roads and Bridges, 2020, LA104 *Environmental Assessment and Modelling,* page 14

2. Baseline Conditions

2.1 DESIGNATED HERITAGE ASSETS

2.1.1 The Historic England Archive (Listing the List) and Defra's Magic map were consulted to verify the location of designated heritage assets.

2.1.2 In accordance with Step 1 of Historic England's GPA3 (*identify which heritage assets and their settings are affected*) an initial study area of 2.5km from the western extension area was assessed, as proposed in scoping. The Zone of Theoretical Visibility (ZTV) was reviewed and this demonstrated that topography will prevent any visual effects upon designated assets. Furthermore, given the distance involved (of greater than 1km to the nearest asset) and the woodland that surrounds the western extension and, to some extent, the application area, no adverse effects from noise and dust are predicted in relation to designated assets.

2.1.3 The rationale behind this conclusion is discussed in **Table 8**. The locations of designated heritage assets overlain onto the ZTV are shown on **Figure 3**.

2.1.4 To ensure the validity of the ZTV a visit was made to the four distinct groups of assets on March 4th 2021. Photographs were taken looking in the direction of the Site and the western extension area, and these are shown on **Figure 4A-D[7].** They clearly demonstrate the lack of intervisibility.

[7] Locations of the four photographs are shown on Figure 3

Table 8 Designated Assets within approximately 2.5km of the western extension area

Asset or Group of Assets	Grade - sensitivity	National Heritage List reference	Rationale for scoping out of detailed assessment
Within 2km			
Collyweston Manor	Grade II/ Medium	1286825	Situated 1.8km NNW of the western extension area. No views due to topography.
Duddington Bridge	Scheduled Monument/High	1006613	Situated to the west of the village at a distance of 1.6km WNW of the western extension area. No views due to intervening development, topography and woodland.
Church of St Mary, Duddington	Grade II*/High	232955	Situated within the village at a distance of 1.4km WNW of the western extension area. No views, even from Belfry, due to topography.
Duddington Village: 27 Grade II listed structures within a Conservation Area	II/Medium		All assets lie to the west of the A43 at a distance of >1.2km. There is no intervisibility with the western extension area due to topography and dense woodland (The Assarts). A working quarry also separates the village from the western extension area.
RAF Wittering: nuclear fissile core stores and buildings (and three associated Grade II structures)	II*/High	1402763	Situated 1.5km NE of the western extension area. No views due to intervening woodland (Collyweston Great Wood) which is over 675m wide
Huskissons Lodge	II/Medium	422127	1.85km SE of the western extension area. No views due to topography.
Over 2km			
Kings Cliffe Village: Over 50 Grade II listed structures within a Conservation Area	II/Medium		Over 2km south of the western extension area. No views from any assets due to topography.
Church of All Saints, Kings Cliffe	I/High	422104	2.3km SE of the western extension area. No views due to topography.
Hall Farmhouse, Kings Cliffe	II*/High	422100	2.4km SE of the western extension area. No views due to topography
Collyweston village. 26 Grade II listed structures within a Conservation Area	II/Medium		Over 2km NNW of the western extension area. No views due to topography.
Collyweston Sundial	Scheduled monument/High	1003637	Over 2km NNW of the western extension area. No views due to topography

Asset or Group of Assets	Grade - sensitivity	National Heritage List reference	Rationale for scoping out of detailed assessment
Collyweston: site of manor house and gardens	Scheduled monument/High	1003632	Over 2km NNW of the western extension area. No views due to topography.
Collyweston: Church of St Andrew	II*/High	232904	2.1km NNW of the western extension area. No views due to topography.

2.2 ARCHAEOLOGY AND HISTORIC LANDSCAPE

2.2.1 The Northamptonshire Historic Environment Record (NHER) was consulted for a record of sites, monuments and events up to 1.5km from the boundary of the western extension area. This was chosen as being an appropriate area of search in order recover information on archaeological sites, monuments and events which can place the western extension area into its local context, and to help identify the potential for further, previously unrecorded features. Given the proximity to the Peterborough Council area, their HER was also consulted.

2.2.2 NHER records are listed in **Table 9** below and key sites are shown on **Figure 5**.

Table 9 Northamptonshire Historic Environment Record

NHER no	Feature and brief description	Distance (m) from the western extension area boundary
195 – MNN160137	THE JURASSIC WAY - POSSIBLE PREHISTORIC ROUTEWAY	975
983/1/1 – MNN139436	PROBABLE C20 QUARRY PITS	450
1276/0/1 – MNN201	POSSIBLE ROUND BARROW INVESTIGATED BY GEOPHYSICS AND EXCAVATION. NO FINDS	830
1276/0/2	RING DITCH OF POSSIBLE LBA/EIA BARROW. UNURNED CREMATION PIT DUG INTO DITCH	850
1846 –MNN114796	EASTON HORNSTOCKS WOOD SHOWN ON 1820 MAP	850
1846/0/1 - MNN134540	DITCH & BANK EARTHWORK	1320
2486/0/2 - MNN128890	POSSIBLE ROMAN BUILDING IDENTIFIED FROM AERIAL PHOTOGRAPHY (SEE ALSO 9400)	1400
2830/0/10 –	LAW'S LAWN, AN EARLY FOREST	1050

MNN149097	LAWN	
2830/0/11 - MNN132014	POSSIBLE CHARCOAL BURNER'S SITE OF UNKNOWN DATE	1400
2830/0/12 - MNN132013	POSSIBLE CHARCOAL BURNER'S SITE OF UNKNOWN DATE	1420
2830/0/17 –MNN134539	UNDATED DITCH AND BANK	1250
2845 - MNN4982	POSSIBLE SETTLEMENT SITE OF UNKNOWN DATE	720
2845/0/1 - MNN22409	UNSTRATIFIED ROMAN FINDS	720
2846 - MNN4983	POSSIBLE SETTLEMENT SITE OF UNKNOWN DATE	1230
2846/0/1 - MNN22410	POSSIBLE ROMANO-BRITISH SETTLEMENT	1400
2846/0/2 - MNN22411	POSSIBLE STONE BUILDING OF UNKNOWN DATE IDENTIFIED FROM AERIAL PHOTOGRAPHY	1400
2846/0/3 - MNN27529	SLAG FOUND DURING FIELDWALKING OF UNKNOWN DATE (SEE ALSO 9399/0/0)	1200
2847/0/1 - MNN32458	POSSIBLE RECTANGULAR ENCLOSURE OF UNKNOWN DATE IDENTIFIED FROM AERIAL PHOTOGRAPHY IN1982	740
2847/0/2 - MNN128886	POSSIBLE ENCLOSURE OF UNKNOWN DATE IDENTIFIED FROM AERIAL PHOTOGRAPHY	680
2847/0/3 – MNN128887	POSSIBLE LINEAR BOUNDARY OF UNNOWN DATE IDENTIFIED FROM AERIAL PHOTOGRAPHY	700
2848/0/1 – MNN148	SLAG REPORTED HERE BY ADAM BROS	900
2868 - MNN5000	ROMAN RELIGIOUS RITUAL AND FUNERARY SITE (KNOWN AS SITE NN5000)	900
2868/1 - MNN12247	ROMAN TEMPLE (SAME GRID REFERENCE AS ABOVE)	900
2868/1/0 - MNN28710	UNSTRATIFIED ROMAN FINDS (SAME GRID REFERENCE AS ABOVE)	900
2868/1/1 - MNN22442	EXCAVATION; 1953-4; ROMANO-BRITISH TEMPLE; SEVERAL PERIODS OF CONSTRUCTION INCLUDING HEXAGONAL & OCTAGONAL STONE BUILDINGS; LATTER WITH OPUS SIGNINUM FLOOR; ALSO PAVED AREAS & HEARTH & BURNT AREAS; PROBABLE ADDITIONAL STRUCTURES NEARBY; PARTLY BULLDOZED FOR RAF DEVELOPMENT FINDS INCLUDE ANIMAL BONES & OYSTER SHELLS & BURNT STONES & SAMIAN POT SHERDS &	900

	C1ST-C4TH POTSHERDS & IRON SLAG & WORKED STONE & INSCRIBED STONE (SAME GRID REFERENCE AS ABOVE)	
2886/1 – MNN9705	WATCHING BRIEF IDENTIFED A ROMANO-BRITISH IRON SMELTING FURNACE	1200
2894 - MNN5020	SITE NN5020 (NO DESCRIPTION)	340
2894/0/1 - MNN224	CHARCOAL FILLED PIT IDENTIFIED DURING PIPELINE DEVELOPMENT IN 1977 (SAME GRID REFERENCE AS ABOVE)	340
3010/1 – MNN12289	POSSIBLE ROMANO-BRITISH ROAD ROUTE SEEN AS SOIL MARKS AND A POSS ANCIENT HEDGE LINE	1200
3010/1/1	POSSIBLE ROMANO-BRITISH ROAD AGGER	1200
5086 - MNN137059	POSSIBLE SITE OF POST-MED DATE (NO DESCRIPTION)	820
4158/0/1 – MNN138671	LIBERTY BOUNDARY WALL	1400
5086/0/1 - MNN114613	POSSIBLE BUILDING OF POST-MED DATE (NO DESCRIPTION)	820
5087	ASSART FARM VISIBLE ON MAP OF 1798 AND ASSOCIATED BUILDINGS. IN RUINS ON 1950 OS MAP	80
5087/1 – MNN135110	ASSART FARM	80
5087/1/5 – MNN163986	POND ASSOCIATED WITH ASSART FARM	80
5178 – MNN160668	POSSIBLE IA/RB ACTIVITY	975
5178/0/1 – MNN160667	POSSIBLE IA/RB ENCLOSURE CROP MARK	975
6585 – MNN113067	COLLYWESTON GREAT WOOD	adjoining
6585/0/1	POSSIBLE LAWN. CLEARING IN THE WOOD SHOWN ON 1ST ed OS	300
6700 – MNN166196	UNDATED ROAD ROUTE	920
6700/0/1 – MNN138695	HOLLOW WAY	920
7101 – MNN143292	WESTHAY LODGE, HUNTING LODGE	370
7101/0/1 – MNN143293	WESTHAY LODGE, LODGE	370
7101/1/1 – MNN143294	REMAINS OF DEMOLISHED WESTHAY LODGE	370
7101/1/2 – MNN143295	POSSIBLE WALLED GARDEN	370
7180/0//1 - MNN374	LINEAR FEATURE PROBABLY NATURAL	900
7180/0/2 – MNN374	NATURAL FEATURES COLLEYWESTON QUARRY	900

7180/0/3 – MNN374	PIT ANOMALIES POSSIBLY NATURAL COLLEYWESTON QUARRY	900
7180/0/4 – MNN374	LINEAR FEATURES PROBABLY NATURAL	900
7180/0/5 – MNN374	ARCHAEOLOGICAL FEATURES COLLYWESTON QUARRY	900
7180/0/6 – MNN115266	UNDATED SHALLOW PITS	760
7181/1/1 – MNN374	POSSIBLE IRON AGE SMELTING SITE COLLYWESTON QUARRY IDENTIFIED IN A TRIAL TRENCH	900
7181/1/2 – MNN115264	POSSIBLE LATE BRONZE AGE/EARLY IRON AGE ACTIVITY FOUND IN A TRENCH, INCLUDED POTTERY BONE AND SLAG	900
7246 – MNN164554	DUDDINGTON WOODS	10
7246/5 – MNN11449	UNNAMED COPPICE	1100
7246/6 – MNN114490	UNNAMED COPPICE	720
7246/7 – MNN11448	ASSART LANDS IN THE PARISH OF DUDDINGTON	80
7713 –MNN136217	WESTHAY WOODS	10
7713/0/14 - MNN134519	DITCH & BANK EARTHWORK	540
7713/16 – MNN114702	CORNER GREEN. COMMON LAND ON 1798 MAP	10
7713/0/54 - MNN134439	DITCH & BANK EARTHWORK	370
7713/8 – MNN164549	STOCKINGS WOOD	1200
7713/8/2 – MNN134432	MED/POST MED BOUNDARY DITCH AND BANK	800
7713/8/3 – MNN134431	MED/POST MED BOUNDARY DITCH AND BANK	1000
7713/8/4 – MNN134430	MED/POST MED BOUNDARY DITCH AND BANK	1000
7713/9 – MNN164546	BUXTON WOOD	450
7713/9/1 – MNN134519	MED/POST MED BOUNDARY DITCH AND BANK	530
7713/9/2 – MNN134439	MED/POST MED BOUNDARY DITCH AND BANK	400
7713/9/3 – MNN134494	MED/POST MED BOUNDARY DITCH AND BANK	500
8232 - MNN136254	UNCERTAIN ACTIVITY (NO DESCRIPTION)	520
8232/0/1 - MNN114614	GREGORY'S LODGE PRESENT FROM 1775 TO 1950 BUT NOT STANDING NOW	640
8293/0/1 – MNN166193	POSSIBLE PIT (UNDATED)	450

8510/0/1 – MNN362	DUDDINGTON ROC OBSERVER POST	1070
8678/1/6 - MNN116745	REMOTE MUNITIONS STORES, RAF WITTERING AND ASSOCIATED BUILDINGS	620
8678/1/7 – MNN116755	YARNOLD SANGER CONCRETE GUARD POST	1000
8927/1/1 – MNN128891	PROBABLE MED/POST MED BOUNDARY DITCH CROP MARK	1100
8942/0/2 – MNN115267	POST MEDIEVAL SLATE QUARRY	760
9150/0/1 - MNN113064	POSSIBLE LAWN. CLEARING IN WOOD THOUGH NOT LABELLED AS LAWN	760
9151/0/2 –MNN113066	WOOD SHOWN ON 1841 ENCLOSURE MAP	400
9152/0/2 - MNN113069	PRECINCT OF WESTHAY" ON ENCLOSURE MAP. PROBABLY LAWN	WITHIN WEA
9152/0/3 – MNN113070	COW WOOD ON ENCLOSURE AWARD BUT NO TREES. PROBABLY AN ENCLOSURE	900
9152/0/4 – MNN113071	CORNER GREEN SHOWN ON ENCLOSURE AWARD MAP. COMMON LAND?	350
9152/0/5 –MNN113	HEATH AND DROVE OVERLAPS CORNER GREEN	900
9169/0/1 – MNN114488	HEATH ON ENCLOSURE MAP, NO EXTENT MARKED	750
9169/0/2 – MNN134435	UNDATED DITCH AND BANK EARTHWORK	850
9169/0/8 – MNN138540	UNDATED DITCH	1000
9170/0/28 – MNN138546	UNDATED DITCH	1000
9170/0/29 – MNN138547	UNDATED DITCH	1000
9170/0/101 – MNN13443	MED/POST MED BOUNDARY DITCH AND BANK	750
9170/0/102 MNN13443	UNDATED DITCH AND BANK	900
9172	ROCKINGHAM FOREST PROJECT – ENCLOSURES, WOOD, HEDGES AND COMMON LAND RECORDED WITHIN PARISH OF DUDDINGTON	-
9172/0/21 – MNN138683	HEDGE	900
9172/0/22 – MNN134437	UNDATED DITCH AND BANK	800
9172/0/23 – MNN166655	PROBABLE MED/POST MED RIDGE AND FURROW	720
9172/0/24 –	PROBABLE MED/POST MED RIDGE	450

MNN166666	AND FURROW	
9173/0/1 - MNN114729	'THE SHORT' – FIELDNAME	WITHIN WEA
9173	ROCKINGHAM FOREST PROJECT – LAWN, ENCLOSURES, WOOD, RECORDED WITHIN PARISH OF DUDDINGTON	-
9173/0/7 - MNN128888	CROPMARK INTERPRETED AS PART OF NATIONAL MAPPING PROGRAMME AS A FOOTPATH BUT SHOWN AS FIELD BOUNDARY ON 1ST EDITION OS MAP AND ON 1950S OS MAP	WITHIN WEA
9173/0/8 – MNN160666	PROBABLE C18TH OR EARLIER WOODLAND TRACKWAY/RIDE	10
9174	ROCKINGHAM FOREST PROJECT – ENCLOSURES RECORDED WITHIN PARISH OF DUDDINGTON	-
9174/0/33 – MNN134434	MED/POST MED BOUNDARY DITCH AND BANK	1600
9175	ROCKINGHAM FOREST PROJECT – COMMON LAND AND WOODS RECORDED WITHIN PARISH OF EASTON ON THE HILL	-
9175/0/29 – MNN114795	ROGUE SALE WOOD SHOWN ON 1820 MAP	1300
9316/0/1 - MNN263	AREA OF BURNT PEBBLES, SHATTERED, AND CHARCOAL. REALLY OF UNKNOWN DATE- PREHISTORIC COOKING SITES?	340
9383/1 – MNN135332	LEICESTER TO PETERBOROUGH TURNPIKE	760
9389/0/0 - MNN191	SIGNIFICANT FIND SCATTER OF ROMAN DATE INCLUDING BUILDING STONE AND POTTERY.	500
9394/0/0 - MNN197	CHARCOAL BURNING SITE	1150
9395/0/1 – MNN198	BARROW EARTHWORK WITH HOLE IN TOP 15M DIAM 1M HIGH. LIKELYTO BE A CAIRN	860
9397/1/0 - MNN199	CHARCOAL BURNING SITE	540
9399/0/0 - MNN115	BLACK SLAG FROM IRONWORKING SITE (SEE ALSO 2846/0/3	1200
9400/0/0 - MNN126	POTTERY SHERDS, OCCUPATION DEBRIS, CHARCOAL AND SLAG PATCHES. POSSIBLE ROMAN IRONWORKING (SEE ALSO 2486)	1400
9402/0/1 – MNN128882	POSIBLE PREHISTORIC LINEAR FEATURE FROM AP	1000
9402/0/2 – MNN128884	POSSIBLE PREHISTORIC BOUNDARY FEATURE FROM AP	1000
9402/0/3 – MNN12885	POSSIBLE PITS (UNDATED) FROM AP	1000

9576 – MNN116786	SITE	400
9576/0/1 – MNN1116788	STONE FEATURE ON N SIDE OF GREEN LANE	400
9576/0/2 - MNN116789	POUND IN NE CORNER OF BUXTON WOOD	400
9686/1 – MNN136435	POSSIBLE POST MEDIEVAL CHARCOAL PRODUCTION SITE	10
9686/1/1 - MNN128889	POSSIBLE CHARCOAL BURNING PLATFORM AND MACULA (POST MEDIEVAL - 1540 AD TO 1749 AD) IDENTIFIED FROM AERIAL PHOTOGRAPHY	180

2.2.3 A survey has also been undertaken within Fineshade Wood that lies to the west and south west of the western extension area as part of the Rockingham Forest project[8]. Some of the entries may duplicate those already recorded in the NHER but have been given new numbers in the NHER, as set out in **Table 10.**

Table 10 Fineshade Wood Survey results in the NHER

NHER no	Description
MNN138535	DITCH
MNN13944-8	QUARRY PITS
MNN166529	VETERAN TREES
SN9 – MNN167006	FINESHADE WOOD PROJECT
MNN167418-167425	DITCH AND BANK
MNN167427	DITCH AND BANK
MNN167514	DITCH AND BANK
MNN167543	DITCH AND BANK
MNN167924	DITCH
MNN167925	DITCH
MNN167929	DITCH
MNN167937-167939	DITCH
MNN168050-168055	POND
MNN 168022	POND

2.2.4 The Peterborough HER (PHER) was also consulted online as it includes records within Northamptonshire where they are the result of cross-county investigations, such as pipelines, or where there may be some doubt as to the precise location.

2.2.5 Two records are within 1500m of the western extension area.

[8] Foard, G., Hall, D. N. and Britnell, T. (2003). The Historic Landscape of Rockingham Forest. Northamptonshire County Council.

- Knocker's Temple 900m east of the western extension area. Approximate position of stone foundations of possible Roman temple found in 1953-54 by Captain Knocker. The description is the same as the Northants HER entry 2868/1/1 - MNN22442

- Pipeline watching brief (PHER 51109) 700m east of the western extension area. No features were observed.

Archaeology within the western extension area

2.2.6 Three entries are recorded within the western extension area (9152/0/2, 9173/0/1 and 9173/0/7). They comprise an area on the enclosure award map that was probably lawn, a fieldname and a crop mark of a field boundary that appears on the 1950s Ordnance Survey mapping.

2.2.7 No archaeological investigations are known to have taken place within the western extension area prior to the current project, although it is considered likely that the western extension area was fieldwalked by David Hall during his extensive fieldwalking programme of the local landscape between 1960 and 1999.

2.2.8 Aerial photographs of the western extension area were examined as part of the National Mapping Programme, and the field boundary that used to cross the centre of the western extension area was identified.

Archaeological investigations in the vicinity

2.2.9 The vicinity of the western extension area has been extensively examined, in particular by David Hall. Numerous archaeological sites have been located, notably of Roman date, and including possible settlements, buildings and ironworking located by fieldwalking. The National Aerial Photographic Mapping Programme has covered the area.

2.2.10 A large number of landscape features were identified from the Rockingham Forest Project (Foard et al, *op cit*). Supported by the Heritage Lottery Fund and English Heritage its aim was to track the evolution of the Forest from the 10th to 20th centuries. This followed work by David Hall in locating earthwork enclosure banks and ditches.

2.2.11 An archaeological watching brief was undertaken during soil removal in advance of development of the current ENRMF in 2008[9]. No archaeological deposits or artefacts were identified.

2.2.12 An excavation is recorded in Collyweston Great Wood, 900m north-north-east of the western extension area. This took place in 1953-4 and identified a Romano-British temple of several periods of construction including hexagonal and octagonal stone buildings, and associated finds.

2.2.13 In September 2016, an archaeological evaluation was undertaken by Cotswold Archaeology[10] at Collyweston Quarry, 1km north west of the western extension area. The evaluation comprised the excavation of eleven trial trenches. A geophysical survey of the site had indicated that it had a low potential for archaeological remains, although a rectilinear anomaly, suggestive of a possible enclosure but interpreted as being of natural origin, was identified. The natural origin of the anomaly, which was probably formed by glacial and periglacial processes, was confirmed and no archaeological remains or artefactual material were encountered elsewhere within the site.

Archaeological background

2.2.14 Few parts of England have been examined in as much detail as this part of Northamptonshire. The combined efforts of David Hall and the former County Archaeologist, Glen Foard, ensured that programmes of desk-based research and field-based examination mapped large numbers of sites and possible sites.

2.2.15 Prehistoric sites are rare.

2.2.16 A possible cooking site identified during fieldwalking 340m north of the western extension area was marked by burnt and cracked pebbles.

2.2.17 Two possible Bronze Age ring ditches were identified approximately 1km north-west of the western extension area. 1276/0/1 was identified by geophysical survey. It was subsequently excavated revealing a large pit in the middle that was probably a result of an antiquarian excavation. The other (1276/0/2) comprised a ring ditch containing pottery, animal bone and

[9] Leigh, D.J., 2008, *An archaeological watching brief during soil stripping on land at Slip Clay Pit, landfill site, Stamford Road, Kings Cliffe, Peterborough* Northamptonshire Archaeology Unpublished report 08/193

[10] *Collyweston Quarry (Western Extension), Duddington, Northamptonshire: Archaeological Evaluation*. Cotswold Archaeology. Project 660768

charcoal which was cut by a pit containing about 1kg of cremated bone. In this same area there is evidence for an Iron Age smelting site (7181/1/1).

2.2.18 A further possible prehistoric barrow (9395/0/1) was identified in Westhay Wood, to the south of the western extension area, comprising a low mound about 15m in diameter.

2.2.19 Two linear crop marks on the southern margin of the search area (9402/0/1 and 9402/0/2) have been interpreted as potential prehistoric boundaries.

2.2.20 Despite fieldwalking and aerial photographic assessment, and a large number of Roman sites in the landscape, there are no known Roman sites close to the western extension area.
2.2.21 The nearest (9389) is 500m from the boundary of the western extension area and comprised a significant find scatter of Roman date including building stone and pottery, located by David Hall.

2.2.22 About 900m to the north-east of the western extension area there is the Romano-British temple complex (2868), referred to above (para 2.2.12) and a further probable settlement and ironworking site (2846) lies 1200m south-east of the western extension area. A similar Roman settlement, including evidence for a building from aerial photographs and ironworking, lies to the north-east of 2846 (2486 and 9400) and may be a continuation of 2846. Both sites lie to the east of Westhay Lodge.

2.2.23 A Romano-British iron smelting furnace (2886/1) was found in a 1977 watching brief 1.25km north west of the western extension area and a possible section of a Roman road (3010/1) is also recorded. The latter was identified by a 1982 aerial survey, 1.2km west of the western extension area.

2.2.24 In addition to the iron slag from defined sites, further undated surface finds might reflect the more extensive nature of metal working in the Roman period.

2.2.25 The medieval and post-medieval periods have been intensively examined, both in the field by David Hall who mapped earthwork enclosure banks and ditches, and more recently by the Rockingham Forest Project. The landscape of these periods has been re-created with some success.

2.2.26 Given that this is an area of historic woodland it is of no surprise that woodland activities are present within the study area, and in particular the production of charcoal. Five locations scattered across the study area produced evidence suggesting charcoal production (2830/0/11, 2830/0/12, 2894/0/1, 9394/0/0, 9686/1 and 9686/1/1) of which only the last is dated, in that case to the post- medieval period.

Historic Landscape

2.2.27 The local landscape has been the subject of several detailed studies (Petitt 1968[11], Hall 1992[12], Foard et al 2003, *op cit.,* Hardcastle, 2015[13]). These studies have been published and the scope for additional documentary research is therefore limited. The Historic Landscape Characterisation classification of the western extension area is of an Enclosure period field with no internal divisions.

2.2.28 Due to Covid-19 a visit to the Northamptonshire Record Office and National Archives at Kew was not possible, but research was carried out in 2006 by the late Anthony Breen MA as part of a previous planning application and the discussion below is drawn from his research[14].

2.2.29 The area was formerly royal forest and many of the historic records relating to the forest in medieval and early modern period are held at the National Archives at Kew. Later the land was leased to Earl of Exeter, a member of the Cecil family. This family's extensive archives are held at Burghley House, Stamford in Lincolnshire.

2.2.30 The western extension area is now located in the north-western corner of the civil parish of King's Cliffe. The western boundary of the western extension area follows the line of the parish boundary with Duddington. It was previously an extra-parochial district in Rockingham Forest until 1861, when it was added to King's Cliffe[15] .

2.2.31 The relationship of the extra-parochial area of Westhay to the then parish boundaries of the parishes of King's Cliffe and Duddington are shown on Bryant's 1827 'Map of Northamptonshire' (ref. NRO Map 4164/3) (**Figure 6**). The northern field of the western extension area is marked on Bryant's map as 'Colley Green'; the southern field is not named. Both are unwooded.

---

[11] Philip A. J. Pettit *The Royal Forests of Northamptonshire A Study of Their Economy 1588-1714* Northamptonshire Record Society Vol XXII 1968

[12] David Hall *Open Fields in Northamptonshire.* Northamptonshire Record Society Vol XXXVIII 1992

[13] Hardcastle, K (2015). *Northamptonshire Historic Landscape Character Assessment.*

[14] Breen, Anthony (2006) 'Documentary Research' in *King's Cliffe Landfill Site, Northamptonshire: Cultural Heritage Assessment* (2007). Andrew Josephs Ltd.

[15] R.M. Serjeantson and W.R.D. Adkins (eds) *Victoria County History Northamptonshire* Vol. 2 1906

2.2.32 The southern field of the western extension area is named as 'The Short' on Richard Gee's 'Map of the Earl of Exeter' Estate' dated 1800. The original map is held at Burghley House. The field-name was still in use in 1932.

2.2.33 The enclosure map of King's Cliffe dated 1813 (ref. NRO Map 2860) does not show the western extension area as it was extra-parochial (that is outside the parish). The same area is also not depicted on the enclosure maps of the parish of Duddington dated 1775 for the same reason.

2.2.34 In 1968 Philip Pettit (*op* cit) published his research on the Royal Forests and prepared a map of 'Rockingham Forest in the Seventeenth Century'. The original area of the forest as described in a perambulation of 1299 had been considerably reduced before the seventeenth century.

2.2.35 'The Short' is marked on Pettit's map and this field is also mentioned in the Victoria County History (*op cit*) at a much earlier date:

'*The tenants of Duddington petitioned Edward III in 1361 that they should not have to pay farm for a place called Duddington Short in the forest of Rockingham in which the men of King's Cliffe had common pasture'*.

2.2.36 The reference is drawn from the Close Rolls for that year and the implication is that the western boundaries of the western extension area are medieval.

2.2.37 By the 17th century Westhay was coppiced woodland and according to the Victoria County History's '*The staple trade is wood-turning' though 'charcoal-burning was carried on to a small extent until the middle of the nineteenth century*'. Both the trades of woodturning and charcoal-burning rely on wood supplied from coppiced woodlands and not from mature trees.

2.2.38 Philip Pettit mentions the trade of woodturning:

'One of the forest's most interesting ancillary industries was that of woodturning at King's Cliffe. An inquisition which discussed the state of the population there in 1613 gave no hint of such occupation for the town's multitude of poor people; by 1762 twenty-six of its able-bodied men liable for the militia were described as wood turners'.

2.2.39 There are further accounts of the economy of the woodlands given in various sources. In particular the forest's local swanimote courts granted to the tenants of the neighbouring lands permission to use timber for house construction and hedging known as 'housebote' and 'hedgebote'. These courts also regulated the numbers of pigs that were allowed to forage in the woods for acorns or mast, known as 'pannage'. Other beasts were allowed to forage in parts of the woods and to graze the open lawns. A summary of the accounts for 1592 has been published (Hall 1992, *op cit)*. In this account the court ordered that two pounds '*are to be made in Moorehay, 1 in Westehey*

and 1 in Sewly' for the impounding of strays beasts. A Pound Lane is marked on Bryant's map to the west of Westhaye Lodge. Though the area was termed forest it was managed woodland, that would have included clearings, and used for a variety of agricultural and artisan activities. Few of these apart from charcoal burning will leave significant archaeological remains.

2.2.40 This point is emphasised by Foard et al (*op* cit):

'From at least the 12th century some clearances from woodland use were immediately managed in severalty as enclosed fields, although many of them appear to have been cultivated in strips like the rest of the open field systems attached to the villages. They can often be recognised as a band of relatively small enclosures on the common field/woodland boundary, but were often ploughed in medieval ridge and furrows'.

2.2.41 In conclusion, a clear picture of the historic land use of western extension area has become apparent. The land of the western extension area would have been open common grazing set within a managed woodland; the northern field being named 'Colley Green', the southern 'The Short' Two detailed estate maps of 1798 and 1800 mark the PDA with the field name 'The Short'. The latter is referenced as early as 1361 in the petition of the inhabitants of Duddington to Edward III.

Geophysical Survey

2.2.42 Geophysical survey was carried out by Tigergeo in November 2019 and May 2020 before the crop matured. Interpretation is shown on **Figure 7A-C** and the report is appended (**Appendix C**).

2.2.43 There was very little identified that could be described, with certainty, as of archaeological interest, most of the suitable anomalies being non-connected linear examples with weak magnetic enhancement and no coherent layout. Some were considered to be ditch fills, others drains or former paths, and some contrast so weakly defined from their surroundings as to be only tentatively identified. The southern part of the western extension area is dominated by services, pipelines and under-drainage.

