A428 Black Cat to Caxton Gibbet improvements

TR010044

Volume 9

9.23 Updated Archaeological Mitigation Strategy

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A428 Black Cat to Caxton Gibbet Improvement Scheme

Development Consent Order 202[ ]

9.23 Updated Archaeological Mitigation Strategy

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PART ONE – OUTLINE ARCHAEOLOGICAL MITIGATION STRATEGY

1 Introduction

1.1 Project background

1.1.1 AECOM (the Consultant) have been commissioned by National Highways (the Client) to design the archaeological works in advance of the A428 Black Cat to Caxton Gibbet improvements Scheme (the Scheme).

1.1.2 The Scheme would comprise the construction of a new 16 kilometre (10 mile) dual 2-lane carriageway from the Black Cat roundabout to Caxton Gibbet roundabout, to be known as the A421 (hereafter referred to as the 'new dual carriageway') and in addition approximately 1.8 miles (3km) of tie-in works, with grade separated junctions at Black Cat, Cambridge Road and Caxton Gibbet.

1.2 Overview of the document

1.2.1 This Outline Archaeological Mitigation Strategy (AMS) includes the scope, guiding principles and methods for the planning and implementation of essential archaeological mitigation for each site identified following analysis of the results of desk-based research and analysis of aerial photographs **[TR010044/APP/6.3]**, geophysical surveys (REF 1, REF 2) and trial trench evaluation (REF 3, REF 4, REF 5) undertaken as part of the Scheme.

1.2.2 It details the archaeological mitigation proposed to reduce the effect of the Scheme on the archaeological resource, either by protection/preservation of archaeological remains where possible, or, where remains cannot be preserved, through a structured programme of archaeological investigation to mitigate the loss.

1.2.3 Further, this document presents the approach to consultation and approvals, project management, fieldwork methodology, and the post-excavation analysis and publication stages for investigations carried out as part of the advance archaeological works for the Scheme.

1.2.4 This document also summarises (where applicable) the extent of previous investigations, provides the research framework for the Scheme, and describes the proposed mitigation works and methods that will be implemented.

1.2.5 In summary, the AMS:

a. Is the control document for the programme of archaeological mitigation undertaken on each site or area of archaeological interest in advance of and as part of the construction phase of the Scheme.

b. Details the principles and methods for the preparation of the Site Specific Written Scheme(s) of Investigation (SSWSI) for each site.

c. Will be a certified document with its implementation being secured by Requirement 9 in Schedule 2 of the Development Consent Order (DCO), forming part of the Scheme's Second Iteration Environmental Management Plan (EMP), which will be derived from the First Iteration Environmental Management Plan **[TR010044/APP/6.8]** submitted as part of the DCO application.

1.3 Status of this document

1.3.1 This outline AMS has been prepared following review and comment by the relevant and applicable members of an academic advisory panel (see Section 1.5.3 below), Bedford Borough Council, Central Bedfordshire Council, Cambridgeshire County Council and Historic England.

1.3.2 The document forms an Appendix to Chapter 6, Cultural heritage of the Environmental Statement **[TR010044/APP/6.1]**.

1.4 The strategy of the document

1.4.1 This document sets out the scope, guiding principles and methods for the planning and implementation of the required SSWSIs for each site.

1.4.2 The SSWSIs are documents that relate to particular elements of archaeological fieldwork and detail specific measures to be applied or adopted as part of the programme of archaeological mitigation works. They will be prepared by the Archaeological Contractor for the Scheme in accordance with the principles and methods set out in this AMS and will be approved by the archaeological advisors for Bedford Borough Council (BBC), Central Bedfordshire Council (CBC), and Cambridgeshire County Council (CCC), and, where relevant, with Historic England (the Curators).

1.4.3 The individual SSWSIs will be prepared by the Archaeological Contractor in consultation with the Archaeological Clerk of Works (ACoW) and the Curators. Each SSWSI will be prepared prior to the fieldwork for each site (the subject of that SSWSI) commencing and is designed to answer specific research questions to advance knowledge gain, or to ensure the protection of archaeological features whilst being mindful of public benefit.

1.5 Roles and responsibilities

1.5.1 The following terminology is used throughout this document:

a. The Client – National Highways, or their representative (hereafter referred to as the Client's representative).

b. The Principal Contractor (i.e. the construction contractor for the Scheme).

c. Archaeological Clerk of Works (ACoW) (as appointed by the Principal Contractor).

d. Archaeological Contractor (as appointed by the Principal Contractor).

e. Curators – the three local planning authority archaeologists for Bedford Borough Council (BBC), Cambridgeshire County Council (CCC) and Central Bedfordshire Council (CBC), as well as representatives of Historic England (including, but not limited to, the Inspector of Ancient Monuments, the Inspector of Historic Buildings and the Regional Scientific Advisor).

1.5.2 The archaeological mitigation strategy has been produced by AECOM working alongside the Client's representative in consultation with the Curators. AECOM have acted as Archaeological Consultant in support of the DCO application process, but will not be involved beyond DCO consent as the Archaeological Consultant.

1.5.3 An academic advisory panel has been created to comment on and provide specialist advice on this mitigation strategy. Members of the panel are experts in the Iron Age and Roman periods of the region, as well as medieval settlement, and/or staff at archaeological companies with extensive experience of excavating in the region. There are representatives of Cambridge Archaeology Unit, University of Cambridge, University of Leicester, the Medieval Settlement Research Group, retired curators, MOLA and Headland.

1.5.4 An Archaeological Contractor will be appointed and be responsible for the delivery of the archaeological mitigation programme, as set out in this AMS. This responsibility will include all on-site and off-site works, including preparation of SSWSIs and reporting and publication. The Archaeological Contractor's Fieldwork Manager will be responsible for oversight of the archaeological mitigation programme and will be the principal point of contact for advisor groups and the Curators.

1.5.5 An ACoW will be appointed and will be responsible for monitoring the work undertaken by the Archaeological Contractor on behalf of the Principal Contractor to ensure compliance with the AMS and the SSWSIs. They will also be responsible for liaising with the Principal Contractor to monitor construction activities to ensure compliance with the AMS and the First Iteration EMP **[TR010044/APP/6.8]**. The ACoW will also organise and attend regular site meetings to be held with the Curators.

1.5.6 The Curators will monitor the fieldwork to ensure that it is carried out to the required standard and specification as set out in this AMS and the SSWSIs, and ensure that it will achieve the desired aims and objectives. The relevant Curators will attend site meetings, to be arranged by the ACoW, to review the progress and results of the fieldwork. These meetings will also be used to inform sign off of sites prior to construction. Further detail is provided in Section 7 of this document.

1.6 Policy and guidance

1.6.1 The Strategy conforms with current good practice and takes account of guidance outlined in:

a. National Policy Statement for National Networks (NPSNN) (REF 6).

b. National Planning Policy Framework (NPPF) (MHCLG, 2018) and National Planning Practice Guidance (REF 7).

c. Design Manual for Roads and Bridges (DMRB): LA 104 Environmental Assessment and monitoring (Revision 1) (REF 8).

d. Design Manual for Roads and Bridges (DMRB): LA 106 Cultural heritage assessment (Revision 1). (REF 9).

e. Design Manual for Roads and Bridges (DMRB): LA 116 Cultural heritage assessment management plans (Revision 1). (REF 10).

f. Management of Research Schemes in the Historic Environment ((REF 11).

g. Understanding Historic Buildings (REF 12).

h. Standard and guidance issued by the Chartered Institute for Archaeologists (CIfA): Code of Conduct (REF 13); archaeological excavation (REF 14); archaeological watching brief (REF 15); archaeological field evaluation (REF 16); the creation, compilation, transfer and deposition of archaeological archives (REF 17); and for the collection, documentation, conservation and research of archaeological materials (REF 18).

i. Historic England have also issued a variety of guidance notes for environmental archaeology, human remains, scientific dating, preservation of archaeological remains and archaeological conservation (see Appendix A).

1.6.2 A brief has been prepared by the Curators at the councils. This is designed to facilitate the production of the SSWSIs by the Archaeological Contractor. The contents of this brief have been taken into account when detailing the overarching scope of works in Part Two of this document. The brief is included as Appendix B.

1.7 Structure of document

1.7.1 This document comprises of the following three parts.

Part one - the detailed archaeological mitigation strategy

1.7.2 It describes the principles to be applied in undertaking archaeological mitigation on the Scheme and proposed strategies. This section details the relevant archaeological baseline, survey results and rationale for mitigation for each of the identified mitigation areas.

1.7.3 For those areas where archaeological investigation and recording is proposed, relevant research themes and period-based questions are indicated. These have been identified in consultation with specialists, drawing on (but not limited to):

a. Research and Archaeology Revisited: a revised framework for the East of England (REF 19).

b. Bedfordshire Archaeology Research and Archaeology: Resource Assessment, Research Agenda and Strategy (REF 20).

c. Understanding the British Iron Age: an agenda for action (REF 21).

d. The Rural Settlement of Roman Britain (REF 22).

1.7.4 Scheme specific research questions have also been developed, and the development of the strategy also draws on the scheme specific Rationale and Strategy (see Appendix C).

Part Two - the overarching scope of works

1.7.5 In this part, the strategy for each of the mitigation approaches is discussed and outline method statements are presented. These methods statements will form the basis of the works to be detailed in SSWSIs.

1.7.6 The requirements for communication, monitoring and reporting are identified and the procedure for completion of the archaeological works is set out. Assessment, reporting and archiving requirements are outlined.

Part three - appendices

1.7.7 These are as follows:

a. Appendix A Standards and Guidance.

b. Appendix B Joint Cambridgeshire/Bedfordshire *Brief for a Programme of Archaeological Investigation*.

c. Appendix C A428 Archaeology – Rationale and Strategy.

d. Appendix D Archaeological Mitigation Action Areas.

e. Appendix E Public Archaeology and Community Engagement Strategy.

2 Purpose and objectives

2.1 Purpose of document

2.1.1 The purpose of the AMS is to detail the scope of the fieldwork methodologies and detail the required strategy to mitigate impacts of the Scheme, in line with the Joint Cambridgeshire/Bedfordshire *Brief for a Programme of Archaeological Investigation*. This includes both archaeological sites and built heritage assets. The strategy for each site is designed to answer specific research questions to advance knowledge gain, or to ensure the protection of archaeological features where they do not need to be excavated.

2.1.2 Not all sites will be fully excavated, as the primary aim of the Strategy is to maximise knowledge gain. The mitigation of the Scheme is not designed to allow recording for recording's sake, but rather to excavate those sites with intrinsic or group value, which will add to the corpus of knowledge for the region. This approach is not new, and has been used on other major linear projects, such as the A303 (REF 23) and High Speed 2 (HS2) (REF 24). The approach has been agreed with the academic advisory panel (see Section 1.5.3 above).

2.1.3 The archaeological mitigation approach in this AMS will be developed and implemented through the SSWSIs in line with the following parameters:

a. Observe professional codes, guidance and standards (see Appendix A).

b. Consider archaeological and cultural heritage evidence from all periods and its contribution to the understanding of the historic landscape and its use over time.

c. Only undertake extensive intrusive works in areas where there will be a direct impact through development (as identified in the ES [as certified by the DCO]), or where there is a need to consider design changes.

d. Utilise the information provided by other disciplines (for example, geotechnical investigations).

e. All works must take account of all statutory designations.

2.2 Objectives

2.2.1 All those undertaking archaeological work associated with the Scheme will:

a. Ensure a detailed programme of archaeological work is in place to appropriately mitigate impacts on any archaeological remains due to the Scheme.

b. Promote high quality research using intensive excavation methodologies and scientific techniques to explore a transect through the landscape and investigate past settlement patterns, develop new research questions and feed back into the relevant research strategies.

c. The results of archaeological investigation will be published within an appropriate period following assessment and analysis (see Section 13 below for further details). The results of fieldwork interventions should be combined into a single report.

d. Ensure that the results of the investigations (i) are made publicly available in an appropriate format for assimilation into the Bedfordshire Borough Council, Central Bedfordshire Council and Cambridgeshire County Council Historic Environment Records, (ii) develop an understanding of the historic environment resource of the Scheme by the public at large; and (iii) disseminate in a timely manner via the Online Access to the Index of Archaeological Investigations (OASIS) and the Archaeological Data Service (ADS).

e. Ensure the physical archive (artefacts and ecofacts) is publicly accessible through their deposition at the Higgins Art Gallery and Museum and the Cambridgeshire Archaeological Archive Store.

2.3 Aims of specific intervention types

2.3.1 Archaeological mitigation for the Scheme will take several forms, ranging from preservation of a site *in situ*, excavation, sampling and detailed recording. Further details of these techniques are contained within Sections 5 and Sections 8-12.

Preservation of archaeological sites

2.3.2 Where archaeological sites will not be affected by the Scheme, the principle will be followed that there is no need to excavate them. Preservation of archaeological remains will be undertaken where possible. The aim of preservation is to allow them to survive for future generations. Where remains within the Scheme boundary will be unaffected, proposals to ensure their preservation are presented in Part Two of this document.

Geoarchaeology and palaeoecology

2.3.3 The aims of the geoarchaeological and palaeoecological assessment and analysis are to investigate palaeochannels at Hen Brook, to examine areas of colluvium, to identify potential remains within or below the deposition sequences, and to extend understanding of the palaeoenvironment where this is associated with archaeological activity. Geoarchaeological assessment will establish the requirement for further analysis and absolute dating of appropriate samples. Specific aims comprise:

a. To collect undisturbed palaeoenvironmental samples for off-site assessment/ analysis.

b. To provide an assessment of the formation processes behind the deposit sequences and their development through time.

c. To produce a geoarchaeological deposit model of the areas in question to detail the sequence and distribution of sub-surface deposits across the area.

d. To assess the potential for archaeological remains associated with buried sediments and archaeological horizons.

e. To determine the location, nature, extent, date, condition, state of preservation, significance and complexity of geoarchaeological and palaeoenvironmental sequences.

f. To provide information, within the limitations of the investigation, about the palaeoenvironment and the palaeotopography and place the results into the context of the wider landscape.

Detailed excavation

2.3.4 The aim of the detailed excavation areas is to mitigate the impact of construction of the Scheme on known archaeological remains, by ensuring that they are fully investigated, recorded and interpreted. More detailed aims are:

a. To make a record of the archaeological resource that will be impacted as a result of the Scheme within each site.

b. To record (where possible) the nature, depth, extent, character and date of archaeological deposits or features encountered in order to successfully fulfil the research aims of the project.

c. To record and recover an adequate sample of the range, quality and quantity of artefactual and environmental evidence present in order to successfully fulfil the research aims of the project.

2.3.5 A further aim is to achieve detailed understanding of the various settlements' sequences, their depositional dynamics, such as midden practices, and the different functional use of their individual components, such as settlement locations and separate paddocks and grazing areas. The areas excavated will also aim to obtain substantive environmental evidence and artefact assemblages and will maximise the recovery of metalwork and evidence of industry.

Excavation and sampling

2.3.6 The general aim of the sampling is to ensure that deposits are understood. The purpose is to supplement results of the evaluation excavation, where the nature, significance and extent of features does not warrant full excavation, to record the nature, depth, extent, character and date of archaeological features.

Built Heritage

2.3.7 The aim of the built heritage recording of Brook Cottages is to provide an analytical record of the building, consistent with a Level 3 record as defined in *Historic England's Understanding Historic Buildings; a Guide to Good Recording Practice* (REF 12), and to prepare a photographic, written and drawn record of the building prior to its demolition for the purposes of future research.

2.3.8 The recording, removal, storage and reinstatement of the listed milestones is to ensure they are protected during construction and reinstated as close as possible to their original setting, such that their context is retained.

3 Archaeological background

3.1 Introduction

3.1.1 The archaeological background of the Scheme has been presented in Chapter 6, Cultural heritage of the Environmental Statement (ES) **[TR010044/APP/6.1-6.3 & TR010044/APP/6.3]**. This includes the historical and archaeological background of the Scheme within a defined 1km study area and the results of archaeological evaluations undertaken as part of the Scheme. The archaeological background is summarised here.

3.1.2 In preparation of the cultural heritage assessment, desk-based research following the Chartered Institute for Archaeologist (CIfA) *Standard and guidance for historic environment desk-based assessment* (REF 25) and a design brief (appended to REF 26) jointly prepared by Cambridgeshire County Council, Central Bedfordshire Council and Bedford Borough Council was undertaken setting out the requirements for the phased archaeological evaluation of the Scheme.

3.1.3 The assessment work included analysis of aerial photographs and available LiDAR data, geophysical survey and a programme of archaeological evaluation through trenching across the Order Limits.

3.1.4 The site reference numbers in brackets herein are the reference number from the relevant Historic Environment Record (HER) or from the National Heritage List for England.

3.2 Aerial photography and LiDAR

3.2.1 A review of aerial photograph and LiDAR data was undertaken in August 2019 (REF 27). Aerial photographic data was consulted from the Historic England Archive and the Huntingdonshire Archive, as well as digital images available from online sources. LiDAR data was obtained from the Digital Terrain Model and the Digital Surface Model from the Environment Agency. Much of the evidence from this survey is thought to indicate Iron Age/Roman features, although later medieval and post-medieval features were also recorded.

3.3 Geophysical surveys

3.3.1 Three phases of geophysical surveys have been undertaken to support the archaeological assessment of the Scheme (REF 1, REF 2). The survey results indicated numerous enclosure features of probable Iron Age or Roman date as well as later agricultural features of the medieval and post-medieval periods. Many of the features respected the cropmarks recorded through analysis of the aerial imagery, although this has been enhanced in places by the success of the magnetometry survey.

3.4 Trial trenching evaluation

3.4.1 Three phases of archaeological evaluation trenching were undertaken between January and September 2020 as part of the archaeological evaluations for the Scheme. The scope and extent of the works were based on the results of the geophysical survey and targeted areas of known archaeological potential as well as areas seemingly empty of archaeological deposits.

3.4.2 The scope of work was developed in consultation with the planning archaeologists for Bedford Borough Council, Central Bedfordshire Council and Cambridgeshire County Council and presented in three written schemes of investigation (WSIs) (REF 3, REF 4, REF 5).

3.4.3 Phase One of the trenching investigated 37 areas (totalling 274ha) covering 34,360 linear metres of trenching. The evaluation confirmed the location of a number of archaeological sites ranging in date from the Late Bronze Age to the post-medieval period. The majority dated from the Iron Age and Roman periods.

3.4.4 Phase 2 covered 22 areas totalling 20,145 linear metres of trenching. Late Bronze Age remains, including a potential roundhouse, were recorded in Field 70. The presence of Iron Age sites was recorded in nine location and isolated features were recorded in an additional four. Evidence of occupation following the Roman conquest was recorded in six locations. Other features recorded in Field 70 were identified as part of the deserted medieval village of Wintringham.

3.4.5 Phase 3 of the trenching covered the final area of evaluation and several locations where access had been delayed from the previous phase. These areas were located across the Order Limits, and a total of 257 trenches were excavated covering 12,590 linear metres. The archaeological features followed the trends of Phase 1 and 2 results, and largely identified deposits from the Iron Age and Roman periods

3.5 Archaeological baseline

Prehistoric (Up to AD43)

Palaeolithic

3.5.1 Evidence of the early prehistoric period is relatively limited, which is characteristic of the lowlands of southern England (REF 28 page 10). Evidence of the Palaeolithic (up to 10,000BC) within Cambridgeshire and north Bedfordshire is important although arguably poorly understood (REF 29 page 3; REF 30 page 8). Throughout England evidence is derived from rivers and associated deposits, although remains are rarely found *in situ*. In Bedfordshire the River Great Ouse is important for its survival of deposits containing Palaeolithic material (REF 30 page 8). Much of the evidence is derived from areas of gravel extraction predominantly with finds, often hand axes, recovered during the 19th and early 20th centuries (REF 31 page 21) and often noted from spoil heaps rather than found *in situ* (REF 32 page 41). In keeping with this, evidence of Palaeolithic activity is noted at the westernmost part of the

study area, along the valley of the River Great Ouse, comprising of a flint core and hand axes.

Mesolithic

3.5.2 As with the earlier Palaeolithic period, Mesolithic (10,000 – 4,000BC) material is relatively sparse in the study area. Mesolithic sites are difficult to locate and identify, often comprising a few flint scatters left behind by the hunter-gatherers of the period who were exploiting the landscape on a seasonal basis (REF 33 page 8; REF 31 page 27). However, activity relating to the Mesolithic is considered to be widespread across the region, often sited along river valleys and areas with good vantage points for hunting (REF 28; REF 26 page 10; REF 31 figure 6.1). Many of the records on the HER are lithic scatters recovered from plough soil or from within features of a later date. Two groups of Mesolithic lithic artefacts recorded within the study area comprise a collection of flint implements including 16 cores, 29 blades, five scrapers and three other implements (00514) from St Neots and the find spot of lithic flakes (MBD490) to the east of the River Ivel at Blunham.

Neolithic

3.5.3 Although there are limited Neolithic (4,000 – 2,000BC) sites recorded within the study area, work within the wider landscape has pointed to the River Great Ouse continuing as a focus for activity throughout this period, with some authors suggesting it is national importance due to its apparent role as a corridor for continental contact (REF 34 page 57). Along the Great Ouse valley the evidence of ceremonial, or ritual, activity is well recorded while domestic settlement and farming activity is harder to identify, a situation that is also repeated in other parts of England (REF 31 page 37), with pit clusters seen as representative of settlement activity in the earlier Neolithic in eastern England (REF 19 page 9).

3.5.4 Excavations at Colmworth Business Park (MCB16709) to the west of the River Great Ouse uncovered two Neolithic pits containing early Neolithic pottery, lithics, and carbonised plant remains. Further archaeological investigations at Alpha Park (MCB18206) to the west of MCB16709 also found evidence for Neolithic activity in the form of a series of pits. Artefacts recovered from the evaluation excavations included a Neolithic antler pick, lithics, and an auroch horn core.

3.5.5 Evidence of the early prehistoric periods identified during evaluation trenching was limited to some individual lithics. A good example of a Neolithic Greenstone axe was found in a medieval furrow in Field 97 and a second was found in the same field. Three Neolithic flint blades were recovered from features dating to the Iron Age in Fields 44 and 94. Three further flakes from Field 80 were dated from the Neolithic or early Bronze Age.

Bronze Age

3.5.6 There is a noticeable increase in the number of sites dating to the Bronze Age (2,000 – 700BC) within the study area recorded on the HER. This can be linked to an increase in structural evidence, as much of the evidence of earlier periods is confined to find spots, whereas a number of ring ditches were recorded from the Bronze Age in the study area. Throughout England, round barrows and ring ditches are the most common ceremonial monument, often in groups and termed 'monument complexes' (REF 31 page 41). Several such sites lie within the study area. For example, at Roxton a site comprising five ring ditches and timber structure containing a burial (617) was excavated in the 1970s ahead of gravel quarrying (REF 35).

3.5.7 Settlement evidence for this period is, as with the Neolithic, not common and is generally evidenced through artefact find spots and pits (REF 31 page 38; REF 37 page 58). Exceptions include evidence of a Bronze Age cremation cemetery identified during excavation at Papworth Everard. The excavated section of the cemetery comprised an area of 12m x 6m and contained up to 33 burial deposits of up to 44 individuals. These consisted of both urned cremations and unurned cremations as well as associated features and material such as pits and pyre debris (REF 41). Evidence of settlement in the late Bronze Age was also identified during excavation by Wessex Archaeology in Cambourne. Evidence of forest clearance from c.800BC and the presence of possible Bronze Age roundhouses was recorded as well as finds of pottery and charred plant remains (REF 42 and REF 43). The evaluation trenching has contributed additional evidence to the understanding of the Late Bronze Age period in the area. A multi-phase settlement recorded in Fields 34 and 35 and a potential roundhouse with an associated stone filled pit and gully were recorded in Field 70. Artefactual evidence was used to date the features to the period.

Iron Age

3.5.8 Iron Age (700BC – AD43) evidence recorded within the study area provides clear evidence for settlement activity. The study area falls within the territory of the late Iron Age tribal group known as the Catuvellauni. It was one of the core tribal groups in south-east England who were significant in "*…influencing the subsequent administrative structure of the Roman province*." (REF 40 page 141). Two Late Iron Age coins found within the study area and recorded on the HER are of the ruling dynasty of the south-east of England ([REF 80 page 4); one of Tasciovanus (MBB20152) and one of Cunobeline, his son (MCB15791).

3.5.9 Early Iron Age settlement within the region is similar to the open, unenclosed settlements of the late Bronze Age (REF 38 page 5; REF 39 page 114; REF 36) with a move to a more enclosed form during the middle and later Iron Age, a pattern seen throughout the south of England (REF 34 page 14). A regional variation is seen in settlements dating to the latter part of the early Iron Age within southern Cambridgeshire and Bedfordshire (incorporating the study area) where large

numbers of pits have been recorded within settlement sites, with the pits containing artefacts and animal bone, as well as a number of animal and human burials (REF 38 page 6). The late Bronze Age/early Iron Age saw the beginning of boundaries within the landscape, perhaps indicating a move towards territorialisation (REF 37 page 61). These boundaries generally survive as pit alignments, linear dykes, and ditches (REF 39 page 119). Settlement evidence from within the study area includes pits and ditches as described above and comprises ditches and post-holes at Tempsford Park (19765), ditches and pits to the east of St Neots (MCB15790), three pit alignments at Eltisley (02403), and a large pit near Cambourne (MCB24004).

3.5.10 Extensive Iron Age remains have been identified though evaluation. A small agricultural landscape located on a ridge of high ground overlooking the River Great Ouse was identified during trial trench evaluation for the Scheme in Field 34. Fifteen fields found to contain evidence of Middle to Late Iron Age were identified along the Scheme during Phase One of the evaluation. Nine of these contained enclosure settlements located wholly or partially within the DCO boundary. Three of these enclosures were also found to be part of a larger 'string' settlement and are connected to other settlements and enclosures by long landscape boundaries. Further Iron Age settlement evidence was identified during Phase Two of the evaluation. This includes multiple small sub-square enclosures on the south side of a larger rectilinear settlement in Field 9. The settlement area is appended to a linear curving boundary 'string' with small enclosures and roundhouses located on either side of it. An inhumation burial was also recorded within a ditch in an area of largely Iron Age enclosures in Field 49. Iron Age pottery was also recorded within the enclosure site in Field 66.

3.5.11 Fields 92, 94 97 and 99 all contained evidence of Iron Age sites. In the north of Field 92, Middle to Late Iron Age enclosures were found to be linked by external ditches similar to those recorded in Field 47. Two enclosures were recorded in the central and eastern section of Field 94 along with a field system of at least three rectangular fields or paddocks. Further enclosures were recorded in Fields 97 and 99 demonstrating considerable utilisation of the landscape over several centuries.

3.5.12 While the information contributed to the understanding of the Iron Age period in this region is significant, the density of the deposits recorded is not unusual. A large number of Iron Age settlements were already known in the region and the high number of sites relating to this period were anticipated within the Order Limits.

3.5.13 Iron Age settlements recorded within Order Limits also show evidence of continued occupation into the Roman period. Settlement activity continuing into the Roman period was recorded in Fields 9, 34, 44, 49, 58, 66, 73 and 74. Several of the enclosures recorded in Fields 92, 94 97 and 99 also included evidence of continued activity into the Roman period.

Roman (AD43-410)

3.5.14 Extensive evidence of Roman activity has been recorded in the study area with 68 assets recorded on the HER. Evidence of Roman activity within the region has benefitted from an increased number of evaluations and excavations that have taken place in the last decade, supplemented by extensive analysis of aerial photography (REF 19 page 33). Evidence of Roman date has been recorded within the study area through aerial photography. A possible high-status Roman settlement near Pivot and Gorse Plantation (outside the Order Limits, to the south of Field 88) was recorded through a large rectilinear compound with a smaller inner enclosure and various overlapping and subdividing elements.

3.5.15 Further settlement sites are also recorded on the HER to the north of Wintringham Hall where regular and rectilinear enclosures were recorded near to the Sandy to Godmanchester Roman road (Margary No 22). Other features of probable Iron Age or Roman date include possible hut circles north of Ingles Spinney and east of North Lodge Plantation, an oval palisaded enclosure near North East Farm and Pembroke College Farm, D-shaped enclosures between Pembroke College Farm and Ermine Street and traces of possible field boundaries.

3.5.16 Evidence of settlements within the study area include potential sites of high status noted to the north of Tempsford, including a villa (16799). At Little End, St Neots (MBD15267), a large enclosure was recorded as cropmarks and field walking in the area recovered a large number of surface finds including coins, jewellery, a miniature axe blade and a lead eagle figurine. Four of the Late Iron Age sites recorded during trial trench evaluation and recorded on the HER also showed evidence of continued use into the 1st and 2nd centuries AD and part of a 2nd to 4th century AD ladder settlement was also identified, in F35.

3.5.17 Geophysical survey undertaken as part of the archaeological evaluations for the Scheme has recorded numerous enclosure features of probable Iron Age or Roman date. These features ranged from large enclosure complexes to small isolated enclosures, and features such as roundhouses, pits and trackways have been recorded in association with the enclosures.

3.5.18 The presence of extensive remains from the period of transition from the Late Iron Age through the Roman period was identified through the trial trench evaluation of the Scheme. These include the enclosure complex in Field 9 which is believed to have been occupied through the Roman period and the continuation of a Late Iron Age and Roman site in Field 3 investigated during the update of the A421 Great Barford Bypass to the west (REF 5).

3.5.19 Several sub-square enclosures dating to the early Roman period and an associated large curvilinear ditch were recorded in Field 77. Features including pits and a possible roundhouse were also identified. Artefactual evidence shows that the site was occupied from the late Iron Age and into the 4th century AD. To the west of the settlement possible 'lazy beds' or a similar agricultural system was also recorded which were similar to those recorded during works to improve the A14 between Cambridge and Huntingdon (REF 5).

3.5.20 A large and complex farmstead, dating primarily to the 2nd – 3rd century AD, which was recorded in the eastern portion of Field 65, also contained large quantities of pottery. A possible clay extraction site was also recorded in this field, within an area with a possible kiln. Early Roman pottery was also recorded within the hill-top enclosure site in Field 66.

Early Medieval (410-1066)

3.5.21 The early medieval period (AD410 – 1066) is recorded in the place-names of the study areas, as well as the archaeological evidence recorded. Many of the settlements recorded in the Domesday Book have Anglo-Saxon origins (e.g. Eaton Socon and Eynesbury). Archaeological evidence has included settlement evidence close to Tempsford Park, as well as early examples of moated sites and Deserted Medieval Villages (DMV). There is considered to be an overlap of Roman and early medieval activity within the region, as the continuation of a Roman cultural tradition may be seen in the early 5th century through pottery and 'clipped' coinage. Although settlement during the early medieval (Anglo-Saxon) period is not a continuation of Roman settlement, the infrastructure remained an influence.

3.5.22 Evidence of the early medieval period identified during the evaluation trenching is fairly limited. A small number of sherds of pottery, dated as Saxon, was found in the upper fill of a rectangular enclosure ditch in Field 74 and a pit in Field 65. A ditch, dated as potentially early medieval, was recorded in Field 5 but its function is unknown. Similar ditches recorded during the work on the Black Cat Quarry was found to date to the 9th – 11th centuries and are potentially related to a Viking camp (REF 5).

Medieval (1066-1540)

3.5.23 Evidence for the medieval period is much more visible within the record and indeed, on the ground, with 105 assets recorded within the study area including moated enclosures, fishponds, deer parks, and religious buildings. Many of the sites are developments based on the infrastructure, the boundaries, settlements, religious sites, of the later early medieval, or late Saxon, period (REF 44 page 98). Moated sites are seen throughout the region and can be viewed as status symbols of wealthy farmers and landowners linked to agriculture, manors, and religious sites, with examples including the moated site at Swansley Wood, which belonged to the St Neots Priory (01087). Medieval moated sites have also been recorded at Wintringham Hall and Pastures Farm on aerial photographs.

3.5.24 DMVs are also a feature of the medieval landscape, and a number are present within the study area. One example includes the scheduled site of Wintringham (1006815) which comprises earthworks in a rectangular pattern of sunken roads and house platforms. In Field 70, 11th and 12th century enclosures and a trackway found during evaluation excavation likely formed the western edge of this DMV.

3.5.25 Ridge and furrow have been widely recorded within the study area, although much of it has been levelled by modern agricultural processes, as well as plough headlands recorded on aerial photographs.

3.5.26 The presence of these features indicates the dominance of agricultural land in the area during the medieval and early post-medieval periods. Further agricultural features were identified during Phase 2 of the trial trenching evaluation, including evidence of medieval/post-medieval field boundaries, matching existing boundaries to the west and east in Field 73 and ditches likely part of the medieval/ post-medieval farming landscape in Field 63.

3.5.27 Evaluation identified a post-medieval mill in Field 93 which was found to have its origins in the medieval period. Another feature of the medieval landscape recorded within the study area is a quarry, evidence of which was recorded within a trench in Field 69 during Phase 2 of the trial trench evaluation (REF 4).

3.5.28 Churches are perhaps the most common standing building form from the medieval period (REF 44 page 104). Within the study area are four churches with medieval origins. These are all Grade II* listed: Saint Pandionia and Saint John the Baptist Church, Eltisley, with the nave and aisles dating to c.1200 (1127179); St Mary's Church, Roxton, built in the 14th to 15th century of brown cobblestones with ashlar dressings (1105); the Church of St Peter, Tempsford, dated to the 14th and 15th centuries (1114096); and the 13th century Church of St Nicholas, Hail Weston, with its 14th century timber-framed tower (1330437). Whilst standing buildings are considered to be less common, the region boasts one of the highest number of extant medieval timber-framed buildings (REF 45 page 101). A small number are seen within the study area and include extant Grade II listed examples including the late 15th century The Old Post House, Eltisley (1331397), Manor Farmhouse, Croxton (1309206), and Green Farmhouse, Eltisley (1331396). During Phase 1 of the trial trench evaluation of the Scheme, the remains of High Hayden Farm were also identified, which potentially dates to the late medieval period, and is thought to be of high status.

Post-Medieval (1540-1900)

3.5.29 The post-medieval period is the most well represented period, with a large number of assets identified within the study area. During this period a number of nationally significant events left their mark on the landscape, with the enclosure of commons and the Agricultural Revolution in the 18th and 19th centuries (REF 19 page 79), the Industrial Revolution of the late 18th to early 19th centuries, and the agricultural decline of the late 19th century all leaving their mark on the landscape. The main

effects seen in the landscape are changes in the division of land, abandonment of farmsteads, and growth of towns and urban centres.

3.5.30 The development of transportation had a huge impact on the landscape. The River Great Ouse was made navigable from St Ives, Cambridgeshire to Bedford in the 17th century, a stretch of which lies within the study area. Turnpike Trusts were set up in the 18th and early 19th centuries, although many of the associated toll houses are now lost to road improvements (REF 45 page 128). The remains of a turnpike road (20571) run through Tempsford and through the Site to the north of Tempsford. This is the turnpike road that went from Tempsford Bridge (scheduled: 1005393) to Godmanchester. Associated with the growing road network are a number of mile posts, including four 19th century Grade II listed mile posts. These are largely cast iron, triangular in shape and painted white with black painted raised inscription. These are located along Cambridge Road in Croxton (1331371), and Caxton (1162760), and near the junction with Elsworth Road (1331369). One, located at Eltisley (1331394), is stone.

3.5.31 A further significant development was the introduction of the railways. The London to Peterborough section of the Great Northern Railway (MCB20853) opened in 1850 (now the East Coast Main Line) and runs through the Site at two locations. The impact on industries was great, enabling expansion and with it the expansion of urban centres, but was also one of the influencing factors of the agricultural decline.

3.5.32 Evidence of local manufacturing was recorded in Field 5 during the evaluation trenching. Evidence of a small industrial site comprising kilns, a quarry and small pits of medieval or post-medieval date were recorded. This site indicates that the manufacturing of brick and/or tiles using the locally sourced clay was being undertaken.