2.2.44 The main features identified were ditch fills [4][16] that define the western part of a small rectilinear enclosure. They lacked internal features but the strength of magnetic enhancement associated with the fills, relative to other ditch fills on the site, might suggest the presence of materials commonly

[16] Numbers in *[n]* refer to numbers on Figure 7A-C

associated with intensive use. These can include cultural debris and heated soils.

2.2.45 Other fairly definite linear fills included [1], which, if not a former (unknown) field boundary, could be associated with [4]. Other likely ditch fills [7], [13], [14] were isolated and magnetically lacked diagnostic characters.

2.2.46 A possible group of linear fills at [18] could be interpreted as a palimpsest of enclosures, but equally could have been regarded as features related to drainage.

2.2.47 All the other linear anomalies were too weak to be sure of identification.

Archaeological Trial-Trenching

2.2.48 The Museum of London's Northampton Office was appointed to carry out trial-trenching across the western extension area. A trench layout and Written Scheme of Investigation (**Appendix** D) was approved by the County Archaeological Officer (copies of correspondence are at **Appendix B**) and the work took place in October and November 2020.

2.2.49 The trenching project targeted geophysical anomalies to check their origin and blank areas to act as a control. In total the evaluation comprised the excavation of fifty-one 50m x 1.8m trial trenches. A number of services cross the western extension area and stand-off from these was required by the statutory undertakers. The layout is shown on **Figure 8**.

2.2.50 The trenching report is appended (**Appendix E**).

2.2.51 The trenching project had the following aims:

- Record evidence for the location, extent, nature and date of any archaeological features or deposits that may be present
- Establish the integrity and state of preservation of any archaeological features or deposits that may be present
- Recover artefacts to assist in the development of type series within the region
- Produce a report that details the results in sufficient detail to inform a future mitigation strategy for the proposed development; and
- To provide sufficient evidence of the archaeological resource within the Site to allow an informed planning decision to be made.

2.2.52 The results of the evaluation identified low levels of activity from the Roman period onwards. Where present, archaeological preservation levels were consistently high and most of the remains encountered did not appear to have been significantly affected by modern activities, such as ploughing. Features of interest were primarily concentrated within the northern half of the northern field and the north-eastern extent of the southern field.

2.2.53 A sparse artefactual assemblage was recovered during the investigation, which has left the majority of the encountered archaeological features undated. The paucity of datable material has hindered understanding of the chronological progression of the site's formation and development. However, it is probable that the archaeological remains recorded represent a focus on the economy of the landscape, predominantly concerning stock management.

2.2.54 Two ditches thought to form part of a large, square enclosure identified by the geophysical survey were excavated in the northern field (Trenches 10 and 11). No internal features associated with the enclosure were identified within the constraints of the evaluation. As such, it is possible that these ditches functioned as boundaries for a field system and perhaps delineated an enclosed area related to farming management. The animal bone assemblage recovered indicates that cattle, sheep or goat are the most probable species of livestock which may have been managed within this system. Neither ditch revealed evidence of prolonged use, which was confined to the Roman period.

2.2.55 Potential charcoal production was evidenced in one location within the southern half of trench 33. The feature (a pit) was similar to small charcoal production pits identified at several sites in the east of England. As only a single feature associated with this activity was identified during the evaluation, it is probable that this represents a very small-scale of charcoal production, possibly for domestic purposes rather than industrial.

2.2.56 At present, the relationship between this probable enclosure and the further undated archaeological features remains unclear. It is possible that the features concentrated within the northern half of the northern field may be associated with the enclosure ditches, perhaps defining land or route boundaries and providing field drainage.

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2.2.57 The results of the evaluation corroborated the geophysical survey. It identified only a sparse number of archaeological features given the size of the site and there is limited potential to address the research objectives detailed in the regional research agenda.

3. IMPACTS AND MITIGATION

3.1 DIRECT IMPACTS

3.1.1 The nature of mineral extraction results in the total loss of the archaeological resource wherever extraction takes place, and the potential loss or damage in other areas associated with infrastructure and landscaping.

3.1.2 The archaeological evaluation has located only two discrete areas of archaeology of local value. The trenching confirmed the results of the geophysical survey and high confidence can therefore be placed in the accuracy of this conclusion. This also corresponds with the results of the watching brief within the current facility where no archaeology was found.

3.2 MITIGATION OF DIRECT IMPACTS

3.2.1 It is proposed that the two areas of archaeological interest are subject to set-piece soil stripping under the direction of an archaeologist, followed by archaeological excavation (**Figure 9**). This may be carried out in separate phases based on the phased development of the western extension area. A watching brief will be maintained on the service corridors where disturbance occurs, such as during the removal of the overhead electricity line and construction of its replacement route. This approach has been agreed with the County Archaeological Officer and a Written Scheme of Investigation is appended (**Appendix F**)

3.2.2 Should archaeological features continue outside the set-piece area excavation would continue until the archaeology runs out in discussion and agreement with the County Archaeological Officer.

3.2.3 No sitewide watching brief is proposed.

3.3 INDIRECT IMPACTS

3.3.1 As the baseline assessment has demonstrated (Section 2.1), there will be no effects upon the visual, historical or contextual setting of designated assets by the proposed development. No mitigation is required. **Table 11** summarises the rationale behind this conclusion for each group of assets, in accordance with Step 2 of Historic England's GPA 3 (*op cit.)*

3.4 OTHER POTENTIAL IMPACTS

Due to distance, and the physical isolation of the WEA resulting from strong local topography and extensive woodland, there would be no predicted cumulative or combined effects of the proposed development in relation to heritage.

Table 11 Designated Assets within approximately 2.5km of the western extension area: summary of effects

Asset or Group of Assets	Rationale for scoping out of detailed assessment
Duddington Duddington Bridge (SM), Church of St Mary, 27 Grade II listed structures within a Conservation Area.	All assets lie to the west of the A43 at a distance of >1.2km to the north west of the western extension area. There is no intervisibility with the western extension area due to topography and dense woodland (The Assarts). A working quarry also separates the village from the western extension area. There is no effect on the significance of the heritage assets
RAF Wittering Nuclear fissile core stores and buildings and three associated Grade II structures.	Situated 1.5km NE of the western extension area. No views due to intervening woodland (Collyweston Great Wood) which is over 675m wide. There is no effect on the significance of the heritage assets.
Kings Cliffe Church of All Saints (I), Hall Farmhouse (II*), over 50 Grade II listed structures within a Conservation Area. Huskissons Lodge (II)	Over 2km S/SE of the western extension area. No views from any assets due to topography. There is no effect on the significance of the heritage assets. 1.85km SE of the western extension area. No views due to topography. There is no effect on the significance of the heritage asset.
Collyweston Collyweston Sundial (SM), Site of manor house and gardens (SM), Church of St Andrew (II*), Collyweston Manor (II), and 26 Grade II listed structures within a	Over 2km NNW of the western extension area. No views due to topography. There is no effect on the significance of the heritage asset.

Asset or Group of Assets	Rationale for scoping out of detailed assessment
Conservation Area.	

4. ASSESSMENT OF RESIDUAL EFFECTS

In accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 the significance of an effect should be identified. This is achieved using the methodology set out in **Section 1.7**, above. The results of the assessment are summarised in **Table 12**, below.

Table 12 Summary and Evaluation of Residual Effects

Direct / Indirect	Type of Effect	Probability of Effect Occurring	Sensitivity	Magnitude	Significance of Effect	Rationale
Direct effect: Designated Assets	None	Certain	High	No change	Neutral	There are no designated assets within the Site or western extension area
Direct effect: Archaeology	Adverse	Certain	Low	Moderate	Slight	Only two discrete areas of archaeology of local interest have been identified by field- based evaluation. These will be excavated and recorded prior to development. The slight adverse effects would be offset by the contribution to archaeological knowledge arising from the excavations.
Indirect effects upon setting of designated assets	None	Certain	High	None	Neutral	There will be no effects upon the visual, historical or contextual setting of designated assets by the proposed development due to topography and intervening woodland. This assessment applies to all phases of the development and after restoration.

5. CONCLUSION

5.1.1 The proposed development would have no adverse effects upon designated cultural heritage assets (a neutral situation) as a result of topography that prevents any visual connection. No assets are situated within 1km of the western extension area and that, coupled with topography and intervening dense woodland, would prevent any adverse effects upon historical context or from the effects of noise and dust.

5.1.2 The results of a desk-based archaeological and historical assessment, geophysical survey and trial-trenching point to an overall low potential for archaeology within the western extension area. The trenching corroborated the results of the geophysical survey and identified only two areas of local archaeological interest. These would be excavated in advance of development. The adverse effect is assessed as of moderate magnitude and slight significance, and would be offset by the contribution to archaeological knowledge arising from the excavations.

5.1.3 Having regard to the baseline conditions and the assessment carried out against professional guidance, there are no significant effects that would derive from the proposed development and it therefore fully accords with cultural heritage policy, and specifically policy set out in National Planning Policy Framework (NPPF), the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, the NPS for Hazardous Waste 2013, East Northamptonshire Planning Policies EN14 and 15, and national guidance published by Historic England.

Figures

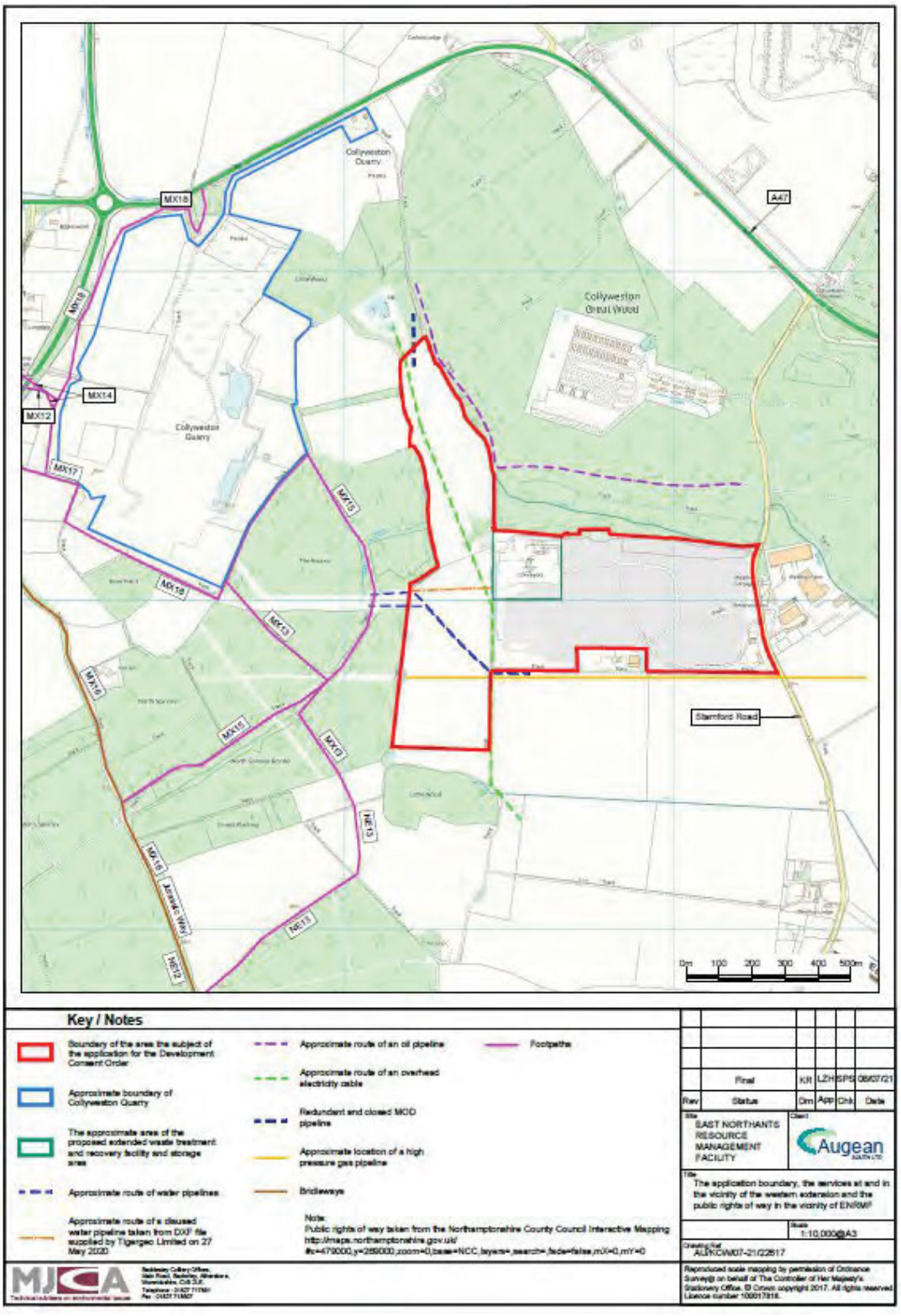
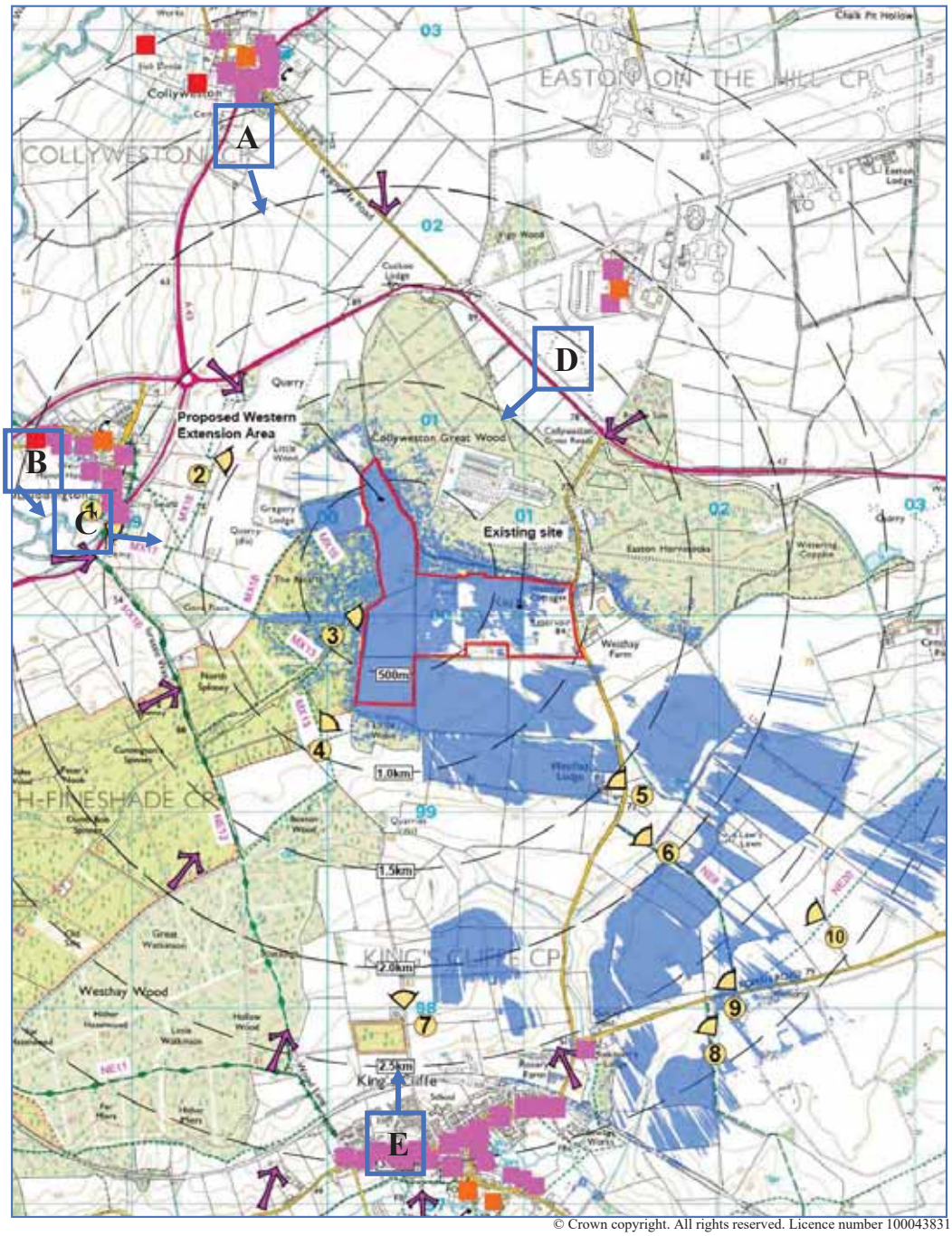


Figure 1 **Application Area showing constraints**

AJA andrew josephs associates	
Site	ENRMF
Client	Augean plc
Ref	Figure 2
Rev	Date: May 2021
Title	Aerial photograph



ZTV 1 → Figures 4A-E

Approx. Application Area

Scheduled Monument

Grade 1/II* Structure

Grade II Structure

Site	ENRMF
Client	Augean plc
Ref	Figure 3
Rev	Date: May 2021
Title	**Designated Heritage Assets within 2.5km of the Site**

Site	ENRMF
Client	Augean plc
Ref	Figure 4A
Rev	Date: May 2021
Title	**View from Collyweston**

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Site	ENRMF
Client	Augean plc
Ref	Figure 4B
Rev	Date: May 2021
Title	View from Duddington Bridge

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Site	ENRMF
Client	Augean plc
Ref	Figure 4C
Rev	Date: May 2021
Title	**View from Duddington Village**

Site	ENRMF
Client	Augean plc
Ref	Figure 4D
Rev	Date: May 2021
Title	**View from direction of RAF Wittering**

AJA andrew josephs associates	Site	ENRMF	
	Client	Augean plc	
	Ref	Figure 4E	
	Rev	Date	May 2021
	Title	View from King's Cliffe	

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Northamptonshire County Council

Title: **HER search: Monuments (north)** **Figure 5A**

N

Date: 14-05-2020 **Scale:** 1:10,000

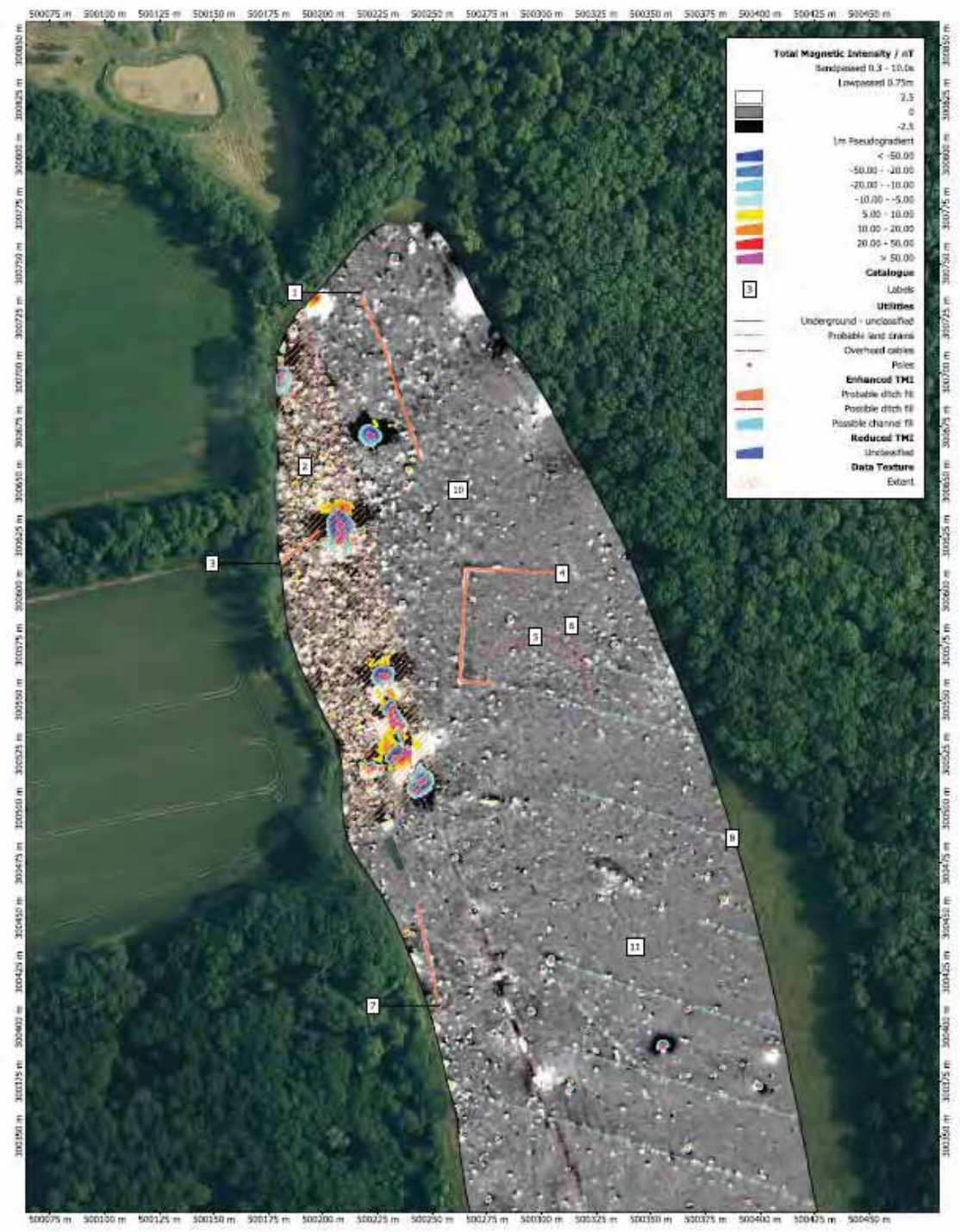
Northamptonshire County Council

Title: **HER search: Monuments (south)** **Figure 5B**

N

Date: 14-05-2020 **Scale:** 1:10,000

Site	ENRMF
Client	Augean plc
Ref	Figure 6
Rev	Date: May 2021
Title	Bryant 1827



KCP191 Kings Cliffe, Northamptonshire
DWG 04a - Interpretation - A

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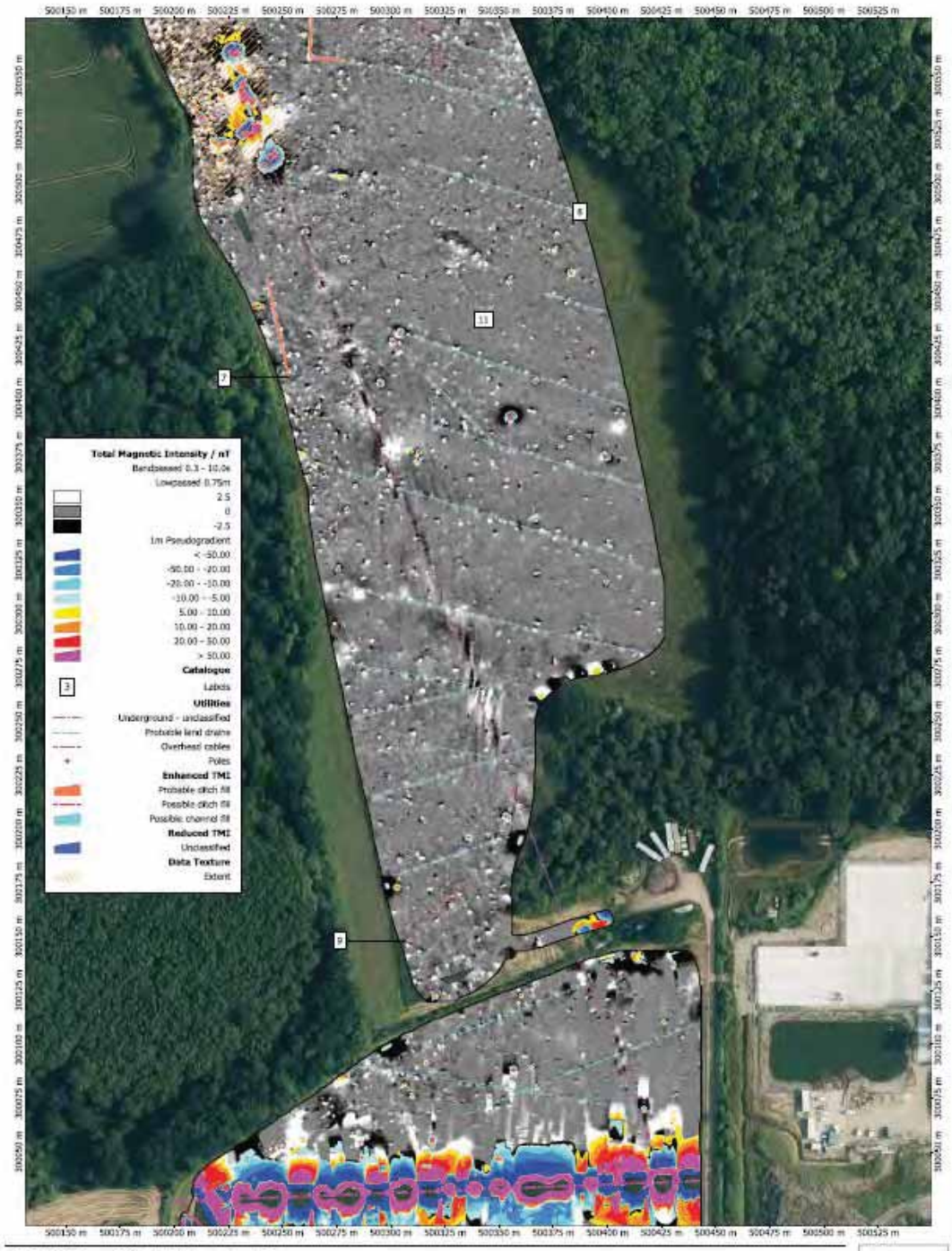
File: KCP191.map Copyright TigerGeo Limited 2020

Site	ENRMF
Client	Augean plc
Ref	Figure 7A
Rev	Date: May 2021
Title	Geophysics North

AJA andrew josephs associates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Poles
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Probable ditch fill
Possible ditch fill
Possible channel fill
Reduced TMI
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KCP191 Kings Cliffe, Northamptonshire
DWG 04b Interpretation - B
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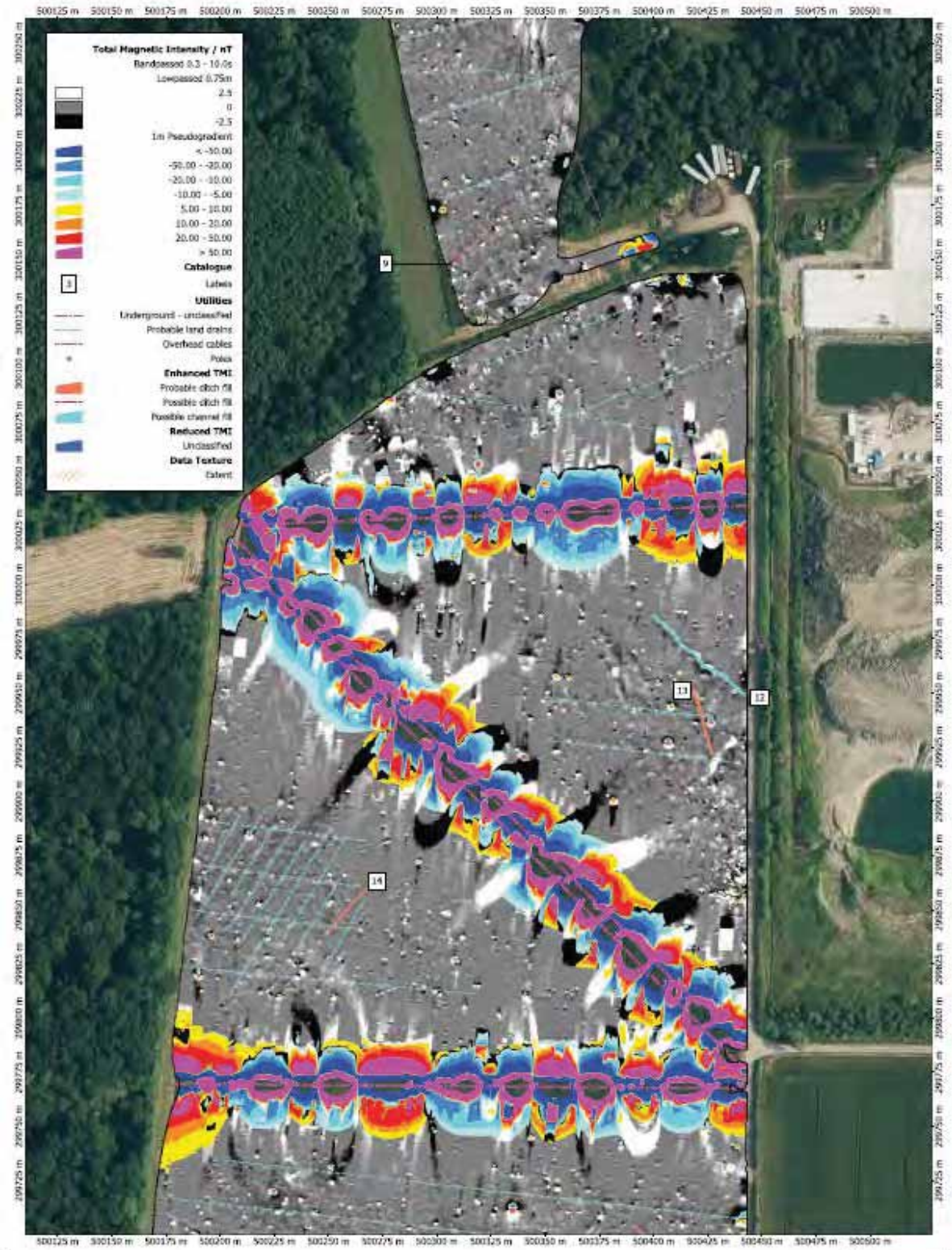
Client Augean plc
Ref Figure 7B
Rev
Date May 2021
Title Geophysics Centre/N



KCP191 Kings Cliffe, Northamptonshire
DWG 04c Interpretation - C

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File: KCP191.map Copyright TigerGeo Limited 2020

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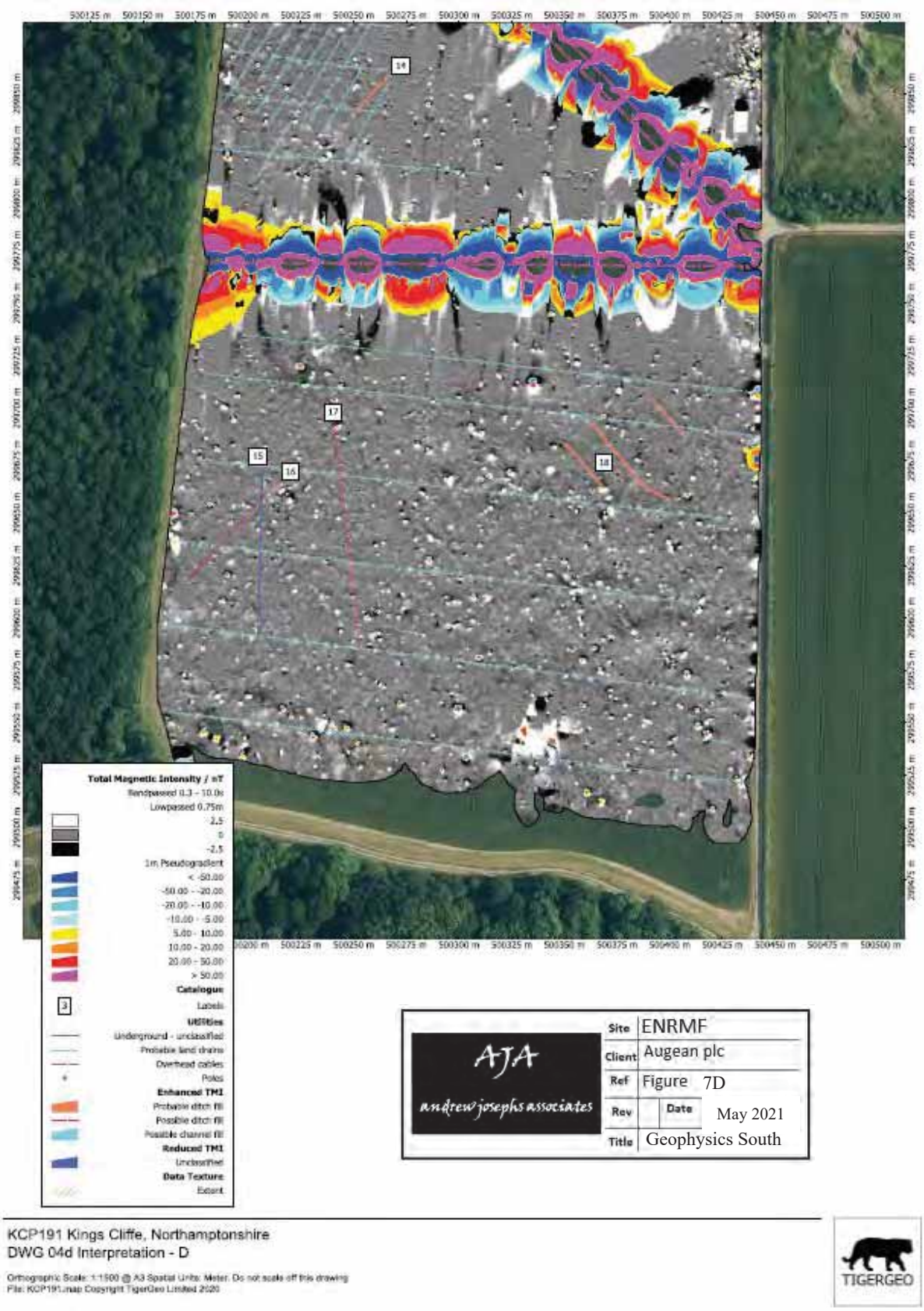
Site	ENRMF
Client	Augean plc
Ref	Figure 7C
Rev	Date May 2021
Title	Geophysics Centre/S

TIGERGEO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Overhead cables
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Probable ditch fill
Possible ditch fill
Possible channel fill
Reduced TMI
Unclassified
Data Texture
Extent
AJA
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Site ENRMF
Client Augean plc
Ref Figure 7D
Rev
Date May 2021
Title Geophysics South
KCP191 Kings Cliffe, Northamptonshire
DWG 04d Interpretation - D
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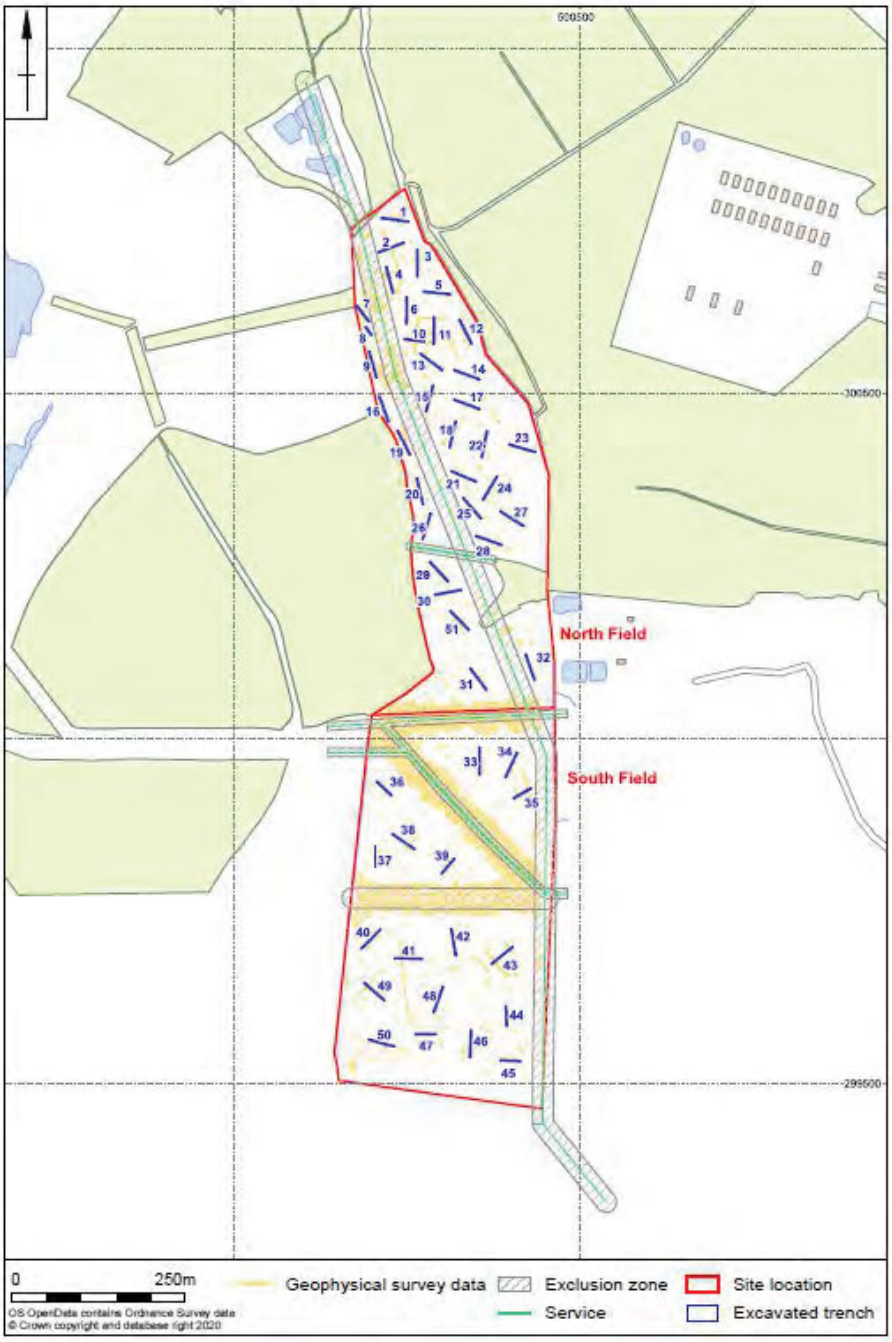
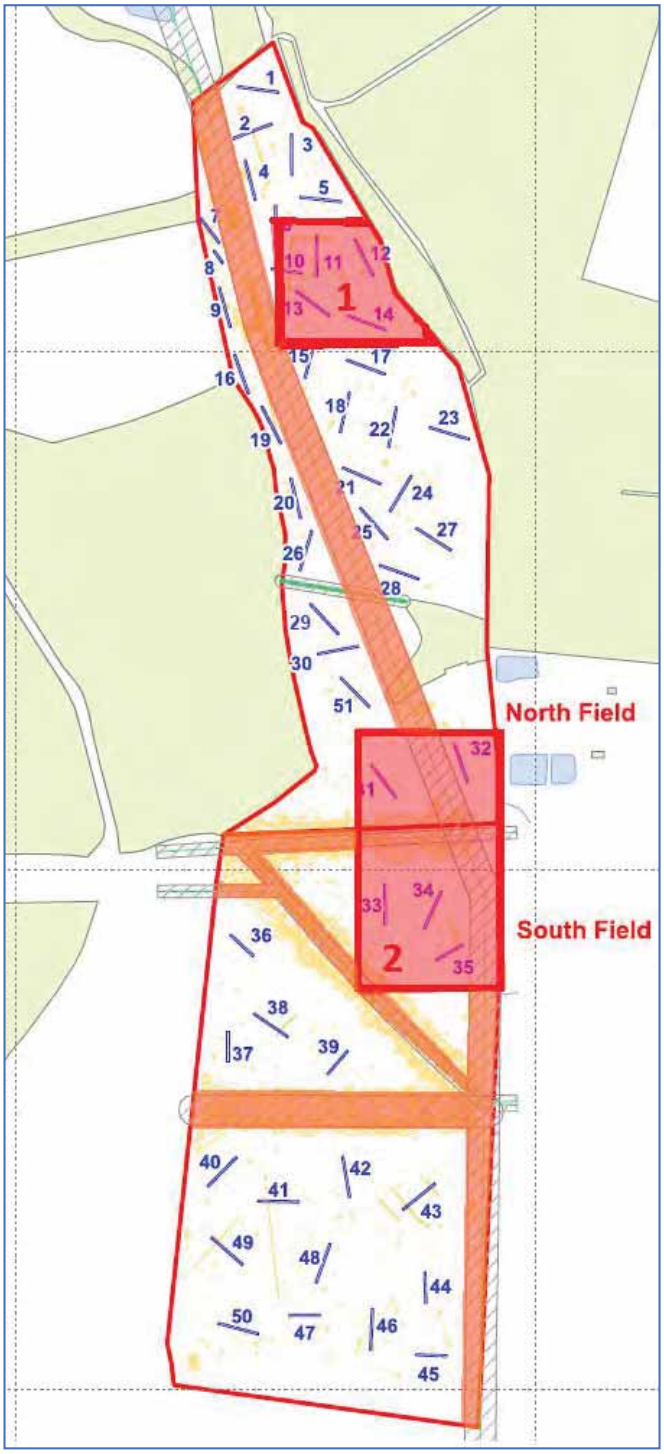
File: KCP191.map Copyright TigerGeo Limited 2020
TIGERGEO



Site	ENRMF
Client	Augean plc
Ref	Figure 8
Rev	Date May 2021
Title	Trench layout



AJA andrew josephs associates	Site: ENRMF
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	Ref: Figure 9
	Rev: Date: Oct 2020
	Title: Excavation Areas

Appendices

Appendix A - Glossary of Terms

Glossary of Cultural Heritage Terms

***appraisal*:** Brief review (often within the planning framework) of the SMR and Historic Maps etc, to decide whether a development application has the potential for archaeology. The appraisal may or may not become a condition.

***archaeology**:* The scientific study of past human life and change through analysis of material remains that humans have left behind (from the Greek root *archaeo,* meaning ancient and *logos*, meaning study)

archaeological monitoring: Archaeological monitoring involves an archaeologist being present in the course of carrying out development works (which may include conservation works), to identify and protect archaeological deposits, features or objects which may be uncovered or otherwise affected by the works. (*See Watching Brief*)

archaeological periods:
The time-scales of the archaeological periods referred to in this report are given below. The periods are given their usual titles. It should be noted that for most cultural heritage purposes the boundaries between them are not sharply distinguished, even where definite dates based on historical events are used. Subdivisions within periods are not considered separately.

Prehistoric: Palaeolithic	(*c.* 500,000 BC – *c.*10,000 BC)
Prehistoric: Mesolithic	(*c.* 10,000 BC – *c.* 4,300BC)
Prehistoric: Neolithic	(*c.* 4,300 BC – *c.* 2,300BC)
Prehistoric: Bronze Age	(*c.* 2,300 BC – *c.* 600 BC)
Prehistoric: Iron Age	(*c.* 600 BC – *c.* AD 43)
Romano-British	(*c.* AD 43 – *c.* AD 410)
Anglo-Saxon	(AD 410 – AD 1066)
Medieval	(AD1066 – AD 1485)
Post-medieval	(AD1485 to present day)

***aerial photograph (APs)**:* Photographs taken from the air and used to identify archaeological sites either by low light for upstanding monuments or by differential crop growth on sites within arable fields.

artefact : An object or part of an object which has been used or created by a human and provides physical clues to the activity carried out by humans in the area of discovery (This can range from Pottery, Metalwork, Woodwork, Worked Stones through to mortar samples) (See Ecofact)

***assemblage*:** a group of **artefacts** found together in a single **context** such as a grave or pit.

conservation area: an area (usually urban or the core of a village) considered worthy of preservation or enhancement because of its special architectural or historic interest, "the character or appearance of which it is desirable to preserve or enhance," as required by the Planning (Listed Buildings and Conservation Areas) Act 1990

consultant : An expert providing objective and independent advice to the applicant/developer on the basis of professional standards.

contractor : A person or organisation commissioned to undertake archaeological research and fieldwork either to a brief or general requirement for archaeological investigation set by a planning archaeologist.

cropmark : An archaeological site no longer visible on the ground due to the removal of upstanding remains (often by ploughing). The sites are recorded from Aerial Photographs by differential crop growth over buried features such as pits, ditches and walls

cultural resource **:** Broad definition of a feature, site, structure or other form of heritage element that is deemed to be of value to the country either on a local, regional or national level. As with all resources, this term relates to both the fragile and irreplaceable nature of the resource.

curatorial archaeologist : An archaeologist with responsibility for management of the archaeological resource. The work of such organisations or individual is one of cultural resource management. County Archaeologists, Planning Archaeologists, Sites and Monuments Record staff, English Heritage, Historic Scotland and CADW are all within this role.

designation: The various pieces of legislation used for legally protecting heritage assets from damage and destruction are grouped under the term 'designation'

desk-based assessment (DBA) : An assessment of both the known and potential archaeological resource within a specified area. A study is carried out on available sources such as SMRs, Map Evidence, Documentary Sources Aerial Photographs. The study will provide a background for a decision to be reached on the potential archaeological resource in a local, regional, national context within the review area.

English Heritage (EH) : The government agency charged with the protection and care of the monuments and heritage resources of England

environmental archaeology : The study of the interface between the environment of a locality and the human activity within the area, accomplished through the study of soils, plant and animal remains.

excavation **:** Intrusive fieldwork with a clear purpose, which examines and records archaeological deposits, features and structures and recovers artefacts, ecofacts and other remains within a specified area or site. This will lead to both a further programme of Post Excavation and Publication and perhaps further excavation.

evaluation : A limited programme of non-intrusive and/or intrusive fieldwork, which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area. This may take the form of an intrusive investigation of a percentage of the site, geophysical or topographical survey. The results of this investigation will establish the requirements for any further work.

fieldwalking**:** A form of evaluation that provides details of surface features visible during a physical search of the site area and is a systematic observation of the ground surface during. The recovery of **artefacts** that may indicate periods of occupation is also an important part of this evaluation (also termed walkover survey)

geophysical survey **:** A method of seeing beneath the ground surface using a number of methodologies, including Ground Penetrating Radar (GPR), Resistivity

and Magnetometry. It takes a specialist to both use the field equipment and interpret the data. When used with Topographic survey the results can be very effective, though it is very dependent on soil and geological conditions within the site area.

historic environment record (HER) : A database (usually computerised and sometimes online) of all archaeological sites and find locations from a given area, usually a county, maintained by the County Council, and adopted by formal resolution.

IFA **:** Institute for Archaeologists. It is an organisation for archaeologists in the United Kingdom that promotes professional standards and ethics for conserving, managing, understanding and promoting heritage.

in situ: in its original place

listed building: a building that has been placed on the Statutory List of Buildings of Special Architectural or Historic Interest. In England and Wales the authority for listing is granted to the Secretary of State by the Planning (Listed Buildings and Conservation Areas) Act 1990.

natural: in archaeological terms this refers to the undisturbed natural geology of a site

OD: Ordnance datum; used to express a given height above sea-level. (AOD Above Ordnance Datum)

OS: Ordnance Survey

scheduled monument a 'nationally important' archaeological site or historic building, given protection against unauthorized change. The protection to scheduled monuments is given under the Ancient Monuments and Archaeological Areas Act 1979.

stratigraphy : the building block of archaeology, where careful excavation and recording determines the precise sequence of events that took place to create the deposits, cuts and features that have been uncovered.

Strip map and sample : a method of archaeological excavation involving machine stripping of an area, plotting observed features onto a site plan and then partially excavating those features (sampling).

test pits : a series of small (usually 1m x 1m) excavations to give an indication of the underlying soil / deposit profiles. These may take place prior to full evaluation, or may be all that is required on the site.

topographic survey : A detailed analysis of the ground surface of the site, a contour plan (from a flat 2D plan to a 3D computer model) is produced and can help to recognise buried landscape features or features that are too slight or too large to see with the naked eye.

trial trenches : see evaluation

watching brief : A formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons within a specified area or site on land or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

Appendix B – Summary of Consultations including copy of NCC Archaeological Brief

From: NCC

Sent: 29 March 2021 08:31
To: Andrew Josephs Associates

Subject: RE: Kings Cliffe landfill Archaeological Mitigation Strategy

Dear

Thank you for the AMS. It is all in order and I am happy with the scope of work proposed.

A method statement from the archaeological contractor would of course be expected to confirm that they will follow the AMS.

It may be worth adding a footnote to the AMS to clarify that from 1st April 2021 I will be Archaeological Advisor at North Northants Council, rather than at NCC which will no longer exist.

Regards

Archaeological Advisor

From: Andrew Josephs Associates

Sent: 22 March 2021 08:55
To: NCC

Subject: Kings Cliffe landfill Archaeological Mitigation Strategy

Please find attached an AMS for your comments/approval.

Kind regards

andrew josephs associates

consultancy | project management | expert witness

Specialists in Archaeology and Cultural Heritage

NCC

Wed 12/08/2020 08:50

Looks fine to me. It is evitable that some of the trenches will have to moved or cut in half but we can deal with that at the time.

Regards

County Archaeological Advisor

One Angel Square
Angel Street
Northampton
NN1 1ED

From: Andrew Josephs Associates

Sent: 11 August 2020 16:29
To: NCC
Subject: Re: Kings Cliffe landfill geophysics and trenching

Please find attached a proposed layout for both fields. This has been prepared without consultation with the utilities providers (gas, water and overhead power lines). Some trenches may therefore have to be relocated, but even if we have to split 50m trenches into smaller lengths this would be the minimum number of trenches. There is a contingency to carry out further trenching if needed to clarify results..

If you are happy with this I will seek tenders to carry out the work, with a view to starting in early September.

I would therefore hope to get a WSi to you within 10 days.

andrew josephs associates

consultancy | project management | expert witness

Specialists in Archaeology and Cultural Heritage

From: NCC

Sent: 07 August 2020 15:12
To: Andrew Josephs Associates

Subject: RE: Kings Cliffe landfill geophysics and trenching

Andy

The Brief. If you have any questions please get back to me.

Regards

County Archaeological Advisor

From: Andrew Josephs Associates

Sent: 05 August 2020 16:45
To: NCC
Cc: MJCA
Subject: Re: Kings Cliffe landfill geophysics and trenching

Thanks for your advice

In order to allow full flexibility for the proposed design, we will include trenches in the southern field. I will need to take advice on the stand-offs that we must observe from the services and i will then submit a revised layout.

Kind regards

andrew josephs associates

consultancy | project management | expert witness

Specialists in Archaeology and Cultural Heritage

BRIEF FOR THE ARCHAEOLOGICAL FIELD EVALUATION OF A POSSIBLE EXTENSION TO THE KINGS CLIFFE LANDFILL SITE, KINGS CLIFFE, NORTHAMPTONSHIRE

CONTENTS:

Planning Services
Northamptonshire County Council

1 INTRODUCTION

1.1 This Brief is valid for 6 months from the date of issue. If the project it describes is undertaken after that period the Brief should be referred to the County Archaeological Advisor for revision; no work should be undertaken until an updated Brief has been issued.

1.2 The background for this archaeological field evaluation is contained in the *Brief for a Programme of Archaeological Investigation of a possible extension to the Kings Cliffe landfill site at Kings Cliffe, Northamptonshire* (7th August 2020) which accompanies this document, and which should be read in conjunction with it.

1.3 The archaeological field evaluation forms Stage I of the programme of archaeological investigation for the site outlined in the above *Brief*.

2. OBJECTIVES

2.1 It is clear that the proposed development could have archaeological potential and could contain remains that would be a constraint on the proposed development.

2.2 The following information is required to allow the development of a strategy for further investigation of the site:

2.2.1 The location, extent, nature, and date of any archaeological features or deposits that may be present.

2.2.2 The integrity and state of preservation of any archaeological features or deposits that may be present.

2.3 The information required will be acquired through a programme of archaeological fieldwork as outlined below.

3 FIELD METHODS

3.1 In order to obtain the information outlined in 2.3 a programme of archaeological fieldwork will be undertaken.

3.2 Throughout the project the standards set in: Chartered Institute of Field Archaeologists Codes of Conduct and Standards and Guidance documents (specifically Standard and Guidance for Archaeological Field Evaluation, 2014) updated June 2020, English Heritage's Management of Research Projects in the Historic Environment (2015a) and Archaeological Archives: A Guide to best practice in creation, compilation, transfer and curation (Brown 2011) and Northamptonshire Archaeological Archives Standards (Donnelly-Symes 2020). will be adhered to. Archaeological units working in Northamptonshire are expected to commit to the use of selection strategies for archaeological archives from the initiation of the project. The CIfA Toolkit for Selecting Archaeological Archives (http://cifa.heritech.net/selection-toolkit) should be used as an outline basis for these strategies. The recording system

employed will conform to these standards and will be approved by the County Archaeological Advisor before the project commences.

3.3 The recording system employed will conform to these standards and will be approved by the County Archaeological Advisor before the project commences.

3.4 The Integrated Project Archive (including artefacts/ecofacts and project documentation) is to be deposited within the Northamptonshire Archaeological Resource Centre (NARC) on completion of the evaluation programme or following any publication of the evaluation results. NARC is expected to be opened in early 2021. Archive preparation and deposition procedures are covered in Northamptonshire Archaeological Archives Standards (Donnelly-Symes 2020). The site archive specification should conform to the guidelines in MoRPHE (HE 2015), eg section 2.5.3.

3.5 Physical arrangements for the long term storage and deposition of all artefacts must be agreed with the landowner and NARC during the reporting stage. Transfer of Title (ownership) of the archive to Northamptonshire Archaeological Resource Centre needs to be arranged at this time and the arrangements should be indicated in the full report. The archaeological organisation's Transfer of Title form should be signed by the landowner and submitted to the NARC Curator. *It is strongly recommended that the archaeological Project Manager is the individual responsible for gaining the signature of the landowner.* ***The*** **box charge will be £120.00 per box**. This charge covers the accessioning of the archive, future proofing for long term storage to ensure that NARC is a sustainable. Further details of charges for the use of NARC can be found in the forthcoming NARC guidelines.

3.6 The archaeological contractor must be satisfied that all constraints on archaeological fieldwork are identified and appropriate measures to avoid damaging or illegal impacts must be put in place before the project commences. The constraints include the siting of live services, Tree Preservation Orders, public rights of way, contaminated land, areas of ecological interest and the habitats of protected species.

3.7 The field evaluation will have a single stage: trial trenching as outlined below.

3.8 STAGE I – TRIAL TRENCHING

3.8.1 A series of trial trenches will be excavated within the redline area. The trenches will be positioned to target areas of possible archaeological activity as identified in the geophysical survey (Tigergeo 2020). Blank areas will also be tested to clarify the geophysical survey results.

3.8.2 The trench sample area should be sufficient to define the character and extent of any potential activity identified by the geophysical survey. It is anticipated that it will be no less than 3% but may vary in density within the application area. Contingency provision will be made to allow for further investigation of any significant features or deposits that are encountered.

3.8.3 The trench layout and the deployment of the contingency allowance will be discussed with and agreed by the County Archaeological Advisor before they

are implemented. The trenches will avoid areas of known disturbance and services

3.8.4 The trial trenches will be excavated under archaeological supervision by a suitable machine fitted with a toothless bucket with a minimum width of 1.8m.

3.8.5 Topsoil and subsoil will be removed by machine down to the top of natural subsoil or archaeological deposits, whichever is encountered first.

3.8.6 The spoil will be scanned for artefacts and will be potentially metal detected dependent on the metal detecting results.

3.8.7 The trial trenches will then be cleaned by hand and the location of all features and deposits recorded by hand at a scale of 1:50 or 1:20 if appropriate.

3.8.8 All archaeological features will be fully excavated unless previously discussed with the CAA. All discrete features will be half sectioned, where safe to do so but should in any case the sample should not be less than 50% of the whole. Excavation slots must be at least 1m in width. It should be born in mind that excavation must not compromise the integrity of the archaeological record. Investigation should be undertaken in such a way as to allow for the protection of the deposits through the application of mitigation procedures or through the opportunity for better excavation under the conditions pertaining to full investigation of a larger area.

3.8.9 Should a significant depth of stratified deposits be encountered it may be necessary for excavation to continue in a restricted area within the trial trenches in order to test the depth and nature of the stratigraphy. The location and scale of the deeper excavation will be dictated by the nature of the archaeological deposits revealed in the opening of the trenches and by other on–site conditions, paying particular regard to health and safety issues. The agreement of the County Archaeological Advisor must be obtained before such a strategy is implemented.

3.8.10 All excavated features and deposits will be fully recorded in accordance with the approved recording system. The primary photographic record will normally be compiled in high resolution digital format using a digital SLR Contractors should refer to Donnelly-Symes 2020 for site photographic guidance. Details of the revised photographic standards can be found in paragraphs 16.1.6 and 16.2.8 of the new standards. Further information on digital archiving can be obtained from the Technical Advisory Service for Images and Archaeology Data Service.

3.8.11 A procedure for the retrieval of environmental, organic and artefactual material will be instituted during the excavation. Guidance on sampling is to be found in Historic England (2015b). Details of the sampling strategy will be included in the Project Design. **The archaeological contractor is required to provide details of the projected number of samples they intend to take within their WSI.**

3.8.12 All finds and other relevant material will be retained and removed from the site for post-fieldwork analysis.

3.8.13 Care must be taken in dealing with human remains and the appropriate Department for Constitutional Affairs and environmental health regulations

followed. The County Archaeological Advisor and the local Coroner must be informed immediately upon discovery of human remains. Where human remains are encountered as part of the investigation, they should be left in situ and only removed if absolutely necessary. If they are removed, it is essential that the post-excavation assessment contains an analysis of the remains and a statement for the final deposition of the assemblage. The qualified statement must address future research potential, where applicable, and the options for reburial.

3.8.14 Project Managers are reminded of the need to comply with the requirements of the Treasure Act 1996 (with subsequent amendments). Advice and guidance on compliance with Treasure Act issues can be obtained from the Historic Environment Record (HER) office, and project managers are recommended to report any finds that could be considered treasure under the terms of the Act made during the process of fieldwork to the Finds Liaison Officer, Ellie Cox elcox@northamptonshire.gov.uk within 48 hours of discovery.

3.7.15 All areas of ground disturbance will be accurately surveyed in and marked out prior to the commencement of work.

3.7.16 The trial trenches will not be back filled before they have been inspected by the County Archaeological Advisor or the agreement of that Officer has otherwise been obtained for the back filling of specific trenches.

4. POST-FIELDWORK

4.1 After completion of the fieldwork programme the data acquired will be analysed to a level which will provide the information required (see 2.2).

4.2 Bulk soil samples taken for environmental purposes (3.8.11) will be sieved and scanned.

4.3 All finds will be cleaned, marked, sorted and analysed in accordance with the approved recording system and the practices and standards described in *Preparation of Archaeological Archives; Selection, Retention and Dispersal of Archaeological Collections* (1993), the CIfA *Standards and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials* (2014) updated June 2020, *Archaeological Archives: Guide to best practice in creation, compilation, transfer and curation* (2011) and Northamptonshire Archaeological Archives Standard (Ben Donnelly-Symes 2020).

4.4 All medieval and earlier artefacts should be reported on by a suitably qualified specialist, named in the contractor's method statement or Specification. All Saxon and later ceramics should be classified in accordance with the Northamptonshire Ceramic Type Series. The MPRG's *Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics* must be adhered to (Slowikowski et al 2001).

5 REPORT

5.1 A report will initially be prepared on the results of the field evaluation. This will incorporate the results of the investigations.

5.2 It will describe the methods employed and outline the results in relation to the areas of information required (see 2.2) and conform to the standards set out in the Chartered Institute of Field Archaeologist's *Standard and Guidance for Archaeological Field Evaluation* (2014) updated June 2020.

5.3 The report must contain sufficient detail to enable the results to be interpreted without recourse to the site archive. It will include tabulations of contexts and finds by context. It will also include a non-technical summary of the project and its results.

5.4 The results of this evaluation must be related to the archaeological and historical context of the surrounding area.

5.5 The report should also contain a consideration of the significance of the results of the evaluation, putting them into a local and regional context. It must not, however, contain any recommendations for dealing with the archaeological resources in the light of the plans to develop the site.

5.5 Unless other arrangements are made, 6 months after the submission of the report the information it contains will be entered into the Historic Environment Record; a publicly accessible database.

6 GENERAL

6.1 The fieldwork must be undertaken by a team of recognised professional competence and experience in this type of project. The use of volunteers or unwaged personnel is specifically excluded unless they are additional to the core project staff.

6.2 Before commencing work the Project Manager must carry out a **risk assessment** and liaise with the site owner, Client and County Archaeological Advisor in ensuring that all potential risks are minimised. A copy should be sent to the County Archaeological Advisor.

6.3 The Specification should conform to the outline in *MoRPHE Project Planning Note 3: Archaeological Excavation* and will contain information on the following:

- the size and qualification of the work force including names and experience of key personnel;
- details of staffing levels and the number of person days to be spent on each specific task;
- details of specialists, including qualifications, who are likely to have input into the project, whether they are in-house or contracted in;
- details of the recording system for fieldwork and post-excavation analysis;
- a timetable covering the whole project from setting up on site through report writing to deposition of the archive, including suitable allowance for bad weather or other unforeseen circumstances, the latter must be clearly indicated.

6.4 The Specification will be submitted to the County Archaeological Advisor for vetting to ensure their conformity to this Brief before the contract for the project can be let.

6.5 The appointed archaeological contractor must consult (unless advised otherwise) the Northamptonshire Historic Environment Record with the regard to the archaeological and historical background for the development site and surrounding area before submitting the WSI in order to establish the archaeological context for the project.

6.6 To assist with the creation and curation of the project's archive, the Northamptonshire Historic Environment Record office must be contacted to obtain an Event number (ENN) at the outset of the project. NARC use this number as a unique identifier linking all physical and digital components of the archive. The unique event number must be clearly indicated on any specification received for this project. It should be shown on all paperwork created on site (context forms and plans etc), on relevant ensuing reports and on the OASIS data collection form.

6.7 Adequate arrangements must be made within a suitable time scale for the conservation of artefacts. Where fragile or unstable finds are recovered appropriate steps must be taken to stabilise them. All conservation, including initial stabilisation must be undertaken by recognised, named specialists.

6.8 Archive preparation and deposition procedures are covered in Northamptonshire Archaeological Archives Standards (Donnelly-Symes 2020) and these guidelines should be followed. The digital archive should be deposited with the Archaeological Data Service (ADS) or another publicly accessible CoreTrustSeal certified repository on completion of the archaeological programme. Confirmation of deposition of the digital archive will be provided by ADS and this will need to be submitted to NCC to demonstrate that the archive has been submitted in accordance with the Brief and the County Archive Standards. In line with General Data Protection Regulation (GDPR), archaeological units/managers are expected to gain permission to share the details of individuals and landowners that are referenced in any subsequent archive produced by the project.