3.5.33 Although the development of industries affected the landscape during the post-medieval period much of the land remained in agricultural use throughout this period as recorded on the historic mapping and evidenced by the post-medieval farmsteads. These include extant structures as well as the sites of former buildings, as well as former field boundaries, recorded during geophysical surveys, dated to the 18th and 19th centuries, following the enclosure of medieval open fields. Post-medieval field boundaries and features were also recorded throughout the area (e.g. Fields 56, 77) during trial trenching of the Scheme. The sites of two former farms have also been identified and the site of a post-medieval windmill was evaluated.

Modern (1900-present)

3.5.34 The landscape has remained mostly agricultural in nature throughout the 20th century to the present, interspersed with farmsteads and small settlements, many of which survive from the post-medieval period.

3.5.35 The impact of the Second World War can still be seen in the landscape. Sites recorded within the study area include an anti-aircraft battery (MBD17958), pillbox (17966), and anti-tank traps (18001). The former RAF Caxton Gibbet (CB15131), used for training aircrew, was located at the eastern end of the Site, and was in use from 1934-1945, although the site of the main airfield has now been returned to agricultural use.

3.5.36 The expansion of St Neots continued through the 20th century, with Eaton Socon and Eaton Ford merging with St Neots in the 1960s, and development within and directly bordering the settlement has continued. This is not the case for many of the other settlements in the study area that appear to remain more contained with a small amount of development seen. One noticeable exception, Cambourne, to the south-east of the Site, is a new settlement, having become a civil parish in 2004. Road improvements along the Site occurred in 1972 with the adjustment of the road to bypass Eltisley (the original road now the A45), and a more major adjustment occurring in 1985 with the bypass around St Neots (the former road now the B1428).

4 Research agendas

4.1.1 Consideration of research agendas and themes is key to understanding the potential evidential significance of archaeological remains. The broad principles of a number of existing research agendas will be applicable to the works set out in this document.

4.1.2 The research agenda is key to identifying the focus for the archaeological mitigation, and to identify the sites that require further investigation. The purpose is to identify sites which will provide maximum information to answer the research questions set by the relevant frameworks and for the Scheme.

4.1.3 The mitigation strategy has taken the research questions into account, utilising information from desk-based studies, and archaeological evaluation. This has resulted in scheme wide research questions, as well as those specific to each site. The research questions will be reviewed and updated throughout the project – they are not fixed. For example, excavation at one site may lead to different questions for an adjoining site. The strategy should be flexible, and based on real-time information. The questions will be reviewed during preparation of the SSWSIs, during fieldwork and during preparation of the post-excavation assessment report.

4.1.4 The following section provides an overarching strategy, based primarily on the regional and thematic research agendas. Each site will have specific questions, as detailed in Appendix D. However, the SSWSIs will have an updated research section and questions. The questions presented in this document are not fixed and the questions set in the SSWSIs should be responsive to the Scheme.

4.1.5 While the research questions below largely echo those presented in section 4.2 of the Joint Cambridgeshire/Bedfordshire Brief for a Programme of Archaeological Investigation (see Appendix B), the research priorities of the Brief should also be taken into account when setting the research questions for the SSWSIs.

4.2 Relevant agendas

4.2.1 The relevant research agendas for the mitigation Strategy are:

a. Research and Archaeology Revisited: a revised framework for the East of England (REF 19).

b. The review of the Regional Historic Environment Research Framework for the East of England (REF 46), including papers by Cooper; Brudenell; Evans; Hills; Hoggett; Martin; Antrobus & Ayers, and Andrews.

c. Bedfordshire Archaeology Research and Archaeology: Resource Assessment, Research Agenda and Strategy (REF 20).

d. Understanding the British Iron Age: an agenda for action (REF 21).

e. The Rural Settlement of Roman Britain: an online resource (REF 22).

4.3 Overarching themes

4.3.1 The overarching themes of the research questions for the AMS relate to the following:

a. Bronze Age chronologies.
b. Bronze Age settlement patterns.
c. Bronze Age – Iron Age transition.
d. Iron Age settlement and field patterns.
e. Iron Age enclosure types.
f. Iron Age – Roman transition.
g. Interconnectivity of Roman settlements and the role of roads.
h. Roman industrial sites.
i. Roman – early medieval transition and possible settlement continuity.
j. Early medieval settlement and field types and forms.
k. Medieval and post-medieval agricultural systems.

4.4 Research questions by period

4.4.1 As there are no known sites of earlier than Bronze Age date, period specific research questions are omitted for the Palaeolithic, Mesolithic and Neolithic periods.

Bronze Age

4.4.2 There are two sites dated to the Bronze Age within the Order Limits, with other evidence recorded at some of the major Iron Age sites.

4.4.3 The presence of Bronze Age features can help to refine the chronologies of Bronze Age sites within the East of England. Further dating of Bronze Age settlement is required to refine the understanding of their distribution and chronology in the landscape. Equally, ceramic studies would be enhanced by better cross-referencing between typological methods of dating and scientific methods.

4.4.4 The transition between the Bronze Age and the Iron Age is poorly understood. This appears to be a period of marked change, with the abandonment of many late Bronze Age field systems. The scale, rate and nature of these changes are not well documented.

4.4.5 Priorities for research which the Scheme has the potential to address from the research agendas are identified as follows:

a. Settlement activity

The dearth of settlement evidence means that the identification and investigation of settlement and activity sites of this period is a high priority (REF 20).

The apparent concentration of settlement and ritual activity in two areas within the county: the main river valleys and the chalk downland need to be investigated to see if it is a real distribution or a function of archaeological activity and preconception (REF 20).

Examination of the inter-relationships between settlements, together with variation and changes in settlement types, offers considerable potential to explore the social changes taking place, as well as the interrelationship between settlements and monuments. This, coupled with more extensive palaeoenvironmental evidence, would enable past landscapes and economies to be recreated (REF 19).

Addressing 'gaps in knowledge' (Middle Bronze Age settlement, archaeology beyond the river gravels) – while significant progress has been made to this, the proposed Scheme will be able to add to the corpus of knowledge. It is now apparent that many areas of the region's claylands were extensively occupied by the end of the Middle Iron Age. Further work is needed to understand the processes of permanently settling these heavy soils, and how they unfolded over the course of the period. To what extent can 'pioneering' phases of occupation be recognised, and when did these give way to widespread permanent settlements? The character of clayland occupation in the Late Bronze Age and Early Iron Age require closer definition. Does this occupation differ to that on the gravels or other geologies? Is there any evidence that specific activities were being conducted on the clay? (REF 38).

Further analysis is needed to explore the range of settlement forms in the Late Bronze Age to Middle Iron Age, and establish their patterning and distribution. Attempts should be made to correlate patterns with the quantity and range of finds to try and benchmark different types of sites. Is there a correlation between enclosure forms and economic signature from animal bone retrieved, or the ceramic repertoire recovered? Are all types of find found across all types of site, or is there patterning in the content and composition? (REF 38).

b. Dating

Dating is a problem area throughout these periods. A key issue is the establishment of a firm chronological Research Agenda and Strategy framework, especially for the 1st millennium BC (REF 20).

The application of Bayesian modelling to radiocarbon dates based on rigorously selected samples will help to refine chronologies. Ceramic studies would be enhanced by better cross-referencing between typological methods of dating and scientific methods.

Dating of structures (e.g. roundhouses) and settlement enclosures (REF 47).

Field system chronologies – accepting the complexities involved in dating Bronze Age land boundaries, teasing out a more refined understanding of specific construction sequences remains important (REF 47).

c. Field Boundaries and Field Systems

Whilst it is now acknowledged that ditch-defined field systems were widely constructed in the region during the Middle Bronze Age, the later history of these features requires further investigation. How long did Middle Bronze Age boundary systems continue to structure the organisation of the early to mid-first millennium BC landscapes? Further work is also needed to define if, where and when earlier field systems were actively maintained, or establish whether new systems were constructed (REF 38).

4.4.6 Further questions raised by the Scheme, either in the Rationale and Strategy (see Appendix C) or in the reports on the evaluation excavations, are as follows:

a. Mitigation should focus on relationships between site clearance, landscape partition, settlement and farming practices.

b. The site in Field 70 site lies at a higher elevation than the sites in Fields 34/35 and 44, which lie within the valley of the River Great Ouse. What is the relationship between settlement and topography/ geology? (See also settlement activity section above).

Iron Age

4.4.7 The most evidence on the Scheme dates to the Iron Age, with multiple sites identified through desk-based research and evaluation. These include settlement complexes, such as those in Field 9 and Field 44, as well as enclosures across the landscape. These latter include a variety of different forms, including circular enclosures and sub-square rectangular enclosures. Some may form groups, or subsequent periods of activity.

4.4.8 There is very little evidence for unenclosed settlement, although some locations have been identified, such as in Field 80 and Field 97. The relationship between open structures and enclosed sites is not well understood, and neither is the relationship between seemingly unenclosed settlements and linear boundaries or strings, such as that in Field 90.

4.4.9 Some sites continued in use into the Roman period, and examination of the transition will pose a number of research questions about settlement development and the relationship of the native peoples with the Roman incomers.

4.4.10 Evidence of activity in the landscapes between the enclosures is another area where information is lacking. However, evidence from the Scheme is limited, and there is little scope to investigate this further. Where unenclosed settlements or field patterns have been identified, further work is proposed.

4.4.11 Priorities for research which the Scheme has the potential to address, identified from the research agendas, are as follows:

a. Settlement types

Distribution, density and dynamics need further study, including zonation of use/internal spaces; location of sites with reference to topography and geology, resources, communication routes, etc.

The character of the wide variety of enclosure types (domestic, agricultural, etc.) is a matter for further research. The extent to which this apparent proliferation is a product of our interpretative frameworks, however, and the tendency to assign a (Late) Iron Age/Roman date to undated rectilinear enclosures and fields primarily on the basis of their morphology, needs further investigation, including ground-truthing. Simultaneously, it is at present almost impossible to distinguish later Iron Age sites from those of Roman date on the basis of morphology alone. There is also great potential for investigating the relationships between field systems and long-distance trackways, and settlements, enclosures and funerary sites (REF 19).

Further analysis is needed to explore the range of settlement forms in the Late Bronze Age to Middle Iron Age, and establish their patterning and distribution. Attempts should be made to correlate patterns with the quantity and range of finds to try and benchmark different types of sites. Is there a correlation between enclosure forms and economic signature from animal bone retrieved, or the ceramic repertoire recovered? Are all types of find found across all types of site, or is there patterning in the content and composition? (REF 38).

In recent years many sites of this type have now been excavated within the region and this is to the point that they soon risk becoming repetitive. In this regard, a number of points warrant notice. First, that too much excavation is strictly focused on their core-area paddocks, with insufficient attention given to their fields, which after all was the basis of their production. Not only is this true as regards environmental study (e.g. soil micromorphology and pollen), concerning what was actually growing where, but also what processing and stock facilities actually occurred out in the fields. With some landscapes so packed with farmsteads, to what degree was the land ‘managed’ and their practices sustainable? Second, it is settlements of this type in which variable methodologies should be applied. Rather than continuing to dig them by just ‘standard rote’, in the light of their frequency, some could see more minimal recording (e.g. just establishing their plan layout and broad sequence-chronology). In balance, though, others warrant being excavated (and sampled)

to a much higher intensity, so that the dynamics of their operation – variously the foci of processing, storage, consumption and middening – can be interrogated and detailed (REF 48).

b. Dating

Dating is a problem area throughout these periods. A key issue is the establishment of a firm chronological Research Agenda and Strategy framework, especially for the 1st millennium BC (REF 20).

Even in artefact “rich” areas like Wessex and south-east England, we often overlook how dependent the absolute dating is on a few key sequences and diagnostic artefact types. The existing, essentially ceramic-based, chronology relies heavily on the proposition that broadly similar regional assemblages were in use at the same time. The apparent persistence of handmade ‘middle Iron Age’ pottery traditions into the Roman period in parts of southern and eastern England, without an intervening ‘late Iron Age’ phase defined by wheelmade pottery, affords a good illustration of this point (REF 21). Specific questions include:

B2 Developing dating frameworks

The application of Bayesian theory to radiocarbon dates could help refine the absolute chronology for the region. While radiocarbon dating is an essential tool in the excavation of Iron Age features, what is dated is important. As well as those features that might be important for the sequence of the site, features with good pottery assemblages need to be targeted. Finds of datable metalwork in context — particularly brooches and coins — are of great importance, and need to be clearly correlated with pottery and other material. Finds of early and middle Iron Age brooches, pins and other metalwork are very rare, any found in context are of crucial importance (REF 19).

c. Clayland settlement and exploitation

There is also a need to understand more about regional variation in the county during the Iron Age and Roman periods. For instance, how do the settlement patterns known from the main river valleys differ from the emerging pattern recently identified from air photographs in the clay plateau in the north of the county [Bedfordshire]; and where elements are contemporary how do they interact. As yet little is known about the sites on the clay and understanding these sites is a priority. At the same time the range of variation settlements in the river valleys is not yet fully understood (REF 20).

It is now apparent that many areas of the region’s claylands were extensively occupied by the end of the Middle Iron Age. Further work is needed to understand the processes of permanently settling these heavy soils, and how they unfolded over the course of the period. To what extent can ‘pioneering’ phases of occupation be recognised, and when did these give way to

widespread permanent settlements? The character of clayland occupation in the Late Bronze Age and Early Iron Age require closer definition. Does this occupation differ to that on the gravels or other geologies? Is there any evidence that specific activities were being conducted on the clay (REF 38)?

d. The agrarian economy, field systems, and the areas between

If their potential for interpreting life in the Iron Age in new and exciting ways is to be realised, sites excavated ahead of development need to be investigated and analysed according to some stringent and novel guidelines, developed in partnership with curators and contractors. Two main areas of innovation are required: first, in relation to sampling fractions as specified in project briefs; and second, regarding the analysis and publication of finds assemblages (REF 21).

Most Iron Age settlements were farmsteads, most Iron Age people were farmers, and farming formed the basis of Iron Age societies. Although archaeobotanical and archaeozoological studies are offering more sophisticated elucidation of Iron Age agricultural regimes and their variation in space and time (e.g. Jones 1996; Hambleton 1999), this work is only loosely articulated with research on other aspects of material culture and society. A more inclusive approach is required, which would transcend the normal separate reports on the animal and plant remains. One answer is to develop an agrarian sociology for the Iron Age (REF 21).

The nature of the agrarian economy needs further study. Is a real understanding of continuity and change emerging? What are the relative proportions of cereals and livestock and is there a changing dynamic throughout the period? A wider understanding is needed of the extent and nature of the palaeoenvironmental resource, in order to target those sites with the greatest potential. Further work is required on recording palaeoenvironmental and faunal data, as well as micromorphological analysis of buried soils and alluvial/colluvial deposits (REF 19).

Further work is needed to explore the connections between adjacent sites thought to be contemporary. How did they relate, physically, socially and economically? Beyond proximity, can we trace other physical and material links between these sites? Clues may be found in the details of the content and composition of their artefact repertoires or faunal signatures etc. Are these more alike on adjacent sites than those from those further afield? Equally, differences may be revealing of relative status, or the adoption of different but linked economic strategies (REF 38).

e. Depositional practices

Work is needed to explore the wider nature of depositional practice on sites. Discussions on this theme have tended to focus on overtly formal acts of ‘structured’ or ‘ritual’ deposition. These are important, but interpretation must move beyond definition and identification if it is to continue to further the

understanding of these practices. Crucial is the recognition that material entered the ground in a variety of different ways, and for a variety of different reasons, grading from the largely unconsidered disposal of refuse at one end of the spectrum, to overtly and explicitly symbolic acts of deposition at the other…Bulk sampling for botanical remains and sieving for animal bone and artefacts should be routine requirements in briefs for potential Iron Age sites, supported by scientific techniques such as phosphate analysis, magnetic susceptibility and soil analysis. While the quantities of finds are generally going to look small compared to later periods, maximising their retrieval is essential to define the regionally-specific practices around which Iron Age social relations were evidently articulated. It is also imperative to look beyond visible settlement boundaries (REF 38).

Clear finds recovery strategies should be established and made explicit in published reports: complex interpretations are unsustainable without well-excavated, quantified data. This needs to operate at various levels. There should also be deliberate targeting of potentially artefact-bearing deposits, for example in the digging of stretches rather than constrained sections of ditches (REF 38).

Deposition and related taphonomic problems have been a popular topic in Iron Age studies for several years now, as ideas of deliberate deposition with ritual intent have caught on. However, mere identification of ritual is insufficient without an attempt to explain it (REF 38).

There clearly is a pressing need for site publications to more widely present artefact-category distributional analyses. Without this, it is difficult to appreciate, for example, a settlement's middening patterns or whether finewares clustering occurred adjacent to house compounds, as opposed to animal paddocks. Indeed, not undertaking this kind analysis and visualisation, is to miss one of the main strengths of large-scale/total settlement investigations (REF 48).

f. Burial and the treatment of human remains

There is evident need for research into the location of Iron Age burials and how these relate to other components of the settlement pattern (REF 21.

Cremations are being found in varying contexts and locations, as isolated burials, small groups, as or as part of larger cemeteries. Further work is needed to understand the nature and extent of this funerary tradition, and the degree of continuity with practices from the Middle Bronze Age. Some Early Iron Age examples have also been recorded suggesting continuity into the earlier first millennium BC. Routine radiocarbon dating of cremations will be crucial. Isolated cremations should be dated. The same is true for isolated, often flexed, inhumations, which have yielded dates covering the whole of the late second and first millennium BC (REF 38).

g. Iron Age/Roman transition

On sites of this period, does the evidence suggest a seamless transition or a change in use of the land or farmstead, or continued occupation of the site but a change in building-types or agricultural practice? How far is there assimilation of late Iron Age culture into Roman or does acculturation occur? Are religious sites and deities, Roman ways and styles adopted first by the ruling elite and then by the masses? To what extent do indigenous building styles persist? Is there continued use of field systems (with modest adaptation) as late as the early 2nd century? (REF 19).

4.4.12 Further questions raised by the Scheme, either in the Rationale and Strategy (see Appendix C) or in the reports on the evaluation excavations, are as follows:

a. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'.

b. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction?

c. What was the influence of east–west landscape divisions along the Scheme? This includes the river and the string system boundaries.

d. What was the purpose of the string system boundaries? Were they strictly agricultural/pastoral or did they relate to larger territorial-blocking units? Do any recut earlier pit alignments? What is the relationship of the boundary strings to settlement activity, if any?

e. With regard to the Scheme's east-west axis, at what point did the different character of Bedfordshire's Iron Age settlements – with a greater frequency of grain storage pits and pit alignments – become apparent. Was the Ouse a divide in this or was it a matter of gravel vs. clay geologies?

f. Was there any relationship to the area's more scant evidence of preceding (unenclosed) Late Bronze/earlier Iron Age usage? Were these in anyway ancestral to the subsequent Iron Age enclosed settlements, perhaps representing seasonal forays onto the heavier lands prior to permanent settlement?

g. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute?

h. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

i. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

j. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

k. The Scheme would be located at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the Scheme?

l. What was the purpose and function of the various cellular enclosures? Do these relate to functional differences (e.g. livestock vs. occupation) and/or multiple family-unit usage?

m. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

n. What does the pottery show about trading patterns and external influences?

o. Is it possible to determine which settlements were active concurrently? How were they connected?

Roman

4.4.13 A number of the sites with evidence of Roman date located within the Scheme had their origins in the Iron Age. These sites will provide an opportunity to examine the Iron Age to Roman transition.

4.4.14 Other sites are of specific Roman date, with sites ranging from smaller enclosures to much larger scale sites. These will allow research questions pertaining to different settlement types to be addressed. The major sites on the Scheme of Roman date are located in Field 65 and Field 77, both of which appear to have a good degree of surviving deposits and artefacts. That in Field 65 is only part of a much larger settlement complex, which contains (to the north outside the Order Limits) rectangular buildings that may form a villa complex or perhaps a *mansio.* This site also contained evidence of industrial activity, which was not seen elsewhere. In Field 77 there was a large settlement complex with evidence of

agricultural activity of Roman date. While the site had its origins in the Late Iron Age, the pottery predominantly dated to the 3rd and 4th centuries AD, allowing for later Roman activity to be examined.

4.4.15 The Order Limits are also crossed by three Roman roads, including Ermine Street. While no evidence of the roads was recovered, the Scheme has the potential to answer questions regarding the relationships between Roman roads and settlement patterns.

4.4.16 Priorities for research which the Scheme has the potential to address from the research agendas are identified as follows.

a. Romanisation

   Understanding both the continuity of Iron Age into Roman settlement and the 2nd century 'Romanisation', identifying continuity as well as new settlement structure and land use which develops across the region at this time and explanations for this at site, landscape and political levels. Some regions show evidence of re-organisation several decades after the Roman Conquest (REF 19).

b. Rural settlements and landscapes

   There is also a need to understand more about regional variation in the county during the Iron Age and Roman periods. For instance, how do the settlement patterns known from the main river valleys differ from the emerging pattern recently identified from air photographs in the clay plateau in the north of the county [Bedfordshire]; and where elements are contemporary how do they interact. As yet little is known about the sites on the clay and understanding these sites is a priority. At the same time the range of variation settlements in the river valleys is not yet fully understood (REF 20).

   Many rural sites have been excavated in recent years. Although the data needs collation and analysis, this work raises a number of issues: What forms do the farms take, and is the planned farmstead widespread across the region? What forms of buildings are present and how far can functions be attributed to them? Are there chronological/ regional/ landscape variations in settlement location, density or type? How far can the size and shape of fields be related to the agricultural regimes identified, and what is the relationship between rural and urban sites? How common are aisled buildings within the region, and how are they used? A general impression from fieldwork suggests that far greater numbers of rural sites are present in the late Iron Age and early Roman period than the later Roman period, a pattern recognised elsewhere in Britain, but worth confirming and quantifying in the East of England. Settlement typology should be reviewed across the region to establish consistent terminology and test hierarchical models and consider how and why such hierarchies developed (REF 19).

In recent years many sites of this type have now been excavated within the region and this is to the point that they soon risk becoming repetitive. In this regard, a number of points warrant notice. First, that too much excavation is strictly focused on their core-area paddocks, with insufficient attention given to their fields, which after all was the basis of their production. Not only is this true as regards environmental study (e.g. soil micromorphology and pollen), concerning what was actually growing where, but also what processing and stock facilities actually occurred out in the fields. With some landscapes so packed with farmsteads, to what degree was the land 'managed' and their practices sustainable? Second, it is settlements of this type in which variable methodologies should be applied. Rather than continuing to dig them by just 'standard rote', in the light of their frequency, some could see more minimal recording (e.g. just establishing their plan layout and broad sequence-chronology). In balance, though, others warrant being excavated (and sampled) to a much higher intensity, so that the dynamics of their operation – variously the foci of processing, storage, consumption and middening – can be interrogated and detailed (REF 48).

In the future, planners and excavators must be aware of both the larger and the local picture as well as of new scientific and methodological techniques that may greatly enhance our understanding of matters such as chronology, population and livestock mobility, and site formation processes (REF 22).

In the Central Belt, East and South regions, with much higher densities of excavated sites, in addition to looking for higher standards of excavation and reporting, there are still major gaps in our knowledge. The recovery of evidence of structures in materials such as wood, cob or turf, is still poor, such that it remains difficult to reconstruct the built environment of farmsteads and the people who lived and worked in them. This puts a premium on sites not damaged by ploughing, where structural evidence may be better preserved. (REF 22).

c. Dating

Further excavations of Roman rural sites across much of the Central West, Upland Wales and the Marches, the North and the South-West regions are all highly desirable. In these regions where assemblages of material culture are often very limited and where preservation of environmental data are very poor, a better grasp of chronology, drawing on more extensive and rigorous radiocarbon dating, is essential. This can only be resolved by extensive programmes of scientific dating (REF 22).

d. Infrastructure

We are slowly adding to our knowledge of the Roman road network, principally from the results of the National Mapping Programme (NMP), but more archaeological evidence is needed before we can produce a comprehensive

synthesis of roads and lesser routeways. Also, as monuments, they are under-studied. What variations in structure exist? Are they different in the countryside, and on different terrain? Why did some disappear and others continue in use? Those which disappeared were often deliberately cut, e.g. by historic parks, so for what reasons and when? (REF 19).

e. Manufacturing and industry

Evidence for manufacturing and the organisation of industry in the region needs collation and synthesis. The impact of Roman quarrying and extractive industries on the landscape needs further study. How does industry relate to topography and natural resource and how does this affect the infrastructure? (REF 19).

f. Finds studies

More synthetic work needs to be undertaken, for instance, are items such as mortaria and samian bowls used differently on rural sites than on urban, as seems to be the case in some areas? A brief survey suggests that puddingstone querns are more common on rural sites than urban where their place is taken by lava querns, does the distribution of other finds show similar variation? Structured deposition is now accepted as being a widespread phenomenon, there is however a need to classify the different forms this takes and critically interpret their meaning. Detailed recording of *in situ* assemblages would aid understanding (REF 19).

As highlighted in the Reading Project studies, as issues of ceramic trade/supply are coming to the fore it is imperative that relevant specialists are familiar with the full range of major pottery industries so that the scale of their regional distributions can be mapped. Conversely, with 'Early' kilns now being widely found on settlements the context of their production needs to be explored: were they strictly local settlement related or were some more widely traded? (REF 48).

4.4.17 Further questions raised by the Scheme, either in the Rationale and Strategy (see Appendix C) or in the reports on the evaluation excavations, are as follows:

a. Questions concerning the status of the Romano-British settlements along the Scheme and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham. There, closely packed and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements?

b. Did the line of the Roman roads influence settlement location, such as those in Fields 75 and 76? Are settlements linked by Roman roads, such as those in Field 73, Field 77 and those at Loves Farm to the north?

c. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

d. While lazy-bed planting plots only seem associated with the settlement in Field 77, it is likely that field system boundaries will be found to extend beyond the period's main settlement cores. As highlighted in recently revised Regional Research Framework document (Evans 2018), it will be imperative that further trenching is conducted along them to facilitate pollen sampling in an effort to elucidate what crops were grown where (and, potentially, identify the location of woodlots.

e. What influence did Ermine Street have of the density and character of the settlement in the area?

f. Did the proximity of Ermine Street contribute to some settlements continuing from the Late Iron Age into the Roman period?

g. Does the large number of local kilns indicate that pottery was largely locally produced?

Early Medieval and Medieval

4.4.18 Evidence of early medieval date is limited on the scheme to Field 5 and Field 70, although Saxon pottery was also recovered in a quarry pit in Field 65 and a ditch in Field 74. In Field 5 the remains were limited to a ditch, although this may be associated with a Viking Camp, recorded to the east at Black Cat Quarry and also in the vicinity of Rockham Ditch. The excavated ditch may have defined an area of industrial activity, although features here were believed to be post-medieval in date.

4.4.19 At Field 70 the evidence is likely to be related to the Deserted Medieval Village of Wintringham to the east and will answer questions relating to the extent of the settlement, and agricultural activity related to the village.

4.4.20 A mill with medieval origins was recorded in Field 93. This could answer questions regarding early industrial practices.

4.4.21 Other evidence of medieval date is limited to ridge and furrow and other agricultural remains. These may answer questions about the agricultural scheme and landscape patterns.

4.4.22 Priorities for research which the Scheme has the potential to address from the research agendas are identified as follows:

a. Rural settlement

Evidence of early Saxon settlement is known from Bedfordshire, both as a presence on ostensibly late Roman sites and without this association; the majority are from river valley locations. However, there is not sufficient information on the location of settlements to be able to understand the settlement pattern and how it relates to the late Roman pattern. Nor is there adequate excavated information to be able to understand the structure of settlements in this period (REF 20).

The origins and development of the different rural settlement types need further research, also the dynamics of medieval settlement. Much of the region has primarily a dispersed pattern, not nucleated, and more small hamlets are being discovered all the time. More data will add to our understanding of the way places appear, grow, shift and disappear (REF 19).

A review of the settlement evidence in 'Greater East Anglia' (Essex, Suffolk and Norfolk) has highlighted some of its distinctive and significant features. These include a high incidence of dispersed farmsteads of medieval origin, many of them moated, and settlements arranged around the edges of common pastures called greens or tyes, which are often peripheral to their parishes and, it is suggested, post-Norman Conquest in origin. Earlier origins for greens are, however, suggested for Cambridgeshire (REF 49). Specific questions include:

i. The importance of studying the medieval evidence within its wider landscape.

ii. Palaeoenvironment sampling and the dating of extant historic landscape features such as field boundaries.

iii. Settlement change, evolution and abandonment, particularly with reference to the evolution of greens and green-side settlements.

b. Landscapes

There is huge potential for further research into topics such as field systems, enclosures, or roads and trackways, in particular utilising historic maps and documents. The use of NMP transcriptions and interpretations for researching settlement might be taken further, for example where it has added significant new information to previously surveyed sites, or has identified physical evidence for sites which were previously known only from documents or surface/metal-detected finds (REF 19).

c. Industry

The production and processing of food for urban markets is a key element in understanding the relationship between towns and their rural hinterlands from the Roman period onwards. The interchange between rural food supplies and urban industrial and craft products was essential for both town and village or hamlet (REF 19).

Post-Medieval

4.4.23 Evidence of post-medieval date is limited. There is a large amount of ridge and furrow recorded across the scheme, which will answer questions related to agricultural development and land-use. Two sites, the kilns in Field 5 and the mill in Field 93, may answer questions about industrial practices.

4.4.24 Priorities for research which the Scheme has the potential to address from the research agendas are identified as follows:

a. Industry and infrastructure

The development and diversity of rural industry (agricultural engineering, textiles, brick making) would benefit from further study, also the role of energy creation within the landscape and the built environment associated with this (e.g. watermills, windmills, pumping-stations and gasworks) (REF 19).

b. Landscape

The large number of post-medieval sites recorded by the NMP represents a substantial body of data. There is huge potential for further research into topics such as field systems, enclosures, roads and trackways or parks and gardens, in particular utilising historic maps and documents. The use of NMP transcriptions and interpretations for researching settlement might be taken further, for example where it has added significant new information to previously surveyed earthwork sites, or has identified physical evidence for sites which were previously known only from documents or surface/ metal-detected.

PART TWO – OVERARCHING SCOPE OF WORKS

5 Mitigation strategy

5.1 Archaeological mitigation requirements

5.1.1 The basic principle for the mitigation strategy is to mitigate impacts on archaeological sites identified as a result of the Scheme. Rather than taking a standard approach of strip, map and record, excavations will instead be targeted upon those sites which maximise information and which have the ability to answer as comprehensively as possible, the Scheme and site specific research questions. There will be some sites that do not fit this criteria and additional work upon them will not be undertaken. Other sites, although within the Scheme boundary, will be fenced off during construction to ensure they are preserved.

5.1.2 To assist with identifying sites for targeted excavations, sites have been divided into four categories:

a. Sites with intrinsic value (i.e. those so important they need to be excavated fully and with increased sampling).

b. Sites with group value (those which, taken with other sites, have increased value. For example, these examine different types of Iron Age enclosures, and the string settlements) and key sites (sites that require full excavation where their investigation is key to understanding a period or site type).

c. Sampling (sites that only need further investigation into certain elements, such as structures or for environmental information).

d. Sites where no further work is required (including those that can be fenced off).

5.1.3 A range of archaeological mitigation requirements are proposed, taking into account the form and significance of archaeological remains or other heritage assets that would be impacted by the Scheme. The principal mitigation techniques to be used are:

a. Excavation.

b. Archaeological excavation and sampling.

c. Geoarchaeological assessment.

d. Preservation of archaeological remains (i.e. fencing).

5.1.4 A total of 41 sites have been identified that require archaeological mitigation. These can be seen on Figure 1.

5.1.5 Five sites have intrinsic value and will require detailed excavation (Sites 3, 4, 7, 15 & 22). The methodology for detailed excavation is outlined in Section 8.

5.1.6 Eighteen sites are considered to be of group value and key sites. They will require excavation or further sampling (Sites 5, 9, 10, 11, 13, 14, 17, 18, 29, 30, 31, 32, 33, 34, 36, 37, 38 & 39). The methodology can be seen in Section 9.

5.1.7 Thirteen sites will require further sampling, including geoarchaeological assessment (Sites 1, 2, 8, 16, 19, 20, 23, 24, 26, 27, 28, 35 & 41). The methodology can be seen in Sections 9 and 10.

5.1.8 Five sites have been identified that require preservation of archaeological remains, with three others requiring elements to be preserved (Sites 1, 4, 6, 12, 16, 21, 25 & 40). The methodology for preservation of archaeological remains is outlined in Section 11.

5.1.9 In addition, 12 sites have been identified as requiring no further work and are outlined in **Table 5.1** below.

5.1.10 In addition to the archaeological mitigation, work will be required to mitigate effects on built heritage assets.

5.1.11 Brook Cottages, a Grade II listed building, would be demolished as a result of constructing the Scheme. It is proposed to fully record this building prior to its demolition. The methodology for building recording is outlined in Section 12.

5.1.12 Three Grade II listed (NHLE 1163534,1331394 and 1162760) and one non-designated milestone (8808) would be impacted by the construction of the Scheme. These will be removed, stored and reinstated as close as possible to their original location. The methodology to undertake this is outlined in Section 12. A similar methodology will be used for the sign at the existing Black Cat roundabout.

5.1.13 The overarching methodologies outlined in Sections 8 to 12 have been compiled taking account of advice provided by the Curators, guidance provided by the CIfA Code of Conduct (REF 13), the Standard and Guidance for Archaeological Excavation (REF 14), the Standard and Guidance for Archaeological Evaluation (REF 16), and other current and relevant good practice and standards and guidance (refer to Appendix A).

5.1.14 Details for each site requiring archaeological mitigation are outlined in **Table 5.1** below, and presented in Appendix D.

Table 5.1 Archaeological Mitigation Sites

Site Number	Field Number	Size (Hectares)	Summary of Archaeology	Mitigation Requirements
1	3	0.1	Part of a Romano-British enclosure system.	c. Sampling Further sampling of linear features (209107, 211603, 211609) and preservation under bund. Management of access – any tracks to be stoned up or using bog mats.
2	5	0.9	Post-medieval kilns and quarry pit. Possible early medieval enclosure.	b. Group value/key site Targeted excavation of medieval and post-medieval features in Trenches 2112, 2136 and 2108.
3	9	2.29	Multiple sub-square enclosures on the south of a larger rectilinear settlement. Late Iron Age to Roman.	a. Intrinsic Full excavation. Advance works.
4	34 & 35	2.85 1.6 excavation 1.25 fenced off	Late Bronze Age roundhouse and undated linear boundary.	a. Intrinsic Full excavation. Advance works and second phase during construction. d. No further work Area to be fenced off
5	34	1	Settlement complex of Iron Age to Roman date.	b. Group value/key site Excavation.
6	35	0.18	Rectilinear Roman enclosure.	d. No further work Fence-off.

Site Number	Field Number	Size (Hectares)	Summary of Archaeology	Mitigation Requirements
7	44	2.22	Multi-phase Iron Age and Roman farmstead and enclosure complex.	a. Intrinsic Full excavation. Advance works.
8	47 & 48	0.8	Small oval Iron Age enclosure and pits.	c. Sampling Sampling of enclosure and boundaries to north & south in Field 47, and pits in Trenches 1072 and 1071 in Field 48.
9	49	3.4	Straggling arrangement of ditches date to the Iron Age. A ring ditch was located at the eastern end, which contained a human skull. Potential for Romano-British deposits.	b. Group value/key site Excavation of features in centre of field.
10	53	1.23	Oval Iron Age enclosure.	b. Group value/key site Excavation. Sampling of colluvium and palaeochannel along beck. Mapping of ridge and furrow alignment.
11	54 & 56	1.48	Large oval Iron Age enclosure and a cluster of Middle to Late Iron Age features.	b. Group value/key site Excavation.
12	56	0.09	Middle to Late Iron Age features.	d. No further work Fence-off.
13	58	2.5	A sub-square Iron Age/Roman enclosure.	a. Intrinsic Full excavation.
14	59	1.46	Wintringham Site 2 – trackway and Iron Age features.	b. Group value/key site Excavation.