6.9 Northamptonshire County Council supports the national stage of the Online Access to the Index of Archaeological Investigations (OASIS III) project and would encourage archaeological contractors to support this initiative. In order that a record is made of all archaeological events within the county occurring through planning systems, the archaeological contractor is requested to input details of this project online at the ADS internet site. The OASIS reference ID should be clearly indicated on any reports.

6.10 Northamptonshire County Council also supports the East Midlands Historic Environment Research Framework wiki initiative for the development and enhancement of the Regional Research Frameworks. This is a project funded by Historic England which aims to encourage heritage professionals to refer to the online version of the Research Framework when producing WSI's, Project Designs and compiling archaeological reports. The team are also particularly keen for feedback on the usability of this resource, ways in which it could be made more user-friendly, and comments on recent work that may

have advanced the Agenda and Strategy. NCC will be monitoring the take up and use of the wiki within the county.

(http://archaeologydataservice.ac.uk/researchframeworks/eastmidlands/wiki/Main

6.11 The responsibility for monitoring the progress of the project throughout its life, to ensure adherence to this Brief and the maintenance of professional standards is undertaken by the County Archaeological Advisor. So that arrangements for monitoring can be made the County Archaeological Advisor will be notified of the archaeological contractor engaged to undertake the work and be given two weeks notification of the start date of the project in writing. Monitoring requirements will also be included in the project timetable with the agreement of the County Archaeological Advisor. One digital copy of the report should be submitted to the CAA. One copy should be sent to the client. The digital copy should include both the report text and all illustrations, ideally as a single electronic document. After approval, the report will be passed to the Northamptonshire Historic Environment Record to act as a permanent record of the investigation.

6.12 Any variation to the WSI must be agreed with the County Archaeological Advisor before a revised programme of work is implemented.

6.13 It should be noted that a charge will normally be made for consulting the Historic Environment Record and the project estimate should include an element for this cost.

6.14 It is the policy of Planning Services to ensure that the results of archaeological work in Northamptonshire are made available to the public through a variety of media. The Project Manager is encouraged, therefore, to provide a strategy for site presentation, which would include (where appropriate) the issue of press releases, articles to local and national media, an "open day" for visitors or a parish-based presentation of the excavated remains. All public outreach events must be conducted following consultation with and approval by, the Client. Planning request advanced notice of outreach events and reserve the right to publicise them on our website. In relation to the promotion of archaeological research, Project Managers are requested to provide a short article (where appropriate) for the Planning web site. The main aim of the article is to capture the attention and imagination of the general Northamptonshire public. The articles would ideally contain photographs of recognisable archaeological activity, such as settlement, burial and cultural artefacts.

REFERENCES

AFU (1999) *Middle Saxon Iron Smelting Furnaces And Other Sites Along The Wing to Peterborough Pipeline: Archaeological Evaluation and Excavation* unpublished report 158 Cambridgeshire Archaeological Field Unit

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Knight, D; Vyner, B; Allen, C (2012) *East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (University of Nottingham/York Archaeological Trust)

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Slowikowski, A. M., Nenk, B., Pearce, J. (2001) *Minimum standards for the processing, recording, analysis and publication of post-Roman ceramics* (MPRG Occ Pap 2)

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Technical Advisory Service for Images Introductory Pack: Image Capture: Hardware and Software available online at www.tasi.ac.uk

TG 2020- *Geophysical Survey Report (Caesium Vapour Magnetic- Archaeology) Land near Kings Cliffe, Northamptonshire* Tigergeo Unpublished report Project KCP191

V1 7th August 2020

Appendix C – Geophysical Survey Report

TIGERGEO

Land near King's Cliffe, Northamptonshire

Geophysical Survey Report
(Caesium Vapour Magnetic – Archaeology)
Version 1.0

Project code: KCP191

Produced for:

Andrew Josephs Associates

Lead Author:
MJ Roseveare, Senior Geophysicist
BSc(Hons) MSc MEAGE FGS MCIfA

REGISTERED ORGANISATION CIfA

18th July 2020

Environmental Geophysics – Survey, Research and Consultancy

TIGERGEO

Land near King's Cliffe, Northamptonshire

Digital data

Item and version	Sent to	Sent date
CAD – Vector Elements 1.0	Andrew Josephs	18th July 2020

Audit

Version	Author	Checked	Date
Interim			
1.0	MJ Roseveare	ACK Roseveare	18th July 2020

Project metadata

Project Code	KCP191
Client	Andrew Josephs Associates
Fieldwork Dates	11th - 13th November 2019, 15th -16th May 2020
Field Personnel	ACK Roseveare, A Gerea, MJ Roseveare
Data Processing Personnel	ACK Roseveare, A Gerea
Reporting Personnel	MJ Roseveare
Report Date	18th July 2020
Report Version	1.0

TigerGeo Limited

TigerGeo Limited - Registered in England & Wales 09895326 - D-U-N-S 22-127-7456
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EuroGPR Member 129, licensed to undertake radar survey in the UK by OFCOM – 1065067/1

TIGERGEO

Non-Technical Summary

A survey was commissioned by Andrew Josephs Associates to prospect land near King's Cliffe, Northamptonshire for buried structures of archaeological interest. Survey was undertaken using an ATV-towed and GNSS-tracked non-gradiometric array of caesium vapour magnetometers on a non-magnetic platform. This configuration allowed the total magnetic intensity to be measured and from this was then modelled a 1m vertical pseudogradient data set and the two used to generate the interpretation presented in this report.

Overall the survey seems to have revealed little of archaeological interest, with a thin scatter across the site of possible ditch fills although most are too weakly magnetic to be sure of their identification. A small rectilinear enclosure in the north of the area, on the highest ground, is the clearest evidence for past human activity. There is no evidence for former cultivation or other agrarian activity and indeed, the dominant elements with the data are various sets of land drains.

TIGERGEO

Table of Contents

Drawing	Title
DWG 01	Site Location
DWG 02a-d	Magnetic Data – Total Magnetic Intensity
DWG 03a-d	Magnetic Data – 1m Vertical Pseudogradient
DWG 04a-d	Interpretation

1 Introduction

TigerGeo was commissioned by Andrew Josephs Associates to undertake a geophysical survey of land near King's Cliffe, Northamptonshire as part of an archaeological evaluation of the land and also to accurately locate a pair of water mains. An area of approximately 24 hectares was surveyed across two field visits, the first being the northern field and the second being the southern, once the ground had dried out. It was undertaken using an array of six caesium vapour magnetometers, GNSS tracked and towed by an ATV. Advanced processing was undertaken to allow use of the resulting total magnetic intensity data plus a modelled vertical pseudogradient to assist interpretation.

Country	England
County	Northamptonshire
Nearest Settlement	King's Cliffe
Central Co-ordinates	500330, 300158

2 Context

2.1 Environment

Soilscapes Classification	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (18)
Superficial 1:50000 BGS	Till, Mid Pleistocene - Diamicton (TILMP), recorded in southern field only
Bedrock 1:50000 BGS	Blisworth Limestone Formation - Limestone (BWL) in northern field, northern part, Lower Lincolnshire Limestone Member - Limestone (LLL) in a broad band crossing the southern field, the remainder Rutland Formation - Argillaceous Rocks With Subordinate Sandstone And Limestone (RLD)
Topography	Southern field level, slight northwards dip, before rising again to a higher level in the northern field
Hydrology	Impeded drainage
Current Land Use	Agricultural - Mixed
Historic Land Use	Agricultural - Mixed
Vegetation Cover	Grass in southern part of north field, stubble and young crop elsewhere
Sources of Interference	Potential ferrous interference from adjacent quarry plant/machinery and agricultural and other debris, buried services etc.

2.2 Archaeology

A rapid review of the Northamptonshire Historic Environment Record (HER), via the Heritage Gateway website, revealed that the records within the survey area relate to field names on the Duddington Enclosure Map of 1775 and possible post-medieval charcoal burning platforms observed from aerial photographs.

There are no other records within the area, although those in the wider environs hint at further post-medieval and medieval activity, extensive Roman period activity including settlements, industrial activity and religious sites (temples) and earlier prehistoric activity in the form of burnt mounds.

The area immediately to the east has been subject to several phases of archaeological investigation, including a Heritage Impact Assessment (Andrew Josephs Ltd, 2011). The assessment sums up the archaeological work undertaken at the site, concluding that no features of archaeological interest were observed across several phases of archaeological monitoring.

3 Discussion

3.1 Character & Principal Results

3.1.1 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 04.

3.1.2 Data

Data quality is good with no significant defects and only limited disturbance from overhead power cables in the northern field. Significant disturbance from underground water mains was seen in the southern field and was expected.

There is low background variation, mostly less than 0.5 nT across a few metres and contrast is weak to moderate. Natural sources contribute about 2-3 nT at the spatial scale of interest, which is similar to or slightly more than the anomaly strength from features of archaeological interest. In the southern field some weak linear anomalies are less than 0.3 nT strength and are only apparent through their plan form. Land drains contribute up to about 1 nT and are apparent throughout the survey.

3.1.3 Geology

The British Geological Survey (BGS) G-Base database (5 km resolution) states total soil iron within the site is 6.6% and at 15 km regional level, 4.8%, which is notably high. However, not all soil iron is available for conversion to more magnetic forms by processes associated with past human activity and a high soil iron proportion is not a guarantor of strong anomalies from buried features of archaeological interest.

Much of the variation within the data is here due to the Till deposits, as both a plethora of small relatively magnetic point sources (e.g. near [10]) but also as broader variations that reflect local changes in soil depth and the composition of the Till, e.g. the smoother texture at [11]. These are present across the entire survey which would suggest that the overall topography of the site is dependent more upon the bedrock than the superficial deposits, i.e. the Till seems likely to extend further north than plotted by the BGS. There are also no textural variations due to the different limestone formations. Boreholes driven as part of the wider environmental assessment have confirmed a fairly thick cover of superficial deposits within the northern field.

Although the soils are seasonally wet, hydrological effects are not especially apparent within the data and there are no convincing signs of changes in magnetic character in the region of known solution features towards the middle of the site.

At [12] there are signs of a former stream channel although insufficient is visible to determine how this relates to the wider landscape.

3.1.4 Land use

The dominant agricultural character is of arable cultivation and there is an extensive series of networks of land drains (e.g. [8]) throughout the site. There is little sign of the modern cultivation and no indications of past cultivation and it is possible that this is due to survival or to low magnetic susceptibility.

In the northwest part of the survey the former extent [2] of an area of woodland is apparent as a strongly variable magnetic region which is likely to be a consequence of the removal of trees rather than any natural process.

A long reduced magnetic intensity linear anomaly at [15] seems unlikely to be of archaeological interest and may be more properly considered to relate to land management in some way.

3.1.5 Archaeology

There is very little that can described as of archaeological interest with any certainty, most of the suitable anomalies being non-connected linear examples with weak magnetic enhancement and no coherent layout. Some may be ditch fills, others could be drains or former paths and some contrast so weakly with their surroundings as to be only tentatively identified.

The main feature is the ditch fills [4] that define the western part of a small rectilinear enclosure. It lacks internal features but the strength of magnetic enhancement associated with the fills, relative to other ditch fills on site, might suggest the presence of materials commonly associated with intensive use. These can include cultural debris and heated soils.

Other fairly definite linear fills include [1], which, if not a former (unknown) field boundary, could be associated with [4]. Other likely ditch fills [7], [13], [14] are isolated and magnetically lack diagnostic characters.

A possible group of linear fills at [18] may be a palimpsest of enclosures, but in this context it is impossible to discount features related to drainage.

All the other linear anomalies are too weak to be sure of identification.

3.2 Catalogue

ID	Data Class	Anomaly Class	Form Class	Feature Class	Feature Sub-Class	Comments
1	TMI	Enhanced	Linear - continuous	Ferrous	Ditch	
2	TMI	Texture	Area	Agricultural		This is the former extent of an area of woodland; why this should have modified the magnetic texture of the ground is uncertain
3	TMI	Enhanced	Linear - continuous	Fill		Possible ditch
4	TMI	Enhanced	Linear - continuous	Fill	Ditch	Three sides of a small rectilinear enclosure are defined by a narrow ditch fill but much of the southern side is not magnetically visible and the eastern extent is unknown
5	TMI	Enhanced	Linear - continuous	Fill?	?	
6	TMI	Enhanced	Linear - continuous	Fill?	?	
7	TMI	Enhanced	Linear - continuous	Fill	Ditch	
8	TMI	Enhanced	Linear - continuous	Agricultural	Drain	One of many drains beneath much of the surveyed area and representing different episodes of drainage
9	TMI	Enhanced	Linear - continuous	Fill?	?	One of a large number of weak linear anomalies that could be ditch fills or land drains. In this case a land drain seems more likely but in most cases there is insufficient diagnostic information
10	TMI	Texture	Area	Natural		
11	TMI	Texture	Area	Natural		

ID	Data Class	Anomaly Class	Form Class	Feature Class	Feature Sub-Class	Comments
12	TMI	Enhanced	Linear - discontinuous	Fill		Possible natural channel fill as if a small stream once flowed here
13	TMI	Enhanced	Linear - continuous	Fill	Ditch	
14	TMI	Enhanced	Linear - continuous	Fill	Ditch	
15	TMI	Reduced	Linear - continuous	Structure?	?	Uncertain, this could be a land drain or similar structure but if so being less magnetic than the surrounding ground implies a void or quantities of relatively non-magnetic materials like stone
16	TMI	Enhanced	Linear - continuous	Fill?	?	
17	TMI	Enhanced	Linear - continuous	Fill?	?	
18	TMI	Enhanced	Linear - continuous (group)	Fill	Ditch	A small cluster of probable narrow ditch fills implies a possible focus of past activity, however, land drainage is also possible

3.3 Conclusions

The clearest evidence for past human activity is the enclosure [4] in the northern field but elsewhere there is a palimpsest of very weakly magnetic linear sources that could be ditch fills, although lacking an overall coherent layout.

Extensive land drains show how the land has a history of being wet and indeed, the survey had to be conducted in two halves to accommodate ground conditions. It may not be coincidence that enclosure [4] is situated on the higher and drier land to the north.

3.4 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 Magnetic Principles

4.1.1 Physical concepts

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.

4.1.2 Instrumentation

The use of the magnetic sensors in non-gradiometric (vertical) configuration avoids measurement sensitisation to the shallowest region of the soil, allowing deeper structures, whether natural or otherwise to

be imaged within the sensitivity of the instrumentation. This also allows the detection of shallow broad variations in magnetic susceptibility that might have archaeological significance. Suppression of ambient noise and temporal trends is reduced and therefore need reduction during processing.

The theoretical slightly reduced lateral resolution inherent to using non-gradiometric sensor arrays is practically not an issue and especially if processing includes a vertical pseudo-gradient conversion. The non-gradiometric system is thus overall a more capable configuration than the short gradiometers often used for archaeological studies.

Caesium instrumentation has a greater sensitivity than fluxgate instruments, however, at the 10 Hz sampling rate used here this increase in sensitivity is limited to about one order of magnitude. Greater benefit is obtained from a better signal-to-noise ratio meaning that sub-nanoTesla measurement is more practically achieved.

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.

4.2 Magnetic Survey

4.2.1 Technical equipment

Measured variable	Magnetic flux density / nT (Total Magnetic Intensity / nT after removal of regional trend)
Instrument	Array of Geometrics G858 Magmapper caesium magnetometers
Configuration	Non-gradiometric transverse array (4 & 6 sensors, ATV towed)
Sensitivity	0.03 nT @ 10 Hz (manufacturer's specification)
QA Procedure	Continuous observation
Spatial resolution	1.0m between lines, 0.25m mean along line interval

4.2.2 Monitoring & quality assessment

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. Rest mode test results (static test) are available from the system.

4.3 Magnetic Data Processing

4.3.1 Procedure

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 – 10.0s
Gridding	Surfer	Kriging, 0.25m x 0.25m
Smoothing	Surfer	Gaussian lowpass 3x3 data (0.75m)
Pseudo-gradient conversion	Proprietary	1m vertical

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. 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.

4.4 Magnetic Interpretation

4.4.1 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.

4.4.2 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.

4.4.3 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.

4.4.4 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.

4.5 Glossary

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

Term	Type	Definition
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)

4.6 Selected reference

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4.7 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, local authority 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 and un-locatable 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.

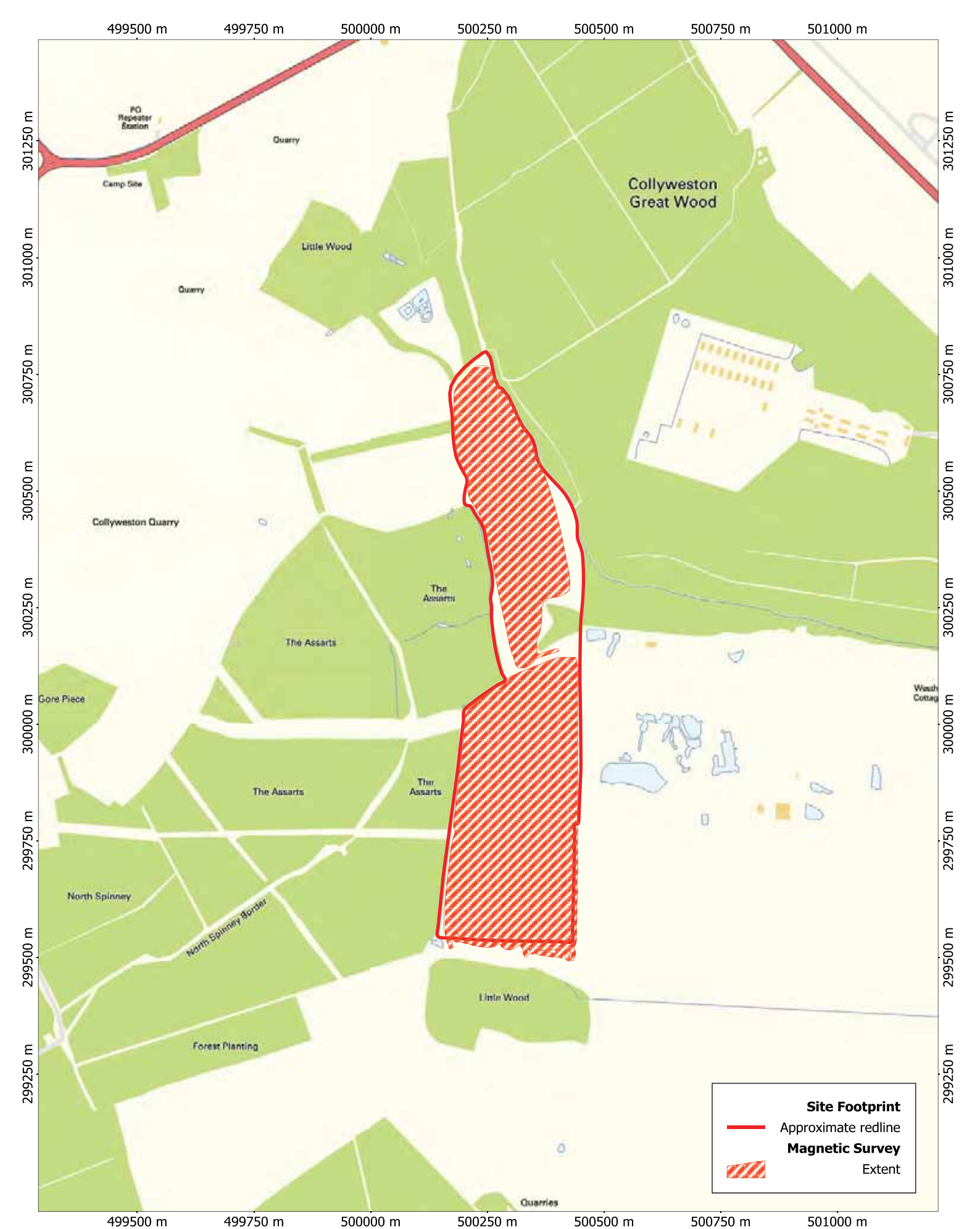
All work for archaeological projects is also conducted in accordance with the following standards and guidance:

- 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

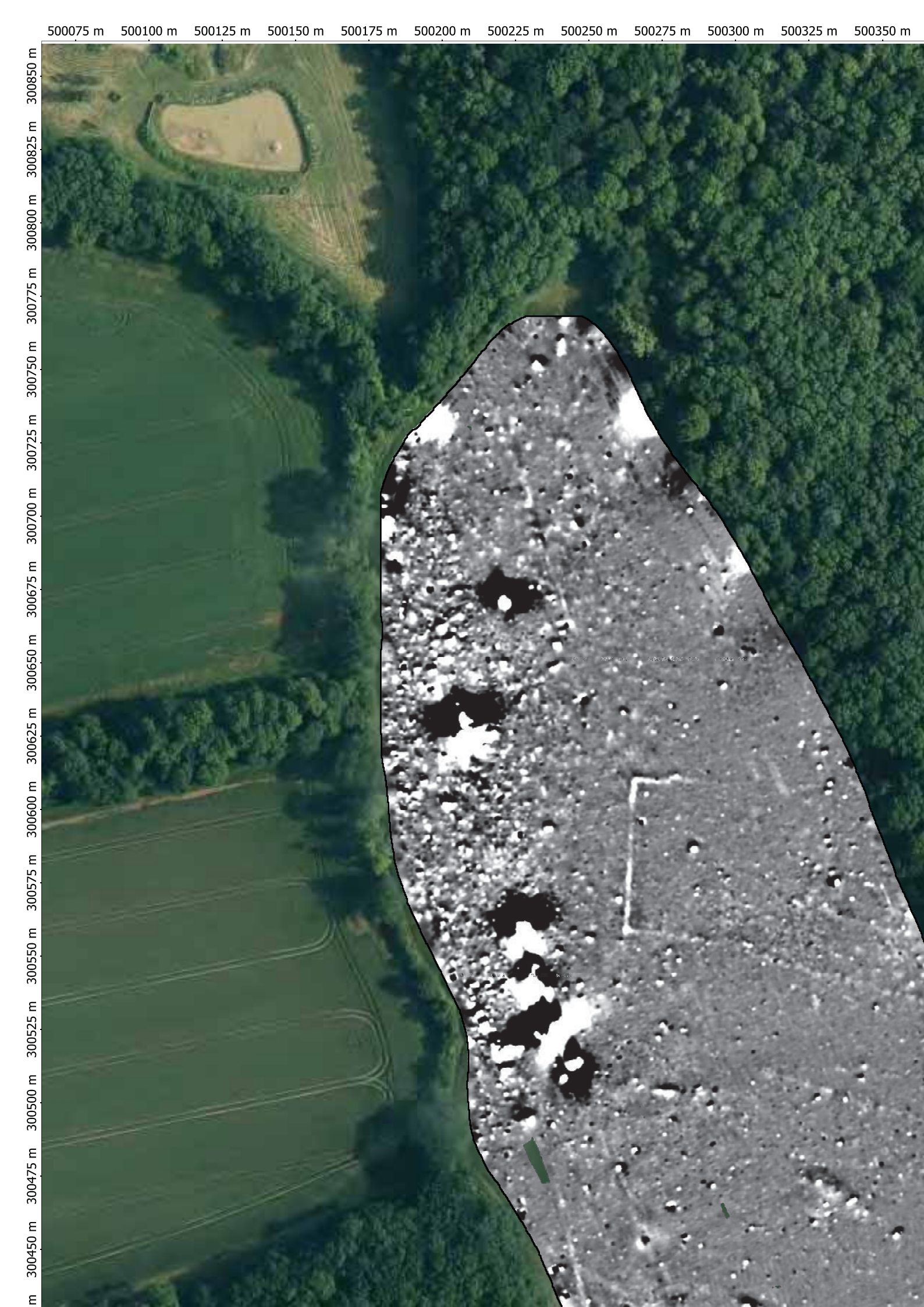
Martin Roseveare, MSc BSc(Hons) MEAGE FGS MCIfA	**Senior Geophysicist, Director**
Martin specialised (MSc) in geophysical prospection for shallow applications and since 1997 has worked in commercial geophysics. Elected a GeolSoc Fellow in 2009 he is now working towards achieving CSci. A member of the 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 (BSSS) and has specific areas of interest in soil physics & hydrology, agricultural applications and industrial sites. Amongst other contributions to the archaeological geophysics sector over the last 18 years, Anne was the founding Editor of the International Society for Archaeological Prospection (ISAP) and is a founding member of the ISSGAP soils group. Specifications, logistics, safety, data handling & analysis are integral parts of her work, though she is happily distracted by the possibilities of discovering lost cities, hillwalking 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 over 15 years' experience in the heritage sector, Daniel has a diverse portfolio of skills. Here he ensures that geophysical work within the heritage sector is well grounded in the archaeology. His spare time includes much running up mountains	
Alexandra Gerea, MSc, BSc, PhD Candidate	**Geophysical Processor & Analyst**
Alexandra has a BSc in Geophysics and an MSc in Applied Geo-biology and started 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. Two years ago she found a passion for electronics and started building different devices including intelligent gardening systems and coding in Python.	



KCP191 Kings Cliffe, Northamptonshire
DWG 01 Site Location

Orthographic Scale: 1:10000 @ A4 Spatial Units: Meter. Do not scale off this drawing

TIGERGEO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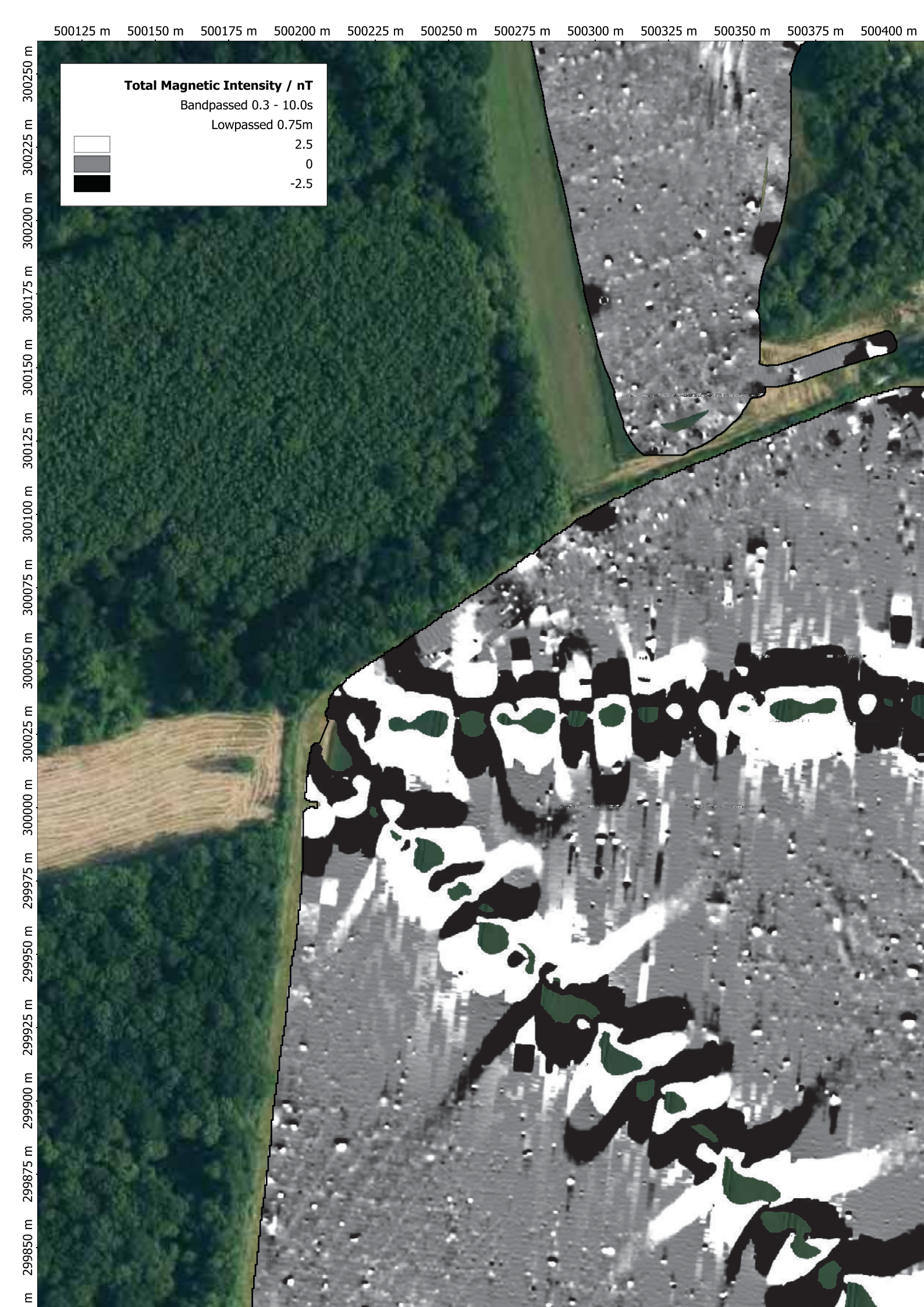
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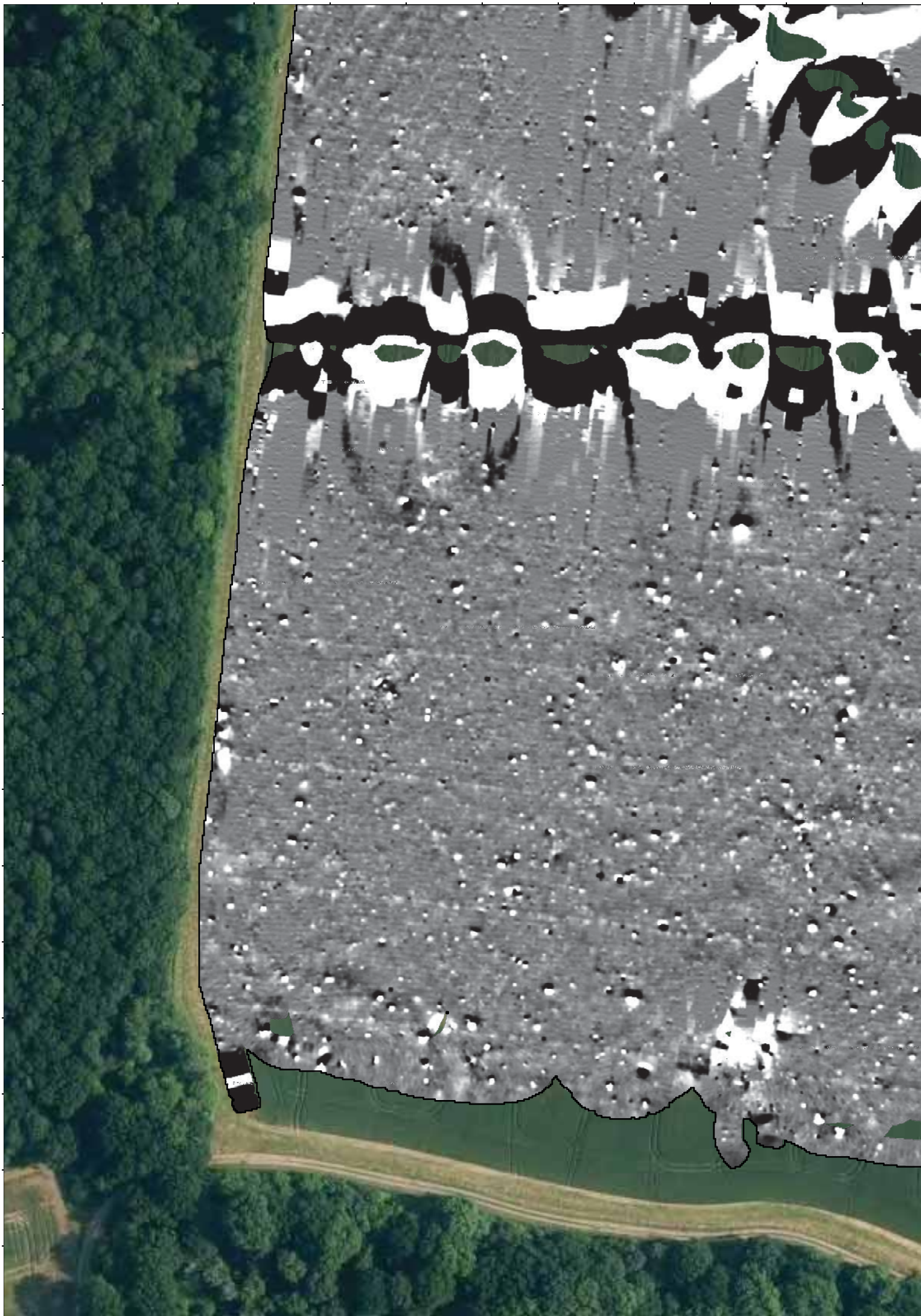
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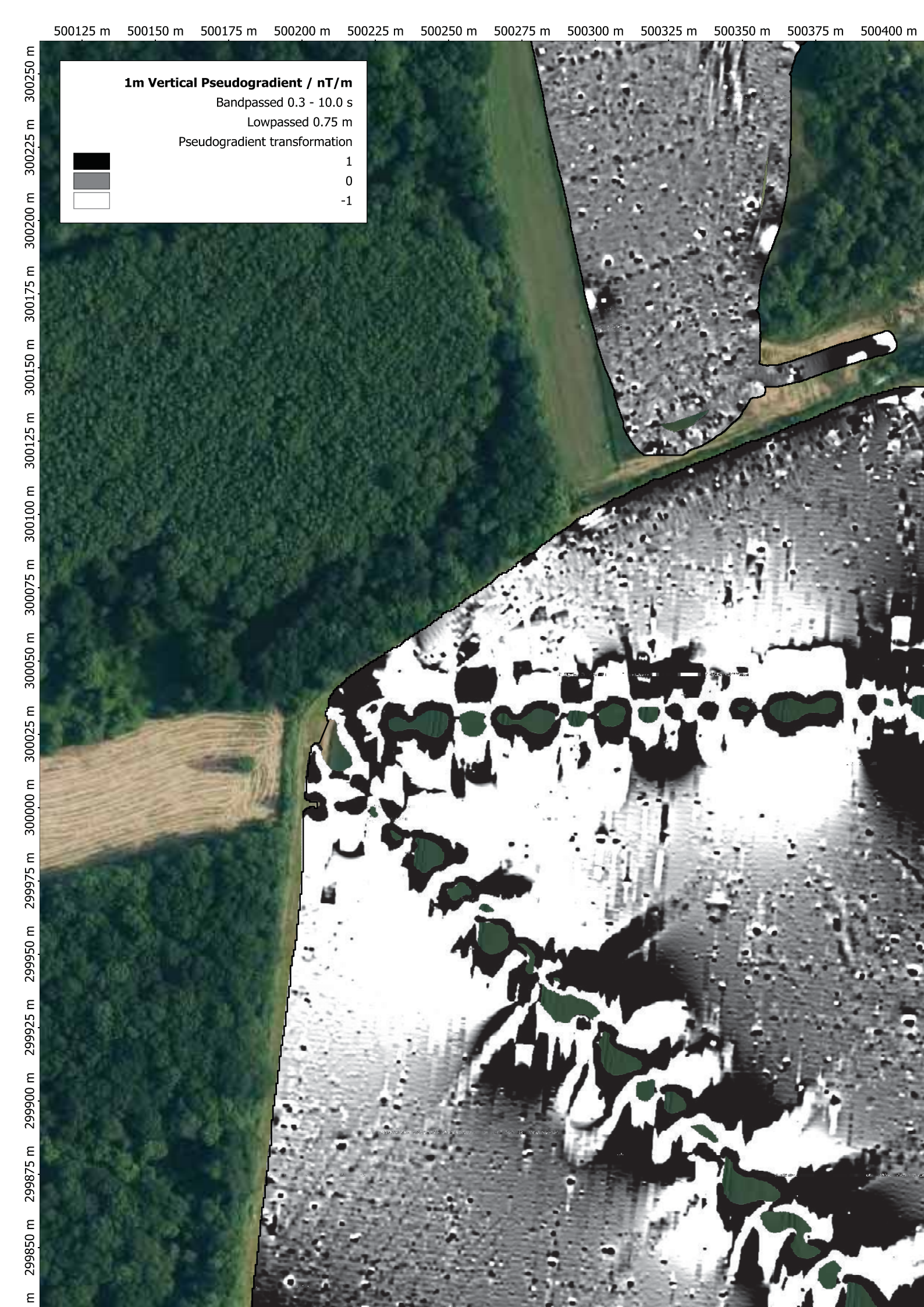
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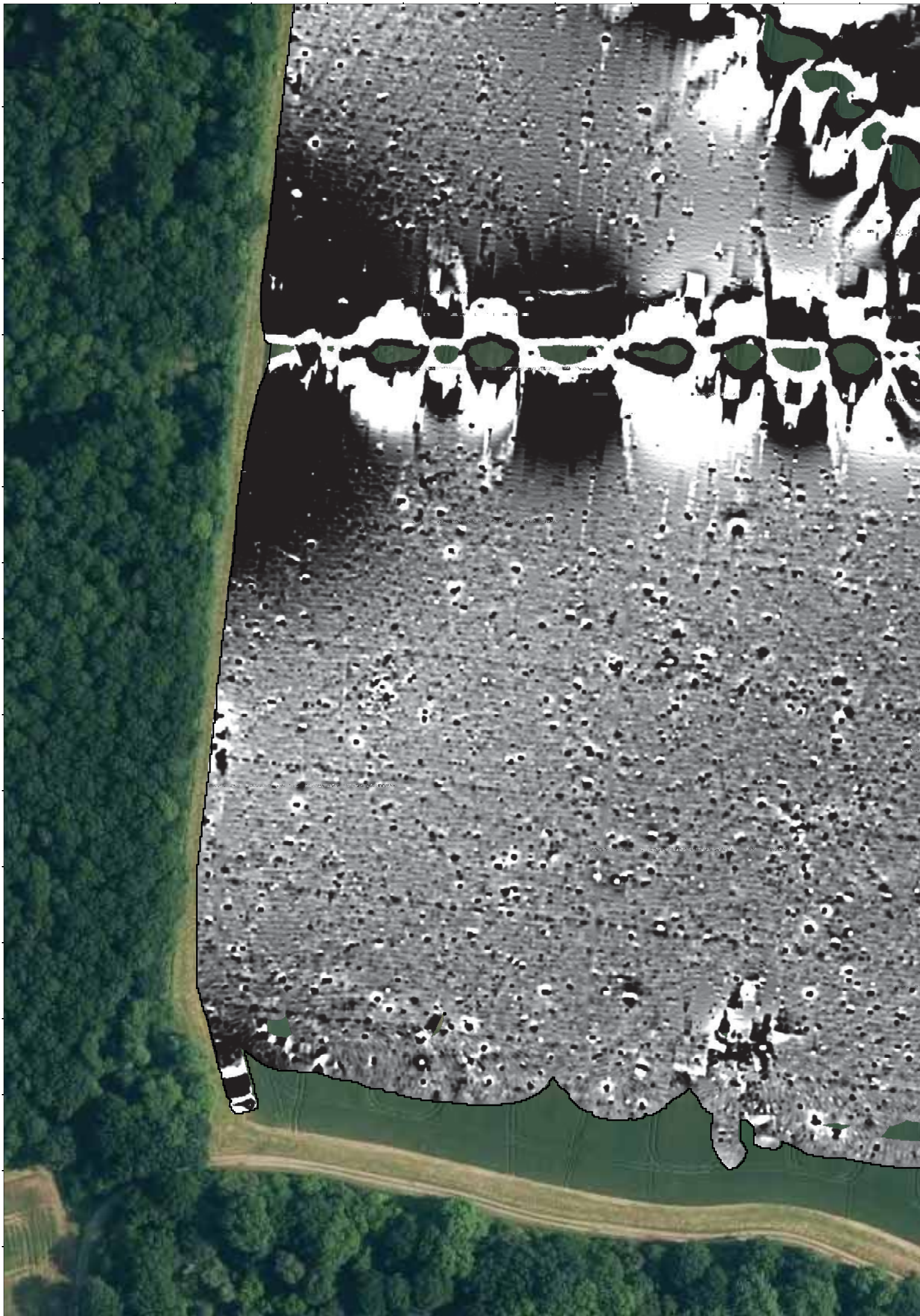
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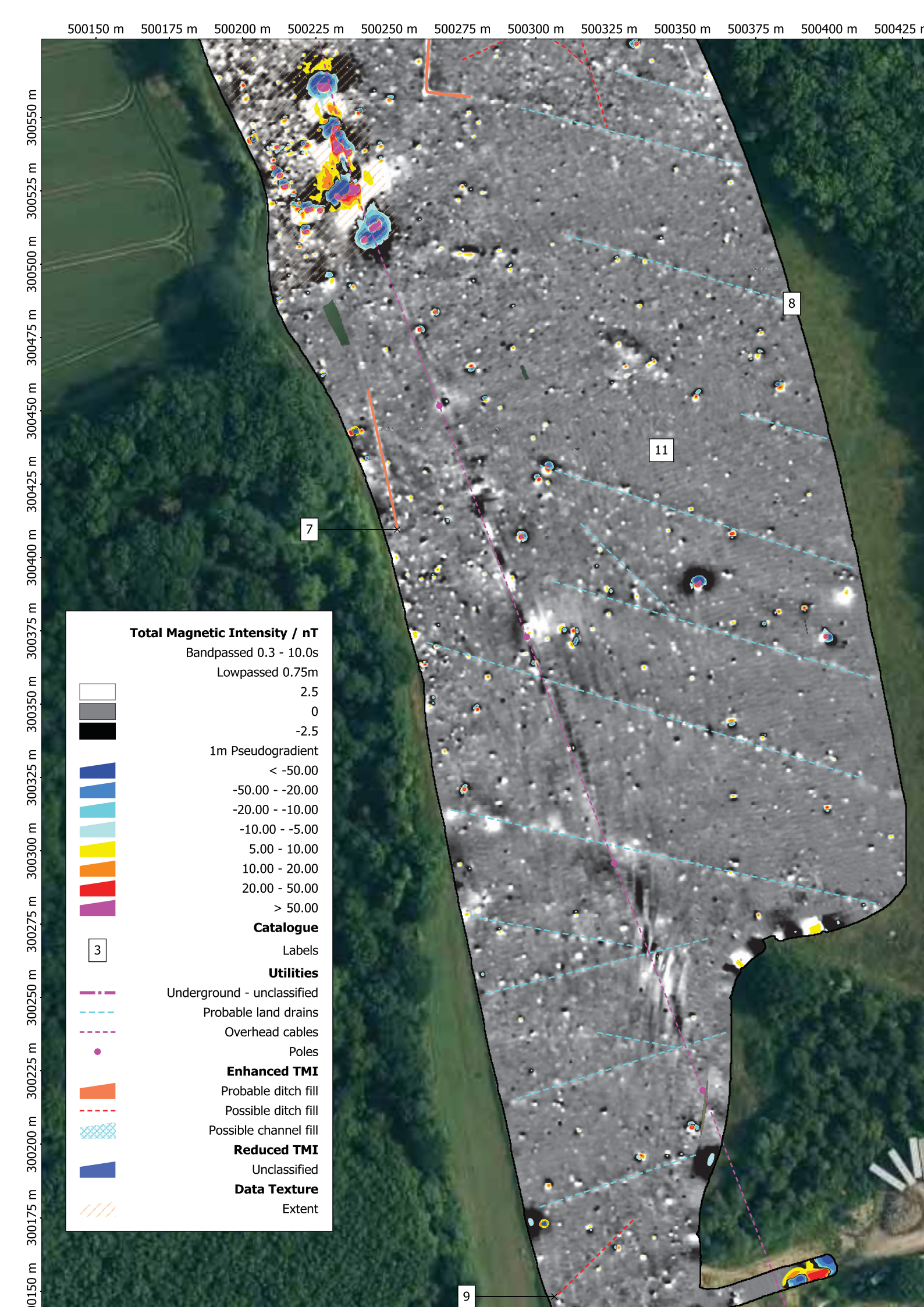
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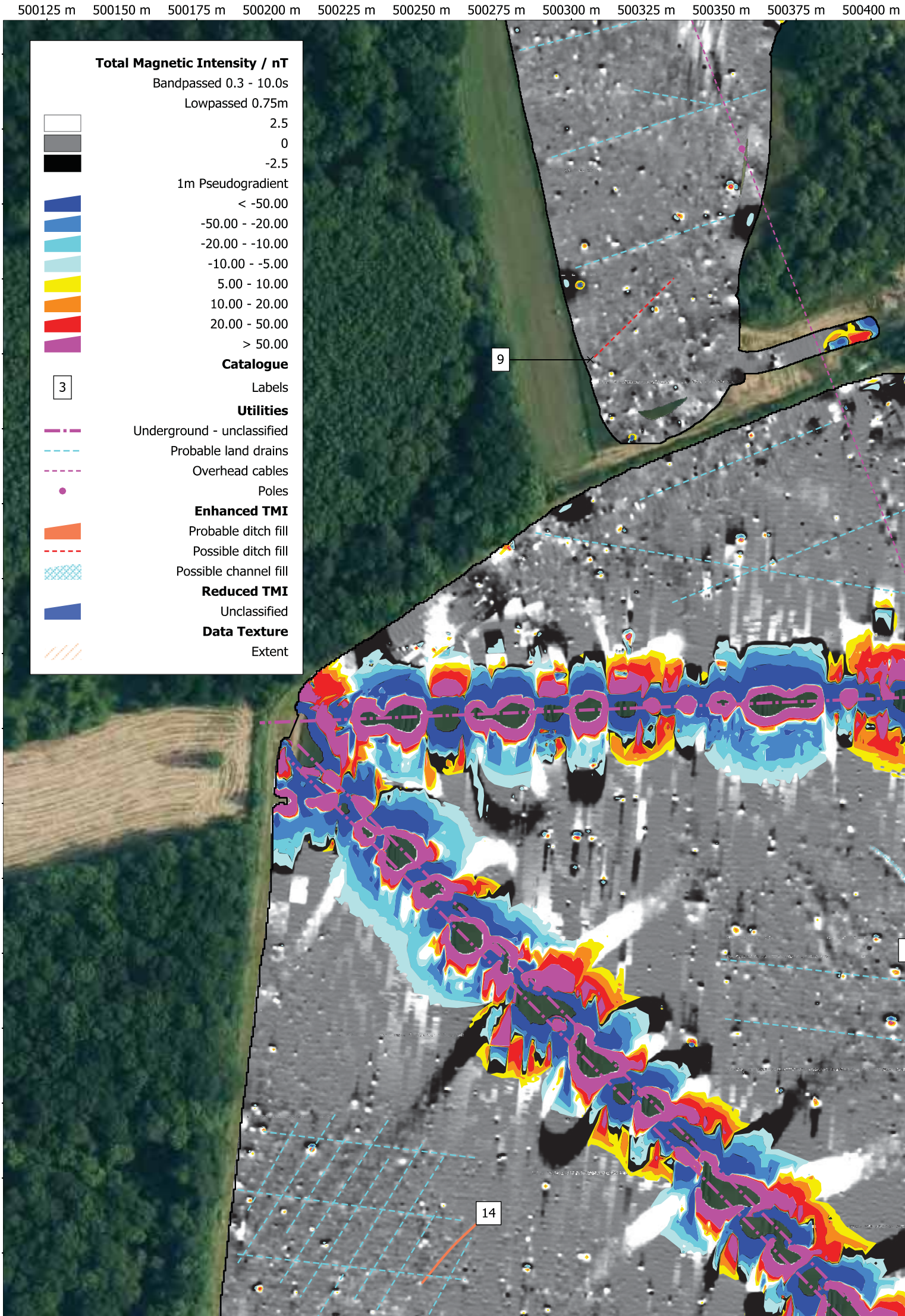
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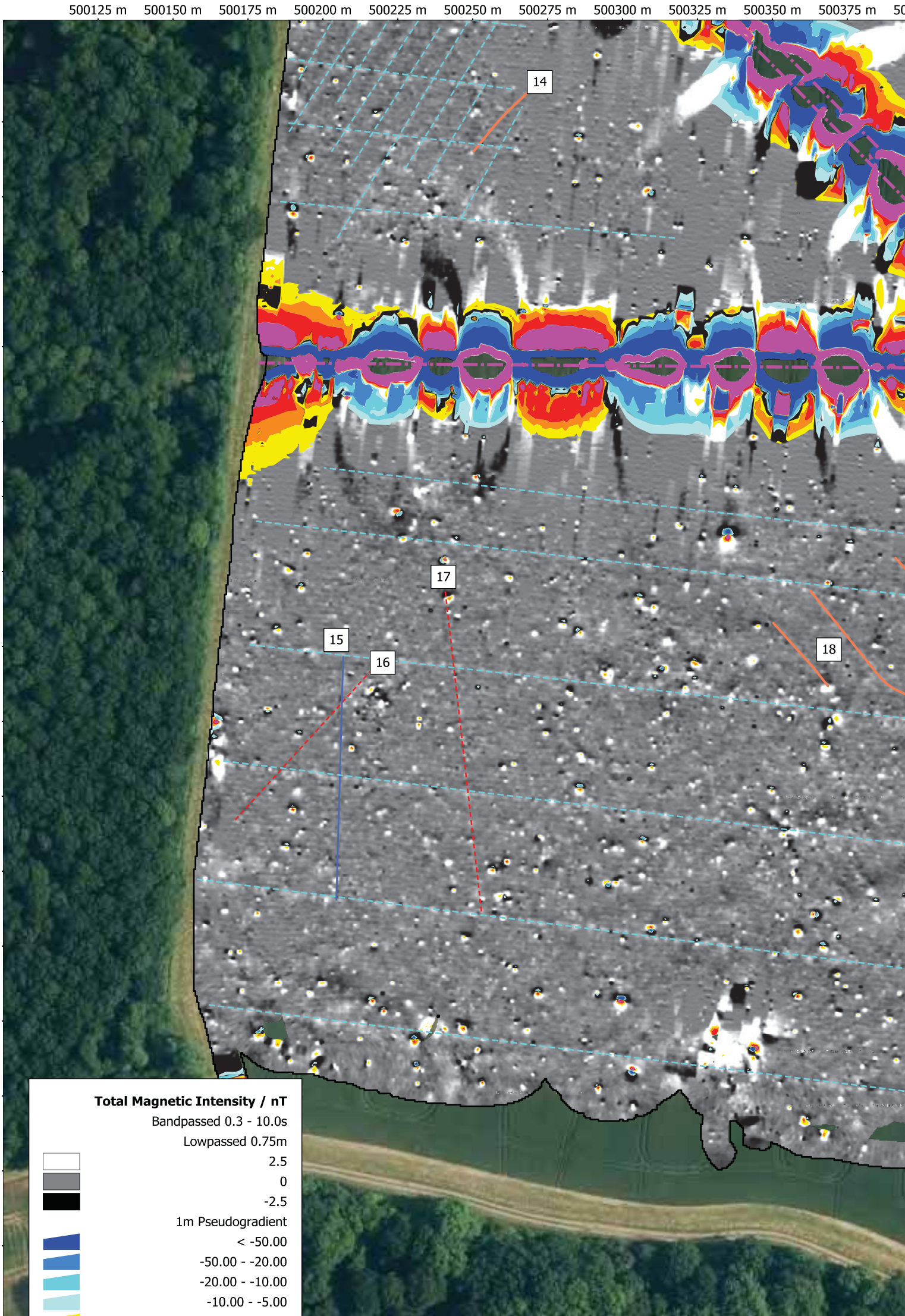
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Appendix D – Trial Trenching WSI

Appendix E – Trial-trenching Report

Archaeological Evaluation at East Northants Resource Management Facility Proposed Extension Northamptonshire October 2020

Report No. 20/076

Author: Camilla Collins

Illustrator: Olly Dindol

Project Manager: Paul Thompson
Site Code: ENN109989
NGR: TL 00308 99890

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Archaeological Evaluation at East Northants Resource Management Facility Proposed Extension Northamptonshire October 2020

Accession number: ENN109989

Report No.: 20/076

Project Manager: Paul Thompson

Quality control and sign off:

Issue No.	Date approved:	Checked by:	Verified by:	Approved by:	Reason for Issue:
1	18/12/2020	R Clare	C Finn	P Thompson	Draft for client review
2	25/11/202			C. Collins	Draft for NCC review

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Illustrator: Olly Dindol

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Illustrations:	Olly Dindol BSc
Pottery:	Adam Sutton BA MA PhD
Animal bone and environmental processing:	Sander Alerts BA MSc

OASIS REPORT FORM

PROJECT DETAILS	**OASIS No: molanort1- 408127**	
Project title	Archaeological Evaluation at East Northants Resource Management Facility Proposed Extension, Northamptonshire	
Short summary	MOLA Northampton was commissioned by Andrew Josephs Associates to undertake a programme of archaeological evaluation at East Northants Resource Management Facility Proposed Extension, Kings Cliffe, Northamptonshire. The evaluation comprised the excavation of fifty 50m x 1.8m trial trenches. The results of the evaluation indicated low levels of agricultural activity concentrated in two distinct areas of the site. In one area, evidence was found for two ditches which may form part of a larger late Roman enclosure. This enclosure was in use for a relatively short period, perhaps for stock management. Potential evidence for small-scale charcoal production was also encountered, though the date of this activity remains unknown.	
Project type	Evaluation	
Site status	Undesignated	
Previous work	Unknown	
Current land use	Arable land	
Development type	Waste disposal	
Future work	Unknown	
Monument type/period	Roman enclosure ditches and pit; undated ditches, gullies and pits	
Significant finds	Pottery (AD 120-410)	
PROJECT LOCATION		
County	Northamptonshire	
Site address	East Northants Resource Management Facility Proposed Extension	
Postcode	PE8 6XX	
OS coordinates	TL 00308 99890	
Area (sq m/ha)	29.16ha	
Height aOD	87m to 90m aOD	
PROJECT CREATORS		
Organisation	MOLA Northampton	
Project Brief originator	Lesley-Ann Mather, Archaeological Advisor, Northamptonshire County Council	
Project Design originator	MOLA Northampton	
Project Director/ Manager	Paul Thompson	
Project Supervisor	Alex Shipley	
Sponsor or funding body	Andrew Josephs Associates	
PROJECT DATE		
Start date (dd-mm-yyyy)	19-10-2020	
End date (dd-mm-yyyy)	30-10-2020	
ARCHIVES	Location (Accession no.)	Content
Physical	ENN109989 Northamptonshire Archaeological Resource Centre	N/A
Paper		Context Sheets, Registers, Drawings
Digital	ADS	Digital photos, PDF report, Database, GIS
BIBLIOGRAPHY	Journal/monograph or unpublished MOLA report	
Title	Archaeological Evaluation at East Northants Resource Management Facility Proposed Extension, Northamptonshire	
Serial title & volume	MOLA Northampton Reports, 20/076	
Author(s)	Camilla Collins	
Page numbers	57	
Date	16-11-2020	

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Archaeological Evaluation at East Northants Resource Management Facility Proposed Extension Northamptonshire October to November 2020

ABSTRACT

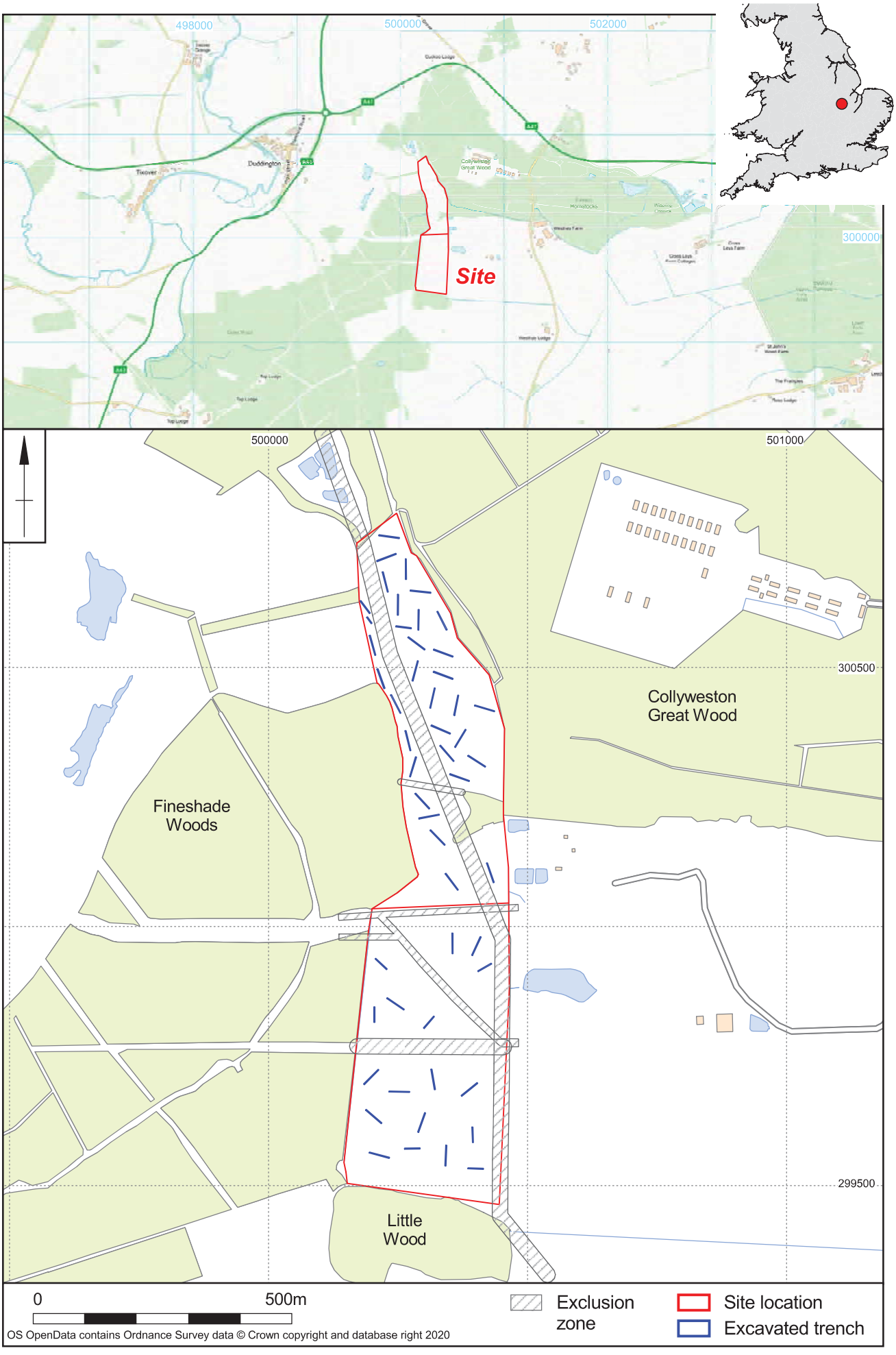
MOLA Northampton was commissioned by Andrew Josephs Associates to undertake a programme of archaeological evaluation at East Northants Resource Management Facility Proposed Extension, Kings Cliffe, Northamptonshire. The evaluation comprised the excavation of fifty 50m x 1.8m trial trenches. The results of the evaluation indicated low levels of agricultural activity concentrated in two distinct areas of the site. In one area, evidence was found for two ditches which may form part of a larger late Roman enclosure. This enclosure was in use for a relatively short period, perhaps for stock management. Potential evidence of small-scale charcoal production was also encountered, though the date of this activity remains unknown.

1 INTRODUCTION

MOLA Northampton was commissioned by Andrew Josephs Associates to undertake a programme of archaeological trial trench evaluation at East Northants Resource Management Facility Proposed Extension, Kings Cliffe, Northamptonshire (Fig 1). The evaluation was carried out between the 19th to 30th October 2020.

The location of the proposed landfill extension lies within an area of significant archaeological potential, and thus the Northamptonshire County Council Archaeological Advisor (NCCAA) required a programme of archaeological evaluation prior to the commencement of any development works. The evaluation was designed to rapidly assess the presence/absence of archaeological remains that would be adversely impacted by the proposed works and to inform a future strategy of archaeological mitigation based on the results detailed herein.

The methodology employed by MOLA Northampton adhered to the Written Scheme of Investigation (WSI) (MOLA 2020) approved by the NCCAA in accordance with current best archaeological practice as defined by the Chartered Institute for Archaeology's *Code of Conduct* (2019a) and *Standard and Guidance documents for archaeological field evaluation* (CIfA 2014a). All works were conducted in accordance with the procedural documents of Historic England including *Management of Research Projects in the Historic Environmen*t (MoRPHE) (HE 2015).



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Site location and excavated trenches Fig 1

2 BACKGROUND

2.1 Location, geology and topography

The site comprised two sub-rectangular pasture fields known as North and South Fields. Mature woodland surrounded the site to the north-east, west and south sides. To the immediate east was Augean Waste Management, who are the site owners.

The British Geological Survey records the local geology of the site as Rutland Formation Argillaceous Rocks with a sedimentary bedrock of Subordinate Sandstone and Limestone (BGS 2020). No superficial deposits have been recorded. The overlying soils are classified as Soilscape 18 and are characterised as slowly permeable, seasonally wet, slightly acid but base-rich and clayey (CSAI 2020). The evaluation confirmed these underlying and overlying deposits.

The site lies between *c*83m and *c*90m above Ordnance Datum (aOD) with the highest point situated at the northern end of North Field. The site slopes southwards towards the field boundary of South Field before sloping upwards and levelling off; most of the area lies between *c*87 and *c*90 aOD.

2.2 Historical and archaeological background

The following information has been provided by the Northamptonshire Historic Environment Record (NHER) in response to a request by MOLA for data on all heritage assets within a 500m radius of the site.

Prehistoric

An area of shattered burnt stone pebbles and charcoal (HER9316/0/1) lies adjacent to the western boundary of the site. Although this feature remains undated, it is thought to probably represent evidence of prehistoric cooking.

Bronze Age

Pottery dating to the late Bronze Age or early Iron Age (HER718/1/2) was found during a trial trench evaluation conducted to the west of the site (Rayner 2002, ENN103356).

Iron Age

A possible smelting site (HER7181/1/1) lies to the far west of the site and was discovered through geophysical surveys (ENN19694, ENN104686) and a trial trench evaluation (ENN19696). Iron Age pottery, animal bone, flint flakes and daub were all found within a clay deposit with overlay a layer of limestone fragments with a burnt area at the centre (Freke 1998).