Site Number	Field Number	Size (Hectares)	Summary of Archaeology	Mitigation Requirements
15	64 & 65	4.86	A developed Romano-British complex.	a. Intrinsic Full excavation. No works to take place along footpath to west. This should be fenced off.
16	66	1.17 0.25 excavation 0.92 fenced off	An enclosure complex of Late Iron Age to Roman date.	c. Sampling d. No further work Area to be fenced off with the exception of affected linear feature. Any features located in this area will be sampled.
17	69 & 70	3.49	Bronze Age roundhouse and late Saxon – early Norman trackway with associated enclosures, possibly part of the Wintringham DMV.	b. Group value/key site Excavation of Bronze Age features. Saxon-Norman remains will be stripped and excavated to establish feature relationships and association with DMV. Mapping of ridge and furrow alignment. Record relationship of the ridge and furrow to medieval settlement activity.
18	73 & 74	7.57	Two small Iron Age enclosures and a Roman site.	b. Group value/key site Excavation. NB Northern end of the eastern site in Field 74 will not be investigated.

Site Number	Field Number	Size (Hectares)	Summary of Archaeology	Mitigation Requirements
19	58 & 62	4.21	Soil build-up in F58 south of Hen Brook. Palaeochannel recorded in F62 to the north.	c. Sampling Geoarchaeological and palaeoenvironmental assessment.
20	75 & 76	1.08	Iron Age ditches and enclosure.	c. Sampling Sample ditch and excavate enclosure. Trial trench across existing track.
21	59	4.58	Wintringham Site 1.	d. No further work No impact from Scheme. Areas to be fenced off.
22	77	2.72	Roman settlement site.	a. Intrinsic Full excavation. Management of woodland removal. Comparison of Roman bedding trenches against the alignment of the ridge and furrow.
23	80	0.44	Unenclosed Iron Age roundhouse and burial.	c. Sampling Sampling around roundhouse.
24	83 & 84	1.68	Two associated Middle Iron Age enclosures. String settlement. Deposits understood and only part of the system is within the Scheme boundary.	c. Sampling Sample to compare with other examples.
25	85	0.54	High Hayden Farm (site of).	d. No further work Fence off.

Site Number	Field Number	Size (Hectares)	Summary of Archaeology	Mitigation Requirements
26	86	0.34	Southern half of an Iron Age curvilinear feature.	c. Sampling Sampling around Iron Age enclosure.
27	88	0.06	Iron Age pit and undated ditches.	c. Sampling Sampling around the pit.
28	90	1.52	Middle to Late Iron Age enclosure and boundary ditch – part of a string settlement.	c. Sampling Sample to compare with other examples.
29	92	2.38	Two small Iron Age enclosures – a string settlement.	b. Group value/key site Excavation
30	92	3.9	Enclosure and boundaries.	b. Group value/key site Excavation
31	93	0.9	Medieval mill.	b. Group value/key site Excavation.
32	94	1.19	Three sub-circular Iron Age enclosures.	b. Group value/key site Selected and targeted excavation.
33	94	0.37	Iron Age enclosure.	b. Group value/key site Selected and targeted excavation.
34	95	1.55	Romano-British farmstead.	b. Group value/key site Strip area and sample of features. Southern part of Field 96 will be fenced off – no impact.
35	69 & 70 West	0.5	Area of brook and a possible Roman road alignment. Geoarchaeological potential.	c. Sampling Sampling and geoarchaeology.
36	97	1.29	Iron Age enclosures (Areas 2 & 3)	b. Group value/key site Excavation.

Site Number	Field Number	Size (Hectares)	Summary of Archaeology	Mitigation Requirements
37	97	0.69	Iron Age unenclosed roundhouse and linear features (Area 5)	b. Group value/key site Excavation.
38	97	1.42	Iron Age enclosure (Area 1).	b. Group value/key site Excavation.
39	97	1.41	Iron Age possible rectilinear enclosure (Area 4)	b. Group value/key site Excavation
40	99	0.76	Iron Age enclosure.	d. No further work Fence-off.
41	26	1.2	Prehistoric pits, Iron Age triple ditch boundary and Roman settlement.	c. Sampling Sampling

5.1.15 A number of other areas containing archaeological remains were identified where no further work is warranted, other than those presented in **Table 5.1**. This is because the remains were poorly preserved or were fully understood from the evaluation. These can be seen in **Table 5.2** below.

Table 5.2 Summary of Sites requiring no further work

Field Number	Summary of Archaeology	Reason
17	Two ditches of likely medieval date.	Understood from evaluation.
39	Roman bedding trenches.	Understood from evaluation.
46	There are possible enclosures showing at the western edge of the site on the geophysical survey, but during evaluation only one ditch of Roman date was identified, with a second of possible Roman date. An undated post-hole was also found.	Understood from evaluation.
57	Post-medieval pond	Understood from evaluation.
68	Isolated linear features. Roman ditch also seen in F73. Other features considered to be relatively modern.	Understood from evaluation.
69	Ditch and quarry pit.	Understood from evaluation.

Field Number	Summary of Archaeology	Reason
74	Northern ditch of an Iron Age enclosure.	Understood from evaluation. Only a small part of this site clipped by the construction of the Scheme.
78, 79, 81 & 82	Post-medieval furrows and ditches.	Understood from evaluation.
89	Undated gully.	Understood from evaluation.

5.1.16 Prior to the start of the archaeological works, procedures will be adopted in the EMP to ensure that sites of archaeological interest are protected, as detailed in this document, as certified by the DCO. This will involve fencing for sites to be retained (see Section 9) and clear notices on site fences. Toolbox Talks will be provided by the ACoW and/or the Archaeological Contractor to inform all site personnel of the archaeological and historic environment constraints on site, the protection measures that are required and their obligations under this AMS to ensure that these are put in place and complied with. The Toolbox Talks will identify sensitive areas/sites that must not be disturbed until investigation is completed and the site signed-off to construction, or where long-term protection is required. In addition, a Toolbox Talk should be given on the appearance of archaeological remains, particularly burials, during soil stripping and the process on how to report these.

5.1.17 In addition, the Archaeological Contractor must prepare a detailed outreach strategy. This must follow the outline strategy presented in Appendix E.

Unexpected finds

5.1.18 If unexpected finds (sites, artefacts, environmental remains or ecofacts, monuments or features) are made during the works, a site consultation meeting(s) will be convened between the Archaeological Contractor, the ACoW, and the relevant Curators, to consider the significance of the find. Depending on the outcome of the consultation meeting, an addendum to the SSWSI or a new SSWSI will be prepared by the Archaeological Contractor in consultation with the ACoW and the relevant Curator.

5.1.19 The procedure for dealing properly with any unexpected finds during the construction process will be set out in each approved SSWSI and recorded in the EMP. This includes where unexpected features extend outside of the boundary of each mitigation area.

5.1.20 In the event of the unexpected finds requiring excavation, if agreed by all parties, the discovery will be reported to the A428 Change Board and a budget agreed. Although paragraphs 2.4, 5.3.4, 8.8 and 11.3 of the Joint Cambridgeshire/Bedfordshire *Brief for a Programme of Archaeological Investigation* (see Appendix B) state that a contingency budget must be allowed for to deal with

unexpected finds, this will not be a set budget for archaeology alone, but will instead be funded via the project risk process.

5.1.21 Any unexpected archaeological discoveries made by the Principal Contractor or their sub-contractors should be reported to the ACoW immediately. It is anticipated that any area of unexpected remains outside of existing mitigation areas will be marked-out on site, and that plant or vehicles shall not be permitted to enter the marked-out area except if given clearance to do so by the ACoW. All construction works within the marked-out area will be suspended until completion of the archaeological investigation in that area.

5.2 Site specific written schemes of investigation

5.2.1 Site Specific Written Schemes of Investigation (SSWSIs) will be prepared setting out in detail the mitigation measures for each archaeological site listed in **Table 5-1**, as well as for Brook Cottages and the three listed and one non-designated milestone. The SSWSIs will be informed by the strategy described in this document. Existing information and new datasets collected as fieldwork progresses will inform the design of mitigation works in the SSWSIs during the investigations.

5.2.2 The SSWSIs will be produced by the Archaeological Contractor. The information contained within the following sections of this document will guide the Archaeological Contractor when compiling each SSWSI.

5.2.3 Information to be contained within the SSWSIs and the approvals process is detailed in Section 6.

5.2.4 The specification for the archaeological works contained within the SSWSIs will be written in accordance with this AMS and the current Standard and Guidance for archaeological excavation prepared by the CIfA (REF 14) and the current CIfA Code of Conduct (REF 13), and will adhere to current and relevant best practice and standards and guidelines (see Appendix A).

5.2.5 A *Joint Cambridgeshire and Bedfordshire brief for a programme of archaeological investigation* was received on 11 December 2020 and updated in August 2021. This is included as Appendix B to this AMS.

5.2.6 Each SSWSI will set out the timing and order of the investigative works and will include details of how the archaeological programme will interact with other construction activities, and the parties undertaking them, at each stage of the archaeological works. Each SSWSI will include a programme for the archaeological work that will be referenced against key milestones/events in the overall design and construction programme.

5.2.7 In areas where archaeological remains or other heritage assets are to be retained (e.g. protected by temporary perimeter fencing, or beneath fill materials, or control measures for plant movements at construction), the method statement will be prepared at the start of the relevant phase of works in order to describe specific

protection measures to be applied to the site or area of interest, and following procedures outlined in the First Iteration EMP **[TR010044/APP/6.8]**.

5.3 Archaeological project team

5.3.1 The Principal Contractor will employ an ACoW who will form part of the site team to, include but not limited to, monitor archaeological site works, liaise with the Archaeological Contractor and the Principal Contractor, review SSWSIs, and attend regular site meetings to be held with the Curators.

5.3.2 The archaeological mitigation works will be delivered by one or more Archaeological Contractors, to be appointed the Principal Contractor. The Archaeological Contractor will have prime responsibility for delivery of the full programme of archaeological mitigation as set out in the AMS, including all on and off site works; outreach activities; technical and non-technical publication and dissemination; and preparation and deposition of the archaeological project archive with the recipient museums and archives.

5.3.3 The Archaeological Contractor will include named key specialists who will either be site-based or have a regular site presence, or who will be on-call at short notice. The Archaeological Contractor and the specialists will have experience of working in the region with the types of geologies, sites and artefacts expected. These will include (as a minimum) the following roles:

a. Project Manager.
b. Environmental archaeology co-ordinator.
c. Environmental archaeology supervisor.
d. A Roman buildings specialist.
e. Archaeobotanist (including palynology).
f. Coleoptera and molluscs specialist.
g. Charcoal specialist.
h. Materials scientist.
i. Finds co-ordinator/processing specialist.
j. Small finds specialist.
k. Lithics specialist with relevant period expertise.
l. Ceramics specialist with relevant period expertise.
m. Ceramic buildings material specialist.
n. Coins specialist.
o. Metalwork specialist.

p. Specialist in wood.
q. Worked stone specialist.
r. Geoarchaeologist.
s. Archaeological surveyor.
t. Digital data co-ordinator/manager (and assistants as required).
u. Human remains specialist.
v. Animal bone specialist.
w. Scientific dating specialist, with expertise in chronological modelling.
x. Specialist in phosphate and lipid analysis.
y. Conservation specialist.
z. Metal-detectorist.
aa. A built heritage specialist, with expertise in timber-framed buildings.
bb. Landscape historian.
cc. An archives manager.
dd. Geomatics team and illustrators.
ee. Public Archaeology and Community Engagement Team (see Appendix E).

5.3.4 The names and qualifications of the individuals fulfilling these roles will be provided to the ACoW for information and comment immediately after appointment of the Archaeological Contractor, with the details passed to the Curators for information. The post-holders shall be in place at the start of the mitigation programme. Any changes to the named post-holders will be notified to the ACoW who will inform the Curators.

5.3.5 The specialists appointed to the archaeological team will be integrated into the Archaeological Contractor's project team to actively input to the design of strategies for the SSWSIs, the public archaeology and community engagement elements, and to advise throughout the fieldwork and post-excavation stages. Regular communication between specialist members of the archaeological team and the fieldwork Project Manager and field staff will be ensured through off-site planning meetings, site visits and progress meetings as required.

5.3.6 Archaeological staff (part of the Archaeological Contractor's site team) supervising the investigative works shall be highly experienced in directing machine stripping/ hand stripping of archaeological sites, with direct experience in and knowledge of the archaeological character of the area in general. The staff member(s) shall be familiar with the content of the results of the relevant previous phases of work,

including the aerial photograph and LiDAR analysis (REF 27), geophysical surveys (REF 1, REF 2) and trial trenching (REF 3, REF 4 REF 5).

5.4 Iterative development of the mitigation strategy

5.4.1 Where required, an iterative site strategy for excavation, artefact recovery and for sampling will be agreed with the ACoW, the Archaeological Contractor and the Curators.

5.4.2 The mitigation strategy will (where required), be responsive to the works taking place on site. For example, if a site is not answering the expected research due to a lack of information, then the extent and scope of works should be reviewed. Similarly, sites producing more environmental evidence could have a more intensive sampling strategy than that previously agreed. Unexpected remains (see Section 5.1.18 - 5.1.20 above) will also be considered. Consultation must be undertaken with the Curators at meetings or onsite discussions.

5.5 Phases of work

5.5.1 There are three stages of construction, the Advanced Works (AW), the Enabling Works (EW) and the Main Works (MW). Archaeological mitigation will be undertaken in all stages of work with some archaeological works to be undertaken during the Advanced Works (AW) stage of the construction programme, as Advanced Archaeological Works (AAW). The majority of the archaeological mitigation will be undertaken during the EW stage. Where site conditions prevent archaeological mitigation at the EW stage, archaeological fieldwork may be required during the MW stage.

5.5.2 In addition, although forming part of this AMS and consequently part of the DCO application, some of the mitigation works are subject to separate planning consents and may be undertaken outside of the DCO consent. This includes Sites 3, 4 and 7, although other Sites can be undertaken as advance works subject to relevant permissions.

6 Site specific written schemes of investigation

6.1 Contents

6.1.1 The Archaeological Contractor shall produce a Site Specific Written Scheme of Investigation (SSWSI) for each site requiring intervention, detailing the exact scope of the archaeological fieldwork or protection. Each SSWSI must be agreed by the ACoW prior to it being submitted to the Curators. Once agreed by the ACoW, it will be sent by the ACoW to the Curators, who will approve the relevant SSWSIs within four weeks of receipt.

6.1.2 The SSWSI should include the following sections as a minimum (see CIfA 2020a Standard and Guidance for Archaeological Excavation (REF 14) and CIfA 2020 Standard and guidance for the archaeological investigation and recording of standing buildings or structures (REF 65) for further information):

a. A statement on the technical, research and ethical competences of the project team, including relevant professional accreditation.

b. Site location (including map) and descriptions.

c. The event number and accession number for sites in Cambridgeshire or the Museum Accession Number for sites in Bedfordshire. These should be shown on all records, finds and samples.

d. Context of the site.

e. Geological and topographical background.

f. Archaeological and historical background.

g. General and specific research aims of the site, with reference to Regional Research Frameworks, as well as earlier phases of work.

h. Methods.

i. Collection and disposal strategy for artefacts, ecofacts, and all paper, graphic and digital materials.

j. Arrangements for immediate conservation of artefacts.

k. Post-fieldwork assessment and analysis of project data.

l. Report preparation (including details of the section headings). The Archaeological Contractor will be required to prepare reports in time to inform the submission of the DCO application.

m. Publication and dissemination proposals, as required.

n. Copyright.

o. Details of finds storage. The Archaeological Contractor shall include details of how the finds will be packaged for storage.

p. Data Management Plan for digital archiving.

q. Methods for preparation of the physical archive, including accession numbers.

r. Timetable.

s. Staffing. Details on the expertise of the project team is also required. The project manager should be a named Member of the Chartered Institute for Archaeologists (MCIfA) who is adequately qualified to manage the required archaeological work or who can demonstrate an equivalent level of competence. The composition and experience of the project team should be described. Specialists should be identified in line with the list detailed in Section 5.3 (e.g. for finds and environmental work). The availability of the environmental specialists (and laboratory) to do analysis for inclusion within the SSWSI should be stated. Note: Specialists should be able to demonstrate a relevant qualification and track record of at least three years continuous relevant work (or equivalent) and appropriate publication. The laboratory should be ready and equipped to do analysis on all samples to fulfil the obligations within the timescale. In appropriate circumstances, less experienced staff may conduct work under the supervision of well-established and widely recognised specialists.

t. A statement on compliance with relevant professional ethical and technical standards (including data standards).

u. Health and Safety considerations, including details of relevant insurance.

v. Environmental protection considerations.

7 Monitoring

7.1 Site monitoring

7.1.1 The ACoW will liaise with the Archaeological Contractor and the Principal Contractor (as relevant) to monitor progress and compliance with the requirements of the SSWSIs. This will include (but not be limited to):

a. Monitoring of all aspects of archaeological fieldwork.

b. Monitoring of the installation and removal of protective measures, such as temporary fencing, and at sites where preservation of archaeological remains is required.

7.1.2 The ACoW will act as coordinator in respect of access and monitoring arrangements with the Client's representative and the Curators. This will include oversight of engagement between the Archaeological Contractor and the relevant heritage stakeholders, including the Regional Science Advisor (East of England), to ensure the timely provision of on-site advice to the fieldwork team.

7.1.3 The archaeological mitigation works will be subject to ongoing monitoring by the ACoW, who will have unrestricted access to the sites, site records or any other information as may be required. The work will be inspected to ensure that it is being carried out to the required standard and that it will achieve the desired aims and objectives.

7.1.4 Site meetings will be held as necessary throughout the archaeological programme to allow implementation of the works to be monitored to ensure adherence to approved SSWSIs, effective decision making where required and to support timely 'sign-off' of archaeological completion. The Client's representative and the Curators will be invited to attend site meetings in accordance with their roles.

7.1.5 The Curators will be afforded access to the sites through regular site meetings (see below); specific visits to access site records and any other information will be arranged as necessary and required through the ACoW.

7.1.6 It is anticipated that progress and consultation meetings will be held at least monthly during fieldwork. Additional meetings and site visits will be held as appropriate. The frequency of meetings will be determined by the work taking place on site. The meetings would include on-site monitoring visits to review site progress, review of work in line with the SSWSIs, and the strategy for the following period. This will ensure that programming details and changes are communicated rapidly and efficiently and will ensure that appropriate resources are available and can be deployed where they are required. Weekly reporting will also be issued (see Section 13.2 below).

7.2 Sign off procedures

7.2.1 It is acknowledged that the programme of works will require authentication of completion and the following approach is proposed.

7.2.2 The archaeological mitigation will be undertaken at one of four levels:

a. Sites with intrinsic value.

b. Sites with group value and key sites.

c. Targeted sampling.

d. Sites where no further work is required.

7.2.3 Each of the sites identified in **Table 5-1** has an approach for mitigation. Each site will have a SSWSI prepared by the Archaeological Contractor.

7.2.4 Each SSWSI will include a programme for the required work. Once the Archaeological Contractor determines the fieldwork to be completed, a review will be undertaken. At this time the Archaeological Contractor will make available by site visit or remote presentation (e.g. online video meetings) the results of the work. All parties will have been prepared for this review, by the distribution of a weekly site report on the progress of work (see Section 13.2 below for more detail).

7.2.5 Sites that have been completed (approved by the ACoW in consultation with the Client's representative and the appropriate Curator) will be subject to a formal signing off procedure. The Archaeological Contractor will submit a completion statement to the ACoW. The ACoW will submit the accepted completion statement to the Client's representative and the appropriate Curator for confirmation (in consultation with Historic England where required) that the relevant works have been completed in compliance with the relevant SSWSIs.

7.2.6 In the event of disagreement between the Archaeological Contractor, the ACoW, the relevant Curator and/or the Client's representative on the progress, strategy or completion of work, a form of arbitration will be proposed.

8 Methodology for detailed excavation

8.1.1 Detailed excavation will be carried out at the locations identified in **Table 5.1**, for those sites considered to be of intrinsic value. All detailed excavation will be carried out in accordance with the SSWSIs, and any further instructions from the Client's Representative and the ACoW.

8.1.2 Five sites have been identified as having intrinsic value and will require detailed excavation (Sites 3, 4, 7, 15 & 22 – See Appendix D).

8.2 Machine excavation

8.2.1 All machine excavation will be undertaken under constant archaeological supervision. In areas of sensitive archaeology, such as at Site 7, this will be under a specific agreed strategy for machining bespoke for the purposes of the site.

8.2.2 The excavation areas will be set out using electronic survey equipment by the Principal Contractor. The extent of the stripped excavations will be clearly demarcated and secured with appropriate barrier fencing (such as Heras fencing) to ensure that persons or vehicles cannot inadvertently traverse the areas of investigation while archaeological works are in progress. The fencing (to be provided by the Principal Contractor unless otherwise agreed) will be regularly inspected and maintained by the Principal Contractor until archaeological investigations in the area have been completed, inspected, approved and signed off by the Curators.

8.2.3 No archaeological work should commence without a Permit to Dig. This should include confirmation that the locations of any services are marked, and that any additional safety measures required to ensure that each area is safe prior to commencement of mitigation work are in place.

8.2.4 The machine excavation will be undertaken using an appropriate 360° mechanical excavator fitted with a toothless ditching bucket. A toothed bucket or breaker may only be used temporarily if concrete, tarmac or other hard standing is encountered. A toothless bucket is to be used at all other times.

8.2.5 Upon removal of the topsoil, the underlying subsoil shall be removed by mechanical excavator until either the top of the first archaeological horizon or undisturbed natural deposits are encountered. Particular attention should be paid to achieving a clean and well-defined horizon with the machine. Topsoil and subsoil will be stockpiled separately. The mechanical excavator will not traverse any stripped areas.

8.2.6 The machined surface will be hand cleaned if necessary, and inspected for archaeological features, and all identified features should be marked on the ground to ensure that they are not “lost” during the mapping stage. Pre-excavation planning will be undertaken to record all identified archaeological features. The pre-excavation plan will form the basis for discussion on site to inform the strategy for excavation of the archaeological remains. The pre-excavation plan will be made available to the Client’s Representative, the ACoW and the Curators.

8.2.7 The Archaeological Contractor shall not excavate any area beyond those scheduled for the proposed works. Should archaeological features revealed within the excavation area continue outside of the area and are likely to be subject to construction impact, the excavation area may need to be extended to sufficiently characterise the material. This will only be undertaken with the agreement of the Client’s Representative, the ACoW and the Principal Contractor, in consultation with the Curators.

8.2.8 Hand excavation, recording and sampling will proceed in accordance with the methodology outlined in this Mitigation Strategy and confirmed in the Archaeological Contractor’s SSWSI, in order to meet the aims and objectives of each excavation.

8.2.9 Areas will be recorded on a suitable digital base map/development plan and the stratigraphy and depth of excavation will be recorded. Details on recording procedures where significant archaeology is discovered are detailed in the section below.

8.3 Hand excavation

8.3.1 Archaeological deposits will be excavated and recorded stratigraphically in accordance with a recording system detailed in the Archaeological Contractor’s SSWSI and approved by the Curators. All relationships between features or deposits will be investigated and recorded in order to achieve suitable preservation by record and to fulfil the aims and objectives of the project.

8.3.2 Hand excavation will be initially targeted to provide information on the form, function and date of the archaeological features. Information on the character, nature, contents and significance of features should also be obtained.

8.3.3 Machine-assisted excavation may be permissible if large deposits are encountered but only after agreement with the relevant Curators. The Archaeological Contractor will include a sampling strategy for machine-assisted excavation in their SSWSI.

8.3.4 A sufficient sample of deposits/features will be investigated through hand excavation to record the horizontal and vertical extent of the stratigraphic sequence, to the level of undisturbed natural deposits.

8.3.5 All features identified following soil stripping will be scanned by a metal detector. Spoil from the excavated features will also be scanned with a metal detector to locate any metallic objects. In addition, ten sites will be metal detected prior to topsoil strip. These are Sites 3, 9, 13, 15, 17, 18, 22, 29, 30 and 37.

8.3.6 The Archaeological Contractor will make provision for appropriate archaeological specialists to visit the site or attend meetings upon request in order to advise on the excavation strategy. The Archaeological Contractor will prepare a list of appropriate archaeological specialists with relevant local experience who are likely to be involved in the project and will include this in their SSWSI.

8.3.7 Unless it is agreed otherwise at the pre-excavation site meeting the following excavation strategy will be employed for Intrinsic Value Sites:

a. **Linear features:** A minimum of 25% of the feature if less than 5m in length and up to 30% of the features if greater than 5m in length (including terminals) will be excavated in order to determine its character, date, morphology and function. Each section will be excavated away from intersections with other features in order to recover an uncontaminated artefact assemblage and will measure not less than 1m long or a minimum of a 1m long section if the feature is less than 10m in length. Initially, all linear features should be excavated on a 25% sample (i.e. one metre in four), with a further 5–10% sample coverage determined judgementally, for example to investigate further critical stratigraphic relationships or to further excavate portions yielding high finds or environmental densities based on the on-going processing and plotting of materials. In addition to the 25 - 30% sample, all intersections will be investigated to determine stratigraphic relationships between features.

b. **Discrete features:** A minimum of 50% of all pits, post-holes and other isolated discrete features will be excavated; unless it is proven that they are of modern origin. If large pits or deposits (over 1.5m diameter) are encountered then the sample excavated should be sufficient to define the extent and maximum depth of the feature but should not be less than a 25% quadrant, unless agreed otherwise. Stake-holes will be fully excavated but only a reasonable proportion will be sampled.

c. **Structural remains and areas of significant and special activity:** These features should be the subject of 100% excavation. Such features will be identified during pre-excavation planning to enable the input and advice of appropriate archaeological specialists, such as a Roman building specialist. Where complex structures or activity areas are encountered, additional detailed recording and specialist environmental sampling or scientific dating may be required. The remains of all upstanding walls will be hand cleaned sufficient to understand their dimensions, extent, composition, sequence and relationships.

d. **Special or burnt features:** These features should be the subject of 100% excavation. Such features will be identified during pre-excavation planning to enable the input and advice of appropriate archaeological specialists. Where *in situ* burning is identified no excavation shall take place until the possible recovery of samples for scientific dating has been considered.

e. **Artefact scatters**: These should be the subject of 100% excavation. Where associated with buried land surfaces, *in situ* flint scatters will require hand cleaning and will need to be spatially defined in three-dimension to determine the limits of the scatter within the area of investigation. All lithic artefacts with a Maximum Linear Dimension (MLD) of 10mm will require three-dimensional plotting prior to recovery and individually bagged and recorded as registered finds. Non-tool fragments of less than the MLD should be bagged according to an appropriate spatial recording system consistent with context.

f. **Human remains:** During excavation human remains will be 100% excavated, recorded *in situ* and subsequently lifted, labelled and packed to the standard established by *Excavation and post-excavation treatment of cremated and inhumed human remains* (REF 50) and *Updated guidelines to the standards for recording human remains* (REF 51). Environmental samples will be recovered from grave fills and specific locations such as the abdominal cavity for specialist analysis. Site inspection will be made by a recognised specialist who will advise on the excavation and sampling strategy following guidelines on *The Role of the Human Osteologist in an Archaeological Fieldwork Project* (REF 52). The location of each grave, inhumation/ cremation and any associated grave goods will be recorded three dimensionally using metric survey-grade equipment (or its equivalent). The exhumation of any human remains will only be undertaken in accordance with current UK legislation and good practice (refer to Appendix A) and any local environmental health requirements. Further detail is contained in paragraph 8.9.1 below.

g. **Tree throws:** Where features are identified as tree throws or hollows a sample will be hand excavated to confirm the interpretation. Features where this interpretation is unclear should be treated as non-structural discrete features and investigated in accordance with the strategy set out above.

h. **Ridge and furrow:** Ridge and furrow will only be recorded during pre-excavation to note its alignment. Excavation of furrows may be required where the relationship with earlier features is unclear, or where they share the alignment of earlier ditches. Areas where mapping of ridge and furrow is required are detailed in Appendix D.

8.3.8 Archaeological recording will proceed in accordance with the specification outlined in this mitigation strategy and accepted national, regional and professional standards and guidance (Appendix A).

8.4 Scientific analysis

8.4.1 To further examine the landscape, past environments, and to provide a more holistic approach to the investigations, scientific analysis should be undertaken. In the first instance, this should comprise the analysis of phosphates. The methodology should normally be as follows. However, the Archaeological Contractor's geoarchaeological team should develop suitable strategies for the scientific study of past land use on a case by case basis:

a. A large-scale grid-transect (50m interval) will be established across Iron Age string systems (e.g. Sites 24 and 28) in order to determine whether there are differential phosphate levels on either side of them and, thereby, evaluate their relationship to agricultural practices.

b. To identify and investigate activity areas and depositional practices, a broader grid (10-20m) should be applied, reducing to a smaller (1-2m) grid across structures (e.g. Sites 3, 7, 20, 22, 35-39).

8.4.2 While some indicative sample intervals are provided above, the SSWSIs should detail the exact requirements for each site and should be guided by the Archaeological Contractor's geoarchaeologist and guidance from the Historic England Scientific Advisor. The results from one site may also inform the use of the technique in additional areas, by means of a change to the sampling interval. Local geochemistry should also be taken into account. A two-stage approach may be undertaken with an initial appraisal of a broad spread of samples to establish the degree of variability and presence of any 'hot' spots on occupation surfaces. The soil phosphorus analysis should follow guidance contained within Historic England's 'Geoarchaeology' (REF 53).

8.4.3 Where required, alternative scientific techniques could be used, depending on the evolving nature of the research questions being asked. Example techniques could include faecal lipid biomarkers, soil micromorphology and geochemical analysis of a range of chemicals using a hand-held portable X-ray spectrometer. This latter technique is only relatively recently being used for archaeological survey, and has been used for assessment as part of HS2 (Finch, pers. comm.). This technique can also allow a more rapid assessment of phosphorus than traditional techniques. However, the use of other scientific techniques will need to be agreed with the ACoW, the Client's representative and the Curators, including the Historic England Scientific Advisor, and should be tailored to the research questions of each site. Blanket use of these techniques is not expected.

8.5 Recording

8.5.1 All archaeological remains shall be recorded to best practice standards including the Chartered Institute for Archaeologists (CIfA) Standard and Guidance for Archaeological Excavation (REF 14).

8.5.2 To minimise the use of paper resources recording would in the first instance be undertaken on a suitable digital device, such as an iPad, using the appropriate software. Recording would be in a format accessible to the relevant parties and will be outlined in the Archaeological Contractor's SSWSI. Where required, hand drawn plans may be required for detailed drawings of specific features (e.g. human remains, kilns etc.).

8.5.3 Archaeological recording is to include as a minimum:

a. A full written (on appropriate pro-forma recording sheets), drawn and photographic record will be made for each element of the excavation works, even where no archaeological features are identified. Where the stratigraphic sequence or inter-cutting features are complex the relationships between contexts shall also be compiled as 'Harris matrix' diagrams (REF 14).

b. Plans and sections of features will be produced at an appropriate scale (normally 1:20 for plans and 1:10 for sections). All plans and sections will include spot heights relative to Ordnance Datum in metres, correct to two decimal places.

c. Photography will be taken in line with current industry best practice and the requirements of the local authority. In addition to records of archaeological features, a number of general site photographs will also be taken to give an overview of the site including photographs of areas prior to and upon completion of fieldwork. Particular attention should be paid to obtaining shots suitable for displays, exhibitions and other publicity.

d. Indices of context records, drawings samples and photographs will be maintained and checked. These will form part of the project archive. These indexed registers will be fully cross-referenced.

8.5.4 All photographs of features must include an appropriate scale, a north arrow, and a photo-board. Graduated metric scales of appropriate lengths should be used, ensuring the use of appropriate vertical scales against deep sections in combination with horizontal scales. Photo-boards must be positioned in such a way that the writing is legible and as a minimum include the context number and site code. Photo-boards should also not obscure the archaeological feature that is being recorded. The photographic record must consist of high-quality digital uninterpolated images of at least 10 megapixels taken using a camera with an APS-C or larger sensor. Digital photographs intended for archive purposes must comply with best practice available at the current time – i.e. high quality non-proprietary raw files (DNG) or TIFF images. The incorporation of clear digital images within ensuing reports, to augment the drawn record, is expected. JPG images and images taken using iPads and/or phones must not be used for archiving purposes

8.5.5 On completion of the field project the site archive will be consolidated, checked to ensure it is internally consistent and ordered as a permanent archive.

8.5.6 During the course of the fieldwork, the Archaeological Contractor is to make all digital records available to the Principal Contractor, the Client's Representative, the ACoW and the Curators, ensuring it is compatible with their systems. The updated digital record will be provided at agreed intervals, the maximum being one month.

8.6 Artefact recovery

8.6.1 Artefacts will be collected, stored and processed in accordance with standard methodologies and national guidelines (refer to Appendix A) and in line with local authority requirements. All artefacts recovered on site must be bagged and recorded at the time of recovery to ensure they are appropriately stored. Bulk finds from feature fills of deposits will be collected and recorded by context. Each 'significant find' will be recorded three dimensionally. Similarly, if artefact scatters are encountered each individual artefact should be recorded three dimensionally and individually bagged and recorded as registered finds.

8.6.2 Except for modern artefacts all finds will be collected and retained. The Archaeological Contractor will clarify in their SSWSI their site-specific Selection Strategy and will ensure that it is in-line with CIfA (REF 14) and local authority guidelines.

8.6.3 Where necessary the artefacts will be stabilised, conserved and stored in accordance with the guidelines of the UKIC (United Kingdom Institute of Conservators) (refer to Appendix A). If necessary, a conservator will visit the site to undertake 'first aid' conservation treatment. If waterlogged organic materials are encountered and appropriate cold storage facilities are not available onsite, the project manager will arrange the removal of the finds to nearby suitable facilities.

8.6.4 Artefacts will be stored in appropriate materials and conditions and monitored to minimise further deterioration.

8.7 Environmental sampling

8.7.1 The Archaeological Contractor's environmental specialist will outline an appropriate sampling strategy for the archaeological excavation to be included in their SSWSI, which will need to be agreed with the Curators and, where appropriate, the Historic England Science Advisor.

8.7.2 Environmental sampling will be targeted to answer the questions laid out in the Site specific aims and the regional research agendas.

8.7.3 Provision will also be made for the recovery of material suitable for scientific dating. An appropriate dating specialist with a background in chronological modelling will be consulted in advance of and throughout the fieldwork and will be available to advise on the ongoing strategy.

8.7.4 Any samples taken must come from securely stratified deposits using the methodologies outlined by Historic England in *Environmental Archaeology; A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (REF 54).

8.7.5 Any samples should be taken during feature excavation from appropriately cleaned surfaces, be collected with clean tools and be placed in clean containers. They will be adequately recorded and labelled, and a register of all samples will be kept. Once the samples have been obtained, they should be stored appropriately in a secure location prior to being sent to the appropriate specialist. All samples will be processed unless otherwise agreed with the Archaeological Contractor's paleoenvironmental advisor, Client's Representative, the ACoW and the Curators.

8.7.6 Provision will be made for the ongoing processing and initial assessment of sampled material in order to provide timely feedback regarding the quality of preservation and the significance of specific deposits during the excavation and to inform the ongoing strategy. As a consequence, consideration must be given to processing on site, or in a nearby compound/facility, of environmental samples to provide dynamic feedback on the environmental content of features, to enable additional processing to be undertaken.

8.7.7 Samples will be taken from stratified, dateable deposits, with a low risk of contamination.

8.7.8 A provisional sampling strategy is proposed in **Table 8.1**.

Table 8.1: Provisional environmental sampling strategy for archaeological excavation

Potential data	Method	Context type	Sample size (ltr)	Excavated feature sample
CPR	Bulk	Structural/occupation features	40	100%
		Pits (prehistoric)	40	50%
		Pits (Roman)	40	50%
		Pits (medieval)	40+	50%
		Pits (post-medieval)	40	50%
		Gully/ditch (settlement)	40	10%
		Gully/ditch (outfield)	40	5-10%

Potential data	Method	Context type	Sample size (ltr)	Excavated feature sample
Waterlogged and organic remains	Bulk	All contexts	10-20	Layer (N/A)
Small bones	Bulk	All contexts	40	50
Molluscs	Incremental	Deposit sequence	As advised by specialist	N/A
Pollen	Monolith	Deposit sequence	As advised by specialist	N/A

8.7.9 If large deposits of animal bone are encountered, the advice of the project specialist will be sought regarding recording and sampling. Animal bone groups (i.e. articulated animal remains) will be assigned a number and documented using a suitable animal bone group sheet following Historic England guidance (REF 55) and will be fully excavated as far as is practicable. Assessment of biological remains will follow standard assessment procedures as laid out in Historic England guidance (REF 52; REF 53; REF 55).