Roman

A Roman temple complex (HER2868/1) is situated close to the north-east of the site at Collyweston Great Wood. It comprises several phases of construction and includes hexagonal and octagonal stone buildings with additional structures probably positioned nearby (Knocker 1965).

Saxon/Early Medieval

There are no known remains of Saxon date within a 1km radius of the site.

Medieval

Kings Cliffe is listed as Cliffe in the Domesday Book of 1086. The site probably lay within the manor of Duddington at this time, which is recorded as having land for 8 ploughs, 10 acres of meadow, 1 league of woodland, 6 furlongs of mixed measures and a mill (Powell-Smith 2020).

A probable pond (MNN168062) and ridge and furrow (MNN166670) lies to the west of the site and further ridge and furrow (HER9172/0/24) has been identified further to the southwest of the area.

Collyweston Great Wood (HER6585) lies immediately to the north-east of the site. It is present on the Collyweston Enclosure map of 1841 but may have medieval origins.

Post-medieval

The precinct of Westhay (HER9152/0/2) is an area of land noted on the Collyweston Inclosure map of 1841 which lies in the centre of the site. 'The Short' (HER9173/0/1) is also located on the map within the site.

A probable former field boundary (HER9173/0/7) lies within the southern half of the site and was identified through aerial photography as a footpath, although it is illustrated on the First Edition Ordnance Survey maps of the 1880s and maps of the 1950s as a field boundary. Possible charcoal-burning platforms (HER9686/1) are located within the southern half of the site and were identified through aerial photography. Similar platforms are also recorded to the south-east (HER9686/1/1).

A possible trackway (HER9173/0/8) lies to the east of the site. It was formerly interpreted as an Iron Age or Roman trackway through aerial photography. However, the route appears on a woodland map of 1815.

Modern

A remote munitions stores (HER8678/1/6) lies to the north-east of the site within Collyweston Great Wood. It was probably associated with RAF Wittering, which lies further to the north-east.

Undated

An undated pit (HER2894/0/1) was found during works for the Wing to Peterborough Pipeline route. It appeared to contain evidence of burning at the edges and contained dense charcoal deposits (Wall 1999).

3 AIMS AND OBJECTIVES

3.1 Project aims

The evaluation aimed to recover information to assist in making future development and planning decisions, specifically:

- Record evidence for the location, extent, nature and date of any archaeological features or deposits that may be present, and;
- Establish the integrity and state of preservation of any archaeological features or deposits that may be present.
- Recover artefacts to assist in the development of type series within the region.
- Produce a report that details the results in sufficient detail to inform a future mitigation strategy for the proposed development.

3.2 Research framework

All work has been undertaken within the priorities established by the East Midlands Historic Environment Research Framework (EMHERF), which are outlined in the *East Midlands Heritage and Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (Knight *et al* 2012). Any evidence uncovered by the evaluation that has the potential to significantly contribute to a research question raised by the framework may, at the appropriate time, be submitted to the agenda via the EMHERF Interactive Digital Resource commenting facility. This allows for the research framework to develop over time and remain relevant.

The following research questions are of particular relevance to this project:

5. Roman

5.4.1 How did the Conquest impact upon rural settlements and landscapes?

5.5.4 Can we chart more closely the processes of agricultural intensification and expansion and the development of field systems?

4 METHODOLOGY

The evaluation comprised the excavation of fifty evenly distributed trial trenches, all of which measured 1.8m in width (Fig 2). In the North Field, there were 27 trenches measuring 40m and two trenches measuring 30m in length. In the South Field, there were 13 trenches measuring 40m and eight trenches measuring 30m in length. The rationale behind the placement of the trenches was informed by the results of a geophysical survey undertaken by Tigergeo (Roseveare 2020). Prospective anomalies identified by the survey were targeted during the evaluation, in addition to so-called 'blank' areas where no anomalies were recorded. A number of services cross the site and stand-off from these was required by the statutory undertakers.

The trenches were mechanically excavated, under the supervision of the MOLA Supervisor, to the first archaeologically significant horizon. In the absence of archaeological features, excavation was to the depth of the natural substrate. The machined surface was cleaned to sufficiently enhance the definition of archaeological remains where encountered.

Archaeological remains pre-dating the early modern period were further characterised through means of hand excavation. All archaeological deposits, features and artefacts encountered during the investigation were fully recorded in accordance with standard MOLA procedures (MOLA 2014). All archaeological features were given a separate context number. Deposits were described on *pro-forma* trench logs and record sheets.

Archaeological features were plotted on hand drawn trench plans of individual trenches at a scale of 1:50. Sections or profiles through features were drawn at a scale of 1:10 or 1:20. All levels were related to Ordnance Datum.

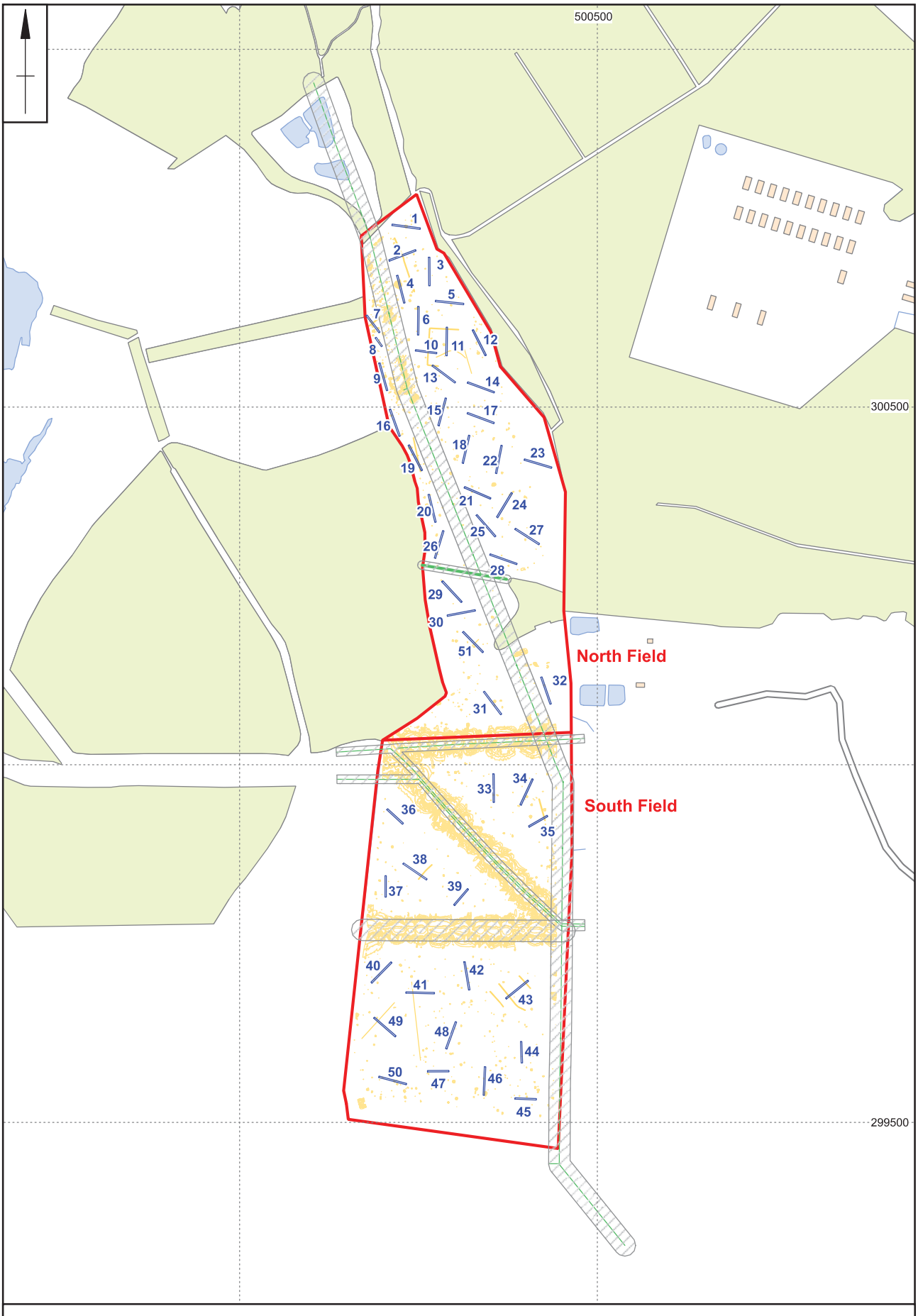
A photographic record was maintained by high resolution digital SLR photography exceeding 12 megapixels. Overall images of the site were taken prior to excavation and following the backfilling of all trenches.

Artefacts were collected by hand and received the appropriate care prior to removal from site (CIfA 2014c; Walker 1990; Watkinson and Neal 2001). All finds were cleaned, marked, sorted and analysed in accordance with the approved recording system which followed the practices and standards described in *Preparation of Archaeological Archives; Selection, Retention and Dispersal of Archaeological Collections* (Society of Museum Archaeologists (SMA) 1993), *Archaeological Archives: A Guide to best practice in creation, compilation, transfer and curation*

(Brown 2011) and those of the receiving county repository (Donnelly-Symes 2020). Digital data has been produced, handled and stored in compliance with the Data Management Plan appended to the WSI (MOLA 2020). The digital archive will be deposited with a CoreTrustSeal repository (i.e. ADS).

Samples were taken for environmental analysis from suitable contexts, which following the guidance for sampling as outlined by Historic England (Campbell *et al* 2015; Dobney *et al* 1992; Murphy and Wiltshire 1994).

The works were carried out in accordance with the approved Written Scheme of Investigation (WSI) (MOLA 2020), as well as with national standards given by the Chartered Institute for Archaeologists' *Code of Conduct* (2014b) and *Standard and Guidance for Archaeological Excavation* (CIfA 2014a), as well as the Historic England guidance document *MoRPHE* (HE 2015).



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Trench plan of site Fig 2

5 EXCAVATION RESULTS

5.1 General stratigraphy

The geological substrate was encountered at a depth of 0.2m to 0.4m below the existing ground level and comprised a number of highly variable formations, including: mixed yellow and white chalky clay and limestone (as observed in Trenches 1, 3, 4, 6, 10, 11); mid yellow orange silt with limestone and chalk (in Trenches 5, 14, 17); light orange brown silty clay (in Trench 18); mid brown limestone brash with orange silt (in Trench 19); mid to light blue grey clay (in Trenches 20-30); orange yellow clay (Trenches 31-50); or a combination of the above (in Trenches 2, 7, 8, 9, 12, 13, 15, 16 19). Sealing the geological substrate in Trenches 20 and 26 was a sterile colluvial deposit of mid orange brown silty clay which measured 0.1m to 0.15m in depth, whilst in Trenches 1, 9 and 13, the geological substrate was overlain by a mid-brown silty loam subsoil which measured between 0.1m and 0.18m in depth. Completing the general stratigraphic sequence was dark grey brown silty loam topsoil, which measured between 0.18m to 0.42m in depth and was consistent across the site.

5.2 Excavated evidence

The evaluation established that features of archaeological interest were concentrated in two distinct areas of the site: the northern half of North Field (Trenches 2, 7, 10, 11, 12, 13, 14 and 17, Fig 3 and 4) and the north-eastern extent of South Field (Trenches 32, 33 and 35, Fig 5). The only exception was Trench 28 which contained archaeological features but was located towards the south-eastern corner of North Field (Fig 4).

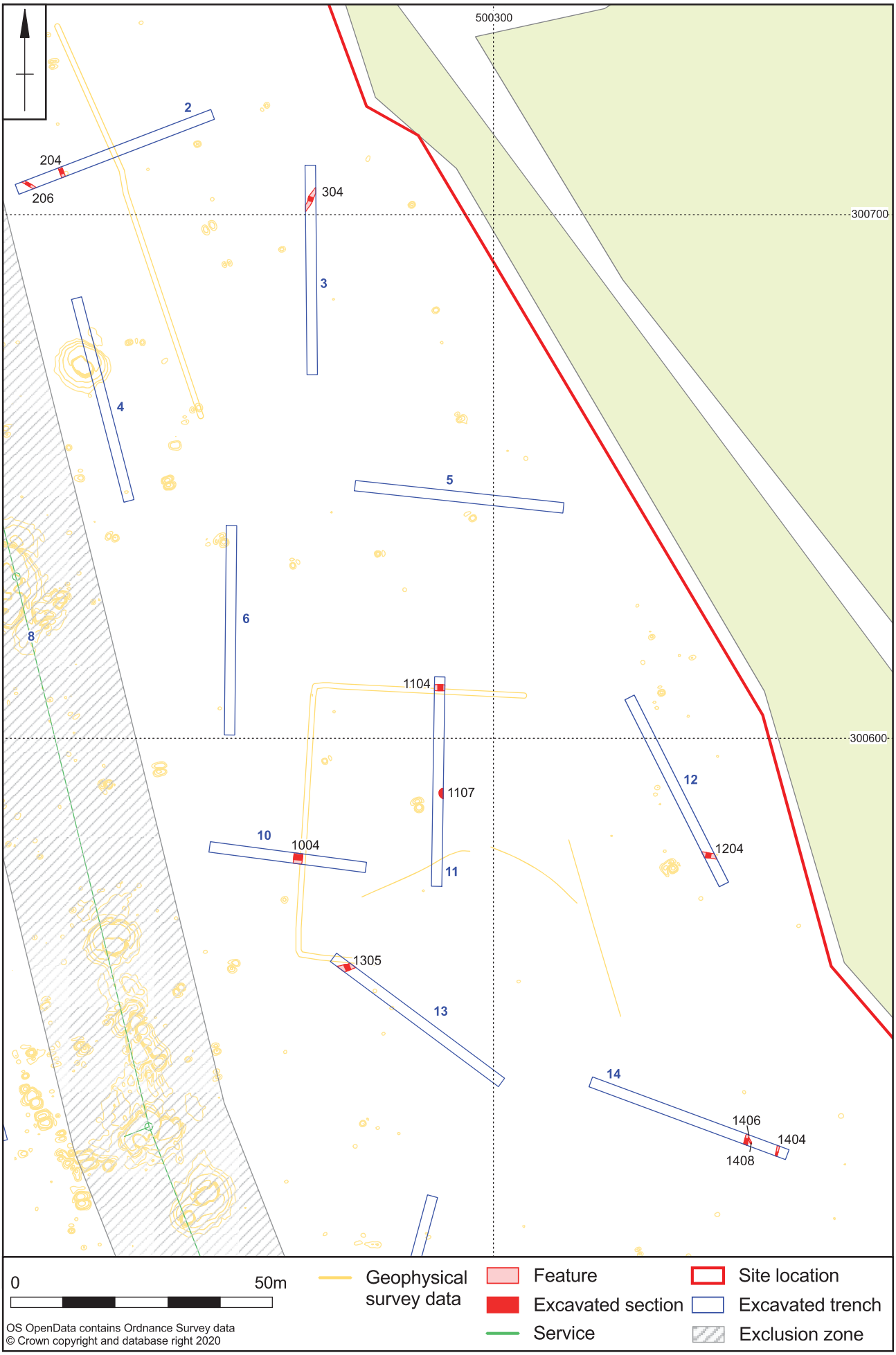
Artefactual evidence has been used where possible to clarify the chronological sequence of the site. In the absence of datable material, archaeological remains have been sub-divided into feature types to enable a more in-depth discussion of the site's formation process and specific activities undertaken.

5.2.1 Roman enclosure

Ditches

Two ditches thought to form part of a square enclosure were encountered during the evaluation and confirmed the results of the geophysical survey (Fig 6). This comprised ditches [1004] and [1104], which formed the eastern and southern axes of the enclosure respectively (Fig 5). Ditch [1004] was broadly orientated north to south and featured an asymmetrical profile created by a sharp eastern edge and gently sloping western side with a flat base. It measured 1.3m in width and 0.27m in depth and contained a single fill (1003) of softly compacted dark mottled brownish grey silty clay with frequent inclusions of small stones and charcoal.

Ditch [1104] was aligned east to west and featured an identical profile to [1004]. It measured 1.4m in width and 0.3m in depth and it contained two distinct fills, the earliest of which was composed of firmly compacted light yellow silt and decayed limestone (1109). Sealing (1109) was an upper fill (1103) of firmly compacted light brown sandy clay with frequent inclusions of large limestone fragments. Finds recovered from fills (1003) and (1103) include animal bone and sherds of pottery, which indicate that both ditches are late Roman in date.



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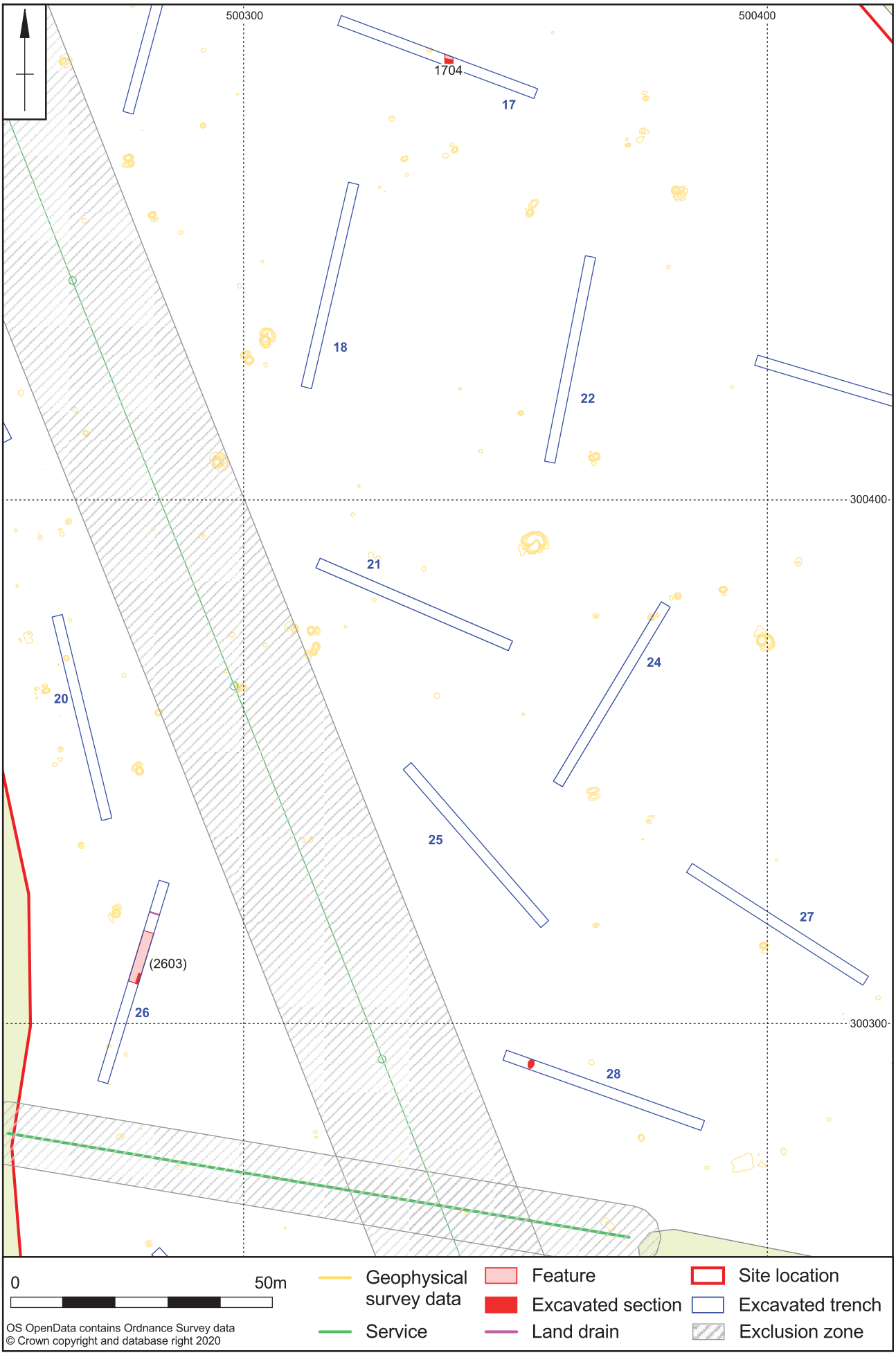
Plan of trenches 2, 10, 11, 12, 13 and 14 Fig 3



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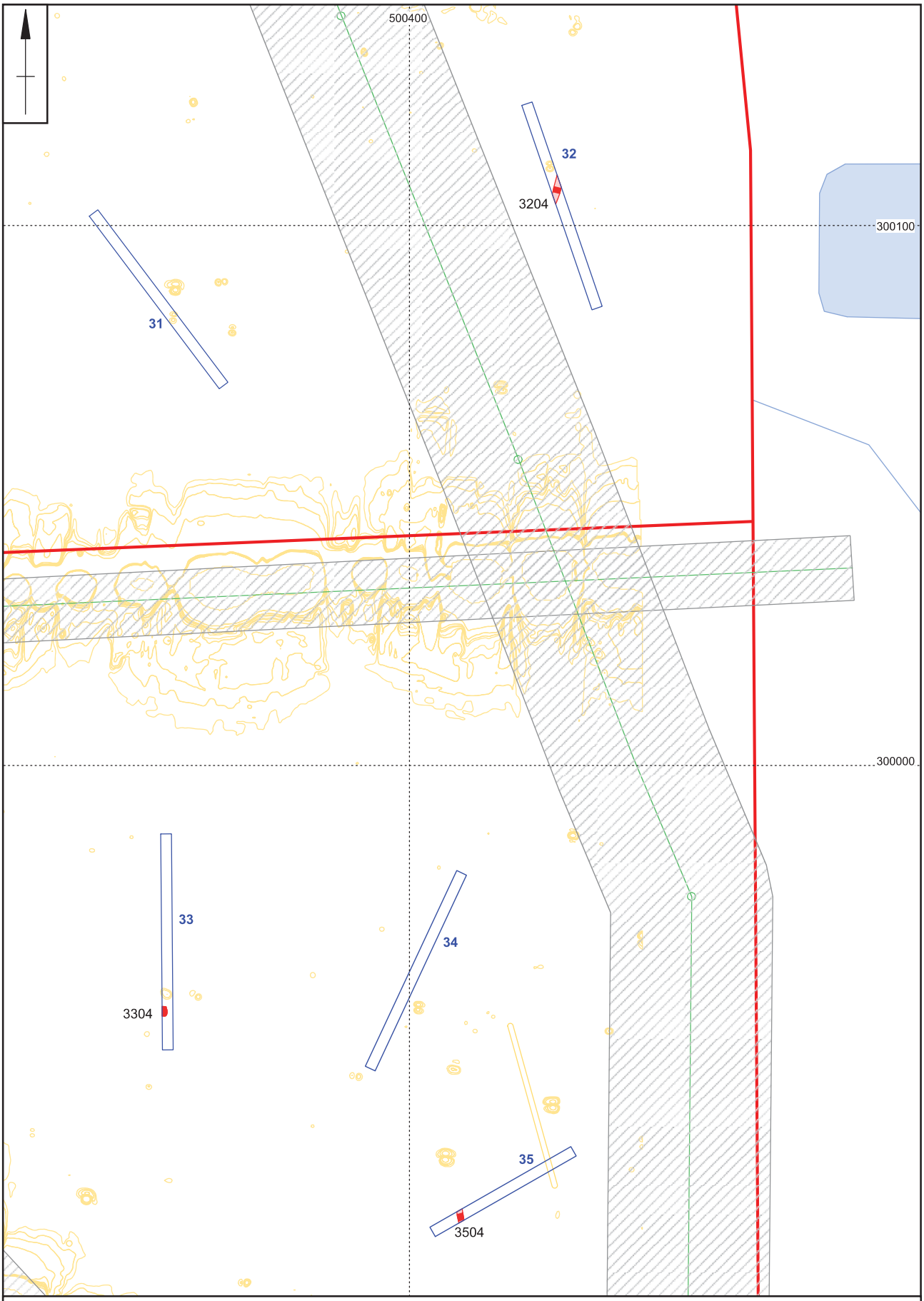
Plan of trenches 17, 26 and 28 Fig 4



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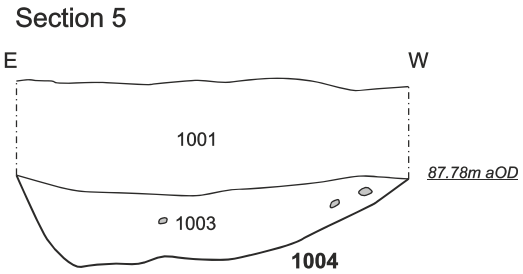
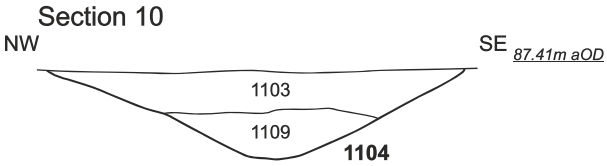
Plan of trenches 32, 33 and 35 Fig 5



Ditch 1004, looking south



Ditch 1104, looking east

Scale 1:25

Sections and photographs of ditches 1004 and 1104 Fig 6

Pit

Pit [1107], positioned to the south of contemporary ditch [1104], was partially revealed during the evaluation (Fig 7). Measuring 2m in width and in excess of 0.34m in depth, this pit [1107] was sub-circular in shape with steep sides (Fig 6). The length and depth of this pit could not be established within the confines of the evaluation, as it extended beyond the western limit of the trench and due to the current high level of the water table. The pit [1107] contained two very similar fills (1105) and (1106) of moderately compact dark yellowish grey silt thought to represent the erosion of the feature's edges. Sealing these two primary fills, and obscuring the relationship between the two, was a deliberate backfill (1108) of moderately compact dark grey silty clay with frequent inclusions of small rounded stones and a large quantity of charcoal.

5.2.2 Undated

Ditches

A series of undated ditches were identified across the site (Fig 8). Ditch [204] was aligned north-west to south-east and exhibited an asymmetrical U-shaped profile with moderately steep sides and a concave base. It measured 0.75m in width and 0.23m in depth, and it contained a single fill (203) of moderately compacted mid brown silt.

Ditch [304] was aligned north-east to south-west and exhibited an asymmetrical profile with a steep south-east side and a gently sloping north-west side. The base of the feature was flat. Ditch [304] measured 0.91m in width and 0.26m in depth, and contained a single fill (303) of friable mid to light orange brown clay silt.

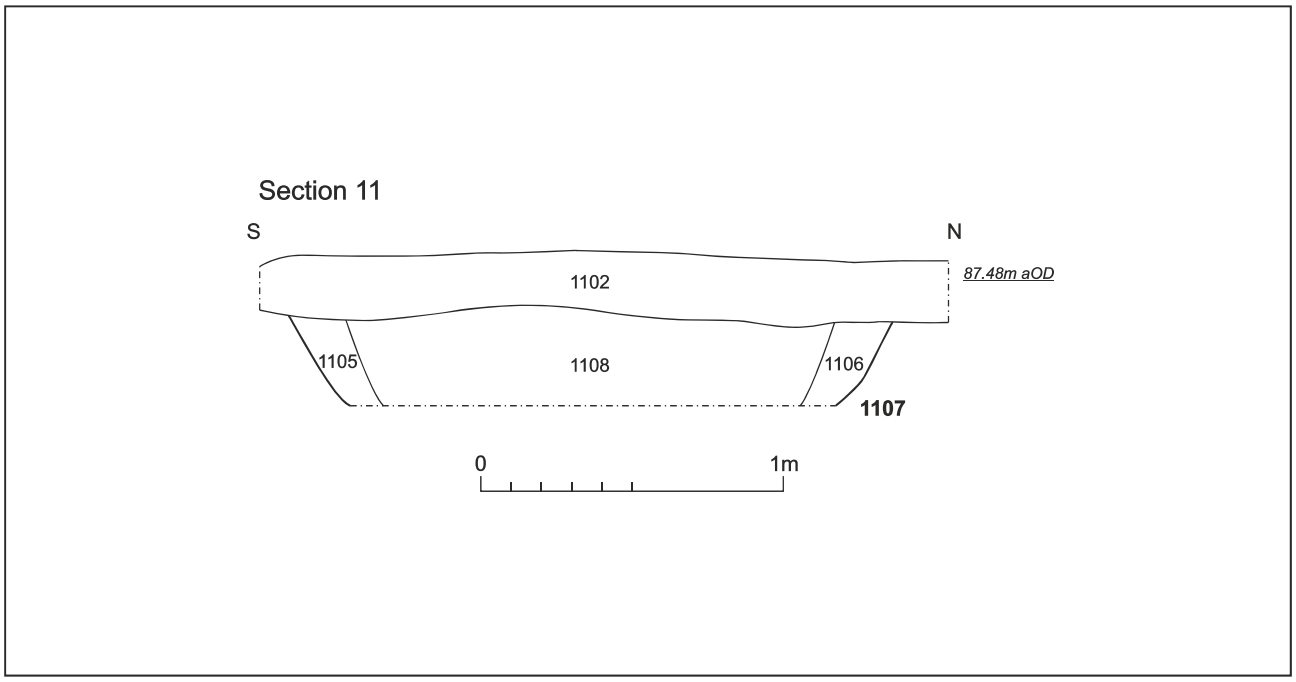
Ditch [1204] featured an elongated U-shaped profile with steep sides and a flat base. It measured 1m in width and 0.2m in depth and it was aligned broadly north-west to south-east. It contained a single fill (1203) of friable mid greyish brown silty clay with inclusions of manganese, charcoal, small pebbles and limestone.

A ditch [1305], aligned east to west, was encountered towards the northern extent of Trench 13. Ditch [1305] exhibited steep sides, a concave base and a symmetrical U-shaped profile. It measured 1.4m in width and 0.35m in depth. Two distinct fills were recorded: a basal fill (1304) of moderately compacted mid brownish grey silty clay measuring 0.13m in depth; and an upper fill (1303) of moderately compact dark grey silty clay measuring 0.22m in depth. Both fills had moderately frequent inclusions of small rounded stones, and fill (1303) also contained charcoal and animal bone.

Ditch [1406] extended across the centre of Trench 14 on a north to south alignment and truncated a small gully [1408]. The ditch [1406] was 1m in width and 0.24m in depth and it had an elongated U-shaped profile with gradually sloping sides and a flat base. It contained a single fill (1405) of firmly compacted mid greyish blue silty clay. This produced an assemblage of molluscs from both semi-aquatic and terrestrial species, indicating a mixed environment in the vicinity.

Ditch [1704] was aligned north to south and had a U-shaped profile with sloping sides and a concave base. It measured 1.6m in width and 0.25m in depth and it contained a single fill (1703) of firmly compacted mid orange grey silty clay.

Ditch [3204] measured 1.2m in width and 0.39m in depth (Fig 4). Orientated north-east to south-west, this ditch exhibited a U-shaped profile with steep sides and a flat base. Contained within [3204] was a single fill (3203) of moderately compact mid yellowish grey clay.