8.7.10 The finds and samples will be processed (cleaned and marked) as appropriate. Each category of find or environmental/industrial material will be examined by a suitably qualified archaeologist or specialist and the results incorporated into the fieldwork report.

8.8 Finds processing

8.8.1 Initial processing of finds (and if appropriate other samples) will be carried out concurrent with the fieldwork. The Archaeological Contractor should consider the option of initial processing to be undertaken on site or in a nearby compound/facility. Finds suitable for pop-up displays or posting on social media should be identified during excavation. Finds which may contain residues should be retained unwashed until analysis is complete. In addition, the Higgins Art Gallery and Museum and the Cambridgeshire Archaeological Archive Facility should be consulted during finds processing.

8.8.2 The CIfA finds Toolkit (REF 64) should be utilised to develop a selection strategy. This strategy should be developed for each site to ensure the appropriate methodology is applied to each site. This will follow the strategy to be agreed with both the Higgins Art Gallery and Museum and the Cambridgeshire Archaeological Archive Facility and should be advised by the specialists.

8.8.3 The processing of finds will be finished shortly after completion of the investigations, the finds will be retained (according to the Selection Strategy), washed, marked, bagged and logged on a MS Access or GIS database (or equivalent), together with their locations according to the requirements set out in the Collection Policy (e.g. 'significant finds' will be recorded on the OS National Grid (eastings, northings) and Ordnance Datum (height) to two decimal places).

8.8.4 The finds assemblage will be treated, labelled and stored in accordance with the appropriate Historic England guidance documents, local authority guidelines (if appropriate) and the Institute of Conservation guidelines (refer to Appendix A). The Archaeological Contractor will ensure that the processing of the assemblage is in accordance with the requirements of the recipient museum.

8.8.5 If appropriate, each category of find or each material type will be examined by a suitably qualified archaeologist or specialist and the results incorporated into the fieldwork report.

8.8.6 All finds will be retained unless otherwise agreed with the Client's Representative, the ACoW and the Curators for further analysis during the reporting phase of the archaeological mitigation of the main construction phase.

8.9 Human remains

8.9.1 If human remains are discovered during the course of the fieldwork the remains shall provisionally, in accordance with current best practice, be covered and protected and left in situ. The removal of human remains will only take place in accordance with the procedure set out in article 56 of the Order **[TR010044/APP/3.1]** will be followed a Ministry of Justice licence and under the appropriate Environmental Health regulations and the Burial Act 1857 (REF 56). In the event of the discovery of human remains the Archaeological Contractor will contact H.M. Coroner.

8.9.2 Excavation of human remains will be undertaken as per the strategy outlined in Section 8.3.7f.

8.10 Treasure

8.10.1 Any artefacts which are recovered that fall within the scope of the *Treasure Act 1996 and Treasure (Designation) Order 2002* (REF 57, REF 58) will be reported to the Client's Representative, the ACoW and the Principal Contractor immediately. The Curators and the relevant Portable Antiquities Scheme Finds Liaison Officer will also be informed. A treasure reporting process is available for Cambridgeshire (https://www.cambridgeshire.gov.uk/asset-library/guidance-for-completing-treasure-receipts-for-archaeological-treasure-ca.pdf). Further details are contained within the Brief in Appendix B. Artefacts that are defined as Treasure according to the above legislation will be vested in the franchisee (e.g. The Duke of Cornwall is franchisee for Cornwall), or if none, the Crown. The Archaeological Contractor will contact H.M.

Coroner, and will ensure that the Treasure regulations are enforced and that all the relevant parties are kept informed. A list of finds that have been collected that fall under the Treasure Act and related legislation will be included in the fieldwork report.

8.10.2 Artefacts that are classified as ‘treasure’ will be removed to a safe place but where removal cannot be achieved on the same working day as the discovery, suitable security measures must be taken to protect the finds from damage or unauthorised removal.

9 Excavation and sampling

9.1 Introduction

9.1.1 Eighteen sites are considered to be of group value and key sites. They will require excavation or further sampling (Sites 5, 9, 10, 11, 13, 14, 17, 18, 29, 30, 31, 32, 33, 34, 36, 37, 38 & 39).

9.1.2 Twelve sites will require further sampling, including geoarchaeological assessment (Sites 1, 2, 8, 16, 19, 20, 23, 24, 26, 27, 28 & 35).

9.1.3 The sites requiring excavation and sampling are outlined in **Table 5-1** and each site, including the limits of the assessment areas, is detailed in Appendix D.

9.2 General methodology

9.2.1 Each area requiring further sampling must have a SSWSI. This will include details of the area to be sampled and the aims of the archaeological work.

9.2.2 The sampling will comprise the topsoil and subsoil stripping of the areas defined within Appendix D.

9.2.3 The excavation areas will be set out using electronic survey equipment by the Principal Contractor. The extent of the stripped excavations will be clearly demarcated and secured with appropriate barrier fencing (such as Heras fencing) to ensure that persons or vehicles cannot inadvertently traverse the areas of investigation while archaeological works are in progress.

9.2.4 No archaeological work should commence without a Permit to Dig. This should include confirmation that the locations of any services are marked, and that any additional safety measures required to ensure that each area is safe prior to commencement of mitigation work are in place.

9.2.5 Each location will be opened under direct archaeological supervision using an appropriate 360° mechanical excavator fitted with a toothless ditching bucket.

9.2.6 Any archaeological deposits/features identified will be cleaned and hand excavated in an archaeologically controlled and stratigraphic manner, sufficient to meet the aims and objectives of the investigation.

9.2.7 Archaeological remains will be investigated and recorded in line with the aims of this mitigation strategy and as detailed in the SSWSI. Not all features will require excavation and some features will only be recorded in plan.

9.2.8 The Archaeological Contractor shall not excavate any area beyond those scheduled for the proposed works. Should archaeological features revealed within the excavation area continue outside of the area and are likely to be subject to construction impact, the excavation area may need to be extended to sufficiently characterise the material. This will only be undertaken with the agreement of the Client's Representative, the ACoW and the Principal Contractor, in consultation with the Curators.

9.2.9 Unless it is agreed otherwise the following excavation strategy will be employed for features that meet the stated aims of the sampling strategy:

a. **Linear features**: A minimum sample in length not less than 1m long, where the depositional sequence is consistent along the length. Linear features with complex variations of fill type will be sampled sufficiently in order to understand the sequence of deposition - a minimum of 25% along the length of features associated with settlement and a minimum of 10% along the length of features associated with field systems. If appropriate all intersections will be investigated to determine the relationships between features. All termini will be investigated.

b. **Discrete features**: Pits, post-holes and other isolated features will normally be half-sectioned. If large pits or deposits (over 1.5m diameter) are encountered then the sample excavated should be sufficient to define the extent and maximum depth of the feature and to achieve the objectives of the sampling, but should not be less than 25%.

c. **Structures**: These features should be subject to a minimum of 100% excavation. Each structure will be sampled sufficiently to define the extent, form, stratigraphic complexity and depth of the component features and its associated deposits to achieve the objectives of the evaluation. All intersections will be investigated to determine the relationship(s) between the component features. The remains of all upstanding walls will be hand cleaned sufficient to understand their dimensions, extent, composition, sequence and relationships and must be excavated to 100%.

d. **Special or burnt features:** These features should be the subject of 100% excavation. Such features will be identified during pre-excavation planning to enable the input and advice of appropriate archaeological specialists. Where *in situ* burning is identified no excavation shall take place until the possible recovery of samples for scientific dating has been considered.

e. **Artefact scatters**: These should be the subject of 100% excavation. Where associated with buried land surfaces, *in situ* flint scatters will require hand cleaning and will need to be spatially defined in three-dimension to determine the limits of the scatter within the area of investigation. All lithic artefacts with a Maximum Linear Dimension (MLD) of 10mm will require three-dimensional plotting prior to recovery and individually bagged and recorded as registered finds. Non-tool fragments of less than the MLD should be bagged according to an appropriate spatial recording system consistent with context.

f. **Human remains:** During excavation human remains will be 100% excavated, recorded *in situ* and subsequently lifted, labelled and packed to the standard established by *Excavation and post-excavation treatment of cremated and inhumed human remains* (REF 50) and *Updated guidelines to the standards for recording human remains* (REF 51). Environmental samples will be recovered from grave fills and specific locations such as the abdominal cavity for specialist analysis. Site inspection will be made by a recognised specialist who will advise on the excavation and sampling strategy following guidelines on *The Role of the Human Osteologist in an Archaeological Fieldwork Project* (REF 52). The location of each grave, inhumation/cremation and any associated grave goods will be recorded three dimensionally using metric survey-grade equipment (or its equivalent). The exhumation of any human remains will only be undertaken in accordance with current UK legislation and good practice (refer to Appendix A) and any local environmental health requirements. Further detail is contained in paragraph 8.9.1 above.

g. **Tree throws:** Where features are identified as tree throws or hollows a sample will be hand excavated to confirm the interpretation. Features where this interpretation is unclear should be treated as non-structural discrete features and investigated in accordance with the strategy set out above.

h. **Ridge and furrow**: Ridge and furrow will only be recorded during pre-excavation to note its alignment. Excavation of furrows may be required where the relationship with earlier features is unclear, or where they share the alignment of earlier ditches. Areas where mapping of ridge and furrow is required are detailed in Appendix D.

9.2.10 Archaeological recording will proceed in accordance with the specification outlined in this mitigation strategy and accepted national, regional and professional standards and guidance (Appendix A).

9.2.11 The methodology for recording, artefact recovery, environmental sampling, finds processing, human remains and treasure should follow the methodology detailed in Section 8 above.

10 Methodology for geoarchaeological and palaeoenvironmental assessment

10.1 Introduction

10.1.1 Three sites have been identified as requiring geoarchaeological assessment. These are at Sites 10, 19 and 35. This will focus on an unnamed stream south of Potton Road, Hen Brook and on an unnamed stream west of Wintringham DMV. Other sites may also require geoarchaeological and palaeoenvironmental analysis and assessment.

10.1.2 The sites requiring geoarchaeological assessment are outlined in **Table 5.1** and each site, including the limits of the assessment areas, is detailed in Appendix D.

10.2 General methodology

10.2.1 Each area requiring geoarchaeological or palaeoenvironmental assessment should have an array of boreholes or cores, designed in a grid or transects as appropriate to ensure full evaluation across the area. This design should be undertaken by the Archaeological Contractor, who must, as detailed in Section 5.3, have a geoarchaeologist and environmental specialists as part of the project team. The borehole design must take into account the results of the evaluation excavations (REF 3, REF 4, REF 5) and any geotechnical boreholes in the vicinity to maximise data recovery. The methodology, design and any revised or site specific aims must be detailed in a SSWSI to be prepared by the Archaeological Contractor.

10.2.2 Each borehole column will be recovered using a windowless sampling rig (for example a Terrier Drilling Rig, Dando Rig or for shallower deposits a power auger) that will be provided by the Principal Contractor and under the supervision of the Archaeological Contractor. The diameter of the borehole shall be approximately 100mm and the core shall be recovered in plastic tubes (or an appropriate substitute).

10.2.3 The location of the borehole will be set out by the Archaeological Contractor's surveyors and shall be surveyed and levelled in three dimensions to Ordnance Survey Grid and Ordnance Datum (OD).

10.2.4 A suitably experienced geoarchaeologist shall be present at all times during the preparatory ground disturbance and during rig drilling. This is to ensure that a proper record is made of the depth of deposits and to ensure that samples are collected and labelled appropriately.

10.2.5 The Archaeological Contractor should make allowance for the excavation of a starter pit prior to drilling in order to confirm that no buried services, land drains or other subsurface obstructions are present.

10.2.6 Made ground deposits need not be described in detail unless it is relevant to the understanding of site formation processes. The surface of each deposit/the contact between deposits must be levelled and the height recorded to OD.

10.2.7 The core will be exposed and the sequence of sediments from the borehole shall be described/logged on site (character and depths of deposits). If possible, a record shall be made of the depth of any water table at the borehole location.

10.2.8 Upon completion of the borehole and the recovery of the core, the void left by the sampling rig shall be backfilled by the operator with a suitable material.

10.2.9 The core sample shall be sealed, labelled, transported as soon as possible and stored securely and in appropriate controlled conditions either on site (temporary) or off-site at the assessment stage. It may be necessary to store the core long-term if it is likely to contribute to any future analyses.

10.2.10 Where warranted, areas identified for geoarchaeological assessment may be stripped to reveal archaeological features sealed by the colluvium. The requirement will be dependent upon the results of the boreholes and further focus of stripping can be achieved by controlled broad transect samples (2m+). The results of this approach will guide the requirement for removal of overlying deposits by machine, which may need to be undertaken in stages for the exposure of contemporary surfaces and features over a wide area. The hand-excavated transects should be orientated perpendicular to the course of the streams in question, so that they capture in section sedimentary processes such as colluviation and headland formation. In all cases, the requirement for work should be guided by the Archaeological Contractor's geoarchaeologist.

10.2.11 All work must be taken in line with Historic England guidance on Geoarchaeology (REF 53) and Environmental Archaeology (REF 54).

10.3 Assessment report

10.3.1 A preliminary interpretation of the soil and sediment characteristics of the core will be made, including a summary of the stratigraphy that will characterise the deposit sequence and identify soil/sediment formation processes. The description of each deposit will include sediment type, inclusions, colour, bedding and nature of contacts to overlying and underlying units. The report will also include appropriate lithological diagrams.

10.3.2 If suitable organic sediment is recovered from the core, samples will be taken for radiocarbon dating, in order to provide a dating framework for the stratigraphic sequence. Where appropriate, other dating techniques, such as archaeomagnetic dating or dendrochronology should also be considered. The Archaeological Contractor shall make provision for submitting a justified proposal and number of samples for radiocarbon and other dating.

10.3.3 If suitable deposits exist, samples will be submitted for specialist assessment (pollen, diatom/foraminifera) to identify the potential for past environmental reconstruction.

10.3.4 An interim summary assessment report will be produced shortly after completion of the fieldwork in order to inform the design of any subsequent archaeological mitigation.

10.3.5 A final geoarchaeological assessment report shall be prepared and will include a complete lithological description, following standard sedimentary conventions and the Troels-Smith system (REF 59) and incorporating the results of specialist assessment and dating.

10.3.6 The final geoarchaeological assessment report will illustrate the sub-surface topography and shall characterise the sediments present on the site and indicate the potential of the core sample taken for environmental reconstruction. If appropriate, it will include a fully justified and costed proposal for analysis and publication.

10.3.7 The geoarchaeological assessment will be placed within the context of any previous investigations and assessment work undertaken in the vicinity of each site to aid the interpretation of the deposit sequence.

11 Methodology for preservation of archaeological remains

11.1.1 A total of five sites have been identified that require preservation of archaeological remains, with three others requiring elements to be preserved. These sites will require preservation in the form of protective fencing and/or burying/sealing sites beneath fill material (to prevent unintended incursion/damage by plant or other vehicles during construction) (Sites 1, 4, 6, 12, 16, 21, 25 & 40). Some sites are located within areas proposed for spoil storage. While most features will be sampled, some elements of the sites may be protected under the soil storage areas (such as at Site 1). Methodology is included should that be required.

11.1.2 The sites requiring preservation are outlined in **Table 5.1** and each site, including the boundary of the fenced area, is detailed in Appendix D.

11.2 Protective fencing

11.2.1 In order to demarcate those sites that require preservation of archaeological remains and to avoid unintentional damage during construction, secure timber fencing will be installed during site set-up. The fencing will be installed by a fencing contractor under the supervision of the Archaeological Contractor. Signs will inform all parties of the protected designation of the site and to “keep out”.

11.2.2 The location and type of fencing for each site for preservation of archaeological remains will be set out in a Scope of Works prepared by the ACoW. The Principal Contractor and their ACoW will be responsible for regularly monitoring the condition of the fencing and will be responsible for its maintenance until either construction work in that area is complete or at Scheme opening, at which time the removal of the fencing will be monitored by the ACoW.

11.2.3 Notices prohibiting works will be attached to the fencing, detailing the purpose of the fenced off area. This is to ensure that no impacts are made to the remains which are being protected. Should these areas be required for scheme works, a SSWSI must be prepared for each area and it is likely that full archaeological excavation would be required at each location.

11.3 Preservation of archaeological remains beneath fill

11.3.1 At a number of locations along the Scheme, suitable fill material on top of a protective barrier membrane as identified in the SSWSI will be used to bury sensitive archaeological remains, to ensure that they are not disturbed during construction and to preserve them for future generations (refer to Appendix D). Sites will be temporarily buried beneath fill to enable specific construction requirements, e.g. soil storage, compounds or temporary roads. Sites where preservation may be required includes Site 1 and perhaps elements of Site 17.

11.3.2 The Archaeological Contractor will include in the SSWSI methods that they intend to use to protect sensitive buried archaeological remains, including measures to prevent damage (such as deep rutting) caused by vehicles or plant. This will include detail on the effects of compression and loading (whether dynamic or static) and site specific protective measures, including the extent of the area to be protected, the depth of fill required and the type of fill. The SSWSIs will set out suitable methodologies for filling areas without disturbing or impacting sensitive archaeological remains, and also for removing the fill at the end of construction.

11.3.3 The preservation methodology in the SSWSI will be developed in line with the principles of Historic England's 'Preserving Archaeological Remains' guidance (REF 60) in consultation with the Client's representative, the ACoW and the Curators. At each site, measures will be put in place to avoid rutting or the compaction of soft ground (topsoil and fill) until or unless adequate protection is provided (vehicles will be restricted or prohibited from traversing sensitive areas prior to fencing, the laying of a protective membrane and fill deposits/vehicle running surface, and at decommissioning).

11.3.4 Retention of archaeological remains under road embankment has been utilised on other schemes, including within the Roman town of *Cataractonium*, a scheduled monument, on the A1 Leeming to Barton (REF 61). An assessment was undertaken which considered the pressure exerted on deposits during embankment construction and the pressure caused by the embankment once in place. This utilised information from a study assessing buried artefact breakage commissioned by English Heritage and DEFRA (REF 62). Information from the Class 4 Stacking Area on the A1 Darrington to Dishforth scheme (REF 63) was also considered. This study concluded that there was an extremely low level of impact caused by the soil stack, which was at a maximum height of 8.9m.

11.3.5 The pressure calculations concluded that the pressure exerted by the embankment upon buried archaeological deposits would be no more than 39 kPa at the top of the embankment and no more than 33 kPa at the bottom. At 300 kPa pressure there is only a one in a million chance of Roman pottery (in the case of this study), and consequently other types of archaeological remains, being damaged. This means that there would be virtually no impact on the archaeological deposits.

11.3.6 The methodology used to allow for the preservation of archaeological evidence was as follows:

a. A layer of 10mm pea shingle was used to fill in any gaps or undulations in the surface of the archaeological remains to a depth of 500mm above the highest level of the archaeological remains. This ensured that any archaeological features were fully infilled. This was pushed over the remains using a D3 low ground pressure machine.

b. A layer of geotextile was laid over the shingle by hand.

c. Above the geotextile layer, normal embankment construction proceeded.

11.3.7 This methodology should form the basis of the preservation methodologies prepared by the Archaeological Contractor and set out on in the relevant SSWSI.

11.3.8 The ACoW will give Tool Box Talks to inform all site personnel of the archaeological and historic environment constraints on site, recognition of archaeological deposits, the protection measures that are required and their obligations under the SSWSI, and generally to ensure that these are put in place and complied with. Following construction, the protective fill material will be removed by the Principal Contractor, under supervision by the Archaeological Contractor, leaving the sites in their original condition.

12 Built heritage

12.1 Building recording of Brook Cottages

12.1.1 The building recording will be carried out in accordance with Historic England's guidance *Understanding Historic Buildings; a guide to good recording practice* (REF 12). The survey level will be Level 3 as defined in that document. This provides 'an analytical record' providing 'a systematic account of the building's origins, development and use' and 'an account of the evidence on which the analysis has been based, allowing the validity of the record to be re-examined in detail' (REF 12, 26).

12.1.2 In addition, the Curator for Bedford Borough Council will provide a design brief for the recording works to be undertaken at Brook Cottages.

12.1.3 The building recording will aim to provide a record of the form, function and phasing of Brook Cottages. This work will identify all features, fixtures and fittings relevant to the original and subsequent uses of the building. The building recording will take the form of a photographic record and descriptive written record, supplemented with floor plans and elevations (and cross sections, if available) and archive photographs and views of the structure, where these are available.

12.1.4 A thorough examination of the building's external and internal fabric is proposed to reveal evidence of phasing; the primary structural assembly (for example, timber framing/ jointing), upper floor construction and wall, floor and roof secondary framing and infilling; plan elements; decorative schemes; fixtures and fittings or other details which help to date the building or its various stages of evolution.

12.1.5 Areas that will be examined prior to demolition include all accessible internal rooms and the roof space. A second phase of recording will be undertaken during demolition as a watching brief. This will record any elements previously concealed within the building. This will include, but not be limited to, jointing detail, carpenters' marks and evidence of infill materials. It will also include further evidence of phasing, as appropriate. These elements will be recorded photographically and through drawn survey in accordance with the methodology outlined below. The report will be updated accordingly.

12.1.6 The photographic record will consist of digital SLR colour photography at 10 megapixels minimum. All photographs will contain a graduated photographic scale, where practicable. The camera will be placed on a levelled tripod and appropriate lenses used to obtain the required views of the structure.

12.1.7 The photographic record will include photographs of all external elevations, to be made at vantage points as nearly parallel to the elevation as possible within the constraints of the site. A series of oblique views and wider views of the building in its surroundings will also be taken in order to place the building within its setting.

12.1.8 The photographic record of the interior of buildings will aim to provide a record of key internal rooms and access areas, as well as detailed photographs of any significant fixtures and fittings, or evidence of phasing, as appropriate to illustrate the descriptive report and serve of as an 'as found' record of the building.

12.1.9 A photographic register detailing (as a minimum) the location and direction of each photograph will be compiled.

12.1.10 The drawn record will be based upon plans made by the survey team. Any plans and/or elevations supplied to the project team will be checked for accuracy on site, and any necessary amendments or annotations will be made.

12.1.11 Phased plans will be produced to show an interpretative account of the building's phases of development. Where appropriate, sketch illustrations and annotated photographs will be produced to assist in interpreting the building in the descriptive report.

12.1.12 Where the survey identifies issues relating to the development history, sequence, function, or other aspect of the structure's character that may be resolved by hidden structural evidence, this will be noted and recorded as part of a watching brief during demolition.

12.1.13 Background research will be undertaken to compliment and expand upon that already undertaken to inform the DCO. Further research at Bedford Archives and Record Service in Bedford, and in BBC's Planning Department.

12.1.14 The building recording will be undertaken in accordance with the Chartered Institute for Archaeologist's (CIfA) *Code of Conduct* (REF 13) and Standard and Guidance for Archaeological Building Recording (REF 65).

12.1.15 A SSWSI will be produced for the building recording.

12.2 Milestones

12.2.1 There are three Grade II listed milestones (NHLE 1163534,1331394 and 1162760) located within the Order Limits that will be affected by the Scheme. In addition, one non-designated milestone (8808) is also located within the Order Limits.

12.2.2 To avoid damage or destruction of the milestones the following methodology will be undertaken:

a. Milestones will be recorded photographically, including photographs of their setting. Their geolocation must also be recorded before removal.

b. Milestones will be removed under archaeological supervision. This removal will be hand dug and machine excavation would not be permitted.

c. The milestones will be stored at the Scheme main compound in a secure location to ensure their protection.

d. The milestones will be reinstated as close as possible to their original location. Their geolocation should be recorded following reinstatement.

12.2.3 The exact methodology for recording, removal and reinstatement will be detailed in a SSWSI to be prepared by the Archaeological Contractor.

12.3 Sign at existing Black Cat roundabout

12.3.1 A sign in the shape of a black cat is located at the existing Black Cat roundabout.

12.3.2 To avoid damage or destruction of this, the following methodology will be undertaken:

a. The sign will be removed under archaeological supervision. This removal will be hand dug and machine excavation would not be permitted.

b. The sign will be stored at the Scheme main compound in a secure location to ensure their protection.

c. The sign will be reinstated at an appropriate location at the new Black Cat junction.

12.3.3 The exact methodology for recording, removal and reinstatement will be detailed in a SSWSI to be prepared by the Archaeological Contractor.

13 Reporting

13.1 Introduction

13.1.1 Following the completion of the fieldwork, all finds and samples will be processed (cleaned and marked). Each category of find or environmental/industrial material will be examined by a suitably qualified specialist so that the results can be included in the Post-Excavation Assessment Report (PEAR) to be produced at the end of the investigations.

13.2 Weekly reports

13.2.1 Weekly written progress reports will be provided by the Archaeological Contractor and submitted to the ACoW during each phase of fieldwork, to be issued via e-mail each Friday, and to be received no later than 14.30 hrs. This should include details of each area where archaeological work has taken place in the previous week, along with details of any archaeological features located, highlighting significant finds and discoveries and progress against the programme. In addition, the Principal Contractor and Archaeological Contractor will inform the ACoW and/or the Client's Representative on the progress of the fieldwork verbally upon request.

13.2.2 It is anticipated that regular progress meetings will be held on site with the Curators during the course of the fieldwork. If appropriate, the Historic England Regional Science Advisor, shall be invited to attend. These meetings will be arranged by the AcoW; monitoring meetings will also be held during the post-excavation phase of the project if appropriate. A programme of monitoring visits/meetings will be agreed prior to the commencement of fieldwork.

13.2.3 Use should be made of GIS systems as an interactive tool during site monitoring and as part of the reporting process.

13.3 Interim statements

13.3.1 Interim statements will be prepared and submitted by the Archaeological Contractor to the ACoW and the Client's representative The ACoW will submit these interim statements to the relevant Curators. The purpose of each interim statement is to provide a basic account of the results of the investigations at each site to inform the progress meetings. Interim statements will be prepared within a set time frame following completion of fieldwork at the relevant site. This time frame will be decided by the ACoW, the Client and the Archaeological Contractor prior to the commencement of the post-excavation work. The interim statement will include:

a. A brief summary of the results.

b. A draft or preliminary site plan of each archaeological area or site.

c. A quantification of the primary archive including finds and samples.

d. Identify any issues that have arisen during the course of the fieldwork to ensure that there is integration across the Scheme between sites and phases.

e. A programme of work and schedule for the completion of the PEAR.

13.4 Post-Excavation Assessment

13.4.1 The Archaeological Contractor will meet the set time frames in order that the post-excavation assessment, analysis and publication phases can be programmed and resourced properly, and so that the completion date for all construction and post-excavation works can be met.

13.4.2 While each individual site will have its own post-excavation assessment, the results from all fieldwork interventions will be combined and treated as one project for the purposes of the updated project design. The results from earlier investigations (evaluation surveys and any advance archaeological works) will also be assessed/reviewed by the Archaeological Contractor where it contributes to an understanding of the site and addresses the research questions and aims and objectives of the SSWSIs. The assessment reports should also reflect the previous archaeological work at nearby sites, so that lessons learnt regarding the usefulness of specific techniques can be applied. Following the completion of the post-excavation assessment, the original project objectives will be reviewed to determine the scope of any analysis and publication.

13.4.3 The preparation of the project archive, post-excavation assessments and subsequent analysis and publication phases will be undertaken in accordance with the SSWSIs and Historic England guidelines (REF 11), and other relevant archaeological standards and national guidelines (see Appendix A). The different phases will be completed within a set time frame following completion of fieldwork, as agreed between the Archaeological Contractor, ACoW and the Client in consultation with the Curators.

13.4.4 The precise format of the reports is dependent upon the findings of the investigations, but the post-excavation assessment reports will contain the following:

a. A non-technical summary.

b. Site location.

c. Brief archaeological, historical and project background.

d. Methodology.

e. Aims and objectives.

f. Results – factual data statements (stratigraphic, artefactual, environmental, initial scientific dating results).

g. Statements of potential (stratigraphic, artefactual, environmental).

h. Statements regarding immediate and long-term storage and curation.

i. Review of original aims and objectives.

j. Statement of the significance of the results in their local, regional, national and international context.

k. Archaeological Research Design (ARD) that sets out how the research aims and objectives of the SSWSIs can be addressed at the analysis stage.

l. Post-excavation analysis method statements.

m. Recommendations for analysis, reporting and publication (including a synopsis of the proposed contents).

n. Proposed resources and programming (task list linked to key personnel, time required, cost and key research questions that the task will answer or facilitate and programme cascade chart).

o. General and detailed plans showing the location of the investigation areas accurately positioned on an OS base with grid co-ordinates and a plan of the identified archaeological remains (to a known scale).

p. Detailed plans and sections/profiles, deposit models etc., to support the narrative.

q. Detailed stratigraphic matrix for each area excavated and how the areas interlink.

r. Photographs and illustrations, including any 3D models.

s. Bibliography.

t. A cross-referenced index to the project archive and summary of contexts.

u. Appendices containing specialist reports.

13.4.5 The post-excavation assessment reports and Updated Project Design (UPD) will be submitted to the ACoW and the Client for review and comment. The Archaeological Contractor will address any comments that they may have. The ACoW will issue the revised draft report to the Curators for comment. In finalising the report, the Archaeological Contractor will take account of the comments of the Curators.

13.4.6 The scope of the analysis and publication report will be dependent upon the assessment and future discussions to be held with the ACoW, the Client and the Curators. The analysis stage will be undertaken in accordance with the UPD and will lead to the compilation of a research archive and the production of integrated report texts and illustrations for publication.

13.5 Outline publication and dissemination proposals

13.5.1 A comprehensive publication and dissemination programme that also considers the international context of the investigations will be developed in parallel with the strategy for Public Archaeology and Community Engagement (see Appendix E).

13.5.2 The format and structure of the publication (headings, word counts, figures and photographs) will be informed by the post-excavation assessment and will be decided by the Archaeological Contractor in consultation with the Archaeological Clark of Works and the relevant Curators and Historic England. It is envisaged that interim reporting related to mitigation will be published on the Archaeology Data Service archive.

13.5.3 Fieldwork updates would be published annually in fieldwork roundups in appropriate local and period journals. Fieldwork data would be fed into the Cambridgeshire, Central Bedfordshire and Bedford Borough Historic Environment Records. Discussions should be held with the relevant HER officers to ensure all relevant data is provided.

13.5.4 The Higgins Art Gallery and Museum and the Cambridgeshire Archaeological Archive Store should be consulted during the publication and dissemination phases of the Scheme, as recipients of the project archive.

13.5.5 It is anticipated that academic publications would take the form of either a multi-period monograph, a series of thematic or chronological monographs, with further reports in the Archaeological Data Service, and/or topic-, theme-, period-, or object-specific articles in appropriate journals. Popular booklets for children and adults may be produced by the Archaeological Contractor in tandem with formal assessment and analytical reporting.

13.5.6 The final scope and publication outlet/format for the popular and academic publications associated with the Scheme have not yet been decided. However, it is anticipated that these would be print publications also accessible online as open-access publications. Digital publication, dissemination and stable online archiving via the Archaeology Data Service archive would be prepared/arranged by the Archaeological Contractor.

13.5.7 To help promote and launch these publications, a day conference or other form of presentation may be organised to include presentations from project contributors and specialists. This would serve to promote the publication of the monographs and would also provide a further opportunity to share the results of the project and highlight the potential presented by the archive for future academic research independent of the Scheme.

14 Archives

14.1 Archive security and storage

14.1.1 Archaeological material recovered from fieldwork is irreplaceable. The finds, records and data generated by the fieldwork will be removed from site at the end of each working day and will be kept secure at all stages of the project (REF 66; and Appendix A). The Archaeological Contractor will be responsible for the care of the site archive (records and finds) in their possession and should ensure that adequate resources are in place prior at the start of the fieldwork, including the materials necessary for long-term storage and access to an archaeological conservator. Arrangements should be made for the proper cataloguing and storage of the archive during the project life-cycle (it may be appropriate to liaise with an archive specialist).

14.1.2 Specialist data and reports will clearly state the research potential of the collections, highlighting these for the accessioning museum, as this will ensure that the potential of the collections can be promoted to researchers following deposition.

14.2 Archive consolidation

14.2.1 The Archaeological Contractor should compile a Data Management Plan in line with CIfA guidelines (REF 17) and include details within their SSWSIs. The Higgins Art Gallery and Museum and the Cambridgeshire Archaeological Archive Store are stakeholders in this process and should be consulted during the creation of the Data Management Plan.

14.2.2 The Site records and assemblages (list of fieldwork interventions, notebooks/ diaries, context records (including digital records), feature records, structure records, site geomatics (drawings), photographs and films, finds records and associated data files) will constitute the primary Site archive. This is the key archive of the fieldwork project and the raw data upon which all subsequent assessment and analysis and future interpretation will be based. The archive will therefore not be altered or compromised and the Archaeological Contractor is expected to show due diligence and compliance with the digitisation of data.

14.2.3 The Site archive should be quantified, ordered, indexed and made internally consistent, and in line with current good practice (refer to Appendix A). All finds and coarse-sieved, and flotation samples will have been processed and stored under appropriate conditions. The archive will also contain a site matrix, a summary of key findings and descriptions of artefactual and environmental assemblages. The content of an outline structure for a fieldwork archive is presented in MoRPHE, Appendix 1, Product P1 and Product P3 (REF 11).

14.2.4 The Archaeological Contractor will, prior to the start of fieldwork, liaise with the Higgins Art Gallery and Museum and the Cambridgeshire Historic Environment Record (CHER) office to obtain agreement in principle to accept the physical, documentary, digital and photographic archive for long-term storage. This will include the agreement of a retention and disposal policy that is consistent and compliant with both archives. The Archaeological Contractor will be responsible for identifying any specific requirements, archiving costs or policies of the recipient repository in respect of the archive, and for adhering to those requirements.

14.2.5 Discussions are currently ongoing with the Curators and receiving museums archive officers for the process for the deposition of a digital archive via ADS. This is not yet resolved, but pertains to a non-paper archive of records from sites. Consideration must be given by the Archaeological Contractor to how the digital archive will be dealt with.

14.2.6 Each archaeological mitigation area will have its own unique accession number, which will be obtained from the Higgins Art Gallery and Museum and the CHER office by the Archaeological Contractor in advance of the fieldwork, to ensure that the project is recorded in accordance with the requirements of the local authority. The unique accession number will be recorded in the Archaeological Contractor's SSWSIs.

14.2.7 The archive of finds and records generated during the fieldwork will be removed from the Site at the end of each day and kept secure at all stages of the project until it is deposited with the Higgins Art Gallery and Museum and the Cambridgeshire Archaeological Archive Store. The archive will be produced to current national standards (refer to Appendix A) and in line with the *Deposition of archaeological archives in Cambridgeshire* (REF 67) and in line with deposition guidance from the Higgins Art Gallery and Museum and the Cambridgeshire Archaeological Archive Store.

14.2.8 The deposition of the archive forms the final stage of this project. The Archaeological Contractor shall provide the Client's Representative and the ACoW with copies of communication with the accredited repository and written confirmation of the deposition of the archive.

15 Health and safety

15.1.1 The works fall within the definition of Construction Work as defined under the Construction Design and Management (CDM) Regulations. The Archaeological Contractor will be appointed by the Principal Contractor who will act as Principal Contractor at all stages of the archaeological site works.

15.1.2 All staff employed by the Archaeological Contractor shall attend the Principal Contractor's site induction and shall prepare Risk Assessment(s), and a project specific Health and Safety Plan and submit these to the Principal Contractor for approval prior to starting on site.

15.1.3 The Archaeological Contractor's site supervisor will be qualified to Site Managers Safety Training Scheme (SMSTS) level. All other staff involved in the fieldwork should hold the applicable Construction Skills Certification Scheme (CSCS) qualification and be qualified to a minimum standard of 'Archaeologist Technician'. Staff CVs should include SMSTS and CSCS qualifications and expiry dates.

15.1.4 The Principal Contractor will provide the Archaeological Contractor with the results of recently conducted service and utility searches. No archaeological works should commence without a Permit to Dig. This should include confirmation that the locations of any services are marked, and that any additional safety measures required to ensure that each area is safe prior to commencement of mitigation work are in place.

15.1.5 The Archaeological Contractor shall at all times maintain a safe working distance from the overhead and buried services/utilities. In addition, the Archaeological Contractor shall be responsible for any requirements with regard to work in the vicinity of watercourses.

15.1.6 The Archaeological Contractor's Risk Assessment(s) and project Health and Safety Plan shall make reference to relevant guidance and good practice (for example: Health and Safety Executive SEGS6 - Avoidance of Danger from Overhead Lines; HS(G)47 - Avoiding Danger from Underground Services; Energy Networks Association The Safe Use of Mechanical Plant in the Vicinity of Electricity Overhead Lines; PAS 128 – Specification for underground utility detection, verification and location; and Model Procedures for the Management of Land Contamination, CLR 11).

15.1.7 The Archaeological Contractor's site supervisor will maintain a record of site attendance and attend the Principal Contractor's daily briefing at the start of work for each day.

15.1.8 All site personnel will wear personal protective equipment (PPE) as defined by the Archaeological Contractor's approved risk assessment undertaken in accordance with mandatory requirements. Any visitors to the investigations will require a site induction in accordance with the Principal Contractor's Health and Safety requirements, and will have read the appropriate Archaeological Contractor's site-specific Risk Assessment and Method Statemen. All equipment that is used in the course of the fieldwork must be 'fit for purpose' and be maintained in a sound working condition that complies with all relevant Health and Safety regulations and recommendations.

15.1.9 As a minimum, PPE shall consist of a hard hat, steel toe-capped boots with mid-sole protection, a high visibility jacket or vest with sleeves, high visibility trousers, safety glasses and gloves. Additional PPE will be issued by the Archaeological Contractor as required, e.g. ear defenders, masks etc. In addition, site personnel will ensure that any visitors to the excavation are equipped with suitable PPE prior to entry to the site.

15.1.10 The Archaeological Contractor will assure the provision and maintenance of adequate, suitable and sufficient welfare and sanitary facilities at appropriate locations for the duration of the works. The locations for the temporary site welfare facilities and vehicle parking will be agreed with the Principal Contractor prior to the start of the works. Facilities, roles and responsibilities shall adhere to the provisions of The Construction (Design and Management) Regulations 2015 and related Health and Safety Executive guidance.

15.1.11 All staff and visitors involved in the fieldwork should be suitably qualified. Visitors to the site (including, but not limited to, the Curators, specialists etc) must abide by the Principal Contractor's visitor protocols and induction process. All regular visitors to the site must have undertaken the full induction process or access to site will not be permitted.

15.1.12 All site personnel will familiarise themselves with the following:

a. Site emergency and evacuation procedures.

b. The site's health & safety coordinator.

c. The first aider.

d. The location of the nearest hospital and doctor's surgery.

e. The supervisor will maintain a record of site attendance for each day that there is a team in the field.

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Figure 1 Archaeological Mitigation Areas

Appendix A Standards and guidance

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Appendix B Joint Cambridgeshire/Bedfordshire brief for a programme of archaeological investigation

CAMBRIDGESHIRE / BEDFORDSHIRE BRIEF FOR

A PROGRAMME OF ARCHAEOLOGICAL INVESTIGATION
and
PUBLIC ENGAGEMENT SCHEME

Site:	**A428 Black Cat to Caxton Gibbet Improvements**
Development Consent Order (DCO) Stage/	Post-Submission
Brief version:	Update 1.1
Company:	Highways England
Location:	NGR (TL) 515468 255438 west of Black Cat/A1 Junction, to 529651 260657 A428 Caxton Gibbet/A1198 (Ermine Street) Junction, - crossing the River Great Ouse at 526795 255383, and the Great Northern Railway Line at 518190 255434

This design brief has been jointly prepared by Cambridgeshire County Council (CCC) Bedford Borough Council (BBC) and Central Bedfordshire Council (CBC) and may be periodically updated to reflect updates and new professional and planning guidance.

This document is written for commercial archaeological contractor organisations of proven competency to facilitate their production of a responding project design, or Written Schemes of Investigation (WSIs), which should cover all of the minimum requirements of the programme of archaeological investigation shown below, enhancing and adding value to the programme where possible.

The Local Authority HERs should be contacted to obtain refreshed up-to-date HER search data to assist in the development of WSIs, analysis programmes, and for familiarisation with the local archaeological character.

Project Managers are strongly advised to visit the site before completing their specifications, as there may be implications for accurately costing the project.

The WSI should follow published professional protocols issued by the Chartered Institute for Archaeologists (CIfA):

CIfA, 2019. *Code of Conduct*
CIfA, 2020 *Standard and guidance for archaeological excavation*

NO FIELDWORK MAY COMMENCE UNTIL WRITTEN APPROVAL OF A SITE-SPECIFIC WRITTEN SCHEME OF INVESTIGATION HAS BEEN ISSUED BY THE RELEVANT HISTORIC ENVIRONMENT TEAMS FOR CAMBRIDGESHIRE, BEDFORD BOROUGH AND CENTRAL BEDFORDSHIRE COUNCILS.

1.0 SITE DESCRIPTION

1.1 The A428 Black Cat to Caxton Gibbet improvements scheme involves upgrading the existing route between the Black Cat roundabout and Caxton Gibbet roundabout with a new 10-mile dual carriageway and a number of junction improvements.

1.2 The scheme footprint crosses undulating land comprised of several geological facies, mudstones and clays of Jurassic age (Ampthill, Kellaways, West Walton Formation, Kimmeridge and Oxford) with a series of sedimentary deposits (Third River Terrace Sand and Gravels and alluvium) in the River Great Ouse valley at the west end. The land slopes westwards from a high point at Cambourne (65mAOD) down to the river and its western terraces that lie at *c*25mAOD. River tributaries and brooks flow roughly east westwards off the clays towards the Great Ouse, while smaller water courses, many of which are now canalised, flow northward to join the Hen/Alconbury Brook, a principal tributary of the Great Ouse, north of Abbotsley. Essential in all periods, these water courses were particularly important for the siting of numerous Late Saxon villages and Medieval moated enclosures and fishponds (some scheduled) in the countryside outside the nearest town of St Neots in this western part of the county (apply to the HERs for a full suite of data relating to this scheme and see 1.5).

1.3 Archaeological sites are known across the entire length of the road scheme. Transforming earlier understanding of human occupation on the clays, the density of settlement and distinctive land use of later prehistoric to Medieval date has been well established in air reconnaissance flights and aerial photographic transcriptions commissioned in Bedfordshire and Cambridgeshire since the 1990s[1]. While large areas of gravel terraces of the Great Ouse valley were quarried without recourse to archaeological examination prior to Planning Policy Guidance Note 16's publication in 1990, ongoing excavations and those conducted in advance of settlement expansion around St. Neots since 2005 have revealed closely spaced Iron Age, Roman and Anglo-Saxon settlement, burials and communications[2], and the gradual incorporation of abandoned settlements into the Medieval open fields, altering the landscape character in that important time of change and land ownership. Hundred/parish boundaries, furlong boundaries and Medieval and later cultivation remains are distinctive on aerial photographic transcription and geophysical surveys acquired for this scheme and more widely in the HERs, and are seen to follow the contours and mirror the alignment of water courses, winterbournes and other morphological features in the territory.

1.4 Excavations for the new development at Wintringham Park (eg ECB5250: Site 4i) to the west of the A428 Improvement Scheme in Cambridgeshire is currently providing new evidence of Iron Age to Roman settlement on prominent ridges within the development area and further Iron Age and Roman settlement is being excavated to the east of the Caxton Gibbet roundabout at Ermine Street for the West Cambourne development at Swansley Wood (ECBs5357-5361). Large Roman barn/buildings are present along with contemporary settlement and earlier enclosed farmsteads.

1.5 Excavation work undertaken in advance of the A421 Improvement Schemes immediately west of the current scheme identified evidence for remains from the Neolithic to Medieval periods[3]. The majority of these works occurred on the clay uplands of Bedfordshire, a trend for the establishment of middle Iron Age settlements was established with a noted increase of activity in these areas from this period onwards. Site 8 of the A421 Great Barford Bypass showed continued activity through to the early Saxon period. Recent excavations at the Black Cat Roundabout in Bedfordshire (EBB1192) within the route of the A428 Improvement Scheme has identified evidence of early dispersed prehistoric activity including several crouched inhumations as well as a multi-phased Roman settlement and associated cemetery. Additionally, these works identified a large enclosure against the banks of the Great Ouse dating to the 10th century and possibly correlating with the Tempsford fort described in the Anglo-Saxon chronicle. Excavation work undertaken in advance of the A421 Improvement Schemes immediately west of the current scheme identified evidence for remains from the Neolithic to Medieval periods. The majority of these works occurred on the clay uplands of

[1] Mills, J. and Palmer, R. 2007 *Populating Clay Landscapes.* Stroud: Tempus

[2] Hinman, M. and Zant, J. 2018. *Conquering the Claylands: Excavations at Love's Farm, St Neots, Cambridgeshire*. East Anglian Archaeology Report no 165. Oxford Archaeology East

[3] Timby, J., Brown, R., Hardy, A., Leech, S., Poole, C., & Webley, L. J. (2007). *Settlement on the Bedfordshire Claylands: Archaeology along the A421 Great Barford Bypass*. Oxford Archaeology Ltd. https://library.thehumanjourney.net/493/

Bedfordshire, a trend for the establishment of Middle Iron Age settlements was established with a noted increase of activity in these areas from this period onwards. Site 8 of the A421 Great Barford Bypass showed continued activity through to the early Saxon period.

1.6 A series of Roman roads are present in the scheme area. Some may have Iron Age origins, at least in part, as has been established at Loves Farm and for excavations on the Old/Great North Road, Ermine Street and along the current line of the A428 between Cambridge and Caxton Gibbet (e.g. MCB16337). The SSW-NNE aligned Sandy to Godmanchester Roman Road (MCB17569, Margary 22), marked by field boundaries and paths in the present landscape, will be crossed by the new A428 Cambridge Road junction. Many footpaths in the scheme have ancient/historic origins. The relationship of ancient roads to the settlements of the Late Iron Age and Roman period, and subsequent Medieval landscape, in the locality will be a focus of investigation.

1.7 A comprehensive field evaluation supported by non-intrusive surveys has taken place across the scheme area to provide tangible evidence of archaeological activity for an Environmental Impact Assessment (Cambridgeshire reference: ECB6150). Three reports of field data demonstrate the presence of settlement sites of various characters (eg Roman and Medieval roadside, heterogeneous enclosed/open Iron Age farms, series of Iron Age enclosures of potentially different functions strung along sinuous boundary ditches that seem to enclose territories[4], *villa rustica*, industrial areas, field systems (prehistoric to Post-Medieval) and cultivation evidence attesting to the land use order controlled by manorial and other landlords. While some sites were previously known from cropmarks, new occupation sites have materialised in the scheme corridor that expand the density of closely spaced settlement that largely originated with pioneering Iron Age communities seeking new opportunities on the clay plain.

1.8 The results of HER searches have been prepared but are not attached to this brief. Please request the data to be supplied in GIS format (MapInfo TAB. or ESRI/QGIS shapefile SHP.) by contacting the CHER, BBC HER or CBC HER. An OS Licence Agreement will be supplied and require signing to obtain the files.

1.9 The A428 Development Consent Order Application Document relevant to the archaeology of this scheme can be found on the PINS website and should be read in conjunction with this brief. Non-intrusive and trench based evaluation reports are contained in the document library along with the PEIR, Environmental Statement for Cultural Heritage and the Archaeological Mitigation Strategy (AMS), which is to be amended prior to approval. The AMS sets out Highways England's strategy to mitigate the impact of the road scheme on the archaeological resource and other heritage assets. A full reference list for the DCO documents is here.

2.0 THE NATURE OF THE DEVELOPMENT AND ARCHAEOLOGICAL REQUIREMENTS

2.1 The development is for a 17km (10.5miles) road improvement scheme, 5km of which is in Bedfordshire with the remaining 12km in Cambridgeshire. Attendant scheme features will include borrow pits, soil storage areas, compounds, lay down areas, flood compensation areas, ecological/new habitat areas, balancing ponds and any other aspects of temporary or permanent works.

2.2 Due to the evidence of significant archaeological remains at the site, the scheme will be subject to a robust mitigation strategy to be identified in the Development Consent Order or Local Authority planning conditions, should these be granted. This will require a scheme of archaeological investigation programme to be undertaken at the site complemented by an appealing public engagement scheme and ultimately the display and interpretation of

[4] Brudenell, M. 2018. Late Bronze Age to Middle Iron Age, *c*. 1150-100BC. *Revised Eastern Counties Archaeological Research Framework*.ALGAO & Historic England

important facets of newly discovered evidence. This design brief sets out the requirements for the archaeological investigation programme for the scheme.

2.3 The investigation should include a suitable level of documentary research to set the results in their geographical, topographical, archaeological and historical context.

2.4 The investigation should include **detailed excavation** of the areas of archaeological significance and will include the excavation of sufficient archaeological evidence to conform to section 3.0 and 6.0 below. Any discrete archaeological features or areas that extend beyond the areas identified for excavation and that are within the development boundary may also need to be investigated. Following on-site discussions with all parties, decisions regarding expansion of the investigation programme will require authorisation by CHET, BBC and CBC who are responsible for the protection, enhancement of local archaeological assets and to manage change to the resource. A suitable contingency (including for concomitant post-excavation work) should be included in arising specifications for this eventuality.

3.0 MITIGATION STRATEGY COMPRISING EXCAVATION

3.1 The part of the mitigation strategy comprising open excavation of the identified area will consist of the following sequential programme.

1. Initial site clearance of overburden under the supervision of competent professional archaeologists with proven experience in this area;
   NOTE: Archaeologists responsible for the stripping of excavation areas should be assisted by the main contractor to enable close contact machining practices conducted in a safe manner. This will enable greater recognition of the height at which archaeological evidence defines in the soil sequence, which is particularly relevant for the definition of earth-fast features such as interments, hearths, structural remains and occupation/industrial surfaces, which are to be examined prior to stripping off the remaining soils.

2. Where stratified soils of old land surfaces are known or that emerge during stripping within the excavation area, stripping should cease at the interface with these soils. A sampling strategy should be specified in the WSI and implemented (e.g. 1m^2 test pits hand excavated in spits of appropriate (specify) depth on a grid or in transects supported by bulk samples extracted for wet sieving) - to examine their artefact content and spatial distribution, and to search for and excavate earth-fast features present only within former land surface soil horizons. Once completed, removal of the buried soils by machine can ensue.

3. The excavation area(s) will be subjected to a metal detection survey over key sites prior to excavation and during stripping and excavation at all sites. Key sites include:

   Site 3: Iron Age and Roman settlement in rectilinear enclosures in Field 9 adjacent to potential Roman Road beneath A1 to east
   Site 9: Giants Parlour Iron Age site in Field 49
   Site 13: A sub-square Iron Age/Roman enclosure was located in Field 58
   Site 15: A large Roman site, possible *villa rustica*, in Fields 64 & 65
   Site 17: Late Bronze Age/Early Iron Age settlement and Saxo-Norman settlement in Fields 69 & 70
   Site 18: Iron Age – Medieval settlement in Fields 73 & 74
   Site 22: Iron Age and Roman settlement & field system in Field 77
   Sites 29 &30: Iron Age string boundary with enclosures Field 92
   Site 37: Iron Age settlement est of Ermine Street Roman Road at Caxton Gibbet Field 97.

   Archaeologists specifically trained in metal detection work, using a high-quality instrument, should undertake this work. The detector should not be set to discriminate

against iron. Recovered items should be plotted on the base plans and their depths recorded to ensure accuracy of their context;

4. Manual cleaning and base planning of archaeological features is required to refine the excavation strategy;

5. Regular monitoring reviews on site with relevant Local Authority Archaeologists (followed by periodic reviews) to discuss the excavation strategy needed for the site as it is revealed, any specific machining needs, other variations that may be required, and to monitor compliance with the agreed WSI;

6. Excavation of archaeological features, stratified deposits and landscape evidence (see Section 6);

7. Implementation of a public engagement programme during the course of and subsequent to the excavation period (see Section 7.2);

8. Submission of a short summary report for each site to the Local Authority Archaeologists followed by the preparation of a post excavation assessment (PXA) to establish the research potential of evidence acquired from all fieldwork stages integrating evaluation results as necessary, and the production of an updated project design (UPD) setting out the objectives and methods for conducting the remaining analysis and reporting stages (**cost review stage**);

9. Arrangements for the transfer of title of the archive to Cambridgeshire County Council's publically accessible archive facility or to the Higgins Art Gallery and Museum, Bedford. Arrangements for display, interpretation and deposition of the archive to a suitably accredited storage facility must be fully agreed at the PXA preparation stage – early discussions with the depositories are, therefore, crucial for understanding the needs of these facilities;

10. Completion of analysis and the production of a full archive report;

11. Submission of short illustrated statements for parish magazines, client's media outlet, popular archaeology magazines (also during the fieldwork).

12. Publication of the project results;

13. Deposition of the collated archive in Cambridgeshire County Council's Archaeological Archive Facility or in the Higgins Art Gallery and Museum, Bedford (or equivalent accredited store) and to an accredited CoreTrustSeal digital archive repository.

All of the above stages should be carried out in accordance with the procedures and guidance contained within Historic England's manager's guide: *Management of Research Projects in the Historic Environment. The MoRPHE Project Managers' Guide.* (HE 2015).

4.0 MITIGATION STRATEGY DETAILS

4.1 Aims and Objectives

4.1.1 The primary objectives are to preserve the archaeological evidence contained within the sites **by record**, to attempt a reconstruction of the history and use of the sites and undertake comparative analysis between the sites and other relevant sites in the locality.

4.1.2 The following research priorities are important considerations although the Project Manager is encouraged to propose others. Attention is drawn to research objectives within *Research and*

Archaeology Revisited: a revised framework for the East of England (EAA Occ. Paper No 24, 2011) and the updated agenda in the current review to define research objectives.

4.1.3 Minimum standards for investigations conducted in the eastern region of England should be followed: *Standards for Field Archaeology in the East of England* (Gurney, D. 2003, East Anglian Archaeology Occasional Paper 14).

4.2 Research priorities

Iron Age

4.2.1.1 To investigate the character and diverse morphologies of Iron Age settlement/territory and associated activity, with reference to its origins and development, and with consideration of the pioneer character of settlement on the clay plain between the River Great Ouse and Cambridge.

4.2.1.2 To compare and contrast the differences between the Iron Age settlements in the Ouse Valley and those on the clay uplands, is there evidence for significant differences in the nature and pattern of these settlements? To examine any variance in the settlements identified on the east and west side of the Great Ouse valley. What role did the river play in the establishment of these settlements and is there evidence for its use as a natural resource or is it simply a case of the geology being more suitable for early agricultural practices?

4.2.1.3 To examine the spatial distribution of settlements, their hetero- or homogeneity and determine their chronologies and determine how they may have been linked by prehistoric trackways and other communications;

4.2.1.4 To investigate the function of the 'string boundaries', their attendant enclosures and associated activity away from the sinuous boundary line. These have become visible on the western Cambridgeshire clay plain since excavations on the A14 occurred and are prominent in the landscape here. What lands might they enclose and how do the long linear boundaries compare to other contemporary boundaries more commonly seen as triple ditches through settlements, such as at Northstowe and at Black Peak, Melbourn?

4.2.1.5 To develop an understanding of trade and the economy of the Iron Age settlements, through analysis of recovered artefacts and ecofacts;

4.2.1.6 To contribute to an understanding and closer dating of Iron Age ceramic sequences;

4.2.1.7 To investigate the character of the treatment and disposal of the dead in this period, with particular reference to discovering either the northern reaches of the Aylesford-Swarling culture or the influence of other distinctive customs;

Iron Age to Roman transitions

4.2.1.8 With Godmanchester located far to the north of the A428, to consider the potential influence of the roadside settlements at Sandy, which had an Iron Age mint and developed into a significant Roman small town, and of contemporary sites in the St Neots area upon the settlements of the A428 within their hinterlands.

4.2.1.9 Within the Great Ouse valley settlement sites have origins within the Iron Age but continued through to the Roman period. What evidence is there for changes in the nature of the type of occupation and land use during the transition period at these sites? How comparable is the transition period at these sites, what are the differences and similarities and can reasons for these be established?

4.2.1.10 Recognition of the prehistoric pioneers' colonisation of this landscape and land improvements to farm and drain the intractable clay-derived soils is a core objective. Environmental

mapping should include pollen catchment work should establish the general environmental conditions and vegetation to define the general character of the land – wooded (dense/light/intermittent) and cleared vs open grassland. Mapping the use of wild fauna and flora vs domesticates is required to establish diet and settlement economy and the arrangement of fields (arable) or corrals (pasture) should be compared against published contemporary sites. Settlement character - open to enclosed or only enclosed, alongside the chronology of change should be examined.

4.2.2 Roman

4.2.2.1 To investigate the political and landscape impact of conquest: *Britannia Perdomita*,[5] and Romanisation of the landscape and economy with reference to the reorganisation of existing patterns of settlement, agriculture and communications;

4.2.2.2 To investigate and date patterns of intensive agriculture represented by parallel, linear furrows – e.g. *pastinatio*: the apparent planning of new layouts and the relationship to/modification of previous and contemporary activity; evidence for the nature and character of the agricultural activity; the longevity and possible reasons for the abandonment of this cultivation method;

4.2.2.3 To consider the location of the sites with reference to the Roman communications network, including, for instance, the road linking the Roman settlements of Sandy, St Neots and Godmanchester (HER MCB17569, Margary 22). The emergence of distinctive early Roman farms - potential *villa rusticae*: e.g. Site 14 (F59), Site 15 (F64 & 65) Sites 18-19 (F73-4); Site 22 (F77) along the road networks and the abandonment of some of the Iron Age settlements, particularly at the eastern end of the scheme, should be addressed;

4.2.2.4 To develop an understanding of the economy and trade of the Roman period settlements, through analysis of recovered artefacts and ecofacts;

4.2.3.5 To contribute to an understanding of Roman period ceramic sequences;

4.2.3.6 To investigate the character of the treatment and disposal of the dead in this period.

4.2.4 Anglo-Saxon, Saxon/Danish, Medieval and Post-Medieval

4.2.4.1 To characterise and identify morphological change in settlement and farming connected with periods of occupation caused by migration or conquest;

4.2.4.2 To examine the hundred/parish boundaries (within the mitigation areas) for their origins subsequent recuts/re-establishment;

4.2.4.3 To examine the impact of the development and expansion of manorial landholdings on the landscape and the deserted/shrunken Medieval settlements within the scheme (e.g. adjacent to Wintringham (Site 17 (F69-70), Croxton and Weald (SMs unaffected by the scheme) and Chawston (Site 2 F5);

4.2.4.4 To identify changes in the character of farming and husbandry;

4.2.4.5 To understand the origins of the Old/Great North Road and the spatial distribution and character of roadside settlement in this period.

4.2.5.6 To fully establish the relationship between the early Medieval enclosure ditch in Field 5, Site 2 and the adjacent industrial area with kilns which have been tentatively dated to the Post-Medieval period. Is there evidence for continued activity within this area between these periods and if so what form did it take?

[5] *cf* Mattingly, D. 2006: 136ff. *An Imperial Possession. Britain in the Roman Empire*. Penguin Books.

4.2.5 All Periods

4.2.5.1 To examine the environmental setting for all periods of settlement and related land use, including evidence for human interaction with and impact on the local environment.

4.2.5.2 The investigation should consider the interrelationship of the settlement cores for each period. Specific attention should be given to any evidence for social or economic differences between the settlement cores, and for the evidence of land use between the settlement cores. Consideration should also be given to the relationship of the site to sites beyond the development boundary, both excavated and from crop mark evidence.

4.2.5.3 The investigation should consider how the topography of the site has influenced the pattern of prehistoric to Roman land use. Continuity or changes in the pattern of land division beyond the Roman period may also be worth consideration, with regard to how the post medieval/modern pattern of field boundaries may or may not have been influenced by previous land use and communications.

4.3 Geoarchaeology and environmental reconstruction

4.3.1 A geoarchaeological approach to the fieldwork programme is required for the investigation of lived in and human/naturally modified landscapes[6]. The combined study of archaeological and geomorphological records with appropriate environmental sampling will enable the definition and characterisation of landscape change to occur and to provide the context in which past activity represented at the site(s) or within the scheme is understood[7]. The selection of relevant appropriate sampling techniques should, therefore, be shown in the WSI to gain evidence to from the geomorphological features in the development area (e.g. palaeochannels, creeks, ponds/oxbows; dry valleys/winterbournes) and from feature and deposit contexts for environmental mapping purposes and to examine past landscape character and transformation brought about by the settlement's inhabitants and due to natural events. Emphasis should be given to relict soils preserved below plough depths, beneath banks, alluvial or colluvial deposits, or that survive as floors in buildings. Soil micromorphology and geochemical analyses combined with bulk, column or mini samples should be factored into bespoke sampling strategies. Specialist advisors should assist with specifying this area of the investigation programme and be encouraged to visit the site to refine the strategy during the excavation and explain how to implement the strategy to field staff.

4.3.2 A detailed environmental sampling programme should be designed for this investigation[8] (see section 7.3) to include: the examination of midden deposits, waterlogged fills, grain-rich fills, utilised buried soils, abandonment deposits and dark earths is a requirement of this investigation. Particular interest will be on the presence of blocky charcoal in soil fills, which may be suggestive of the use of charcoal in craft production, while hammerscale and other metalworking by-products indicative of on-site manufacture should be sought and appropriately investigated and sampled. The recovery of whole animal bones should be attempted wherever possible for measurement purposes and sampling of bone-rich deposits favoured for economic, dietary and butchery evidence. Shell-rich deposits should also be specifically sampled, with on-site weighing for high volumes of for example, oyster shells, with sub-samples returned for analysis (by agreement with relevant specialist). Specific sampling strategies for small fauna, plant and invertebrate remains will be required. The

[6] French, C. 2015. *A handbook of geoarchaeological approaches for investigating landscapes and settlement sites.* Oxbow Books.
[7] Historic England 2020. *Deposit Modelling and Archaeology: Guidance for Mapping Buried Deposits.* Swindon. Historic England.
[8] English Heritage 2011 *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation (second edition).* Swindon English Heritage.

bespoke sampling of graves, cremations, pyres and of deposits in and around the interred human body should be presented.

5.0 PROGRAMME OF WORKS

5.1 Site clearance and base planning

5.1.1 After scanning for services, the modern make up from the delineated area will be mechanically stripped by a tracked vehicles with a minimum 2m wide toothless ditching bucket. Dumper truck must be prevented from travelling across stripped surfaces and routes arranged to remove spoil to heaps placed away excavated areas.

5.1.2 Metal detection will be conducted across all parts of the site at various times in its stripping and excavation: to include deep section faces and spoils heaps.

5.1.3 Phased stripping may be required should buried soils of old land surfaces be encountered that require sample excavation prior to removal. Provision to re-strip areas should be factored into the scheme.

5.1.4 Immediately after stripping, areas will be hand-cleaned to define archaeological features in order to produce a base plan, to be recorded digitally using a total station theodolite or survey-grade GPS equipment to allow a high degree of accuracy (typically 5mm horizontal, 10mm vertical control). Photogrammetry can be used to record complicated evidence. Plans should be produced at appropriate scales (normally 1:20 or finer where complex archaeology is present or 1:50 or 1:100 in areas of less density).and provided for the Client and the Local Authority Archaeologists for the first monitoring meeting and as ongoing work. Surveying techniques should be presented in the WSI.

5.2 Monitoring

5.2.1 The first monitoring meeting will be held after the initial site clean and presentation of the base plan but prior to major excavation work. Subsequent monitoring meetings will be held and will be arranged during the course of the project.

5.3 Excavation

5.3.1 A programme of excavation within these areas will be designed to take account of the research aims and objectives detailed above, general requirements and specific methodology detailed below and presented in the WSI in accordance with paragraph 8.1.

5.3.2 The use of control baulks within relevant sites for sampling and interpretation purposes should be considered. Attention should be paid to the cleaning of limits of excavation section faces as these can hold important contextual evidence.

5.3.3 Details of context recording procedures should be shown in the WSI.

5.3.4 The Project Manager will ensure that sufficient resource is available for this programme of work and that a **contingency resource** is included to enable the necessary investigation of unexpected discoveries or should poor or extreme weather conditions impede the programme. The use of the contingency reserve should be discussed in advance and agreed with the promoter and/or their agent and the Local Authority Archaeologists.

5.4 Mile markers

5.4.1 A number of historic mile stones or mile posts are located along the existing road (A428) and around the Black Cat /A1 junction. Usually designated as listed structures, these will require locating in advance of the road construction programme, lifting, conservation, restoration and temporary storage until they can be relocated in suitable positions once the new road works have occurred. The Milestone Society should be contacted in connection with this work and to map the new locations, which should also be discussed with Highway Assets teams in the local authorities. New locations will be shared with the HERs for mapping purposes. Note: there is an undesignated 18th century mile marker near the Black Cat roundabout, which requires incorporation into this strategy.

5.4.2 Local parishes may have history or archaeology societies that are keen to locate 'their' milestones, restore and place them in more suitable positions. Eltisley parish are one such group that have come forward with this intention and wish to work with the archaeological contractor and relevant authorities to undertake this work to move two markers at a new junction that will be created to the north of the village:

• MCB18059, NHLE 1163534 - 8 miles from St Ives, in the west verge at the junction of A428 Cambridge Road and B1040 St Ives Road, and
• MCB18069, NHLE 1331394 – 12 miles from Cambridge, in the south verge of A428 Cambridge Road.

• A stone 7 miles from St Ives, west verge B1940 St Ives Road south of Papley Hollow, has been missing for some time. Attempts to locate it should be supported.

5.5 Post-excavation assessment and analysis programme

5.5.1 The Project Manager will ensure that sufficient resource is made available for a comprehensive post-excavation assessment, the analytical programme, the production of an archive report and the appropriate publication of the results. This programme must include the following;

1. A simple site summary report for each site should be provided within **two weeks** of completing the site.

2. Individual site-specific Post-Excavation Assessment (PXA) reports must be produced for each site presenting the specialist assessments and the research potential of all artefact assemblages and environmental samples. The methods for detailed analysis and spatial representation of the evidence should be identified during this stage and an illustrated interim site narrative integrated within the report. Normally within six months of completing the excavation, the PXA should be submitted along with the signed Transfer of Title documents. However, to reflect the magnitude of this scheme, the archaeological contractor is asked to indicate a realistic timeframe for the delivery of key aspects of the post-excavation programme: to include the delivery of the PXA, signed Transfer of Title forms, the analytical reports, the archive.

3 Following completion of the assessment of all material and stratigraphic evidence, a **review** of the post-excavation programming should be held with the relevant specialists. At this review stage, a timetable including a Critical Path Analysis and the aims of specialist research and spatial analyses will be identified along with any conservation and discard requirements necessary for archive preparation and/or display. The results of this process should be presented for review and approval by the Local Authority Archaeologists in an **Updated Project Design** accompanying the PXA.

NB: THIS IS A COST REVIEW STAGE – only achievable once the assessment of all excavated evidence has occurred. Changes to funding requirements should be discussed with the funding body of the scheme at this stage.

4. After the review, all agreed specialist work will be commissioned and the full post-excavation programme implemented through to the production of full archive reports for each site, preparation of publication drafts and preparation of the physical and digital archives. Analysis should be completed **within 3 years of the completion of the PXA**. Any extension of time needed should be communicated as soon as possible to the Local Authority Archaeologists for programme tracking purposes.

5. The Project Manager must satisfy the Local Authority Archaeologists that their organisation is capable of completing analysis **within five years** of the completion of site works. A longer period is possible for major developments by arrangement. The final monitoring meeting will take place when the archive is prepared ready for deposition (see Archive section below), and the archive report and draft publication report have been submitted to the Local Authority Archaeologists.

The archaeological programme will be considered complete and signed off when each stage has been concluded to the satisfaction of the Local Authority Archaeologists.

NSIPS are subject to planning policies in NSPNN and must comply with its policies and with this brief to the satisfaction of the Local Authority Archaeologists.

5.5.2 Any variation to these timetables or outputs **must be agreed in advance** with the Local Authority Archaeologists. The Project Manager is advised to ensure that arrangements for securing the specialist analyses and for obtaining absolute dates, are made at as early a stage as possible.

5.5.3 The Association of Local Government Archaeological Officers (ALGAO) published an advice note in 2015 to guide the preparation of post-excavation assessment reports. Use of this guide will assist with ongoing management of the post-excavation component of this investigation programme.

6.0 METHODOLOGY

6.1 Where safe to do so, all discrete features should, in normal circumstances, be half-sectioned or excavated in quadrants where they are large or found to be deep. The use of an auger is recommended to gain depth information for deep features and should be available in the field tool kit and to guide the need for machine assistance, which may be required for very large/deep features and should be shown as a contingency arrangement in the Written Scheme of Investigation.

6.2 The excavation of linear features not directly associated with settlement must be sufficiently sampled to allow an informed interpretation of their date and function. As a guide, 10% excavation of field system ditches is normally acceptable. Excavation slots must be **at least 1m** in width/length. Indication of the interval between excavation slots must be given in the project design.

NB: a priority is given to determining the character of Roman spade cut trenches/furrows and consequently a larger proportion of these usually sterile features should be given in the WSI. Attention to bulk sampling, mollusc and pollen work should be considered by environmental specialists and presented in the WSI.

6.3 The excavation of linear features associated with settlement must be a minimum of 25%; this may increase depending on the nature of the physical evidence. In addition, all terminals of linear features are to be excavated. While the professional judgement of the site director in determining a suitable sample is recognised, structural remains such as eaves drip gullies, beam slots and post-holes demonstrated to be part of a building's construction require total excavation (100%). The use of control baulks and cross baulks across buildings and some

other features types (eg large wells) is encouraged[9]. Post-hole fills of buildings should be retained in their entirety for wet sieving.

6.4 Deep features should be examined in suitably wide, stepped sections with pumps to clear water and enable safe working. Machine assistance may be repeatedly needed for working at depth to be secured at suitable times during the programme.

6.5 All industrial features including "domestic" ovens, hearths, furnaces, smelting pits etc. should be assessed in advance of excavation by an archaeometallurgist for sampling and dating purposes. Thereafter they should be subject to 100% excavation (or as agreed on site) and further sampled for content assessments.

6.6 Under no circumstances is the percentage of sampling of archaeological features to be determined by resource limitations. Any changes both to the above methodology and the final specification must be agreed by the Local Authority Archaeologists.

6.7 The photographic record must consist of high-quality digital uninterpolated images of at least 10 megapixels taken using a camera with an APS-C or larger sensor. Graduated metric scales of appropriate lengths should be used, ensuring the use of appropriate vertical scales against deep sections in combination with horizontal scales. Digital photographs intended for archive purposes must comply with best practice available at the current time – i.e. high quality non-proprietary raw files (DNG) or TIFF images. The incorporation of clear digital images within ensuing reports, to augment the drawn record, is expected.

6.8 The photographic record must include high level images to capture the extent of excavated areas. The use of drone photography undertaken at a suitable height is recommended, acknowledging that their use must comply with all current legal constraints and safe working practices. Pole-cam images are acceptable. Photogrammetry can be conducted for capturing detailed evidence. In addition to final excavation photographs the project manager may wish to consider their use following the initial site strip as well as prior to excavation as an aid to excavation strategy/planning features and interpretation.

6.9 The use of metal detectors on site to aid the recovery of artefacts is required and should be performed by a named, experienced metal detector user trained in the use of a suitable instrument. The metal detector should not be set to discriminate against iron. Metal detected finds should be plotted on suitable plans within the report.