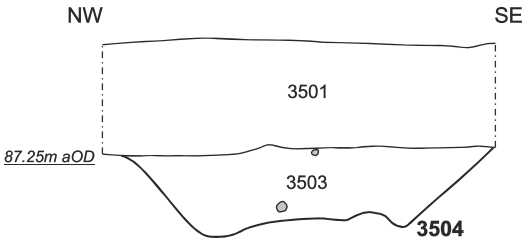
Scale 1:25

Section pit 1107 Fig 7

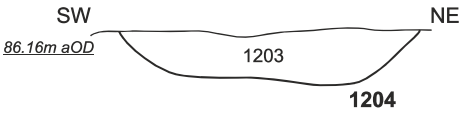
Section 1

Ditch 3204, looking south

Section 2



Section 9



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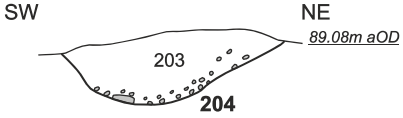
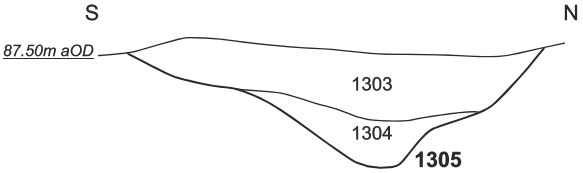
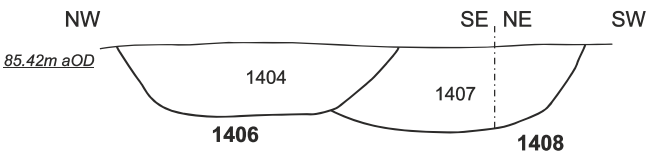


Ditch 204, looking north

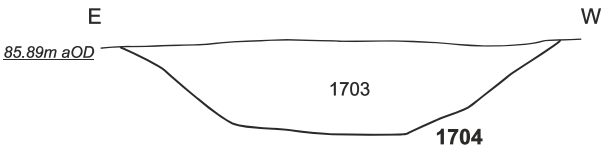
Section 13



Section 14



Section 15



Scale 1:25

Sections and photographs of ditches 204, 1204, 1305, 1406, 1704, 3204 and 3504

Fig 8

Ditch [3504] was aligned north to south and exhibited a U-shaped profile with steep sides and a flat base. It measured 1.28m in width and 0.27m in depth, ditch [3504] contained a single fill (3503) of firmly compacted mid yellowish brown silt.

Gullies and pit

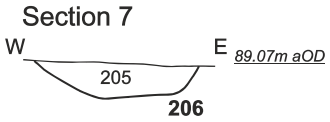
Several undated gullies and two undated pits were noted across the area (Fig 9). The first gully was located approximately 5.1m south-west of ditch [204] was a shallow gully [206] that measured 0.55m in width and 0.12m in depth. This north to south aligned feature had an elongated U-shaped profile with gently sloping sides and a slightly concave base. It contained a single homogeneous fill of mid brown silt with moderately frequent inclusions of small limestone fragments and occasional charcoal flecks.

Gully [1404] measured 0.5m in width, 0.14m in depth and was aligned broadly north to south. This gully had a U-shaped profile with gently sloping sides and a concave base. A single fill (1403) of friable mid brown grey clay with occasional inclusions of shell and manganese was recorded.

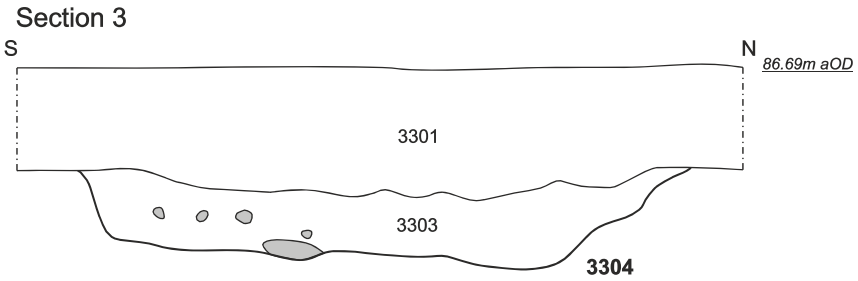
The terminus of a north-west to south-east aligned gully [1408] was encountered to the north-west of gully [1404]. It was 0.5m in width and 0.3m in depth, with an elongated U-shaped profile, gradually sloping sides and a concave base. This gully terminus contained a single fill (1407) of firmly compacted light grey with patches of orange silty clay. It was truncated by ditch [1406].

A possible charcoal-burning pit [3304] was identified within the southern half of trench 33. Pit [3304] was sub-circular in shape and measured 1m in width and 0.25m in depth. It had a U-shaped profile with sloping sides and a flat base. A single fill (3303) of firmly compacted mid grey silty clay with frequent charcoal inclusions was encountered. Discolouration at the pit interface with the natural substrate in addition to several patches of burnt material within the fill were indicative of in situ burning.

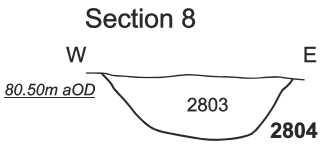
Lastly, a pit [2804] was identified in Trench 28. It was oval in shape and it had a U-shaped profile with steep sides and a concave base. It was 1.6m in length, 0.63m in width and 0.22m in depth, with a single fill (2803) of firmly compacted mid to dark grey clay.

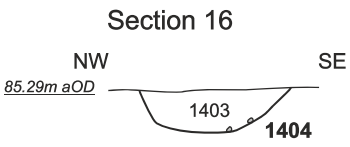


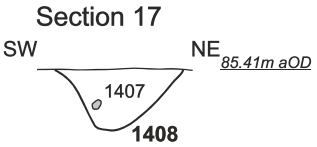
Gully 206, looking north-west

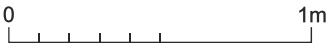


Pit 3304, looking west









Scale 1:25

Sections and photographs of gullies 206, 1404 and 1408 and pits 2804 and 3304

Fig 9

6 THE FINDS

6.1 The pottery by Adam Sutton

A total of 30 sherds of Roman pottery weighing 521g came from three contexts in two trenches. This pottery has been recorded to the level of a 'Basic Record' as stipulated by Barclay *et al* (2016, 16-17) using fabric and form codes derived from the system under development for Iron Age and Roman Northamptonshire by MOLA Northampton. Fabric codes used can be found in Table 1 while quantification by trench and context is found in Table 2.

Table 1: Roman pottery fabrics

Fabric	Description
Shelly wares	
B	Unsourced Shelly ware
Greywares	
C	Unsourced greyware
C28	Unsourced black-reduced ware
LNV RE	Lower Nene valley greyware
Oxidised wares	
D	Unsourced oxidised ware
White wares	
D40	Unsourced white ware
LNV WH	Lower Nene Valley white ware
Colour-coated wares	
LNV CC	Lower Nene Valley colour-coated ware

All of the pottery is later Roman in date. Pottery comprises entirely of unsourced coarsewares and Lower Nene Valley wares. The groups from ditches (1003) and (1103) produced pieces datable to the later third or fourth century AD, including part of a reeded-rim mortarium in LNV WH and a bead-and-flanged bowl in LNV CC. (1108) from pit [1107] could only be relatively broadly dated but a sherd of LNV WH is suggestive of a date in the later second or third century AD. No decoration, use-wear or post-firing modifications were noted.

The main value of the assemblage is in establishing chronology, which has been done here. No further work is required, and discard is recommended.

Table 2: Quantification of Roman pottery by trench and context (C = Count; W = Weight in grams)

	B		**C**		**C28**		**D**		**D40**		**LNV CC**		**LNV RE**		**LNV WH**		**Total**		
	Ct.	Wt.(g)	Ct.	Wt.(g)	Ct.	Wt.(g)	Ct.	Wt.(g)	Ct.	Wt.(g)	Ct.	Wt.(g)	Ct.	Wt.(g)	Ct.	Wt.(g)	**Ct.**	**Wt.(g)**	**Date**
1003	-	-	-	-	-	-	1	4	-	-	2	3	-	-	1	70	**4**	**77**	AD 250-410
Total Trench 10	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**4**	**-**	**-**	**2**	**3**	**-**	**-**	**1**	**70**	**4**	**77**	-
1103	3	31	5	164	-	-	-	-	-	-	2	110	-	-	-	-	**10**	**305**	AD 300-410
1108	11	39	1	29	2	45	-	-	1	8	-	-	1	18	-	-	**16**	**139**	AD 120-300
Total Trench 11	**14**	**70**	**6**	**193**	**2**	**45**	**-**		**1**	**8**	**2**	**110**	**1**	**18**	**-**	**-**	**26**	**444**	-
Total	**14**	**70**	**6**	**193**	**2**	**45**	**1**	**4**	**1**	**8**	**4**	**113**	**1**	**18**	**1**	**70**	**30**	**521**	

6.2 The animal bone by Sander Aerts

A total of 20 fragments of heavily abraded animal bone were hand-collected from two fills. Fill (1003) of ditch [1004] produced a cattle phalanx, radius and scapula fragment, as well as an ovicaprid metacarpus. These were associated with four cattle-sized bone fragment and 10 unidentifiable mammal bone fragments. Fill (1103) of ditch [1104] produced an ovicaprid astragalus and one unidentifiable mammal bone fragment.

No further work is required on this assemblage. It is recommended to discard the materials.

6.3 The environmental analysis by Sander Alerts

Introduction and methodology statement

A total of four environmental soil samples were submitted for analysis, comprising 40 litres each. The samples were processed through bulk flotation at MOLA Northampton using a siraf tank fitted with a 500 micron nylon mesh and a 250 micron test sieve to retrieve the flots. The flots and residues were sorted using a binocular microscope with a maximum magnification of 10x. The remains were analysed using a low-power binocular microscope (Brunel MX1) with a maximum magnification of 40x.

Results

Samples were taken from ditches (1003) [1004], (1405) [1406] (3303) [3304] and from pit (1108) [1107], but produced no conclusive archaeobotanical remains. Some intrusive dewatered modern seeds were present from ditch fill (1003). Snail shells, both terrestrial and (semi)aquatic were present in all fills but were particularly abundant in ditch fill (1405). Charcoal fragments were retrieved from all fills.

Recommendations

No further work is required on this assemblage. Due to the absence of archaeobotanical remains and the limited research value of this assemblage it is recommended to discard the flots and finds.

7 DISCUSSION

The results of the evaluation signify low levels of activity at the site from the Roman period onwards. Preservation levels were consistently high across the proposed development area and most of the remains encountered did not appear to have been significantly affected by modern activities. Features of interest were primarily concentrated within the northern half of North Field and the north-eastern extent of South Field.

A sparse artefactual assemblage was recovered during the investigation, which has left the majority of the encountered archaeological features undated. The paucity of datable material has hindered understanding of the chronological progression of the site's formation and development. However, it is probable that the archaeological remains recorded represent a focus on the agricultural economy of the landscape predominantly concerning stock management.

Two ditches thought to form part of a large, square enclosure identified by the geophysical survey were excavated at the northern field (Trenches 10 and 11). The ditches [1004] and [1104] formed the eastern and southern sides of the enclosure respectively. No internal features associated with the enclosure were identified within the constraints of the evaluation. As such, it is possible that these ditches functioned as boundaries for a field system and perhaps delineated an enclosed area of formal pasture. The animal bone assemblage recovered from the fill (1003) of ditch [1104] indicates that cattle, sheep or goat are the most probable species of livestock which may have been managed within this system. Both ditches revealed no evidence of prolonged use and as such, it is probable that the enclosure was not in use for a long period of time.

Potential charcoal production was evidenced during the evaluation by pit [3304]. This feature was similar to small charcoal production pits identified at several sites in the east of England, most notably Mayton Wood (Hutton 2008; Patten 2004) and Trafford Estate, Horstead (Beers 2017) in Norfolk. As only a single feature associated with this activity was identified during the evaluation, it is probable that pit [3304] represents a very small-scale of charcoal production, possibly for domestic purposes rather than industrial. It is also likely to be indicative of a wooded environment in the immediate vicinity.

At present, the relationship between this probable enclosure and the further undated archaeological features remains unclear. It is possible that the features concentrated within the northern half of North Field may be associated with the enclosure ditches, perhaps defining land or route boundaries and providing field drainage.

The results of the evaluation identified a sparse number of archaeological features given the size of the site and have limited potential to address the research objectives detailed in the regional research agenda.

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MOLA

November 2020

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APPENDIX 1: TRENCH INVENTORY

Trench No	**Length**	**Width**	**Alignment**	
1	**50m**	**1.8m**	**East to West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
101	Topsoil	Dark grey brown silt loam	0.3m-0.32m	-
102	Subsoil	Mid brown silty loam	0.1m-0.11m	-
103	Natural	Yellow and white chalky clay and limestone	-	-

General view of Trench 1

Trench No	**Length**	**Width**	**Alignment**	
2	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
201	Topsoil	Dark grey brown silt loam	0.3m	-
202	Natural	Yellow and white chalky clay and limestone; and mid brown limestone brash	-	-
203	Fill	Fill of ditch [204], Moderately compact mid brown silt	0.75m wide 0.23m deep	-
204	Cut	Cut of ditch, north-west to south-east aligned, moderate sides, concave base	0.75m wide 0.23m deep	-
205	Fill	Fill of ditch [206], Moderately compact mid brown silt with moderate stones and occasional charcoal.	0.55m wide 0.12m deep	-
206	Cut	Cut of ditch, north to south aligned, gently sloping sides, concave base	0.55m wide 0.12m deep	-

General view of Trench 2

Trench No	**Length**	**Width**	**Alignment**	
3	**50m**	**1.8m**	**North to South**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
301	Topsoil	Dark grey brown silt loam	0.3m-0.32m	-
302	Natural	Yellow and white chalky clay and limestone	-	-
303	Fill	Fill of ditch [304], Friable mid to light orange brown clay silt	0.91m wide 0.26m deep	-
304	Cut	Cut of ditch, north-east to south-west aligned, uneven base	0.91m wide 0.26m deep	-

General view of Trench 3

Trench No	Length	Width	Alignment	
4	50m	1.8m	North to South	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
401	Topsoil	Dark grey brown silt loam	0.3m-0.32m	-
402	Natural	Yellow and white chalky clay and limestone	-	-

General view of Trench 4

Trench No	Length	Width	Alignment	
5	50m	1.8m	East to West	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
501	Topsoil	Dark grey brown silt loam	0.38m-0.4m	-
502	Natural	Yellow orange silt with limestone	-	-

General view of Trench 5

Trench No	**Length**	**Width**	**Alignment**	
6	**50m**	**1.8m**	**North-north-east to South-south-west**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
601	Topsoil	Dark grey brown silt loam	0.3m	-
602	Natural	Yellow orange silt with limestone	-	-

General view of Trench 6

Trench No	Length	Width	Alignment	
7	50m	1.8m	North-West to South-East	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
701	Topsoil	Dark grey brown silt loam	0.27m-0.34m	-
702	Natural	Limestone brash; yellow orange silt	-	-

General view of Trench 7

Trench No	Length	Width	Alignment	
8	50m	1.8m	North-East to South-West	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
801	Topsoil	Dark grey brown silt loam	0.33m-0.35m	-
802	Natural	Limestone brash; yellow orange silt	-	-

General view of Trench 8

Trench No	**Length**	**Width**	**Alignment**	
9	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
901	Topsoil	Dark grey brown silt loam	0.28m-0.35m	-
902	Natural	Limestone brash; yellow orange silt	-	-
903	Subsoil	Mid brown silty loam	0.14m-0.2m	

General view of Trench 9

Trench No	**Length**	**Width**	**Alignment**	
10	**50m**	**1.8m**	**East to West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1001	Topsoil	Dark grey brown silt loam	0.24m-0.3m	-
1002	Natural	Yellow and white chalky clay and limestone	-	-
1003	Fill	Fill of ditch [1004], Soft dark mottled brownish grey silty clay fill of ditch	1.5m wide 0.25m deep	Pottery, animal bone
1004	Cut	Cut of ditch, north to south aligned, sharp western slope, gradual eastern slope, flat base	1.5m wide 0.25m deep	-

General view of Trench 10

Trench No	**Length**	**Width**	**Alignment**	
11	**50m**	**1.8m**	**North-north-east to South-south-west**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1101	Topsoil	Dark grey brown silt loam	0.3m-0.31m	-
1102	Natural	Yellow and white chalky clay and limestone	-	-
1103	Fill	Fill of ditch [1104], Firm light brown sandy clay	1.46m wide 0.13m deep	Pottery, animal bone
1104	Cut	Cut of ditch, east to west aligned, steep western edge, gradual eastern edge, flat base	1.46m wide 0.3m deep	-
1105	Fill	Fill of pit [1107], Moderately compact, dark yellowish grey	0.3m deep	-

		silt		
1106	Fill	Fill of pit [1107], Moderately compact dark yellowish grey silt	0.3m deep	-
1107	Cut	Cut of pit, sub-circular, steep sides. Not fully excavated due to safe working depths	2m long >0.82m wide >0.34m deep	-
1108	Fill	Fill of pit [1107]Moderately compact dark grey silty clay	0.34m deep	Pottery
1109	Fill	Fill of ditch [1104], Firm light yellow silt and degraded limestone	0.7m wide 0.17m deep	-

General view of Trench 11

Trench No	**Length**	**Width**	**Alignment**	
12	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1201	Topsoil	Dark grey brown silt loam	0.3m-0.35m	-
1202	Natural	Yellow orange silt with limestone	-	-
1203	Fill	Fill of [1204], Friable mid greyish brown silty clay	1m wide 0.2m deep	-
1204	Cut	Cut of ditch, north-west to south-east aligned, flat base	1m wide 0.2m deep	-

General view of Trench 12

Trench No	**Length**	**Width**	**Alignment**	
13	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1301	Topsoil	Dark grey brown silt loam	0.18m-0.19m	-
1302	Subsoil	Mid orange brown silty clay	0.14m-0.18m	-
1303	Fill	Fill of ditch [1305], Moderately compact dark grey silty clay	0.22m deep	Animal bone
1304	Fill	Fill of ditch [1305], Moderately compact mid brownish yellow silty clay	0.13m deep	-
1305	Cut	Cut of ditch, east to west aligned, steep sides, concave base	1.4m wide 0.35m deep	-
1306	Natural	Limestone brash and light orange brown silty clay	-	-

General view of Trench 13

Trench No	**Length**	**Width**	**Alignment**	
14	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1401	Topsoil	Dark grey brown silt loam	0.3m-0.35m	-
1402	Natural	Yellow orange silty clay	-	-
1403	Fill	Fill of gully [1404], Friable mid brownish grey clay	0.5m wide 0.14m deep	-
1404	Cut	Cut of gully, north to south aligned, U-shaped profile, gently sloping sides, concave base	0.5m wide 0.14m deep	-
1405	Fill	Fill of [1406], Firm mid greyish blue silty clay	1m wide 0.24m deep	-
1406	Cut	Cut of ditch, north to south aligned, gradually sloping sides, flat base	1m wide 0.24m deep	-
1407	Fill	Fill of gully [1408], Firm light grey silty clay	0.5m wide 0.3m deep	-
1408	Cut	Cut of gully, north-west to south-east aligned, gradual sides, flat base	0.5m wide 0.3m deep	

General view of Trench 14

Trench No	**Length**	**Width**	**Alignment**	
15	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1501	Topsoil	Dark grey brown silt loam	0.28m-0.3m	-
1502	Natural	Limestone brash and light orange brown silty clay	-	-

General view of Trench 15

Trench No	Length	Width	Alignment	
16	50m	1.8m	North-West to South-East	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1601	Topsoil	Dark grey brown silt loam	0.28m-0.3m	-
1602	Natural	Limestone brash and light orange yellow silt	-	-

General view of Trench 16

Trench No	Length	Width	Alignment	
17	50m	1.8m	North-West to South-East	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1701	Topsoil	Dark grey brown silt loam	0.3m-0.36m	-
1702	Natural	Limestone brash and light orange brown silty clay	-	-
1703	Fill	Fill of [1704], Firm mid grey silty clay	1.6m wide 0.25m deep	-
1704	Cut	Cut of ditch, north to south aligned, gradually sloping sides, flat base	1.6m wide 0.25m deep	-

General view of Trench 17

Trench No	**Length**	**Width**	**Alignment**	
18	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1801	Topsoil	Dark grey brown silt loam	0.25m-0.31m	-
1802	Natural	Light orange brown silty clay	-	-

General view of Trench 18

Trench No	Length	Width	Alignment	
19	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
1901	Topsoil	Dark grey brown silt loam	0.28m-0.3m	-
1902	Natural	Limestone brash and yellow orange silt	-	-

General view of Trench 19

Trench No	Length	Width	Alignment	
20	**50m**	**1.8m**	**North to South**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2001	Topsoil	Dark grey brown silt loam	0.25m-0.38m	-
2002	Natural	Light blue grey clay	-	-
2003	Colluvium	Mid orange brown silty clay	0.15m	

General view of Trench 20

Trench No	**Length**	**Width**	**Alignment**	
21	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2101	Topsoil	Dark grey brown silt loam	0.28m-0.3m	-
2102	Natural	Light blue grey clay	-	-

General view of Trench 21

Trench No	Length	Width	Alignment	
22	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2201	Topsoil	Dark grey brown silt loam	0.28m-0.37m	-
2202	Natural	Yellow and white chalky clay and limestone	-	-

General view of Trench 22

Trench No	Length	Width	Alignment	
23	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2301	Topsoil	Dark grey brown silt loam	0.3m-0.33m	-
2302	Natural	Light blue grey clay	-	-

General view of Trench 23

Trench No	**Length**	**Width**	**Alignment**	
24	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2401	Topsoil	Dark grey brown silt loam	0.22m-0.31m	-
2402	Natural	Light blue grey clay	-	-

General view of Trench 24

Trench No	Length	Width	Alignment	
25	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2501	Topsoil	Dark grey brown silt loam	0.22m-0.32m	-
2502	Natural	Light blue grey clay	-	-

General view of Trench 25

Trench No	Length	Width	Alignment	
26	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2601	Topsoil	Dark grey brown silt loam	0.3m-0.38m	-
2602	Natural	Light blue grey clay	-	-
2603	Colluvium	Mid orange brown silty clay	0.1m	

General view of Trench 26

Trench No	**Length**	**Width**	**Alignment**	
27	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2701	Topsoil	Dark grey brown silt loam	0.18m-0.22m	-
2702	Natural	Light blue grey clay	-	-

General view of Trench 27

Trench No	Length	Width	Alignment	
28	**50m**	**1.8m**	**West-north-west to East-south-east**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2801	Topsoil	Dark grey brown silt loam	0.28m-0.36m	-
2802	Natural	Light blue grey clay	-	-
2803	Fill	Fill of pit [2804], Firm mid to dark grey clay	0.63m wide 0.22m deep	-
2804	Cut	Cut of pit, oval, U-shaped profile, steep sides, concave base	0.63m wide 0.22m deep	-

General view of Trench 28

Trench No	Length	Width	Alignment	
29	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
2901	Topsoil	Dark grey brown silt loam	0.18m-0.22m	-
2902	Natural	Dark orange and blue clay	-	-

General view of Trench 29

Trench No	**Length**	**Width**	**Alignment**	
30	**50m**	**1.8m**	**East to West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3001	Topsoil	Dark grey brown silt loam	0.33m-0.36m	-
3002	Natural	Dark orange and blue clay	-	-

General view of Trench 30

Trench No	Length	Width	Alignment	
31	50m	1.8m	North-East to South-West	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3101	Topsoil	Dark grey brown silt loam	0.21m-0.3m	-
3102	Natural	Dark orange and blue clay	-	-

General view of Trench 31

Trench No	Length	Width	Alignment	
32	50m	1.8m	North-West to South-East	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3201	Topsoil	Dark grey brown silt loam	0.36m	-
3202	Natural	Yellow brown clay	-	-
3203	Fill	Fill of ditch [3204], Moderately compact mid yellowish grey clay	0.39m deep	-
3204	Cut	Cut of ditch, north-east to south-west, steep sides, concave base	1.2m wide 0.39m deep	-

General view of Trench 32

Trench No	**Length**	**Width**	**Alignment**	
33	**50m**	**1.8m**	**North to South**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3301	Topsoil	Dark grey brown silt loam	0.28m-0.3m	-
3302	Natural	Orange yellow brown clay	-	-
3303	Fill	Fill of pit [3304], Firm mid orange grey silty clay	1m wide 0.25m deep	-
3304	Cut	Cut of possible charcoal burning pit, east to west aligned, sloping sides, flat base	1m wide 0.25m deep	-

General view of Trench 33

Trench No	Length	Width	Alignment	
34	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3401	Topsoil	Dark grey brown silt loam	0.3m	-
3402	Natural	Yellow brown clay	-	-

General view of Trench 34

Trench No	Length	Width	Alignment	
35	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3501	Topsoil	Dark grey brown silt loam	0.28m-0.3m	-
3502	Natural	Orange yellow brown clay	-	-
3503	Fill	Fill of ditch [3504], Firm mid yellow brown silt	1.28m wide 0.27m deep	-
3504	Cut	Cut of ditch, north to south aligned, steep sides, flat base	1.28m wide 0.27m deep	-

General view of Trench 35

Trench No	**Length**	**Width**	**Alignment**	
36	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3601	Topsoil	Dark grey brown silt loam	0.3m	-
3602	Natural	Orange yellow brown clay	-	-

General view of Trench 36

Trench No	Length	Width	Alignment	
37	**50m**	**1.8m**	**North to South**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3701	Topsoil	Dark grey brown silt loam	0.32m-0.4m	-
3702	Natural	Yellow brown clay	-	-

General view of Trench 37

Trench No	Length	Width	Alignment	
38	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3801	Topsoil	Dark grey brown silt loam	0.3m	-
3802	Natural	Orange yellow brown clay	-	-

General view of Trench 38

Trench No	**Length**	**Width**	**Alignment**	
39	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
3901	Topsoil	Dark grey brown silt loam	0.33m-0.4m	-
3902	Natural	Orange yellow brown clay	-	-

General view of Trench 39

Trench No	Length	Width	Alignment	
40	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4001	Topsoil	Dark grey brown silt loam	0.3m	-
4002	Natural	Orange yellow brown clay	-	-

General view of Trench 40

Trench No	Length	Width	Alignment	
41	**50m**	**1.8m**	**East to West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4101	Topsoil	Dark grey brown silt loam	0.3m-0.35m	-
4102	Natural	Orange yellow brown clay	-	-

General view of Trench 41

Trench No	**Length**	**Width**	**Alignment**	
42	**50m**	**1.8m**	**North to South**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4201	Topsoil	Dark grey brown silt loam	0.3m-0.32m	-
4202	Natural	Orange yellow brown clay	-	-

General view of Trench 42

Trench No	Length	Width	Alignment	
43	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4301	Topsoil	Dark grey brown silt loam	0.3m	-
4302	Natural	Orange yellow brown clay	-	-

General view of Trench 43

Trench No	Length	Width	Alignment	
44	**50m**	**1.8m**	**North to South**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4401	Topsoil	Dark grey brown silt loam	0.32m	-
4402	Natural	Orange yellow brown clay	-	-

General view of Trench 44

Trench No	**Length**	**Width**	**Alignment**	
45	**50m**	**1.8m**	**East to West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4501	Topsoil	Dark grey brown silt loam	0.3m-0.31m	-
4502	Natural	Orange yellow brown clay	-	-

General view of Trench 45

Trench No	Length	Width	Alignment	
46	50m	1.8m	North to South	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4601	Topsoil	Dark grey brown silt loam	0.32m	-
4602	Natural	Orange yellow brown clay	-	-

General view of Trench 46

Trench No	Length	Width	Alignment	
47	50m	1.8m	East to West	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4701	Topsoil	Dark grey brown silt loam	0.3m-0.32m	-
4702	Natural	Orange yellow brown clay	-	-

General view of Trench 47

Trench No	**Length**	**Width**	**Alignment**	
48	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
4801	Topsoil	Dark grey brown silt loam	0.31m-0.32m	-
4802	Natural	Orange yellow brown clay	-	-

General view of Trench 48

Trench No	**Length**	**Width**	**Alignment**	
49	**50m**	**1.8m**	**North-West to South-East**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/***

				Samples
4901	Topsoil	Dark grey brown silt loam	0.3m-0.33m	-
4902	Natural	Orange yellow brown clay	-	-

General view of Trench 49

Trench No	**Length**	**Width**	**Alignment**	
50	**50m**	**1.8m**	**North-East to South-West**	
Context	***Context type***	***Description***	***Dimensions***	***Artefacts/ Samples***
5001	Topsoil	Dark grey brown silt loam	0.3m	-
5002	Natural	Orange yellow brown clay	-	-

General view of Trench 50

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Appendix F – Approved Post-consent Archaeological Mitigation Strategy

AJA
andrew josephs associates

consultancy | project management | expert witness

NID Project Reference: WS010005/
Archaeological Mitigation Strategy/March 2021

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009
Regulation 5(2)(a)

CONTENTS

1. Introduction

1.1 SCOPE OF THIS WSI AND PROPOSED WORK

1.1.1 This Archaeological Mitigation Strategy (AMS) has been prepared by Andrew Josephs Associates on behalf of Augean South Ltd (Augean). It details the methodology for undertaking a programme of archaeological works on land that is proposed as an extension to a hazardous waste facility at the East Northants Resource Management Facility (ENRMF), Stamford Road, PE8 6XX.

1.1.2 The western extension area is centred on National Grid Reference (NGR) TL 00308 99890 and extends to 29.16 hectares. **Figure 1** shows the location of the proposed development and the extension area which is currently under agricultural usage.

1.1.3 As part of the planning application and EIA, a desk-based assessment, geophysical survey and trial-trenching was undertaken.

1.1.4 The purpose of this AMS is to define the scope of work required to mitigate the effects of the development on archaeology. It has been approved by the Northamptonshire County Archaeological Service[1] as an appropriate mitigation strategy to be implemented should permission be granted (**Appendix A**). An addendum to this AMS would be produced after the appointment of a contractor that would include details specific to that contractor such as staffing, procedure, health and safety and insurance, as well as stating that they will follow the scope of work set out in this document.

1.2 STANDARDS

1.2.1 The appointed contractor will be a Chartered Institute for Archaeologists' Registered Organisation or of equivalent standing.

[1] from 1st April 2021 the responsible archaeological officer will be based at North Northants Council

2. Archaeological Baseline

2.1 DESK-BASED RESEARCH

2.1.1 A desk-based assessment was carried out. The results are documented in the Heritage Statement that accompanies the planning application[2]. A brief summary is presented below.

Archaeology within the western extension area

2.1.2 Three entries are recorded within the western extension area. They comprise an area on the enclosure award map that was probably lawn, a fieldname and a crop mark of a field boundary that appears on the 1950s Ordnance Survey mapping.

2.1.3 No archaeological investigations are known to have taken place within the western extension area prior to the current project, although it is considered likely that the western extension area was fieldwalked by David Hall during his extensive fieldwalking programme of the local landscape between 1960 and 1999.

2.1.4 Aerial photographs of the western extension area were examined as part of the National Mapping Programme, and the field boundary that used to cross the centre of the western extension area was identified.

Archaeological investigations in the vicinity

2.1.5 The vicinity of the western extension area has been extensively examined, in particular by David Hall. Numerous archaeological sites have been located, notably of Roman date, and including possible settlements, buildings and ironworking located by fieldwalking. The National Aerial Photographic Mapping Programme has covered the area.

2.1.6 A large number of landscape features were identified from the Rockingham Forest Project. Supported by the Heritage Lottery Fund and English Heritage its aim was to track the evolution of the Forest from the 10th to 20th centuries. This followed work by David Hall in locating earthwork enclosure banks and ditches.