6.10 The Project Manager may wish to allow for the use of mobile "all weather" shelters to enable excavation of crucial or sensitive areas.

7.0 SPECIFIC REQUIREMENTS

7.1 Archaeological Science & Methods

7.1.1 An outline strategy for sampling for scientific dating, geoarchaeology and soil science, biological analysis, artefact conservation and analysis, and analysis of technological residues, ceramics (residue and petrology studies where appropriate, and stone must be agreed with the Local Authority Archaeologists following consultation with the environmental and scientific specialists appointed to the project. Historic England's Science Advisor for the East of England should be consulted as necessary, before the commencement of site work. The science and sampling strategy should be based on the evaluation results and should be contained in the specification of works (section 8.1). The strategy will be subject to variation as appears necessary during the excavation, following consultation the project's

[9] For micro-sampling purposes. Bulk samples should be taken from fills during the excavation process to restrict contamination and the oxidation of samples in section faces.

palaeoenvironment and science specialists and with the Local Authority Archaeologists and, where necessary, the H.E. Science Advisor.

7.1.2 The Project Manager is advised to consult their appointed environmental and science specialists with the aim of providing a tailor-made sampling scheme for the sampling of plant and animal remains, industrial residues and for soil geochemical analyses - and for costing purposes. Reference to the following publication is advised in relation to sample sizes (see page 12), type, location, and when designing the site's environmental archaeology strategy:

Historic England, 2011 (reissued 2015), *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition).*

7.1.3 The excavation of human burials and disarticulated human remains should be conducted according to the principles and technical advice published in:

Historic England 2018 *The Role of the Human Osteologist in an Archaeological Fieldwork Project* Swindon. Historic England.

Provision for the in-field recording of human remains by the appointed human osteologist is required. For known burial sites, the WSI should include a section written by the osteologist that deals with the methods of excavation (including sieving), sampling, analysis and recommendations for archive preparations.

7.1.4 The Project Manager is also advised to consult the following (and other relevant) guidance documents in order to provide an adequate strategy for the excavation, field treatment and conservation of any delicate organic materials:

Historic England, 2012 (reissued 2015), *Waterlogged Organic Artefacts: Guidelines on Their Recovery, Analysis and Conservation*;

Historic England, 2008 (reissued 2015), *Investigative Conservation: Guidance on How the Detailed Examination of Artefacts from Archaeological Sites Can Shed Light on Their Manufacture and Use*;

Historic England, 2010 (reissued 2015), *Waterlogged Wood: Guidelines on the Recovery, Sampling, Conservation and Curation of Waterlogged Wood;*

7.1.5 **The project manager must ensure that the results of palaeoenvironmental investigation, industrial residue assessments/analyses & scientific analyses are included in a full report and sent to the Historic England Science Advisor.**

7.2 OUTREACH & PUBLIC ENGAGEMENT

7.2.1 It is the policy of the Local Authority Archaeologists to ensure that the results of archaeological work in Cambridgeshire and Bedfordshire are made available to the public through a variety of media in absorbing and informative ways. The Project Manager of the Contracting Archaeologist is required to provide an engaging **strategy** to run for the lifetime of the project for site presentation, which could include any or all of the following:

- The issue of press releases/articles to local/national media and popular archaeology magazines and parish magazines;
- Relevant television programmes;
- The use of a web-based and social media platforms – to include videoblogs, interactive opportunities;
- Where appropriate, "Open days" for visitors and school groups;
- Community excavation/participation in finds work or documentary research;
- Pop-up displays in public places;

- Significant evidence should be broadcast to the professional and academic communities at the earlier opportunity, inviting participation/consultation on site as necessary;
- Parish-based presentations of the evidence during or after the excavation/analysis;
- Preparation of materials for use by local schools;
- Museum/gallery displays (requires early partnership working and funding)

7.2.2 All public outreach events must be conducted following consultation with and approval by the Client and the Local Authority Archaeologists. We require advanced notice of your outreach events to publicise them for you through our authorities' social media and communications channels. We have an obligation to highlight significant evidence to Council Members at the soonest time and would welcome your co-operation with this aspect of joint work. Contractors should also be prepared to consult with the Parish Councils, local societies, and other representatives of the local community with regards to other reasonable options for public engagement with the project.

8.0 GENERAL REQUIREMENTS

8.1 The investigation must be undertaken by a professional archaeological team of recognised competence, fully experienced in work of this character and formally acknowledged by the Local Authority Archaeologists as advisors to Local Planning Authorities and the Mineral Planning Authorities. Inclusion in The Chartered Institute for Archaeologists' Register of Organisations is recommended. Details, including the name, qualifications and experience, of the Site Director and all other key project personnel will be communicated to the Local Authority Archaeologists as part of a **Written Scheme of Investigation** that conforms to Historic England's MoRPHE guidelines[10]. These details may need to include a statement of the current post-excavation commitments of the Project Manager and Site Director. This specification must:

1. be supported by a research design which sets out the site-specific objectives of the archaeological works;

2. detail the proposed works as precisely as is reasonably possible, indicating clearly on plan their location and extent;

3. provide a timetable for the proposed works including the outreach work and contingency mentioned above;

4. provide details of all specialists;

5. indicate the methods of recording;

6. indicate the level and grade of all key project staff;

7. indicate that the analysed results will be published as a journal article and/or as a monograph(s) and provide an estimate in the proposed budget for the benefit of the client, indicating that this sum should be set aside for this specific purpose and that it will be revised following the completion of the PXA & UPD, AND

8. indicate that the evidence will be published in a popular format supported by digital publication online, stating how this is to be achieved.

[10] Historic England, 2015. *Management of Research Projects in the Historic Environment. The MoRPHE Project Manager's Guide.*

8.2 Care must be taken in the siting of offices and other support structures in order to minimise impact on the environment. Extreme care must also be taken in the structure and maintenance of spoil heaps for the same reasons and to facilitate a high-quality reinstatement. This is particularly important in relation to pasture land.

8.3 Archaeological Project Managers must satisfy themselves that all constraints to groundworks have been identified, including the siting of live services, Tree Preservation Orders and public footpaths. The Local Authority Archaeologists officers bear no responsibility for the inclusion or exclusion of such information within this brief.

8.4 Care must be taken in dealing with human remains and the appropriate Ministry of Justice (MoJ) and environmental health regulations followed. The Local Authority Archaeologists and the local Coroner must be informed immediately upon discovery of human remains. Where human remains are encountered as part of the investigation, it is essential that an **exhumation licence** is requested from the MoJ in advance of excavating the remains. The post-excavation assessment should contain an analysis of the remains and a statement indicating the location of the archived assemblage. The qualified statement must address future research potential, where applicable, and any options for reburial (rare). Please ensure that the exhumation licence indicates a realistic timeframe for the analysis of the human remains and their entry to Cambridgeshire County Council's or the Higgins Art Gallery and Museum archaeological archives facility.

8.5 Before commencing work the Project Manager must carry out a **risk assessment** and liaise with the site owner, Client and the Local Authority Archaeologists in ensuring that all potential risks are minimised.

8.6 The requirements of the **Treasure Act 1996** (with subsequent amendments) must be complied with. Any finds that could be considered treasure under the terms of the Act made during the process of fieldwork **should be reported** within 14 days of discovery in line with the **Act.** Advice and guidance on compliance with Treasure Act issues can be obtained from the Finds Liaison Office of the Portable Antiquities Scheme at the Cambridgeshire or Bedfordshire Historic Environment Team offices. For treasure finds in Cambridgeshire, please use this **form** available from our website for reporting any potential treasure objects. This form has been produced in collaboration with the Finds Liaison Officer for Cambridgeshire and Peterborough, and the Cambridgeshire Coroner's Office to streamline the process.

8.7 The archaeological Project Manager should make arrangements for specialists to visit the site to view significant remains *in situ* if necessary and included as a field requirement in the WSI.

8.8 The Project Manager will ensure that sufficient resource is available for this programme of work, including a contingency reserve for the investigation of unexpected discoveries, the use of a pump or for slower working in poor weather conditions. The use of the contingency reserve should be agreed with the Local Authority Archaeologists and the client in advance of use.

8.9 The Cost Review stage following the preparation of the PXA and UPD is a vital stage at which the finding of the programme can be fully determined. Prior to this it is impossible to accurately cost a scheme of archaeological investigation.

8.10 All post excavation and analysis should be completed within **five years (or as agreed)** of the completion of site works unless there are reasonable grounds for more time and this has been discussed and agreed with the Local Authority Archaeologists.

8.11 The Local Authority Archaeologists are responsible for monitoring and advising on all archaeological programmes within their territories and will normally inspect site works and review the progress of post-excavation, reports and archive preparation. We should be kept regularly informed about developments both during the site works and subsequent post-excavation work.

8.12 The Project Manager must inform the Local Authority Archaeologists in writing, **at least one month in advance**, detailing proposed start dates for the project.

8.13 Any changes to the specifications that the Project Manager may wish to make after approval by this office should be communicated directly to the Local Authority Archaeologists for approval. Unapproved changes to the agreed WSI constitute departures from this planning document and can result in enforcement action.

9.0 ARCHIVE PREPARATION AND DEPOSITION

9.1 To assist with the creation and curation of the project's archive in the **Cambridgeshire** section, the Project Manager must contact the CHER office to obtain a series of Event numbers (ECBs) at the outset of the project, presenting a plan showing the area of the archaeological site to be excavated. CHER use this number as a unique identifier linking all physical and digital components of the site archive. **The unique event number must be clearly indicated on any specification received for each site.** The event number should be shown on all paperwork (WSI, context/photo/enviro sample forms, lists, plans and reports), and on finds bags and sample containers/bags created on site and later shown on ensuing reports and on the OASIS data collection form.

9.2 Before the project commences the appropriate registered museum for **Bedfordshire**, The Higgins Art Gallery and Museum, Bedford must also be contacted in order to discuss the allocation of an accession number, timescale for deposition of the physical archive and resources for box storage and other matters relevant to the long-term curation of the archive. The cost of museum box storage must be included in the quote for the project. Guidance on these matters can be found in Preparing Archaeological Archives for Deposition in Registered Museums in Bedford (2010). The unique accession number must be clearly indicated on any WSI received for this project and any ensuing reports. WSI's that do not contain an accession number will not be approved. **Each site excavated will require a separate accession number from the Higgins Art Gallery and Museum.**

9.3 Communications with the HERs should continue throughout all stages of the programme and include a plan for uploading information to HERs in suitable formats.

9.4 For Cambridgeshire: Project Manager and Finds Officers should consult our guidelines: ***Deposition of archaeological archives in Cambridgeshire*** regarding the requirements for the deposition of the archive into Cambridgeshire County Council's publically accessible Archaeological Archive Facility. Please ensure familiarity with the latest online version, as there may be cost implications for preparation/deposition within relevant physical and digital archive repositories.

9.5 For Bedfordshire: The procedures and requirements, which must be followed for the deposition of physical archaeological archives with The Higgins, are documented in Preparing Archaeological Archives for Deposition in Registered Museums in Bedford (2010). The archiving process should also conform to the guidelines in MoRPHE (HE 2015), e.g. section 2.5.3 and the CIfA document Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives (2020). All projects must make a digital security copy of the documentary archive, a copy to be submitted to The Higgins as part of the deposition process before the final part of the planning condition will be discharged.

9.6 The site archive specification should also conform to the guidelines in MoRPHE (HE 2015), eg section 2.5.3.

9.7 Arrangements for the long-term storage and deposition of all artefacts must be agreed with the landowner and the archive depositories, initially at the start of the fieldwork programme and continue during the PXA stage through to the final stages of archive preparation. Transfer of Title (ownership) of the archive to Cambridgeshire County Council or the Higgins Art Gallery

and Museum, or another local, accredited and publically accessible depository, needs to have been arranged by this time. The archaeological organisation's Transfer of Title form should be signed by the landowner and the archaeological Project Manager and submitted to the relevant officers. Where Highways England is the landowner the archive will be received by Higgins Art Gallery and Museum and Cambridgeshire's Archaeological Archive facility. For all other areas of the scheme in multiple landownerships, a strategy is required to seek permission to deposit the archive in a publicly accessible store. Permission will be sought from landowners at the outset of the project regarding the Transfer of Title and deposition of the archive in the two named, accredited, publicly accessible stores.

9.8 Archive deposition is a requirement of the archaeological programme of works reflecting planning policy (*National Policy Statement for National Networks* (DoT 2014) - NPSNN 5.140 and *National Planning Policy Framework* (MHCLC 2021) – NPPF 205) and should be arranged while contact with a client is still active. PXAs and/or archive reports should indicate a ***realistic*** timeframe for the delivery of the physical archive so that arrangements can be made to accession it and also indicate the delivery timeframe to the planning office. We recommend that delivery of the archive occurs within one year of the approval of the archive reports or draft publication text (to be discussed and agreed).

9.9 **A digital data management plan** (DMP) should be included in the WSI. Plans will require project staff to demonstrate consideration of all issues relating to digital data collection or transfer such as metadata, backups, selection and long-term archival storage from the beginning of the project. The DMP is expected to be 'living' document and should be reviewed and amended throughout a project. Should any substantial amendments be made to the plan, then the revised version should be submitted to the Local Authority Archaeologists. WSIs that do not contain a digital data management plan will not be approved.

9.10 The digital archive should be deposited with the Archaeological Data Service (ADS) or another publically accessible CoreTrustSeal certified repository on completion of the archaeological programme. The PXA report should demonstrate that ADS (or equivalent) has been consulted over the cost for digital archive deposition and indicate the terms of that deposition. The PXA report should also indicate the components of the physical and digital archives in line with the guidance.

9.11 The location of the physical and digital archive should be indicated in the full archive report and any publication arising from the investigation and be shown on the OASIS data collection form.

9.12 For Cambridgeshire, the current archive deposition cost is £100 per box (or minimum £50 per archive). This combined charge covers accessioning and uplift (£30) together with a fee to provide for the long term storage (£70). Further details of charges for the use of the County Archive Facility can be found in Section 6 of the guidelines. **Please note,** these charges will be periodically reviewed to remain compliant with Deep Store's charging schedule. Charges for Bedfordshire should be clarified directly with the Higgins Art Gallery and Museum.

9.13 In compliance with the General Data Projection Regulation (GDPR), the project manager is responsible for providing a statement within the report confirming that the organisation has secured permission to share the recorded details of all individuals involved in the project, both internal and external to the organisation. This includes all landowners, consultants and external specialist involved throughout the project. The data is collected for specified, explicit and legitimate purposes. Further processing for archiving purposes in the public interest, scientific or historical research or statistical purposes are considered to be compatible with the initial purposes. For more information or clarification regarding GDPR and our archiving process please see section 9 of the guidelines *Deposition of archaeological archives in Cambridgeshire* (2020).

10.0 REPORTS

10.1 The Local Authority Archaeologists support the national programme: Online Access to the Index of Archaeological Investigations (OASIS III) project and requires archaeological contractors working in Cambridgeshire to support this initiative. In order that a record is made of all archaeological events within the county, the archaeological contractor is required to input details of this project online at the ADS internet site[11]. The OASIS reference ID should be cleared indicated on the relevant report and the Data Collection Form should be included within the report. **Any report that does not contain this information will not be accepted.**

10.2 Reports of each phase (Post Excavation Assessment, Full Archive Report, Publication Text), clearly marked **DRAFT**, should be prepared and presented to the Local Authority Archaeologists. These should include a comprehensive assessment of the regional archaeological context and present well described, illustrated (including site and artefact/deposit photos - both in situ and /or as cleaned objects) and tabulated archaeological evidence. Report conclusions must include a clear statement of the archaeological value of the results and their significance in the context of the national research themes and the Regional Research Framework (East Anglian Archaeology, Occasional Papers 3, 8 and 24, 1997, 2000 and 2011).

10.3 These reports should reflect the procedures set out in Historic England's MoRPHE publication (HE 2006, reissued 2015), *Standards for Field Archaeology in the East of England* (Gurney, D., 2003. East Anglian Archaeology Occasional Paper 14) and with the Chartered Institute for Archaeologist's *Standard and guidance for archaeological excavation* (2020).

10.4 Following acceptance, a copy of the approved report **in digital form** should be submitted to the Local Authority Archaeologists **via the OASIS website** https://oasis.ac.uk/form within **two weeks** of approval.

10.5 The archaeological advisory and planning role of the Local Authority Archaeologists Historic Environment Team should be acknowledged in any report or publication generated by this project.

11.0 MONITORING & COMMUNICATING CHANGES

11.1 The Local Authority Archaeologists officers are responsible for monitoring and advising on all archaeological programmes within their areas and will need to inspect site works at an appropriate time during the fieldwork, review Written Schemes of Investigation, reports of results and archive preparation.

11.2 Curatorial monitoring visits should be booked with the Local Authority Archaeologists prior to works commencing on site or 5 working days in advance of specific area needs.

11.3 The Project Manager will ensure that sufficient resource is available for this programme of work and that a contingency reserve is included to enable the investigation of unexpected discoveries or poor weather conditions. The use of the reserved contingency fund should be agreed with the Local Authority Archaeologists and the client in advance of use.

11.4 Areas of excavation should not be backfilled or handed over for construction purposes without the approval of the Local Authority Archaeologists. Further trenching, area expansion or deposit testing may be a requirement of the site monitoring visit if unclear archaeological remains or geomorphological features present difficulties of interpretation, or to refine the mitigation strategy. Appropriate provision should be made for this eventuality.

[11] http://ads.ahds.ac.uk/project/oasis

11.5 The project manager must inform the Local Authority Archaeologists in writing **at least one month in advance** of the proposed start date for the project.

11.6 Any changes to the specifications that the project manager may wish to make after approval by this office should be communicated directly to the Local Authority Archaeologists for approval.

11.7 The Local Authority Archaeologists should be kept regularly informed about developments both during the site works and subsequent post-excavation work.

11.8 The archaeological advisory and planning role of the Local Authority Historic Environment Teams should be acknowledged in any report, display or publication generated by this project.

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Appendix C A428 archaeology - rationale and strategy

NB While this document has been agreed with the academic advisory panel and the curators for Central Bedfordshire Council, Bedfordshire Borough Council, and Historic England, Cambridgeshire County Council have not agreed this.

The document forming Appendix C was designed to set the framework for the development of the Archaeological Mitigation Strategy and was updated in October 2020. It does not in itself represent a scope of works or methodology.

A428 Archaeology – Rationale and Strategy

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Over the last 15–20 years, within the course of the major Cambridge Region projects – Cambourne, North West Cambridge/NIAB Lands, Northstowe and A14 (alone; excluding individual sites) – some 42 later Iron Age enclosed settlements and 44 Romano-British settlements have been excavated. Major programmes of excavation are, moreover, underway or shortly to commence at Waterbeach, Wintringham and Cambourne (Phase 2) that will involve at least a further 12 Iron Age/Romano-British settlements. By the same measure, there have been comparably extensive and relevant campaigns of excavation in Bedfordshire (e.g. route of A421, Biddenham Loop/Bedford's environs, Marsh Leys and Broom).

The region's level of large-scale fieldwork is such that its settlements featured as a case-study in the Reading's *New Visions of the Countryside of Roman Britain* series (Smith *et al*. 2016). This, plus the publication of the earlier A428 results (Abrams & Ingham 2008) and other relevant major fieldwork projects (e.g. Timby *et al*. 2007; Luke 2008 and 2016; Wright *et al*. 2009; Luke & Preece 2011; Patten 2012; Hinman & Zant 2018; Evans & Lucas 2020), will permit the current A428 programme to be approached within an *informed framework*. While admittedly we await final publication of much of the region's more recent major fieldwork projects (but for which summaries are available), it can only be assumed that the data are already at hand to provide a firm understanding of the 'base-line characteristics' of the region's later Iron Age and Romano-British settlements.

Against the background of the region's previous and on-going excavation of sites of these periods, and given how many are anticipated along the route, the abiding premise of this proposal is that there would be little to gain by just approaching them all in a 'now-standard' low–medium intensity method (often with, for example, very little or no distributional analyses/plotting). Apart from further 'base-line checklisting', and at the risk of *information redundancy*, there would be limited knowledge-gain. It would be better to excavate some far more intensively so that true public-/academic-value insights are forthcoming; others can then be undertaken in a less intense, but targeted manner, with still others left at the level of their evaluation sampling. In short, directed towards *public-value* and *knowledge-creation* – and in keeping with the spirit of Thomas' 'It's not Mitigation!' paper (2019) – the programme's fieldwork methodologies should be guided by informed research prioritisation.

This ethos is also promoted by the knowledge gleaned through large-scale developer-funded fieldwork over the last three decades of just how densely settled portions of southern England were in later prehistory and Roman times. In many areas, broadly contemporary settlements lay within 300–500m of each other and, as a result, there is far more 'past' than earlier-era researchers could ever have conceived of (e.g. Fox 1923; see Evans 2018 and Evans *et al*. 2008). Now knowing that 'they' could, in effect, have waved to their neighbours, should have fundamental implications for such issues as the transmission of knowledge/skills and style, and resource sustainability. Generally, these have yet to be fully incorporated into archaeological research agendas. At the level of individual sites, this may not make archaeology a 'repeatable

experiment' (Evans 2012 and 2013) but the understanding that there is/was so much more of it means that there is a need for greater methodological experimentation and research prioritisation if we hope to advance knowledge and genuinely provide new insights concerning the past (and not just repeat ourselves).

Assessing Site Value

Three broad categories have been used to provide a basic framework for assessing site value (see below concerning the need for flexibility throughout).

- Given the dominance of Iron Age and Romano-British settlements known along the route, some sites are significant on the grounds of their chronological 'difference' and, thereby, have *intrinsic qualities*. This includes Site 4's probable Late Bronze Age ditch-boundary, the Late Bronze Age and Saxo-Norman settlements at Site 17, and Site 31's windmill.
- The *completeness* of sites within the confines of the route's corridor is also a factor in the determination of excavation strategies and what sites warrant intense 'set-piece' excavation. Even if falling short of the entirety of their settlement enclosures, more can be learnt of their operational dynamics depending upon how much of their 'totality' can be investigated. By way of example, far greater insights can be achieved of, Site 7's Iron Age/Romano-British complex than the limited portion of Site 5 (Field 34 north) that falls within the corridor's line.
- *Group-Value* is another major criterion (NB The mitigation strategy also includes 'key sites' in this criteria). Although unto themselves some of the individual sites involved may not be considered of the highest research value, when considered together by area-blocking they have the potential to address crucial issues. Examples include the enclosures within Fields 90 and 92 in relationship to the 'String' boundaries there; whereas, the adjacent enclosures within Fields 53, 54, 56 and 58, because of their different layout/qualities, will serve as a study of basic enclosure morphology. While there will be other specifically targeted investigations and less intense, 'directed' excavations, also influenced by the sites' preservation, these three main factors – intrinsic qualities, completeness and group-value – are the programme's guiding determinates.

Landscape Themes

Of the forty archaeological sites identified along the 16km of the Scheme, this involves, as a minimum, 21 later/Middle Iron Age sites, seven Iron Age to Roman sites, and five Roman settlements. Unlike, for example, the A14 investigations that effectively ran as a transect spanning two Roman towns and involved a substantial gravel terrace-component over its northern length adjacent to the River Great Ouse, the A428's route involves more limited landscape-scale factors.

Communication and Transport

Over the route's western portion there is the River Great Ouse, with the attraction of its immediate gravel terrace geology and transportation links. Equally, for the programme's Roman-period sites, there is the line of Ermine St (projected along the east side of Field 97; the immediate area's two other possible Roman roads – Margary 231 and 22 [Hinman & Zant 2019, 3–4, fig. 1.4] are discussed below). Both of the main routeways – the river and Roman Ermine Street – have implications for the settlements' long-distance linkages, their supply and development dynamics, and must be understood as framing the programme's researches. On the whole, though, when compared, for example, to the A14, the landscape-route of the A428 sees much greater 'clayplain' uniformity and more limited topographic variability.

Topography, Soils and Geology

With so much of the route's length having heavy clay geology, close attention must be given to its specific topographic conditions. Common to most inland locations (i.e. off-river valley) are issues of water resourcing, and the relationship of early settlement to springheads and minor brooks. Similarly, ground-surface drainage concerns would also have loomed large: to what degree were settlements sited on sloping ground to facilitate this, presumably with a preference for southern exposures? Also, the occurrence of Diamict mixed till-erosion deposits may have been a significant factor for the location of sites. In short, the character of the route's heavy-lands' soils require detailed nuancing.

With only limited evidence of both pre-Middle Iron Age and post-Roman activity recovered, the main thrust of the programme must be with its many Iron Age and Romano-British settlements.

Iron Age

Aside from basic issues concerning whether the nature of the area's riverside/gravel terrace settlements varied in relationship to their clay inlands, there are two main landscape 'dynamics' that should frame the programme.

1) The one relates to the colonization of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities and/or 'influence' within the area. In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone (see below; Hill *et al*. 1999), thereby giving the fieldwork a north-south dynamic or 'impetus'.

   Also, given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, *were the clays a positive agricultural attraction*?

2) The occurrence of east–west landscape divisions along the route/transect's length. Aside from the potential role of the river itself in this regard, crucial are the String System boundaries and their purpose. Were they strictly agricultural/pastoral or did they relate to larger territorial-blocking units?

Also relevant concerning the route's east-west axis is at what point the different character of Bedfordshire's Iron age settlements – with a greater frequency of grain storage pits and pit alignments (e.g. see Timby *et al*. 2007; Luke 2008 & 2016; Cooper & Edmonds 2007) – become apparent. Was the Ouse a divide in this or was it a matter of gravel *vs*. clay geologies?

In addition, the following more specific questions can be asked in relationship to this Middle/later and Late Iron Age colonization horizon:

1) Was there any relationship to the area's more scant evidence of preceding (unenclosed) Late Bronze/earlier Iron Age usage? Were these in anyway ancestral to the subsequent Iron Age enclosed settlements, perhaps representing seasonal forays onto the heavier lands prior to permanent settlement? Indeed, the dynamics of clayland colonization and uptake is just not a regional issue but national significance, one of direct relevance to sequences in the North and Midlands (e.g. Clay 2002). While relatively little evidence of Late Bronze Age/Early Iron Age settlement was recovered in the evaluation, as stressed in the *General Considerations* section below (and as regards the need for contingency provision), emphasis must be given to their recovery. This is especially relevant concerning what might have been the Early Iron Age 'open' settlement origins of the Middle Iron Age settlement forms.

2) Reading's Roman Countryside programme's regional case-study demonstrated that there was a high level of Iron Age-to-Roman continuity (Smith *et al*. 2016) and, certainly, a number of the major Romano-British settlements along the A428's route appear to have seen Iron Age origins. To this end, where direct settlement continuity is thought to occur, where possible every effort should be made to tease out and differentiate their Late Iron Age and primary Roman phases; in effect, closely 'timetable' and date when was the actual impact of their Romanization. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events, such as the Boudiccan revolt, contribute?

3) As marked by the recovery of developed cremation cemeteries, high level of brooch-use and, particularly, small square-set 'shrines', the Cambridge/Bedford 'littoral' would still seem to mark the northern limits of the Late Iron Age 'Aylesford-Swarling zone' and, with it, early Roman/Gaulish influence during the first century BC and the first half of the first century AD (Hill *et al*. 1999). To what degree was this a matter of indirect influence or did it involve the movement of new communities into the area and was itself a direct catalyst of change?

While wheel-made pottery is also relevant in this, it cannot be counted as a hard-and-fast marker of Aylesford-Swarling influence. Late Iron Age wares of this type do occur north of this zone and, by the same token, some communities within its bounds clearly maintained hand-made pottery traditions. This is a crucial issue, especially as regards the latter 'archaic' communities. Should such 'ceramic maintenance' be suspected, then radiocarbon dating will need to be applied to interrogate the longevity of these pottery traditions. Also, thin-section analysis should be undertaken of ceramics to determine

whether they were of local manufacture or if, in effect, the wheel-made wares were then being imported into the area.

Given all this, there is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct southeastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. With the latter, for example, demonstrated by the occurrence of a 'classic' cremation cemetery at Hinxton (*ibid*.) nearby to Duxford's contemporary cemetery that largely saw inhumation burial (Lyons 2011), evidence of burial and other forms of disposal of human remains have the potential to address this issue.

Leaving aside the complicated layout of Site 7's settlement (and possibly other more developed enclosure-forms otherwise underlying later, Romano-British settlements), there are three main forms of Iron Age settlement enclosure:

1) Small 'cell-like' enclosures that variously occur in isolation (Site 18), compounded together (e.g. Site 32; see 'B' below) and associated with String System boundaries (e.g. Sites 28 & 29, Fields 90 & 92)

2) Sub-square/-rectangular enclosures with central roundhouse settings. Possibly of Late Iron Age date, there would be one discrete instance of this type: Site 13 in Field 58. That said, part of Field 97's Site 36 enclosure is similar and, although without any roundhouse registering, the enclosure at the western end of Site 34's system within Field 95 would be another candidate, as would also Site 9's enclosures (Field 49). Others might well occur within the axes of some of the main Romano-British systems, such as the two apparent in the southern portion of Site 3 (Field 9).

3) Various sub-circular enclosures of less than 0.5ha.

Of the latter's morphology, three main types can be distinguished:

A) Simple unelaborated 'circles' (e.g. Site 33, Field 94)

B) Settings that involved small conjoining enclosure settings (e.g. Site 32, Field 94; these seem individually comparable to those associated with the String Systems)

C) Complex, sub-divided, sub-circular forms, some with quasi-concentric elements (e.g. Site 11, Field 54).

The range of these types have, in their essentials, all been previously investigated on earlier fieldwork programmes nearby (Timby *et al*. 2007; Abrams & Ingham 2008, 19-35; Wright *et al*. 2009, 69-83; Hinman & Zant 2018, 21-86; see also Knight *et al*. 2018).

An underlying issue is the nature of the multiple sub-enclosure 'cells' (Types B & C): do these relate to functional differences (e.g. livestock *vs*. occupation) and/or multiple family-unit usage? Equally, what was the purpose of the 'string' arrangements and does it reflect a territorial organization of aggregated settlements? Although some discrete enclosures lie adjacent (e.g. Field 92), at no point does a complex Type C enclosure directly inter-link with a String System. With their associated simple 'cell' enclosures, do the latter relate to pastoral holdings or reflect some manner of inter-familial territorial unit (see below)?

As opposed to larger landscape-area 'blocks', it is usually difficult to establish a true sense of contemporary settlement densities based on linear-transect exposures. A number of the Iron Age enclosures lie in close proximity to each other; some to within *c*. 300m, with some even to within 80m or less and, effectively, side-by-side (i.e. 'paired'). Accordingly, it will be essential to consider their interrelationships within these clusters: were they directly contemporary and reflect kin groups or, by 'type', were there functional differences (e.g. some pastoral specialist)?

Also relevant are questions concerning what the factors were that contributed to longer-term sequences of enclosure-use and elaboration: the advantages of specific locales (soil quality and water resourcing), successful biological/social reproduction and/or trade/communication linkages? While certainly applicable to Middle-to-Late Iron Age enclosure sequences, these issues are also pertinent for what was the basis of Late Iron Age-to-Roman settlement continuity.

Vaguely reminiscent of earlier Iron Age pit alignments and large-scale dyke-type boundaries, in recent years the extent of String System linear boundaries has been recognised within the region. While it is thought likely that they relate to the demarcation of multiple settlement units (Brudenell 2018), their purpose has yet to be convincingly determined. Are there instances, for example, where a String boundary recut a pit alignment? Roughly oriented north–south and lying 2.3km apart, there are two String Systems within the route's east-central portion: Site 24 (Field 84) and Sites 28/29 (Fields 90 & 92). Only one Iron Age enclosure lies within the swathe between them and over much of the western portion. Beyond Site 24's line, aside from the three close-set examples in Fields 53, 54 & 56, the period's enclosures are generally widely dispersed. Some 300m west of Site 24, in Field 80, evidence of what seems unenclosed Middle–Late Iron Age settlement – with a cremation burial – was found (Site 23). Some 2km west beyond that, two Iron Age enclosures occur within 400m of each other (Sites 18 & 20); there being a 1.25km interval to the next enclosure, Site 16. That said, there is a high density of enclosures east of Site 28/29's 'String' within Fields 92–97. Do these in anyway relate to its boundary? Although along the route the enclosure distributions vary, their potential relationship to these landscape 'divides' should be borne in mind throughout (see also Site 8 below).

In this capacity, large-scale grid-transect (50m interval) should be taken across the String System boundaries in order to determine whether there are differential phosphate levels on either side of them and, thereby, evaluate their relationship to agricultural practices.

Roman

As detailed below, there will be major 'set-piece' excavations on Sites 15, 18 and 22's Roman-period settlements (with Site 15 likely to be consist of enclosures associated with a villa lying just west of the route-corridor). Yet, in terms of both its scale and 'completeness' as indicated by the geophysical plot, on many grounds the Site 3 complex, extending north–south and parallel with the Ouse's floodplain, is arguably the programme's most significant Romano-British settlement. While admittedly only the southern portion that falls within the route-corridor will be excavated, it clearly includes earlier, Iron Age enclosures within its axes, and thereby allowing for issues of the nature of Iron Age-to-Roman continuity to be addressed; it also highlights questions of long-distance transportation. With its paddocks evidently arranged around road/trackways, river-access likely influenced its function and, in many respects, its elongated layout is reminiscent of the period's farmsteads densely set alongside the River Ivel in Bedfordshire (Evans *et al*. 2018, fig. 6.30).

While the axial orientation of what appears to be Site 9's trackway (undated; its flanking enclosures being Late iron Age) in Field 49 might also reflect a more riverine orientation, with the exception of Site 18 in Fields 73/74 (see below), east of Site 9 all of the route's Romano-British settlement would seem to follow a (regionally generic) predominantly northwest–southeast orientation. This would also include the period's 'boundary systems' – with their settlement-cores apparently lying west beyond the route-corridor's limits – along the western portions of Field 97 (i.e. part of Sites 36/37 & 38) and which do not reflect the alignment of Ermine Street.

Including the two complexes survey-plotted that fall outside of the development (south of Fields 80/84 & 88), drawing upon the Reading programme's 'type-nomenclature' (Smith *et al*. 2016), these would largely rank as complex or developed farmstead settlements. As such, they would be comparable to those, for example, excavated at Love's Farm (Hinman & Zant 2018) and Vicar's Farm, West Cambridge (Evans & Lucas 2020). A possible exception to this is Site 34 in Fields 95 and 96, whose layout seems somewhat more simple; Sites 9 and 16 are also potential candidates in this capacity. The paucity of such 'undeveloped' Early Roman farmsteads nonetheless seems noteworthy. Indeed, in this manner the results differ somewhat from the findings at West/North West Cambridge (*ibid*.; Smith *et al*. 2016, fig. 5.56) and also at Cambourne (Wright *et al*. 2009). While such simple 'Early' farmsteads were the likely origins of the route's more developed settlements, their density would seem to be less than in the western Cambridge and Cambourne-area environs. That said, with the exception of the Jeavons Lane and Monk Field Farm settlements (just *c*. 150m apart) – plus the latter and the Mill Farm Site (*c*. 600m distant) – in five cases, the interval between Cambourne's Romano-British settlements was all in the range of a kilometre (*ibid*., fig. 33).

In this regard, issues concerning the problem of trying to evaluate settlement densities based on linear-transect exposures need, once again, to be borne in mind. There are some instances where the Roman settlements lie relatively close, such as the *c*. 500 and 800m interval respectively between Sites 15, 16 and 18. Generally, however, the greater 1.2–1.4km interval between Sites 18 and 22, and those two survey-plotted south of Fields 84 and 88 seems closer to the true 'inland' picture (there being 2.75km between the latter of these and Site 34; see also Hinman & Zant's plotting of the wider area's cropmarks: 2018, fig. 1.4).

Of the route's settlements that appear to reflect different organisational principles, one would be Site 7's quasi-concentric layout. This has some parallel in Love's Farm's Settlement 6 (Hinman & Zant 2018) and, like it, would have been determined by accommodation to their preceding Iron Age settlements. Another is Site 18 within Field 73. What distinguishes that settlement is not just the (due) east–west orientation of its main rectangular enclosure – of first–second century AD date – but the formality of its 'geometry'. While given its size (*c*. 55 x 75m) it may amount to no more than a very well laid-out Early Roman farmstead, the tightness of its right-angle axes could suggest that it was somehow 'distinguished' or 'special'. In this regard, it could have parallels with, for example, the TEA 28 complex excavated at Fenstanton in the course of A14's fieldwork (Hewitt 2018).

Site 18's main east–west orientation raises the issue of whether the line of the current A428 roughly follows that of a Roman road: Margary's Route 231 (Hinman & Zant 2018, 3–4, figs 1.2–.4; see also Abrams & Ingham 2008, 37–9, fig. 3.1) and if so, what its impact was on the location and layout of settlements? Given this, it could be argued that the long linears plotted as running east from Site 18's main enclosure and across the western half of Field 74 might represent the eastward continuation of Love's Farm's Routeway 3/9 (Hinman & Zant 2019, e.g. figs 1.6 & 4.1) and, as such, may evince Margary Road 231.

Similarly, thought to possibly fall along the divide between Fields 75 and 76, the putative line of Margary's Road 22 might also have been influential (Hinman & Zant 2018, fig. 1.4). Yet, while its NNE-SSW orientation would not match that of Site 18 (*c*. 700m to the west), it would be more sympathetic with Site 22's, falling some 350m east of that route's projected line. But, then, that is essentially the region's generic Roman orientation and is widespread.

The potential road-linkage between Site 18 and Love's Farm's Settlement 6 raises questions concerning the status of the Romano-British settlements along the route south of it (Sites 9, 15 & 16) and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham (Phillips & Hinman 2009; Hinman & Zant 2018). There, closely packed (*c*. 150–600m) and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements? In this capacity, the occurrence of aisled buildings at both of Love's Farm's settlements (*ibid*., figs 4.12, 4.14–17) maybe telling. Requiring specialist carpentry skills, and seemingly only occurring on complex farmsteads and villas (e.g. none were present on any of Cambourne's settlements; Wright *et al*. 2009), these may have related to centralized agricultural storage and/or processing. If so, at least some of these west-lying settlements may have had an almost 'gateway-like' role relating to the transhipment of produce,

with the route-corridor's farms 'behind' them then, perhaps, having something of a hinterland status.

At a more general level, and as stressed in the Revised Eastern Counties' Regional Research Framework (Evans 2018), the recovery of Roman-period buildings should be prioritized. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. Also, it is anticipated that a recognized Roman building specialist will be appointed to the programme.

Finally, while lazy-bed planting-trench plots only seem associated with the Site 22 settlement, (they might also occur in Field 97's Site 38-area), it is likely that fieldsystem boundaries will be found to extend beyond the period's main settlement cores. As highlighted in the period's recently revised Regional Research Framework document (Evans 2018), it will be imperative that, within the route-corridor, further trenching is conducted along them (*c*. 100m interval) to facilitate pollen sampling in an effort to elucidate what crops were grown where and, potentially, identify the location of woodlots.

Post-Roman

Very little Saxon-period material was recovered. Yet, as was the case at Site 15's probable villa and the Early-Middle Saxon sherds occurring in the upper profile of an enclosure in Field 74, there is clearly the potential for 'early' post-Roman usage/occupation on a number of the sites. West of the Ouse, with Site 2's Late Saxon enclosure (and kilns) also clearly significant, the programme's main post-Roman fieldwork will focus on Site 17's Saxo-Norman enclosures. These are likely to be ancestral to Wintringham's deserted Medieval village, previously investigated by Beresford in 1971-72 (Beresford 1977). Otherwise, aside from Site 31's Medieval windmill and the remains of the late Medieval Hayden Farm (Site 25; to be preserved *in situ*), the recovered Medieval/Post-Medieval remains are restricted to field boundaries and the imprint of agricultural furrows. Accordingly, while on the whole, the periods' remains have limited research value, based largely on the geophysical plots and map evidence the nature of its land-use will be reported on by David Hall and this maybe further augmented by community/public recording of hedgerows, *etc*. (see below).

General Considerations

It is crucial that targeted investigation is made of specific landscape features (e.g. brook palaeochannels; Hen and Abbotsley Brooks), with dated pollen sampling undertaken so that issues of large-scale land-use history can be addressed. Did, for example, woodland clearance occur at a later date on the clays as opposed to the area's riverside gravels? Also, colluvial deposits have been encountered during the course of evaluation trenching and issues of the claylands' hillwash sequencing should, therefore, be addressed. Is it a matter of a single major horizon or sequential and an on-going phenomenon? If so, can these then be tied to specific occupation/agricultural horizons? Given these issues, as well as the emphasis here upon land-use environmental reconstruction generally, it is anticipated that a named geoarchaeologist will be appointed to the programme.

In the light of the quality of the evaluation's geophysical survey results, there is invariably a bias towards the 'heavy' enclosure-register of settlements. During the course of site stripping more 'light' ancillary components and pre-/post-enclosure-phase features may well be forthcoming. Accordingly, substantial contingency provision should be made for their exposure; this being especially relevant for the Set-Piece and Group-Value excavations, but also some of the targeted sites. *A degree of flexibility must be built into the programme* and its categories should not be understood as absolutes. Some sites on their opening may prove less than their expectations, while others could have greater potential than anticipated. If so, there should be scope to modify their applied methodologies accordingly.

Somewhat surprisingly, no cemeteries as such have been identified associated with any of the major settlements. These surely exist and may well be exposed in the course of their full excavation and, accordingly, due contingency should be made for their discovery. In the case of any larger inhumation cemeteries, then aDNA analysis should be made of the burial populace and, if of Iron Age/Romano-British date, require a programme of radiocarbon dating. Should significant cemeteries be recovered, then the aDNA analyses should be extended to any disarticulated human remains occurring within their associated settlements. Concerning the excavation of cemeteries and the techniques applied, Historic England's publication, *Science and the Dead* (APABE2013), must be consulted.

At a methodological level, it is anticipated that, in the course of the A428's excavation-phase, as advocated by Fulford and Holbrook (2018; see also Evans 2012) – and as implemented for the A14, Northstowe and North West Cambridge sites – for comparative purposes, feature-finds densities will be volumetrically expressed by cubic metre.

Given the programme's emphasis on archaeological science, Historic England's Regional Science Advisor should be consulted prior to the commencement of the fieldwork programme and kept informed of results throughout. Similarly, with the emphasis upon chronological issues and that robust radiocarbon dating sequences will be achieved, it is expected that an appropriate modeller will be appointed.

Public Outreach Programme

It is expected that a tailor-designed outreach programme will be implemented, with a dedicated Outreach Officer appointed. This could involve a social media presence, pop-up display in local village halls and supermarkets, exhibition materials offered to locations such as Northstowe's Heritage Centre, St Neot's Museum, Bedford's Higgins Museum, or other local museums, with village and school talks and roadshow-type finds identification events also organized. It is also possible that a colour-illustrated booklet, outlining the route's findings, could be produced and issued on a *gratis* basis to all interested local parties.

Beyond this, the following could also be considered [NB the following were suggested at time of writing but will be considered as part of the audience mapping. Not all of these will occur]:

1) Site 17 Saxo-Norman settlement is likely to be the best candidate for a public-participation dig. Interrelating this with Wintringham Hall's and DMV's earthworks (Beresford 1970) would give a focus to public research on the area's Medieval landscape and could also involve, for example, hedgerow recording.

2) In order to assess the eventual impact of the outreach programme it could be worth conducting, prior to the main excavation phase, surveys concerning residents' attitudes towards the local past. Relating to their understand of its land-use sequence and what they appreciate within it, this exercise could then be repeated on the programme's completion in an effort to gauge just what impact the work had and, thereby, critically appraise its public-value.

3) Local groups – plus, potentially, local Universities for their student training digs – could be contacted and encouraged (possibly augmented by some professional participation) to undertake further geophysical surveys and, perhaps, additional trench investigation of those sites either falling immediately outside the route's corridor or otherwise preserved within it. This could, for example, included the full extent of Site 5's settlement and the enclosure in Field 99.

AECOM is drafting proposals for an outreach programme and this will be reviewed by Principal Contractor who are delivering the archaeological programme via their appointed archaeological contractor.

Intrinsic Value Sites and Intensive Set-Piece Excavations (Category 1)

With the route's archaeology so dominated by Middle/later Iron Age and Romano-British sites, those few that bracket these periods have an intrinsic value for the landscape's narrative and, on that basis alone, warrant fulsome excavation. This includes Fields 34/35's probable Late Bronze Age boundary/settlement (Site 4) and the windmill in Field 93 (Site 31). The former certainly deserves intensive excavation and the procedures outlined below for the Set-Piece sites should be followed (though, depending on the site's final configuration/density multi-spectrum geochemical sampling may not be necessary). The windmill is unlikely, though, to require intense excavation and targeted investigations (i.e. Category 3) will suffice. Indeed, if can be arranged, it could be considered a candidate for a community participation dig. That said, if sub-soil profiles survive there, they warrant thorough sampling, as they could, in effect, provide a datum for the area's colluviation.

With Site 2's Late Saxon remains also significant in this capacity, the foremost site in the 'intrinsic' category is arguably Number 17 in Field 70. While viewed as whole, its configuration is suggestive of an Iron Age String System, the evaluation results were surprising and indicate something quite different. At its southwestern end there is 'open' Late Bronze Age settlement involving what appears to be at least two substantial roundhouse settings (alternatively, just possibly small barrow ring-ditches). The 'line' itself and the many small enclosures occurring alongside it would, however, actually seem to be of Late Saxon date, with some quantity of eleventh–twelfth century Saxo-Norman pottery recovered in association. It has to be presumed that this settlement was 'ancestral' and related to the deserted Medieval village and moated site at Wintringham, located immediately east of Fields 71 and 72. Together, this site sees an unusual Late Bronze Age/Late Saxon 'combination'. While certainly significant for the larger landscape's 'story', the problem is that only soil-stacking is planned for this area and that the site will essentially be preserved. Given its significance, it nevertheless requires further targeted investigation (Category 3). Whereas detailing of the Saxon-Norman enclosures would be unwarranted, the site's Late Bronze Age components deserve limited excavation. Also, further testing of the main boundary-line itself is necessary to ensure that it is not – as it appears – an Iron Age String System that happens to have later intrusive finds within its profile. (Should

this prove to be the case and it was determined to be Iron Age, then the grid-transect phosphate sampling proposed for other 'Strings' should also be taken across it.)

Set-Piece Excavations

The goal is to achieve detailed understanding of the various settlements' sequences, their depositional dynamics (midden practices, *etc*.) and the different functional use of their components (i.e. separate paddock-units). These will also aim to obtain substantive plant remains/environmental and artefact assemblages (i.e. ideally not less than 10,000 animal bones and pottery sherds each), and will maximise the recovery of the respective periods' metalwork and evidence of industry.

It is, therefore, proposed that:

1) The excavation of settlement-area ditches should not be less than 20%, with 30% preferred. The optimal solution would be to initially excavate all linear features on a 20% sample (i.e. one metre in five), with a further 5–10% sample coverage determined judgementally (i.e. to elucidate critical stratigraphic relationships or to further excavate portions yielding high finds or environmental densities based on the on-going processing and plotting of materials; see '2' below). There will be 100% excavation of structural features and, otherwise, all discrete features will see, as a minimum, 50% excavation; those yielding significant eco-/artefact assemblages to be dug in their entirety.

Should it be determined that, if following initial sample-excavation, the upper fills of some ditches and, possibly, major wells/watering-holes are largely devoid of finds, then the use of a mini-digger to assist in their excavation could be considered.

2) Every effort will be made to facilitate on-going finds and eco-fact processing that keeps pace with the progress of excavations. This will allow due *feedback* as a basis of decision-making and to inform further judgemental targeting of features.

3) In order to maximise metalwork recovery, during the course of site stripping the lower sub-soil (i.e. below topsoil) level should be systematically metal-detected. With finds located by hand-held GPS, this can be undertaken in conjunction with the main stripping programme and, if the work is properly organised, need not result in any delay.

4) Multi-spectrum geochemical sampling should be a technique considered for application across the settlements' stripped ground-surfaces. This has proven to be a cost-effective means to elucidate activity areas and depositional practices. (Samples to be collected on a 10-20m grid throughout, reducing to 1–2m across structures.) The use of soil lipid sampling should also be considered.

5) As most of the settlements involved were, to varying degrees, farms, the detailing of their agricultural practices should be highlighted and sampling undertaken of their associated fields/'out paddocks', with 'out-field' ancillary structures thoroughly investigated. To this end, within the road corridor's confines, associated fieldsystems should be traced through further trenching; pollen core samples will be taken from their fills (and any watering-holes/wells) in an effort to determine what crops were grown and,

potentially, the location of woodlots. As regards the latter, identification should be made of activity-associated charcoal-rich deposits to elucidate woodland/timber resourcing.

The limits of any settlements' agricultural holdings, and its interface with those of 'neighbours', is a theme worth exploring. Were there, for example, edge-/boundary-marking practices? Equally, with colluviation also likely to be a significant factor (e.g. Site 7), soil micromorphology should be applied to elucidate its deposition, as well as also any preserved ground-surface horizons.

6) Scientific analysis of any recovered resin/organic-compound substances should be undertaken.

7) Having a three to four century span, the actual dating of many Middle Iron Age pottery assemblages is still not well-established. Accordingly, some of period's enclosure-sequences should be the subject of radiocarbon dating, particularly their major closed-group ceramic assemblages.

Specific methodologies aside (e.g. multi-spectrum geochemical sampling; subsoil metal-detecting), what will primarily distinguish the 'set-piece' excavations from standard practices is both the *intensity* of their excavation overall and, through on-going finds and artefact processing, *feedback* to inform additional judgementally-determined sampling.

Of the sites in this category, Numbers 3, 7 and 18 are held to be the most significant. It is understood that the excavation of Site 7 in Field 44 will occur in the Spring – Summer 2021 and well ahead of the remainder of the programme. As such, it will act as a trial-run of the methodologies proposed here and, accordingly, provide of a basis of their modification and development if considered necessary.

Field 9 (Site 3)

Lying above the river's floodplain (*c*. 900m west of it) and with its *c*. 350m long-axis parallel with the Ouse's channel, this was clearly a multi-period settlement. Its rectangular paddocks likely relate to either a very complex Romano-British farmstead or involve more than one such holding. The geophysical plot suggests that the settlement was arranged on either side of a major east–west road/trackway in the south and there may, in fact, have been a crossroads, as there are indications that it was conjoined by a north–south route along the settlement's eastern side.

The geophysical plot suggests that the Roman settlement developed from out of a number of smaller Iron Age settlements. Two in the southern third involve rectangular enclosures. Possibly of Late Iron Age attribution, the southernmost (its northern side bordering/determining the east–west road-line) has a large roundhouse in its centre; the more square-ish enclosure, just to the north, also appears to have a similarly situated roundhouse but whose register is less distinct.

The greater settlement-area also has at least two sub-circular enclosures within its axes, which are likely to date to the Middle Iron Age; there are also two distinct, small square-ish enclosures of Middle to Late Iron Age date.

Encompassing, therefore, both a major Romano-British roadside farmstead complex and, at the very least four, if not six, separate Iron Age enclosures – of both rectangular and quasi-circular layout – the importance of this site is indisputable (see Tebbutt 1957 on Wyboston's west-bank riverside Iron Age and Roman settlement and Timby *et al*. 2007, 67-78 for the Great Barford Bypass Site 1 lying just to the southwest). Even though only approximately the complex's southern fifth lies within the route-corridor, this still amounts to some 3ha. Including one of the square-enclosures-with-central-roundhouse settings – plus the main east–west road/trackway line and its possible crossroads' junction with the northern 'way'/arm – this certainly deserves intensive excavation.

Fields 34 & 35 (Site 4)

Excavation will occur across 0.6ha that will focus on an obviously 'early', but undated, long linear boundary, and include a Late Bronze Age roundhouse and other settlement features. This excavation in field 34 will be advanced work and is planned for Spring 2021, to coincide with a gas diversion, the southern element in field 35, will be within the main programme of mitigation.

In addition to the main corridor-exposure, two areas to the south will be targeted for more limited excavation. This will involve the intercutting Late Bronze Age/Early Iron Age ditches, themselves cut into a colluvium-filled hollow, within Trench 174. There will also be the excavation of the Late Iron Age pits exposed within Trench 168. Although in neither instance did these areas' features extend into neighbouring trenches, their archaeology seems rather ill-defined, and expansion of their areas – possibly augmented by further trenching – may be necessary. (It is, for example, possible that Trench 174's features actually relate to Site 4's settlement.)

Field 44 (Site 7)

Extending over more than 2ha, essentially consisting of a robustly ditched 'D'-shaped enclosure, this has at least four roundhouses within its interior. With its origins in the Middle Iron Age, it appears to have seen occupation through to Late Roman times. While its Roman-period usage seems to relate to a series of sub-rectangular paddocks within the larger enclosure's interior, there is the suggestion that what was clearly the original 'D-'shaped enclosure (which, in part, also has a concentric interior circuit suggesting its substantial embankment) continued to influence, if not curtail, the later, Roman layout. Given its layout and the number of roundhouses within its interior, this would seem to be the most complex and important of the programme's Iron Age sites, and it could represent a household of elevated status. At a general level, the Late Iron Age double-ditched, 'C'-plan 'fortlet' seen in evaluation fieldwork at Wintringham, St Neots (Focus XIV; Phillips 2009, II, fig. 34) might provide some comparison.

Fields 64 & 65 (Site 15)

Extending over some 4ha, the plot-register of this settlement complex is not particularly clear. While also having nearby Iron Age occupation (and a crouched inhumation was present), in the main it would seem to represent a series of paddock-enclosures associated with a probable villa plotted just north of the route-corridor. Obviously a very complex settlement, of the portion that will be excavated, with kiln furniture forthcoming, it might also have hosted some industrial activity. While most of the pottery recovered is of first century AD date, second–third century AD material also occurred. It appears to consist of a square-ish/rectangular enclosure-core (*c*. 105 x 120m) with internal rectilinear divisions. On its east side this connects with a series of irregular/more trapezoidal enclosures, whose 'diagonal' eastern side may have occurred in relationship to a road/trackway. A series of anomalies beyond the latter's line are likely to have been clay-extraction hollows (one such large quarry feature yielded Early–Middle Saxon and fourth century Roman pottery). This clearly was a complex Romano-British settlement and, even though only a portion of it will be excavated, only intensive excavation (and sampling) will elucidate any functional differences between its various 'parts'. (There will also be further sample excavation of those features found in Field 64 and which appear to relate to the main complex.)

Field 77 (Site 22)

Extending over more than 3ha, this essentially is a developed/complex Romano-British farmstead; with glass recovered, it may have been of a higher status. While largely involving interlinked sub-rectangular enclosure-paddocks, there are also elements that relate to a preceded oval-plan Iron Age settlement. The cropmarks evince what appears to be lazy-bed planting-trenches extending along the southwestern side of the main Romano-British complex. Given the direct interrelationship between the settlement and its fields, the latter's features should be the subject of intensive environmental sampling (pollen and soil micromorphology).

Group-Value and Key Sites (Category 2)

This category pertains to area-clusters of sites on the grounds that, when considered together (and coherently), they have the potential to address specific issues. These range from Iron Age String Systems, enclosure morphology and the dynamics of Iron Age/Romano-British land-use and agricultural practices. Making enclosure/settlement groupings a theme of investigation will, furthermore, allow for consideration of the nature of *Past Neighbours*: was it a matter of kinship, complementary enclosure function (e.g. pastoral sector *vs*. mixed farming), shared technical skills/traits (e.g. oven or building techniques) and/or wider community 'working groups'? An advantage of this approach is that it should inherently have broad appeal, with the idea/value of neighbours being something that the wider public can relate to.

Sites in this category will likely require the greatest degree of flexibility in the intensity of this excavation. In the main, Category 3-level procedures will be applied. A basic 10% excavation-sample (with 5% judgemental provision) will be implemented for linear features. There will be 100% excavation of structures and any industrial features; as a minimum, discrete features will be 50% dug, with there being the capacity for 100% if yielding significant artefact and/or environmental assemblages (e.g. waterlogged deposits). Depending, however, on their degree

of their survival and sequence complexity, upon their exposure some may warrant being excavated to full Category 1 standards.

In addition to the excavation of specific enclosures will be targeted, there will need to be the potential for additional trenching to further trace their associated fieldsystems and specific landscape features (for the purposes of both pollen/geochemical analyses and to allow detailed sub-surface topographic reconstruction and a more nuanced appreciation of the sites' landscape-situation).

Field 34 (Site 5)

Involving 0.8ha of excavation, this will focus on a 20–50m wide 'corridor' exposure (c. 220m long) of an earlier-Middle Roman-period settlement. With later Iron Age enclosures also evidently occurring within its axes, in some respects this seems broadly comparable to Site 3 on the west side of the Ouse's channel opposite. It is intended/suggested that local archaeological groups will be encouraged to undertake geophysical survey, and possibly fieldwalking, within the bordering fields in order to obtain the full plan of the settlement. [Note that work outside the Order Limits is not expected, even for community work].

Field 49 (Site 9)

A number of Iron Age and Roman (and undated) features were documented at this point, but unfortunately, together with the geophysical results, they show 'diffuse' results. The site's main components seem to consist of parallel east-west oriented ditches that likely delineate a trackway connecting with more riverside-adjacent settlements west beyond the route's corridor. Within the corridor, at the trackway's eastern end, there is a *c*. 10m diameter ring-ditch, with a pit in its interior containing a human skull. Up to 2ha of excavation is planned for this area. This will adequately delineate and characterize the trackway and the enclosures that appear to flank it, with the ring-ditch at its end seeing full excavation.

Fields 53, 54, 56 & 58 (Sites 10, 11 & 13)

The emphasis here will be to address basic questions of enclosure-type morphology through the excavation of three neighbouring enclosures. Two are definitely of Middle–Late Iron Age date. That in Field 53 is a large ovoid (*c*. 60 x 95m; Site 10), whereas that in Field 54 (Site 11), although smaller (50 x 45m), is complex and has a number of internal sub-divisions and may even include an earlier enclosure setting on its east side. While no discrete features were identified in the latter's trenching and even if none survive, its deeper ditch deposits should have the potential to test the nature of its various 'parts'.

Lying just some 90m to the north (along the west side of Field 56 and continuing into Field 57) is still another ovoid enclosure, also seemingly of Middle/later Iron Age date (this has been included into an enlarged site 11 at the request of the county archaeologist). Its north side appears to conjoin a series of small enclosure-cells (that continue north to Eynesbury Fields Farm) and another boundary seems to extend south from the east side of the ovoid enclosure. The latter could not be survey plotted further southward due to crop cover in the field's corner and, accordingly, it is possible that might actually link with the Site 11 enclosure. That said, given its 'division' to the north west by the field boundary, field 57 may not warrant intense

excavation but only more targeted investigation, and then only that portion that falls within Field 56 [NB the enclosure in Field 57 is outside the Order Limits].

Some 450m to the north, in Field 58, there is a discrete square enclosure, also having evidence of sub-divisions and roundhouses within its interior (Site 13). While yielding Middle–Late Iron Age pottery, Roman pottery was also present. As the only such discrete square settlement enclosure known along the route, it certainly warrants detailed investigation.

Efforts should be made to obtain an environmental column-sample from possible palaeochannels to Abbotsley Brook.

Together, these four enclosures – the 'simple' and 'complex ovoids' (Fields 53 & 54, plus the enclosure 'cells' conjoining 'ovoid' in Field 56, and Field 58's isolated square setting – would amount to a case-study of the landscape's main 'basic-unit' enclosure forms. Moreover, they also have the potential to significantly contribute to both Middle–Late Iron Age pottery chronology issues and to address whether there were incoming Late Iron Age groups (Aylesford-Swarling) into the area.

Fields 73/74 (Sites 18)

Two rather minor square-ish/quasi-polygonal Late Iron Age enclosures lie within the centre of Field 73. (Also, east beyond the main enclosure, the north side of an irregular/ovoid Iron Age enclosure is present (Site 19; given its partial exposure this would only require limited further investigation.) In the main, however, the system there is rectilinear and, with its alignment predominantly east–west, generally seems of Early Roman date (first–second century AD). While also including off-alignment/'diagonal' components (likely later), its main feature is a 'formal' tight-corner rectangular enclosure (*c*. 55 x 75m), with an eastward entranceway apparent. Its 'geometry' is distinct and this enclosure seems 'special'. There are a number of other both Late Iron Age and Roman enclosures and settlement features around it. Parallel ditches south of the main enclosure may indicate an east–west road/trackway. Also, the long linears that extend east from the enclosure, and west into Field 74, may correlate with Love's Farm's Routeway 3/9 (Hinman & Zant 2018, fig. 4.1) and could indicate the line of Margary's Roman Road 231.

Given what seems to be the formality of the main enclosure's layout, and its relationship to one, if not two, roads/trackways, this seems a 'distinguished' settlement. Indeed, it may well prove to be pivotal for understanding of area's transportation routes and its settlement systems.

Fields 90 & 92 (Sites 28–30)

This represents the most promising opportunity to investigate a Middle-to-Late Iron Age String System. Having an elongated 'D'-shaped enclosure in the north (with some evidence of internal sub-divisions), a sinuous ditch conjoins its southern end and continues for more than 250m across the corridor's width; there also being three roundhouses identified along its southern portion (Site 28). In the field to the east (No. 92) a comparably 'long' ditch-line extends east–west across its northeastern third (Site 29). Lying adjacent, two 'simple' sub-rectangular enclosures conjoin this boundary and seem (like that in Field 90) to be contemporary. In the southern portion of Field 92, lying some 150m east of Field 90's String ditch, there is 'complex'

enclosure with internal divisions and having roundhouses both within its interior and seemingly just exterior to it (Site 30).

The two String boundaries in Fields 90 and 92 appear interrelated and their arrangement could suggest that they delineated a large landscape 'block'. The crucial issue here then is the interrelationship of these boundaries to Field 92's 'complex' enclosure: are they directly contemporary and reflect the enclosure's land-holding, and does that enclosure's organisation represent a multiple household unit? Also, what was the relationship between that enclosure and the three of more simple layout that conjoin the String lines? Were they of different functional character (possibly stock-related) or do they represent separate family units and, if so, what is their relationship to the 'complex' enclosure?

Addressing these issues, it will be crucial to interrogate the intensity of activity/occupation between the four enclosure settings: did the 'complex' enclosure in Field 92 ('off-String') see a wider variety and/or intensity of functions than the other three enclosures (i.e. those 'String-conjoining'). In order to adequately address whether any of the three enclosures had a specific stock-related function, large-scale/-interval phosphate sampling will be necessary, with tighter grid-sampling across the enclosures themselves (and on either side of the String boundaries).

While all of the groupings' enclosures will warrant full excavation, the String boundaries themselves will only require a combination of targeted-area and trench excavation along their lengths. Also, the Late Iron Age and Early Romano-British features occurring at the southern end of Field 92 (within Site 30) will be subject to targeted-area excavation.

Fields 94–97 (Sites 32–34 and 36–39)

With 'landscape' investigation occurring within the four conjoining fields west of the line of Ermine Street, this will involve at least 8.5ha of excavation, with additional trenching to further trace fieldsystems and paddocks. Of particular importance are the number/density of Iron Age enclosures this entails (five +) and, though Romano-British fieldsystems and paddocks are apparent, none seemingly extend to the line of the Roman Ermine Street; nor do any of them reflect the latter's NNW–SSE alignment and, rather, all are (generically) northwest–southeast oriented.

At the west end, in Field 94, are two Iron Age enclosures. The Site 32 enclosure involves at least three conjoining sub-circular 'cells' and they appear to have later fieldsystem boundaries extending from their eastern side. (It is possible that the Iron Age enclosure related to the western extent of Site 29's 'String line' in Field 92.) Lying *c*. 300m to the east, having indistinct internal features, Site 33 is a small sub-circular/ovoid enclosure *(c*. 30 x 50m).

The most distinct (and promising) of the area's Iron Age enclosures is the easternmost, lying beside Ermine Street in Field 97 (Site 38). Of irregular sub-rectangular layout (its southern aspect being curvilinear and with rounded corners throughout; *c*. 50 x 57m), within its interior are at least three roundhouses. At least one other roundhouse (and possibly others) is apparent some 40m to the east, and ditch elements also occur there; this could suggest another possible enclosure.

Two roundhouses and possibly related (enclosure) ditch features occur in the northwest portion of the field (Site 39). Evidently of Romano-British attribution, in the field's southwestern arm, where a seemingly discrete small enclosure is also apparent There, extending much more widely, are also rectilinear fieldsystem components (possibly including lazy-beds in part, and trackways). To the south of this site and possible linked by a ditch aligned NE- SW is an area containing an unenclosed roundhouse (Site 37). This is potentially contemporary with the structure to the immediate east outside the enclosure in Site 38.

In the SW corner of the field is Site 36, of quasi-polygonal layout, a roundhouse (with other conjoining features) dominates its central interior. Lying just *c*. 80m to the west is still another, larger Iron Age enclosure (to be seen as part of the same site 36). Of irregular sub-circular form (*c*. 55 x 65m), numerous features sub-divide/cross its interior; however, some of these may relate to the more rectilinear/'angular' system of ditches that frame the enclosure and extend east from it and likely conjoin with those adjacent to the Site 36 enclosure (and surely relate to the Romano-British system apparent in the field-area's northwest corner at that point).

In Fields 95/96, on the south side of the A428, is still another rectangular Romano-British settlement/fieldsystem, whose components extend northwest–southeast over at least 300m (Site 34). At its western end there is a distinct 'angular'/sub-square enclosure (*c*. 75m across), which may be earlier and represent this settlement's Late Iron Age origin. Mention should be made that the rectilinear components conjoining the Site 32 enclosure in the centre of Field 94 to the west, appear sympathetic to Site 34's Romano-British ditch axes and it is possible that they were somehow related.

Targeted Investigations (Category 3)

These will vary from open-area excavations to just further trenching investigations. For the excavations proper, a basic 10% excavation-sample (with 5% judgemental provision) will be implemented for linear features. There will be 100% excavation of structures and any industrial features; as a minimum, discrete features will be 50% dug, with there being the capacity for 100% if yielding significant artefact and/or environmental assemblages (e.g. waterlogged deposits).

Field 3 (Site 1)

An extension of Oxford's A421 Site 1 (Roman; Timby *et al*. 2007, 67-78), this will involve excavation of features beneath the northwestern bund (c. 0.4ha) and, otherwise, their preservation *in situ*.

Field 5 (Site 2)

There will be *c*. 1ha excavation of the Late Saxon enclosure and kilns, extraction hollows and any other associated features.

Fields 47 & 48 (Site 8)

An ovoid-plan Iron Age enclosure (0.3ha) appears to be 'bracketed' by adjacent large-scale boundary ditches (possibly 'String-related'), with Late Iron Age pits found in Field 48. With the enclosure otherwise seemingly isolated, it will be further sample-investigated, as will the pit-area and the ditch boundaries (*c*. 1ha total area; see below concerning the rectilinear enclosure along the southwestern side of Field 46).

Fields 58-62 (Hen Brook) (Site 19)

A possible palaeochannel of Hen Brook was identified and, in consultation with Historic England's Science Advisor, this will be core-sampled for geoarchaeology and its environmental sequence

Field 66 (Site 16)

This complex, seemingly Early Roman enclosure, will be fenced-off and preserved *in situ*; with the exception of one ditch that will be impacted and which will be further investigated.

Fields 75 & 76 (Sites 20)

Consisting of a small Iron Age enclosure on the east side of 'Roman Way' (Margary Road 22), with a broadly contemporary ditch-line on its western side, these only warrant limited further targeted-investigation (c. 0.3ha) in order to achieve adequate sample-assemblage data to characterize them.

Fields 80 & 83-84 (Sites 23 & 24)

Consisting of an Iron Age roundhouse and a cremation pit (Site 23), this will require up to 0.5ha of targeted excavation. In the field to the northwest (No. 84), Site 24 is a String ditch system with an associated small enclosure. With there being a roundhouse located nearby, up to 0.25ha will be dedicated to further expose and sample investigate these. The justification for this decision is based upon the fact that that very little of the 'String' actually occurs within the corridor's limits, and would provide an insufficient basis for further the understanding of such systems.

Field 86 (Site 26)

With only the southern side of this Iron Age enclosure extending into the area of the route's corridor and, therefore, with limited potential to provide any significant understanding of such enclosures, only sampling around Iron Age enclosure will be undertaken.

Field 88 (Site 27)

An Iron Age pit occurred associated with (undated) ditches and gullies, and warrants further sample-investigation.

Sites Requiring No Further Work (Category 4)

Field 35 (Site 6)

The footprint-area of the later Roman enclosures will be fenced off, allowing the site to be preserved *in situ*.

Field 39

Occurring in isolation and without an associated settlement context, the agricultural features identified in this field are thought unlikely to provide any further significant information/understanding.

Field 46

No further work is planned for the demolished nineteenth century kiln building shown on the 1826 map. Also, seemingly of Roman-period date, the rectilinear enclosure along the southwestern side of the field will be fenced off and preserved *in situ*.

Field 56 (EAST) (Site 12)

Site of enclosure is outside the footprint of the road and to be fenced.

Field 85 (Site 25)

This, the historic High Hayden Farm complex, will be fenced off and preserved *in situ*, with no further work required.

Field 99 (Site 40)

The portions of a larger Late Iron Age enclosure system that enters the field will be fenced off and preserved *in situ*.

Publication and Archiving

During the course of the fieldwork programme it is expected that weekly reports will be issued. These will outline progress of both its excavations and outreach events, highlight significant findings and discuss arising research issues (including any that might require modification of the project's design).

It is anticipating that the fieldwork will form a robust digital archive, one that fully interfaces with the data-bases generated through the programme's assessment and analysis phases. It is expected that the results will be published in both hard-copy and on-line formats, and both as a more popular synthetic account and, at least one, peer-reviewed academic volume, with more specialist-topic papers issued separately. The balance in which the site narratives and their specialist studies appear in print or only in digital formats will depend ultimately on the sites' findings. It is, however, expected that certainly the 'set piece' excavations will see a high level of publication, including distribution plotting of artefact and eco-fact densities/types, alongside the multi-spectrum geochemical analyses. The guiding rationale behind this being that their publication is intended to involve more than just the demonstration of their respective sequences, but also extends to their depositional dynamics (and also that of their various 'parts'); in other words, how they actually 'worked' as settlements.

The arising academic publication must also involve a high level of synthetic study. Integrating the results of other fieldwork programmes in the area (e.g. A421, Biddenham Loop, Marsh Leys, Love's Farm, Cambourne, A14 and North West Cambridge), it will overview the character of early settlement across the region's western claylands and River Great Ouse's terraces (and its tributaries; e.g. the Ivel). In this capacity, the project's detailed micro-case studies (i.e. Set-Piece excavations) should be seen as dovetailing with macro-level issues; including, for example, the scale of Iron Age multi-settlement territories, riverine communication/transportation, Roman-period estates and, also questions of clayland colonization, the processes of Iron Age 'enclosure' and the nature of Middle/Late Iron Age and Roman 'transitions'.