2.1.7 An archaeological watching brief was undertaken during soil removal in advance of development of the current ENRMF in 2008. No archaeological deposits or artefacts were identified.

[2] Josephs, A. 2021. NID Project Reference: WS010005. Heritage Statement. AJA.

2.1.8 An excavation is recorded in Collyweston Great Wood, 900m north-north-east of the western extension area. This took place in 1953-4 and identified a Romano-British temple of several periods of construction including hexagonal and octagonal stone buildings, and associated finds.

2.1.9 In September 2016, an archaeological evaluation was undertaken by Cotswold Archaeology at Collyweston Quarry, 1km west of the western extension area. The evaluation comprised the excavation of eleven trial trenches. A geophysical survey of the site had indicated that it had a low potential for archaeological remains, although a rectilinear anomaly, suggestive of a possible enclosure but interpreted as being of natural origin, was identified. The natural origin of the anomaly, which was probably formed by glacial and periglacial processes, was confirmed and no archaeological remains or artefactual material were encountered elsewhere within the site.

Archaeological background

2.1.10 Few parts of England have been examined in as much detail as this part of Northamptonshire. The combined efforts of David Hall and the former County Archaeologist, Glen Foard, ensured that programmes of desk-based research and field-based examination mapped large numbers of sites and possible sites.

2.1.11 Prehistoric sites are rare. A possible cooking site identified during fieldwalking 340m north of the western extension area was marked by burnt and cracked pebbles. Two possible Bronze Age ring ditches were identified approximately 1km north-west of the western extension area. In this same area there is evidence for an Iron Age smelting site. A further possible prehistoric barrow was identified in Westhay Wood, to the south of the western extension area, comprising a low mound about 15m in diameter.

2.1.12 Despite fieldwalking and aerial photographic assessment, and a large number of Roman sites in the landscape, there are no known Roman sites close to the western extension area. The nearest is 500m distant and comprised a significant find scatter of Roman date including building stone and pottery, located by David Hall. About 900m to the north-east of the western extension area there is the Romano-British temple complex, referred to above (para 2.1.8) and a further probable settlement and ironworking site lies 1200m south-east of the western extension area. A similar Roman settlement, including evidence for a building from aerial photographs and ironworking, lies to the east of Westhay Lodge. A Romano-British iron smelting furnace (was found in a 1977 watching brief 1.25km north west of the western extension area and a possible section of a Roman road is also recorded. The latter was identified by a 1982 aerial survey, 1.2km west of the western extension area. In addition to the iron slag from defined sites,

further undated surface finds might reflect the more extensive nature of metal working in the Roman period.

2.1.13 The medieval and post-medieval periods have been intensively examined, both in the field by David Hall who mapped earthwork enclosure banks and ditches, and more recently by the Rockingham Forest Project. The landscape of these periods has been re-created with some success. Given that this is an area of historic woodland it is of no surprise that woodland activities are present within the study area, and in particular the production of charcoal. Five locations scattered across the study area produced evidence suggesting charcoal production of which only one is dated, in that case to the post- medieval period.

2.2 GEOPHYSICAL SURVEY

2.2.1 Geophysical survey was carried out by Tigergeo in November 2019 and May 2020[3].

2.2.2 There was very little identified that could be described, with certainty, as of archaeological interest, most of the suitable anomalies being non-connected linear examples with weak magnetic enhancement and no coherent layout. Some were considered to be ditch fills, others drains or former paths, and some contrast so weakly defined from their surroundings as to be only tentatively identified. The southern part of the western extension area is dominated by services, pipelines and under-drainage.

2.2.3 The main features identified were ditch fills that define the western part of a small rectilinear enclosure. They lacked internal features but the strength of magnetic enhancement associated with the fills, relative to other ditch fills on the site, might suggest the presence of materials commonly associated with intensive use. These can include cultural debris and heated soils.

2.3 ARCHAEOLOGICAL TRIAL TRENCHING

2.3.1 The Museum of London's Northampton Office carried out trial-trenching across the western extension area in October and November 2020.

2.3.2 The trenching targeted geophysical anomalies to check their origin and blank areas to act as a control. In total the evaluation comprised the excavation of fifty-one 50m x 1.8m trial trenches.

2.3.3 The results of the evaluation[4] identified low levels of activity from the Roman period onwards. Where present, archaeological preservation levels

[3] Tigergeo. 2020. Land near King's Cliffe, Northamptonshire. Geophysical Survey Report.

were consistently high and most of the remains encountered did not appear to have been significantly affected by modern activities, such as ploughing. Features of interest were primarily concentrated within the northern half of the northern field and the north-eastern extent of the southern field.

2.3.4 A sparse artefactual assemblage was recovered during the investigation, which has left the majority of the encountered archaeological features undated. The paucity of datable material has hindered understanding of the chronological progression of the site's formation and development. However, it is probable that the archaeological remains recorded represent a focus on the economy of the landscape, predominantly concerning stock management.

2.3.5 Two ditches thought to form part of a large, square enclosure identified by the geophysical survey were excavated in the northern field (Trenches 10 and 11). No internal features associated with the enclosure were identified within the constraints of the evaluation. As such, it is possible that these ditches functioned as boundaries for a field system and perhaps delineated an enclosed area related to farming management. The animal bone assemblage recovered indicates that cattle, sheep or goat are the most probable species of livestock which may have been managed within this system. Neither ditch revealed evidence of prolonged use.

2.3.6 Potential charcoal production was evidenced in one location within the southern half of trench 33. The feature (a pit) was similar to small charcoal production pits identified at several sites in the east of England. As only a single feature associated with this activity was identified during the evaluation, it is probable that this represents a very small-scale of charcoal production, possibly for domestic purposes rather than industrial.

2.3.7 At present, the relationship between this probable enclosure and the further undated archaeological features remains unclear. It is possible that the features concentrated within the northern half of the northern field may be associated with the enclosure ditches, perhaps defining land or route boundaries and providing field drainage

.

2.3.8 The results of the evaluation corroborated the geophysical survey. It identified only a sparse number of archaeological features given the size of the site and there is limited potential to address the research objectives detailed in the regional research agenda.

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[4] Collins, C. 2020. Archaeological Evaluation at ENRMF Proposed Extension, Northamptonshire. MOLA report 20/076.

3. Archaeological Mitigation

3.1 OVERVIEW OF PROPOSED MITIGATION

3.1.1 National Planning Policy Framework 2019 requires developers to record and advance understanding of heritage assets to be lost and make this evidence publicly accessible (paragraph 199). This can include a programme of archaeological work secured by condition/s on planning permission.

3.1.2 In this case, a programme of pre-development archaeological work secured by condition would be appropriate. This would comprise:

- Soil stripping under the direction of an archaeologist followed by archaeological excavation of two defined areas shown on **Figures 2-4**.
- Watching brief during development within existing service corridors that could not be evaluated as part of the EIA (**Figure 2)**.
- The deposition of reports with the Historic Environment Record, the deposition of archives with the appropriate public museum or receiving institution (normally Northamptonshire Archaeological Resource Centre) and publication commensurate with the significance of any discoveries made.
- Public outreach appropriate to the significance of the findings.

3.2 ARCHAEOLOGICAL EXCAVATION

Methodology

3.2.1 The appointed contractor will secure a NHER event and OASIS numbers before commencing fieldwork.

3.2.2 It is proposed to carry out the work in one or two phases dependent upon the availability of the land from the farmer. This is better for recording the continuity of archaeological features.

3.2.3 Soils will be removed within the excavation area by a 360-machine equipped with a toothless bucket under archaeological direction. All subsequent excavation will be undertaken by hand, although mechanical equipment may be used to remove modern deposits or geological features with the agreement of the Northamptonshire CC Archaeologist. Exposed surfaces will be selectively cleaned in order to aid the identification of any features.

Sampling strategies and recording

3.2.4 Sampling strategies would include:

- 50% of intrusive non-structural features (pits, random postholes). Up to 50% (by number) to be then fully excavated following assessment.
- At least 10 % of each linear feature's exposed area, and all terminals & intersections if definition of relationships is unclear. The actual percentage amount will depend on the type of site being investigated, and, for example, lengths of post-medieval field ditch system that have previously been sampled and dated in previous phases would require only limited further excavation to be undertaken, comprising examination of their terminals and intersections.
- 100% of domestic/industrial working features (hearths, ovens), graves and features of high palaeo-environmental potential (excluding ponds and palaeo-channels).

3.2.5 All exposed archaeological deposits will be recorded using a pro forma recording system.

3.2.6 All archaeological contexts will be recorded on context record sheets. A further more-general record of the work comprising a description and discussion of archaeological remains will be maintained as appropriate. Context sheets will be primarily filled in by the archaeologist excavating the feature or deposit. Context sheets will be checked for completeness and accuracy on a regular basis and before the area in which they occur is signed off.

3.2.7 Context information will be entered into a scheme database. Context grouping will be carried out in parallel with fieldwork. If appropriate a Harris Matrix will be compiled for each area of investigation during the course of fieldwork.

3.2.8 A complete drawn record of excavated archaeological features and deposits will be compiled. This will include both plans and sections, drawn to appropriate scales (generally 1:20 or using survey grade GPS for plans, 1:10 for sections), and with reference to a site grid tied to the OS National Grid. The OD height of all principal features and levels will be calculated and plans/sections will be annotated with OD heights. Drawn plans and sections will be on polyester-based drafting film and clearly labelled.

3.2.9 A full photographic record will be maintained using digital cameras. The photographic record will illustrate both the detail and the general context of the principal features, finds excavated, and the site as a whole.

3.2.10 Photographs will be recorded on *pro forma* Record Sheets.

Finds

Finds

3.2.11 All artefacts from excavated contexts will be retained, except those from features or deposits of obviously modern date. In such circumstances, sufficient artefacts will be retained in order to elucidate the date and/or function of the feature or deposit. Material of undoubtedly modern date observed on the spoil heap of each trench would not be noted or retained.

3.2.12 Artefacts will be recovered carefully by hand excavation. An appropriately qualified and experienced archaeological conservator will assist where appropriate in the lifting of fragile finds of significance and/or value.

3.2.13 Artefacts will be collected and bagged by archaeological context. The location of special finds will be recorded in three dimensions. Three-dimensional recording of *in-situ* flint working deposits will be carried out, as appropriate.

3.2.14 Where appropriate to address the research objectives of the archaeological investigation, sieving of deposits will be undertaken to maximise recovery of small artefacts.

3.2.15 Registers of artefact assemblages and special finds will be maintained throughout the course of fieldwork and post excavation works. Records of artefact assemblages will clearly state how they have been recovered, sub-sampled and processed.

3.2.16 Excavated artefacts will be bagged upon recovery or placed in finds trays. They will not be left loose on site. Artefacts will normally be stored in plastic bags which contain two plastic labels. Labels will be clearly marked in indelible ink with site code, context number and date of finding.

3.2.17 Special finds, those of a fragile nature or requiring special conditions will be individually packaged and labelled as appropriate to the artefact. Where appropriate, for example in the case of fragile faunal remains of early prehistoric date, the advice of a suitably qualified conservator will be sought with regard to their lifting, storage and conservation.

3.2.18 All retained artefacts will, as a minimum, be washed, weighed, counted and identified. Any artefacts requiring conservation or specific storage conditions will be dealt with immediately in line with *First Aid for Finds* (Watkinson & Neal 1998). Ironwork from stratified contexts will be X-rayed and stored in a stable environment along with other fragile and delicate material. The X-raying of objects and other conservation needs will be undertaken by an appropriate approved conservation centre. Suitable material, primarily the pottery, worked flint and non-ferrous metalwork, will be scanned to assess the date range of the relevant assemblages.

Vertebrate remains

3.2.19 If faunal remains are recovered, their condition should be considered: it might be appropriate to record the remains in-situ and lift following consultation with a specialist conservator.

Treatment of treasure

3.2.20 Finds falling under the statutory definition of Treasure (as defined by the Treasure Act of 1996 and its revision of 2002) will be reported immediately to the relevant Coroner's Office, the landowner, the Northamptonshire CC Archaeologist and the Portable Antiquities Scheme. A Treasure Receipt will be completed and a report submitted to the Coroner's Office within 14 days of understanding that the find is Treasure. The Treasure Receipt and Report will include the date and circumstances of the discovery, the identity of the finder and (as exactly as possible) the location of the find

Human Remains

3.2.21 If human remains are encountered, the Northamptonshire CC Archaeologist, the Coroner and the client will be informed. Removal of these remains will be carried out in accordance with all appropriate Environmental Health regulations and will only occur after a Ministry of Justice licence has been obtained.

3.2.22 Where practicable, inhumation burials will be fully excavated by hand within 24 hours of exposure. Cremations should be lifted en-bloc and excavated in the laboratory.

3.2.23 The client will put in place arrangements to ensure the security, protection from deterioration, damage and criminal activity, and the respectful treatment of human remains and burial goods.

3.2.24 All excavation and post-excavation analysis of human remains will be in accordance with the standards set out in CIFA Technical Paper 13 *Excavation and post-excavation treatment of cremated and inhumed remains* and in the Historic England reporting guidelines: *Human Bones from Archaeological Sites: Guidelines for Producing Assessment Documents and Analytical Reports*, 2004. Appropriate specialist guidance/site visits will be undertaken by suitably qualified specialists. The final deposition of human remains following analysis will be subject to the requirements of the Ministry of Justice Licence.

Environmental sampling

3.2.25 Environmental sampling appropriate to the aims of the project will be implemented. Samples will be taken from archaeologically significant features and deposits, where appropriate. Advice will be sought as appropriate from the Historic England Regional Science Advisor. The strategy and

methodology for the sampling, recording, processing, assessment, analysis and reporting of deposits with environmental archaeology potential will be in accordance with Historic England *Environmental Archaeology - A guide to theory and practice of methods, from sampling and recovery to post-excavation,* second edition, 2011. Any variation to this guidance will be agreed in advance with the Historic England Science Advisor and the Northamptonshire CC Archaeologist.

3.2.26 Bulk environmental soil samples for charred plant macrofossils, small animal bones and other small artefacts will be taken from appropriate well sealed and dated/datable archaeological contexts. Samples of between 40-60 litres will be taken or 100% of smaller contexts. Samples will not be taken from the intersection of features or across context boundaries.

3.2.27 Bulk environmental soil samples will be processed by water flotation and a preliminary assessment for environmental potential will be carried out on an on-going basis. Results will be fed back during fieldwork, in order to guide the course of action for further sampling.

3.2.28 For deposits where anaerobic preservation is seen or expected, 20 litre bulk samples will be taken for the retrieval of uncharred plant macrofossils and insects.

3.2.29 Details of the environmental samples and assemblages will be input into a project database.

3.2.30 A geoarchaeologist will record any deposits of particular significance and advise on depositional processes.

3.2.31 Appropriate provision will be made for the application of scientific dating techniques such as radiocarbon, dendrochronology, archaeomagnetic dating, OSL and TL dating. The advice of the Historic England Science Advisor will be sought in advance of the application of these techniques.

3.2.32 Where appropriate, the guidance in the following Historic England papers will be followed:

- Watkinson, D and Neal V, First Aid for Finds (London: Rescue/UKICAS/HE 2001)
- *Animal Bones and Archaeology: Guidelines for Best Practice* 2014
- Animal Bones and Archaeology - Recovery to archive, 2019
- *Human bones from Archaeological Sites: Guidelines for Producing Assessment Documents and Analytical Reports,* 2004
- The Role of the Human Osteologist in an Archaeological Fieldwork Project, 2018

- *Dendrochronology: Guidelines on producing and interpreting dendrochronological dates,* 2004
- *Guidelines on the X-radiography of archaeological metalwork*, 2006
- *Archaeometallurgy,* 2015
- *Environmental Archaeology: A guide to theory and practice of methods, from sampling and recovery to post-excavation* second edition, 2011
- *Geoarchaeology: Using earth sciences to understand the archaeological record,* 2015
- Mineralised Plant and Invertebrate Remains, 2020
- *Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood,* 2010
- Waterlogged Organic Artefacts, 2018
- *Archaeomagnetic Dating: Guidelines on producing and interpreting archaeomagnetic dates* 2006
- *Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains*, 2008
- *Luminescence Dating: Guidelines on using luminescence dating in archaeology* 2008

3.3 FURTHER MITIGATION

3.3.1 Should significant archaeology be identified that continues outside the defined excavation area, further mitigation may be required. The decision would be taken in consultation with the Northamptonshire CC Archaeologist and the project's archaeological consultant.

3.4 REPORTING

3.4.1 Following completion of all fieldwork a Post-excavation Assessment Report will be produced. This report will include an Updated Project Design that sets out a programme of post-excavation analysis through to completion of the full report and publication of the findings. The report will include, as appropriate:

- A non-technical summary.
- Details of the scheme and the commissioning body.
- A description of the site, including its geology and topography.
- A description of the methods employed during the investigation.
- A review of the effectiveness of the archaeological strategies and methodologies

- A description and interpretation of the results.
- Plans and sections showing archaeological features and deposits.
- Photographs of significant archaeological features and deposits.
- Specialist reports.
- A list of references.
- Tabulated context and finds data.
- Recommendations and a timetable for further analysis and publication.

3.4.2 An Oasis report will be initiated prior to the start of fieldwork and will be updated following the completion of the project.

3.4.3 The scope of the full report and the format and destination of subsequent publication(s) arising from excavation and post-excavation work on the site will be agreed with the Northamptonshire CC Archaeologist.

3.5 SPECIALIST INPUT

3.5.1 A list of specialists to be employed on the project will be submitted to the Northamptonshire CC Archaeologist.

3.6 ARCHIVE PREPARATION AND DEPOSITION

3.6.1 The archive will comprise written, drawn, photographic, digital, artefactual and environmental material.

3.6.2 Throughout the archaeological programme, the archive will be kept secure, clean and stored in a suitable environment.

3.6.3 The site archive, to include all project records and cultural material produced by the project, will be prepared in accordance with *Guidelines for the preparation of excavation archives for long term storage* (UKIC 1990) and *Standards in the Museum Care of Archaeological Collections* (Museums and Galleries Commission 1992).

3.6.4 The archive will be fully catalogued, indexed, cross-referenced and checked for consistency before deposition.

3.6.5 On completion of the project the archaeological contractor will arrange for the archive to be deposited at the appropriate public museum or receiving body (normally Northamptonshire Archaeological Resource Centre), in accordance with arrangements made at the outset of the project. A museum accession number will be requested before post-excavation work commences.

3.6.6 Relevant guidelines and requirements of the museum receiving the archive will be adhered to. The potential for discard of bulk materials will be included within specialist post excavation assessment reports.

3.6.7 All artefactual material recovered will be held in temporary storage and the permission of the landowner will be sought for the transfer of such archaeological finds to the appropriate depository to facilitate future study and ensure proper preservation of all artefacts. In the unlikely event that artefacts of significant monetary value are discovered, and if they are not subject to Treasure Act legislation, separate ownership arrangements may be negotiated.

3.7 HEALTH AND SAFETY

3.7.1 A risk assessment will be undertaken and approved and will be kept on site in a file which will contain all relevant health and safety documentation. The Health and Safety file will be available to view at any time.

3.7.2 All staff will be subject to a Health and Safety induction by Augean South Ltd before commencing work on site.

3.8 MONITORING OF WORKS

3.8.1 The Northamptonshire CC Archaeologist will be informed of dates and arrangements to allow for adequate monitoring of the works. They will have free access to the site (subject to Health and Safety considerations) and all records to ensure the works are being carried out in accordance with this document and all other relevant standards.

3.9 EXTERNAL LINKS, EDUCATION AND OUTREACH

3.10 Subject to Health and Safety considerations, local primary schools may be invited to visit archaeological excavations. Public events could be organised, especially as part of recognised formats such as the Festival of British Archaeology. When deemed appropriate, public open days will also be advertised and held. Local lectures could be given if the results warrant it.

Appendix A – Approval of this AMS by the Northamptonshire CC Archaeologist

From:
Sent: 29 March 2021 08:31
To:
Subject: RE: Kings Cliffe landfill Archaeological Mitigation Strategy

Dear

Thank you for the AMS. It is all in order and I am happy with the scope of work proposed.

A method statement from the archaeological contractor would of course be expected to confirm that they will follow the AMS.

It may be worth adding a footnote to the AMS to clarify that from 1st April 2021 I will be Archaeological Advisor at North Northants Council, rather than at NCC which will no longer exist.

Regards

Archaeological Advisor

From:
Sent: 22 March 2021 08:55
To:
Subject: Kings Cliffe landfill Archaeological Mitigation Strategy

Dear

Please find attached an AMS for your comments/approval.

Kind regards

Figures

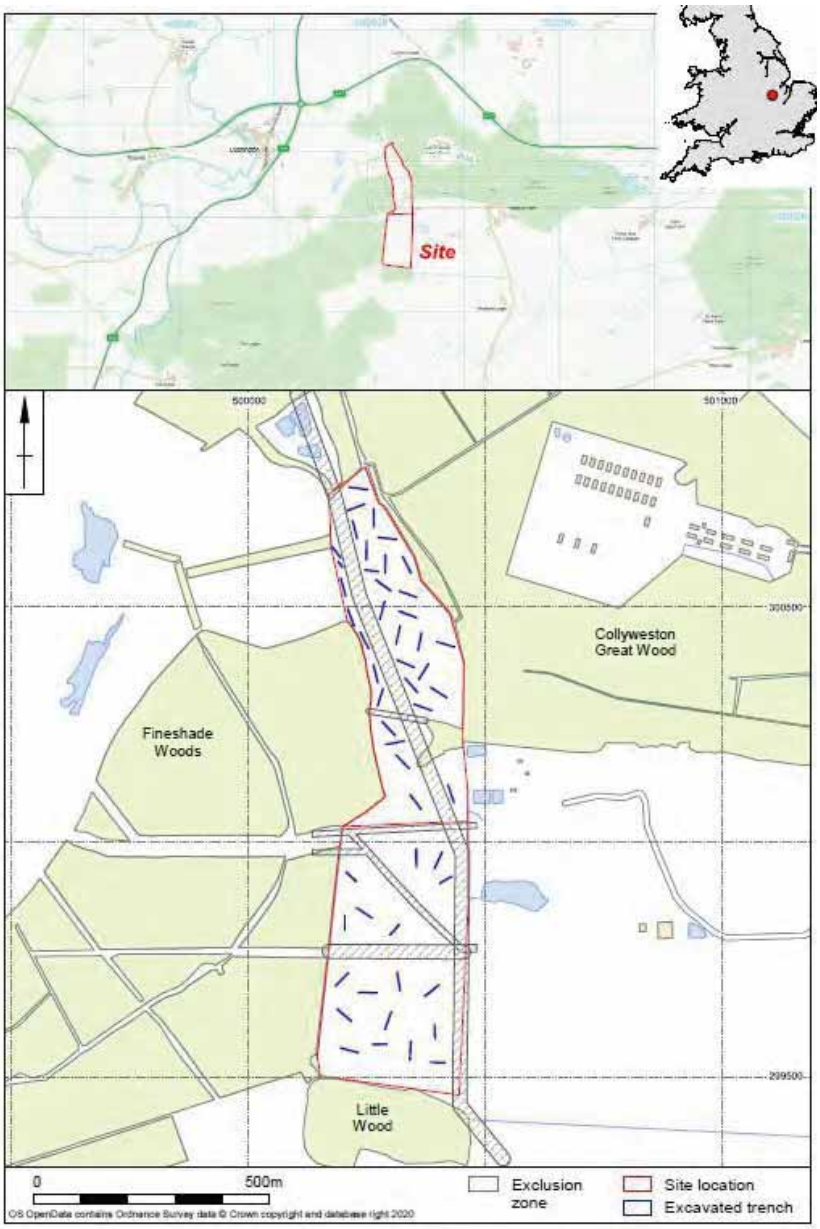

Figure 1 Site Location and Layout of Trenches

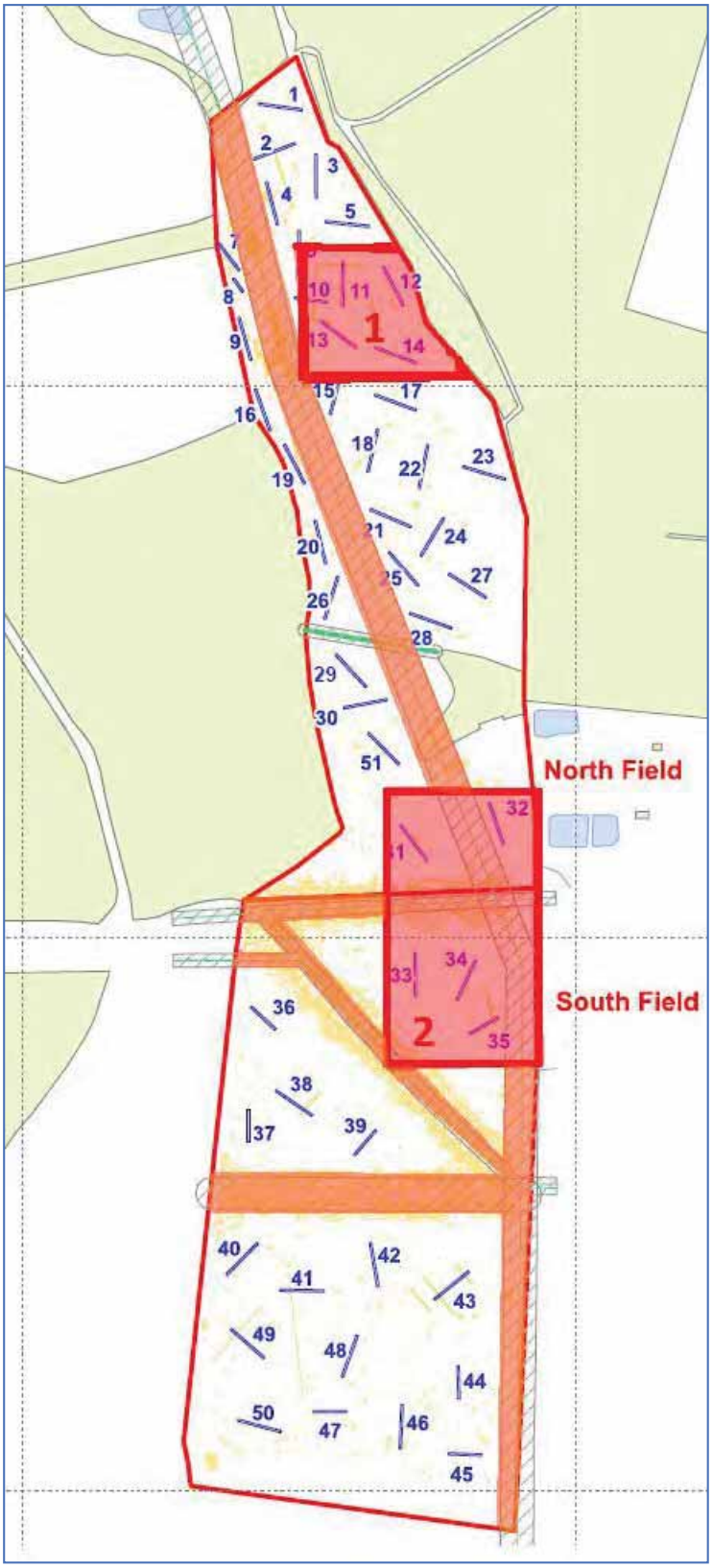

Figure 2 **Set-Piece Excavation Areas (red) and Watching Brief along existing service corridors (orange)**

Figure 3 Set-Piece Excavation Area 1 – northern field

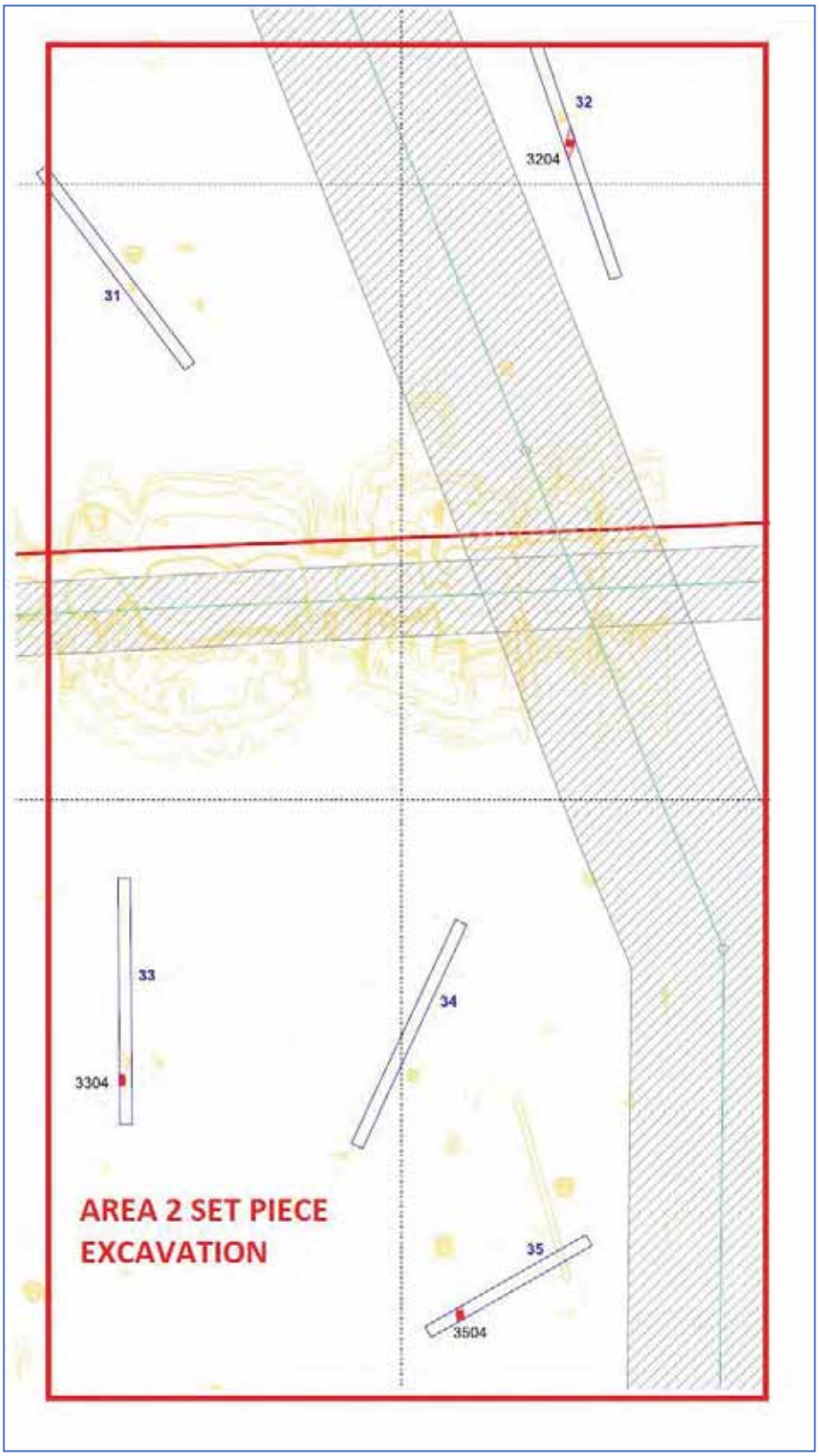

Figure 4 Set-Piece Excavation Area 2 – southern field


AJA
andrew josephs associates