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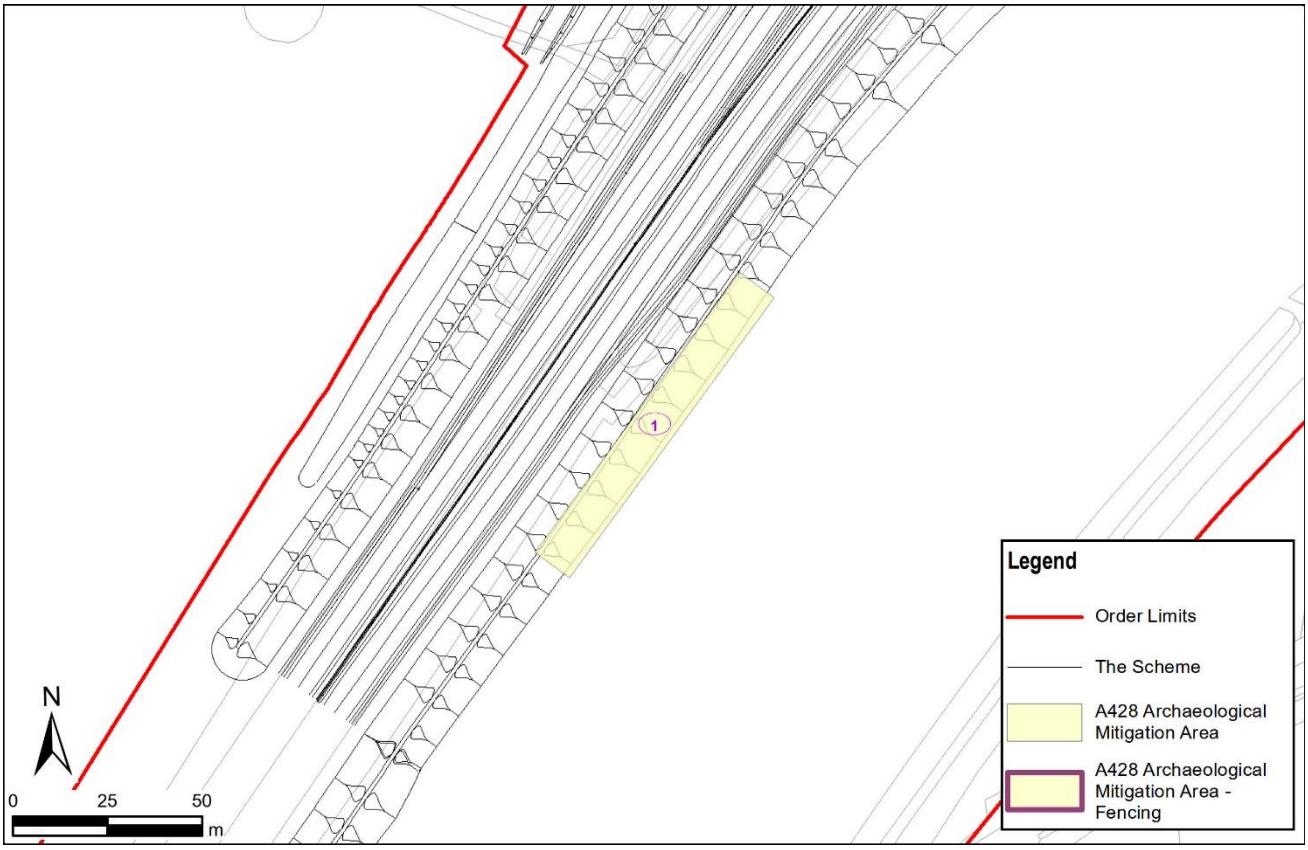
Appendix D Archaeological mitigation action areas

Site 1	
Designation:	Non-designated
Field Number:	3
Reference IDs:	None
Location (NGR):	514881, 255226
Site area (approximate):	0.1 ha



Description

Sixteen trenches were excavated in this field.

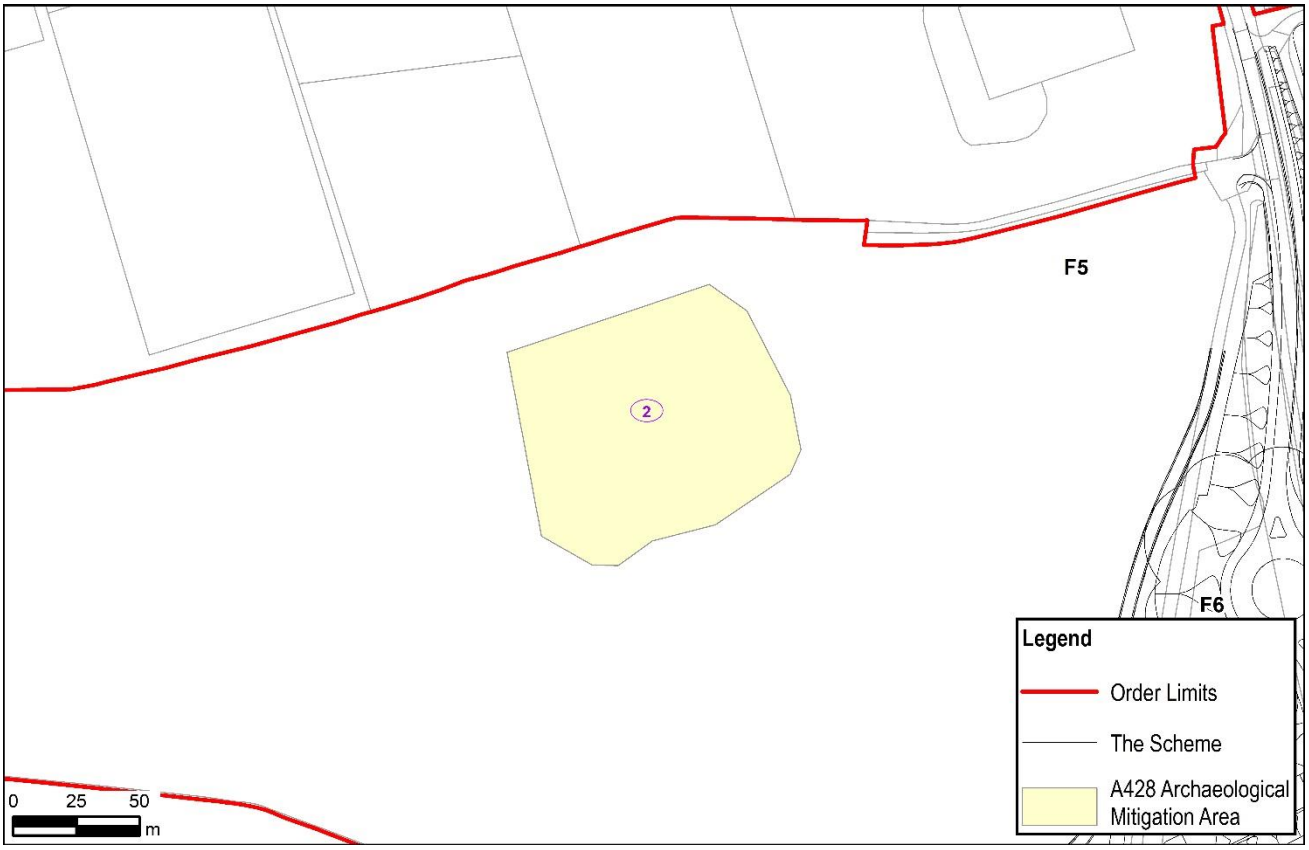
Ditches and enclosures, identified through geophysical survey, are considered to be part of the Roman site excavated as part of the A421.

A rectilinear enclosure aligned north–south, occupies the southern half of the field. Two smaller internal enclosures were also recorded. A further sub-square enclosure was present in the south-east corner of the field. All are considered to be of Late Iron Age and Roman date.

Features associated with ridge and furrow and remnants of a farm track were recorded. These are medieval/post-medieval in date.

Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. However, the site extends into fields to the south and these remains will be unaffected by the Scheme. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Sampling of linear features. Preservation under bund. Access tracks to be stoned up or using bog mats.
Research objectives
Roman b. Rural Settlements and landscapes c. Dating j. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 2	
Designation:	Non-designated
Field Number:	5
Reference IDs:	None
Location (NGR):	515387, 255647
Site area (approximate):	0.9 ha



Description

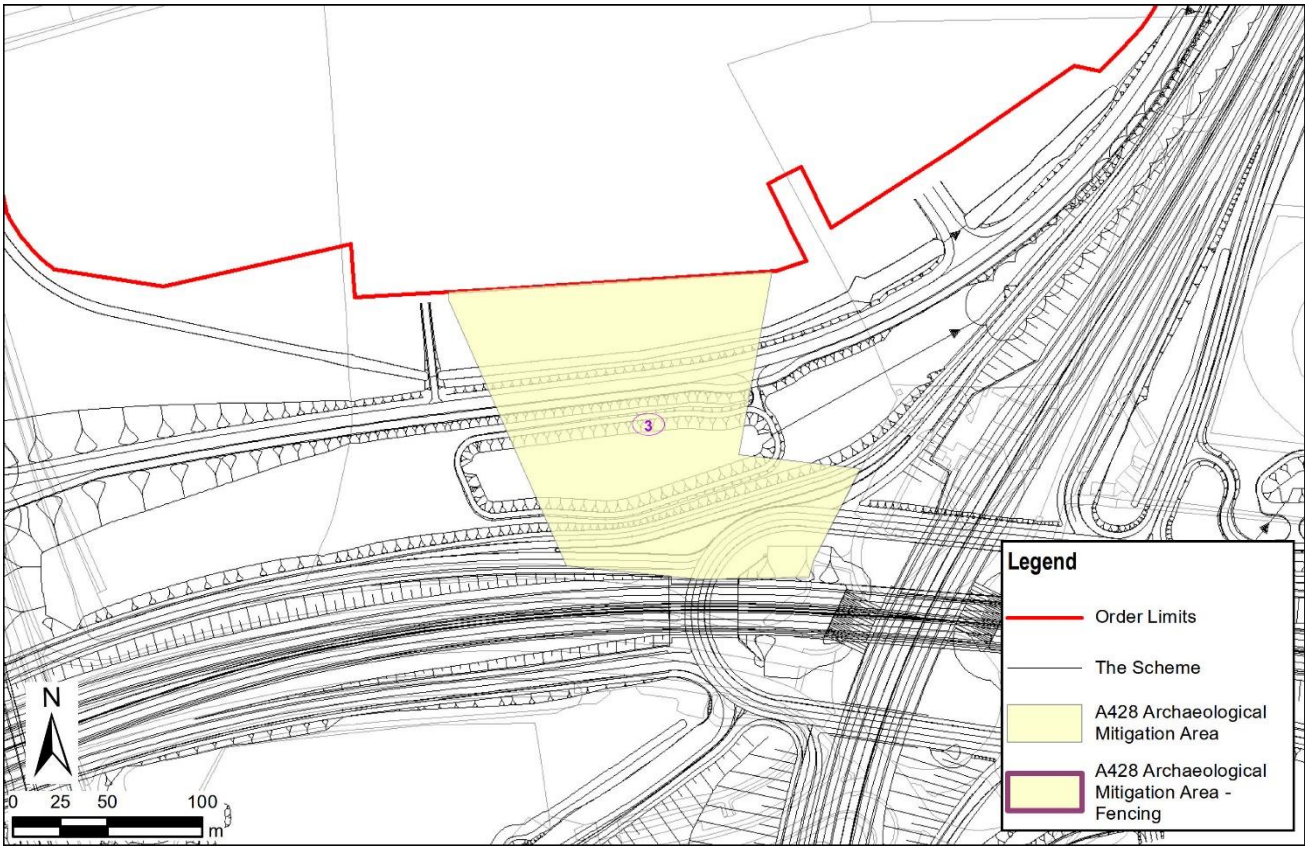
Seven evaluation trenches excavated during Phase 1 and 36 during Phase 3. No archaeological features identified at Phase 1. Natural substrate identified directly below 0.25-0.4m of topsoil.

Phase 3 identified an isolated curvilinear ditch in the corner of the field dating to the Iron Age.

Two sub-square kilns were recorded and dated to the 18th or 19th century. A large area of extraction adjacent indicates the use of the local clay for the production of brick or tile. A cluster of small sub-rectangular pits, believed to relate to the manufacturing process, were also recorded. Early medieval pottery was identified.

Scheme impact
Limited elements of the asset would be affected by the excavation of a borrow pit. Construction of the Scheme would have a slight adverse effect on this asset
Mitigation
Targeted excavation of medieval and post-medieval features
Research objectives
Early Medieval and Medieval a. Rural settlement b. Landscapes c. Industry **Post-Medieval** a. Industry and infrastructure

Site 3	
Designation:	Non-designated
Field Number:	9
Reference IDs:	**745** - Linear block of sub-rectangular enclosures visible on aerial photographs. Dated to Iron Age/ Roman from excavations of peripheral features to the south. **19824 –** Find of a Roman copper alloy strap fitting. **19827 –** Find of an incomplete copper alloy barbarous Roman coin. **19828 –** Find of a copper alloy Roman coin, a nummus of Constans. **19829 –** Find of a Roman coin, a copper alloy barbarous radiate.
Location (NGR):	515758, 255587
Site area (approximate):	2.29 ha



Description

Thirteen trenches were excavated within this field. The site comprises multiple small sub-square enclosures on the south side of a larger rectilinear settlement. A small number of internal features within this enclosure were also excavated, with most of the pottery recovered dating to the late Iron Age/early Roman transitional period.

Within the area of the trenches four main enclosures in the southern part of the settlement were identified: a sub-square enclosure to the south, a central sub-rectangular enclosure which contained within it a smaller square enclosure, a western enclosure which contained within it a circular enclosure, possibly a roundhouse, and the southern edge of a larger enclosure which extended to the north. Ditches associated with the enclosures varied in depth and form but survived to a depth of up to *c.* 1m. Features associated with the three southernmost enclosures produced pottery of consistently Middle to Late Iron Age date. East of the main enclosure was a ditch running parallel to the main site; possibly forming a double-ditched boundary or a trackway along the edge of the settlement. Pottery from this area dates to a later period than the rest of site (at least the early 2nd century). Acidic ground conditions indicate that environmental preservation will be poor.
Scheme impact
Elements of the site would be permanently affected by the construction of the new dual carriageway, a side road and an attenuation basin. However, the site extends into fields to the north, and these remains will be unaffected. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Full excavation Pre-DCO Consent A SSWSI for this site is being prepared for approval by Bedford Borough Council
Research objectives
Iron Age a. Settlement types b. Dating d. The agrarian economy, field systems, and the areas between e. Depositional practices g. Iron Age/Roman transition h. Did the colonisation of the clays in the Middle/ later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. l. With regard to the Scheme's east-west axis, at what point did the different character of Bedfordshire's Iron Age settlements – with a greater frequency of grain storage pits and pit alignments – become apparent. Was the Ouse a divide in this or was it a matter of gravel vs. clay geologies? n. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into

Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute?

o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The Scheme would be located at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the Scheme?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Roman

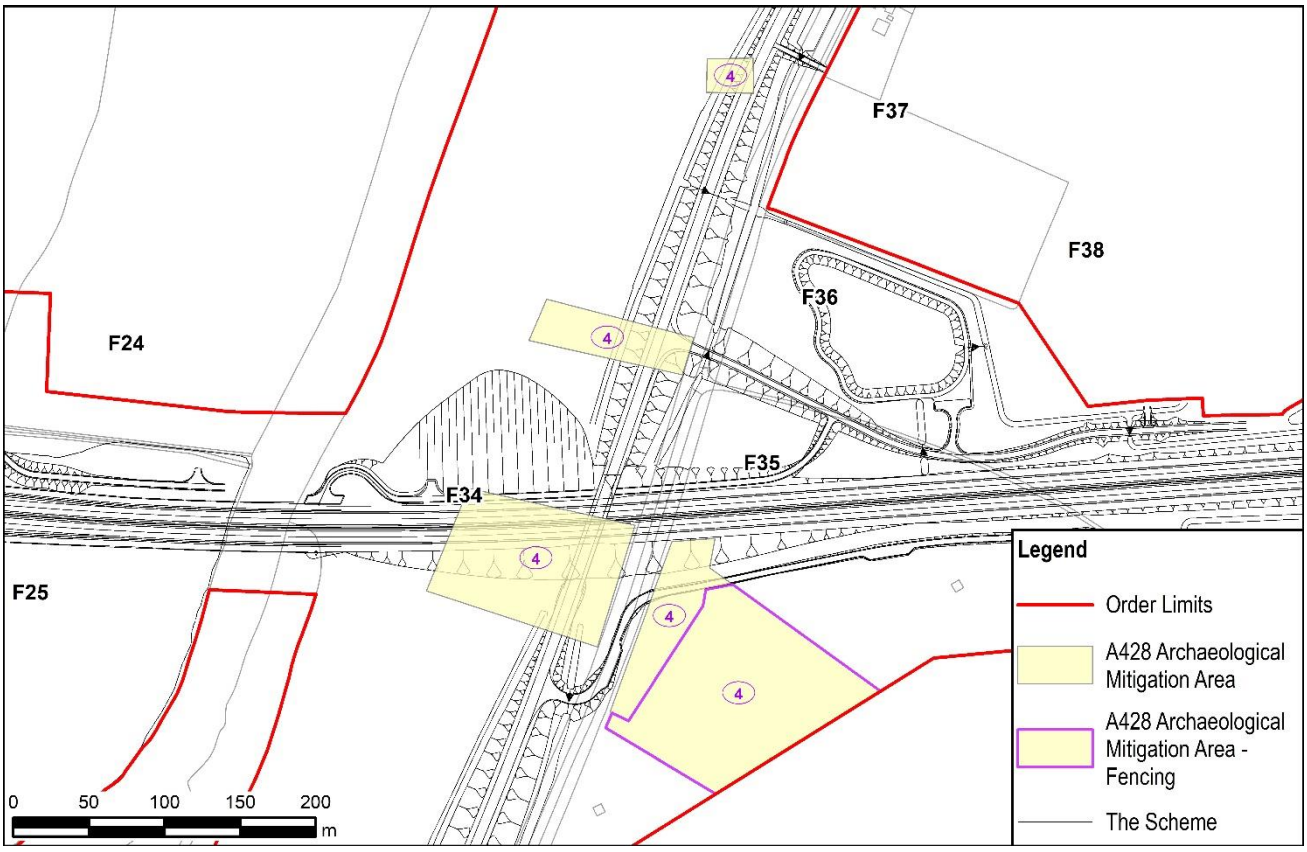
a. Romanisation

b. Rural settlements and landscapes

c. Dating

i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 4	
Designation:	Non-designated
Field Number:	34, 35
Reference IDs:	**EBB697** - Field walking survey and watching brief for the Huntingdon to Little Barford gas pipeline. Nine sites comprising Roman pits and ditches, medieval ditches and a post-medieval surface scatter and wall foundation. Unstratified finds dated between the Neolithic to the post-medieval period were also recorded.
Location (NGR):	516998, 255373
Site area (approximate):	2.85 ha (1.6 ha excavation,1.25 ha fenced off)



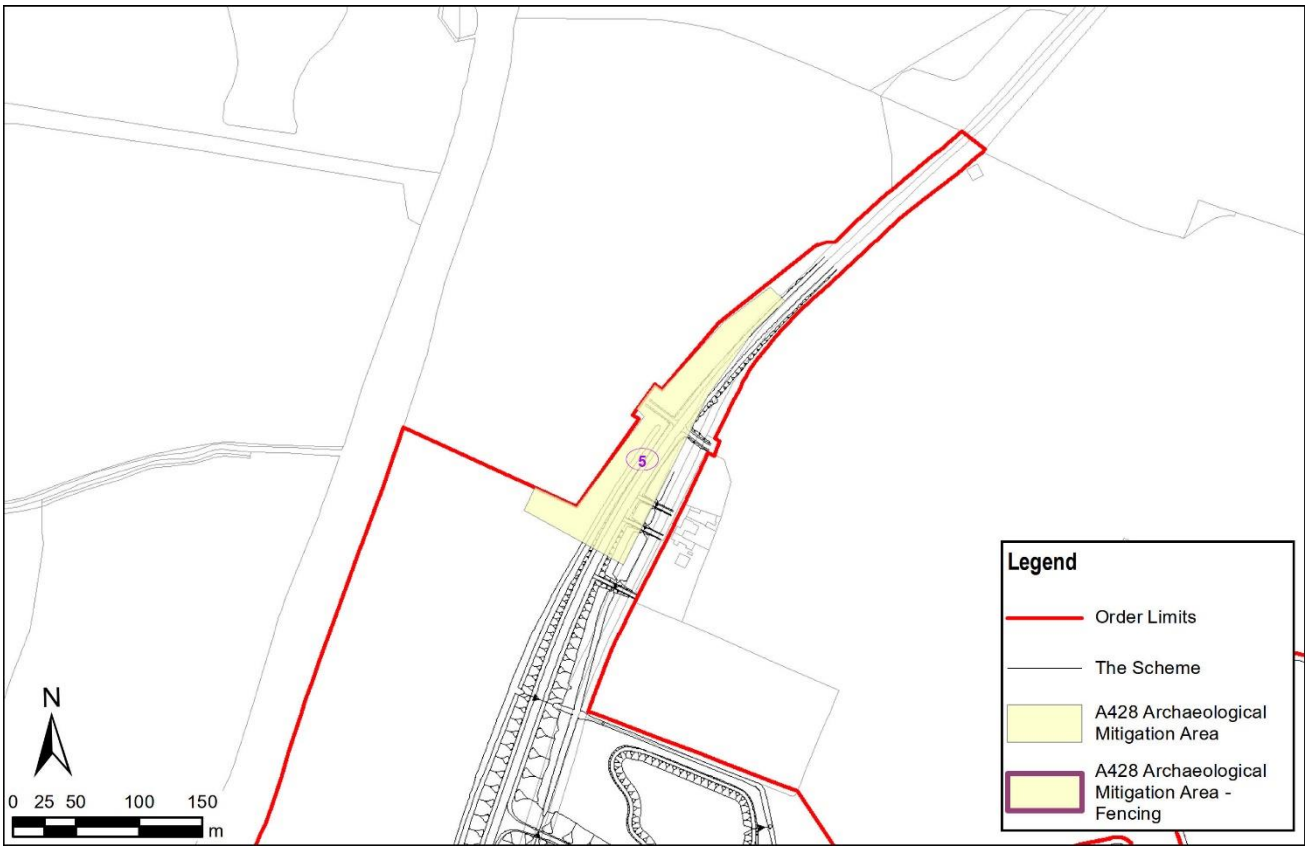
Area extends into F35 to be undertaken at Preliminary Works stage.

Description

The site comprised a long (c.280 metre) linear boundary ditch aligned west to east through part of Field 34 and into Field 35. No dateable material was recovered from the fills of the ditch. It was possibly the focus of other archaeological activity revealed as several geophysical anomalies, including a potential roundhouse. These features may be of Late Bronze Age date.

Scheme impact
The site would be permanently affected by the construction of the new dual carriageway and the diversion of utilities. The construction of the Scheme would have a moderate adverse significance of effect on the site.
Mitigation
Full excavation Field 34 – Pre-DCO Consent Field 35 – Advanced or Preliminary Works A SSWSI for this Site within Field 34 has been approved by Central Bedfordshire Council A separate SSWSI will be produced for the works in Field 35 Fence-off area in Field 35.
Research objectives
Bronze Age a. Settlement activity b. Dating c. Field Boundaries and Field Systems d. Mitigation should focus on relationships between site clearance, landscape partition, settlement and farming practices; e. The site in Field 70 site lies at a higher elevation than the sites in Fields 34/35 and 44, which lie within the valley of the River Great Ouse. What is the relationship between settlement and topography/geology? **Iron Age** m. Was there any relationship to the area's more scant evidence of preceding (unenclosed) Late Bronze/earlier Iron Age usage? Were these in anyway ancestral to the subsequent Iron Age enclosed settlements, perhaps representing seasonal forays onto the heavier lands prior to permanent settlement?

Site 5	
Designation:	Non-designated
Field Number:	34
Reference IDs:	**EBB697** - Field walking survey and watching brief for the Huntingdon to Little Barford gas pipeline. Nine sites comprising Roman pits and ditches, medieval ditches and a post-medieval surface scatter and wall foundation. Unstratified finds dated between the Neolithic to the post-medieval period were also recorded.
Location (NGR):	516998, 255373
Site area (approximate):	1 ha



Description

Twenty-eight trenches were excavated within this field. The Site comprises a large settlement complex at the north end of Field 34, extending for c.215m (south to north) and continuing beyond the DCO limits to east and west. The settlement site comprised a series of rectangular and circular enclosures, and associated ditches and gullies. Three phases – Iron Age to Roman.

There were three Iron Age enclosures over approx. 200m, and one Roman enclosure with complex and deep chronology, good preservation and an assemblage of over 70 sherds extending from

AD70-240, with a range of animal bone that included evidence for butchery and gnawing. The site provides partial views of larger settlement areas which lie beyond the DCO boundary and have the potential to further understanding of settlement patterns in the region. This may be especially the case for the northern end of Field 34, which has the potential for study into the Iron Age and Roman transition.

Scheme impact

The site would be permanently affected by the construction of the side road along the eastern edge of the field. The construction of the Scheme would have a moderate adverse significance of effect on the site.

Mitigation

Excavation

Research objectives

Iron Age

a. Settlement types

b. Dating

e. Depositional practices

g. Iron Age/Roman transition

l. With regard to the Scheme's east-west axis, at what point did the different character of Bedfordshire's Iron Age settlements – with a greater frequency of grain storage pits and pit alignments – become apparent. Was the Ouse a divide in this or was it a matter of gravel vs. clay geologies?

n. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute?

o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Roman

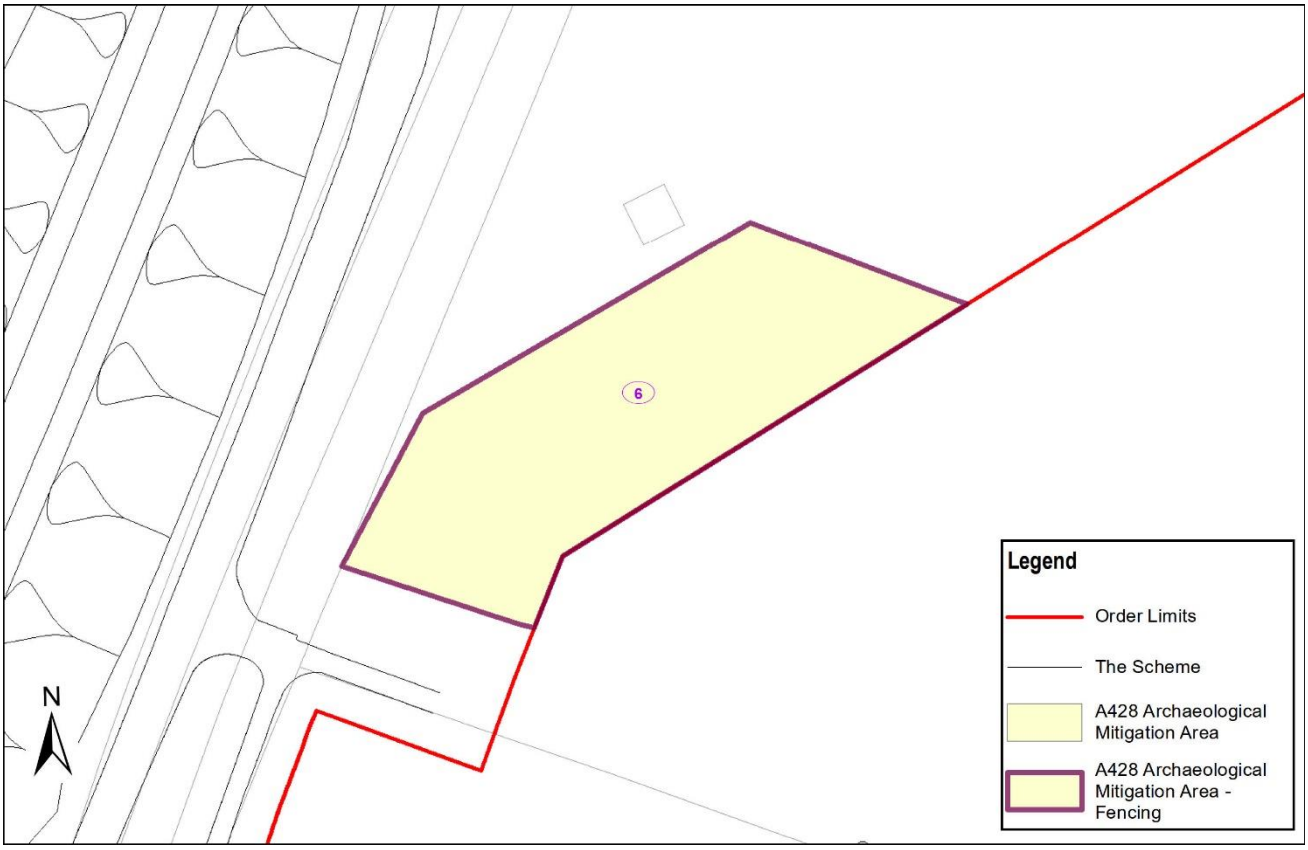
a. Romanisation

b. Rural settlements and landscapes

c. Dating

i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 6	
Designation:	Non-designated
Field Number:	35
Reference IDs:	None
Location (NGR):	517138, 255418
Site area (approximate):	0.18 ha



Description

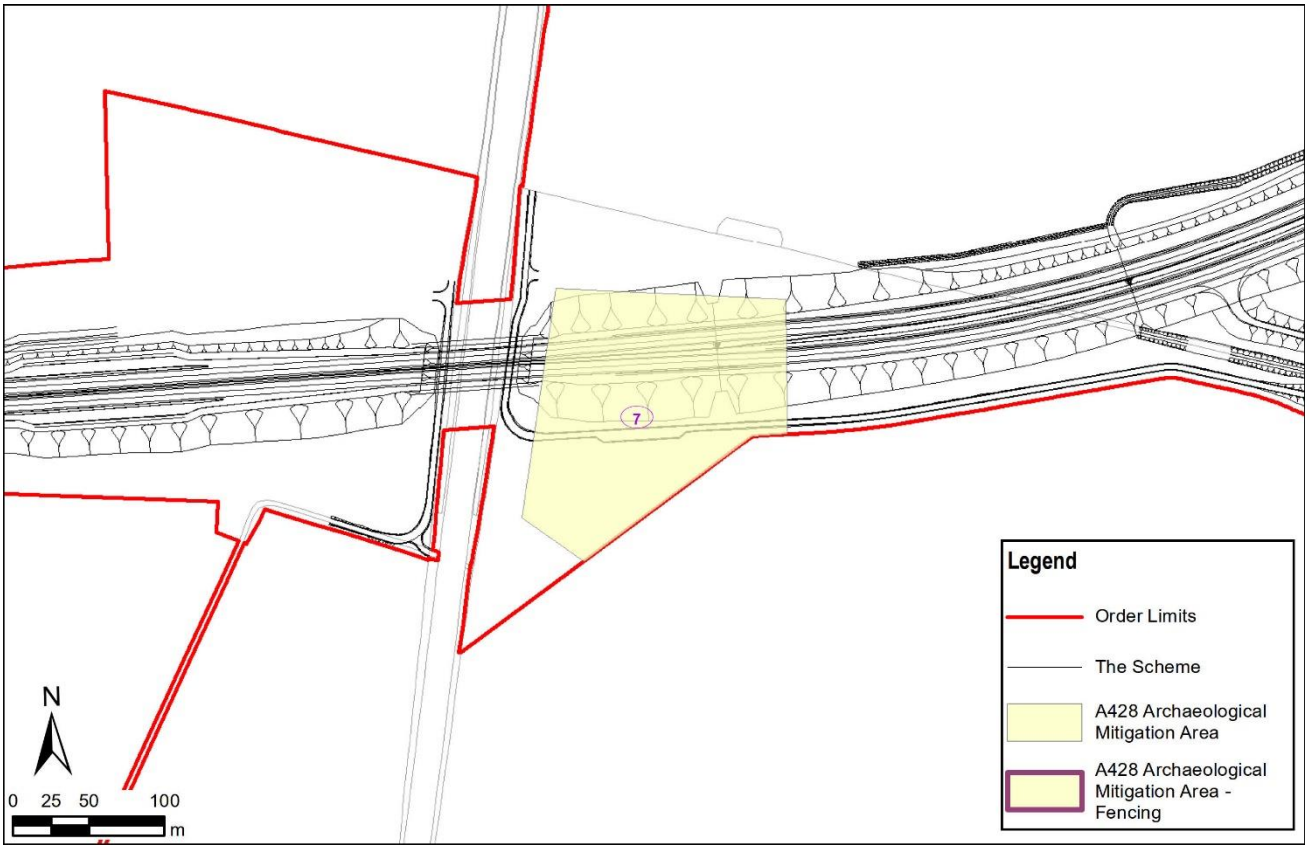
Sixteen trenches were excavated within this field.

A rectilinear Roman enclosure was identified in the south-west corner of Field 35. The enclosure measured approximately 45m north to south, by over 35m east to west and continued beyond the DCO limits to the east.

Trench 56 was positioned to target the anomalies revealed by the geophysical survey which was suggestive of a large rectangular enclosure divided into smaller rectangular parcels. The western boundary of the enclosure was defined by a large, V-shaped ditch, aligned south to north. Another V-shaped ditch lay parallel to the east, and the two appeared to be connected by a 0.42m wide x 0.2m deep U-shaped gully. Further to the east, another parallel north to south aligned ditch formed the east side of a small internal division. A charcoal-rich circular pit was located on the inside of the

smaller internal enclosure. With the exception of the western boundary ditch, which contained no finds, all of the features contained Roman pottery spanning from the 2nd to 5th centuries.
Scheme impact
None
Mitigation
Fence off
Research objectives
N/A

Site 7	
Designation:	Non-designated
Field Number:	44
Reference IDs:	**16800** - Cropmarks, south of Alington Hill, consisting of prehistoric rectilinear enclosures that abut a former stream course. Field to the south: **16802 -** A scatter of small curvilinear enclosures with a large sub-rectangular one to the south, recorded as cropmarks.
Location (NGR):	518270, 255420
Site area (approximate):	2.22 ha



Description

The geophysical survey undertaken within the Site identified a moderately large settlement complex of probable Iron Age or Roman date which covered an area in excess of 2.3 hectares (ha) and extended beyond the survey area to the south and east. The settlement had previously been identified as cropmarks and was recorded on the Historic Environment Record (HER). The settlement comprises a large D-shaped outer boundary ditch, a series of smaller enclosures and

roundhouse gullies within the D-shaped boundary ditch, as well as possible pits and/or deposit spreads.

Eighteen trial trenches were located within the field. The layout was designed to target the anomalies identified during the geophysical survey, as well as evaluating seemingly blank areas. The archaeological deposits and features identified largely correlated with the geophysical survey results and confirmed the presence of a complex Iron Age – Roman settlement enclosure.

The D-shaped outer enclosure ditch identified in the geophysical survey was confirmed during the evaluation and measured approximately 170m north to south and 150m east to west, measuring up to 4m wide and 1.8m deep in the trenches it was identified in. Substantial occupation deposits were identified within the enclosure towards the east. These deposits may have settled over a dry valley which marks the eastern edge of the enclosure. A number of internal enclosures were also identified within the main enclosure, as well as a number of possible roundhouses.

There was evidence in some trenches for possible earlier phases of the outer ditch, suggesting that it was in use for some time. Pottery was recovered from each of the trenches the ditch was excavated in and this was dated to the late Iron Age and Roman periods. Further Iron Age and Roman pottery was identified in a number of the internal enclosures, roundhouses and discrete features.

A substantial occupation deposit was identified in trenches 644 and 61 towards the east of the enclosure, and excavation of this deposit identified at least three distinct layers. A number of features were identified to be cutting through and/or overlain by each of these deposits, and as such, this deposit was not extensively investigated during the evaluation.

The evidence identified during the evaluation trenching indicated that this settlement developed, possibly from as early as the middle Iron Age and was occupied, in some form, through to the 3rd and 4th centuries AD, with a change of structural form evident in the 1st – 2nd centuries AD.

Scheme impact

The new dual carriageway would result in a permanent change to key archaeological elements relating to this asset as a result of groundworks. The construction of the Scheme would have a moderate adverse significance of effect on this site.

Mitigation

Full excavation

Pre-DCO Consent

A SSWSI for this Site has been approved by Central Bedfordshire Council

Research objectives

Iron Age

a. Settlement types

b. Dating

d. The agrarian economy, field systems, and the areas between

e. Depositional practices

g. Iron Age/Roman transition

l. With regard to the Scheme's east-west axis, at what point did the different character of Bedfordshire's Iron Age settlements – with a greater frequency of grain storage pits and pit alignments – become apparent. Was the Ouse a divide in this or was it a matter of gravel vs. clay geologies?

n. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute?

s. What was the purpose and function of the various cellular enclosures? Do these relate to functional differences (e.g. livestock vs. occupation) and/or multiple family-unit usage?

t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

Roman

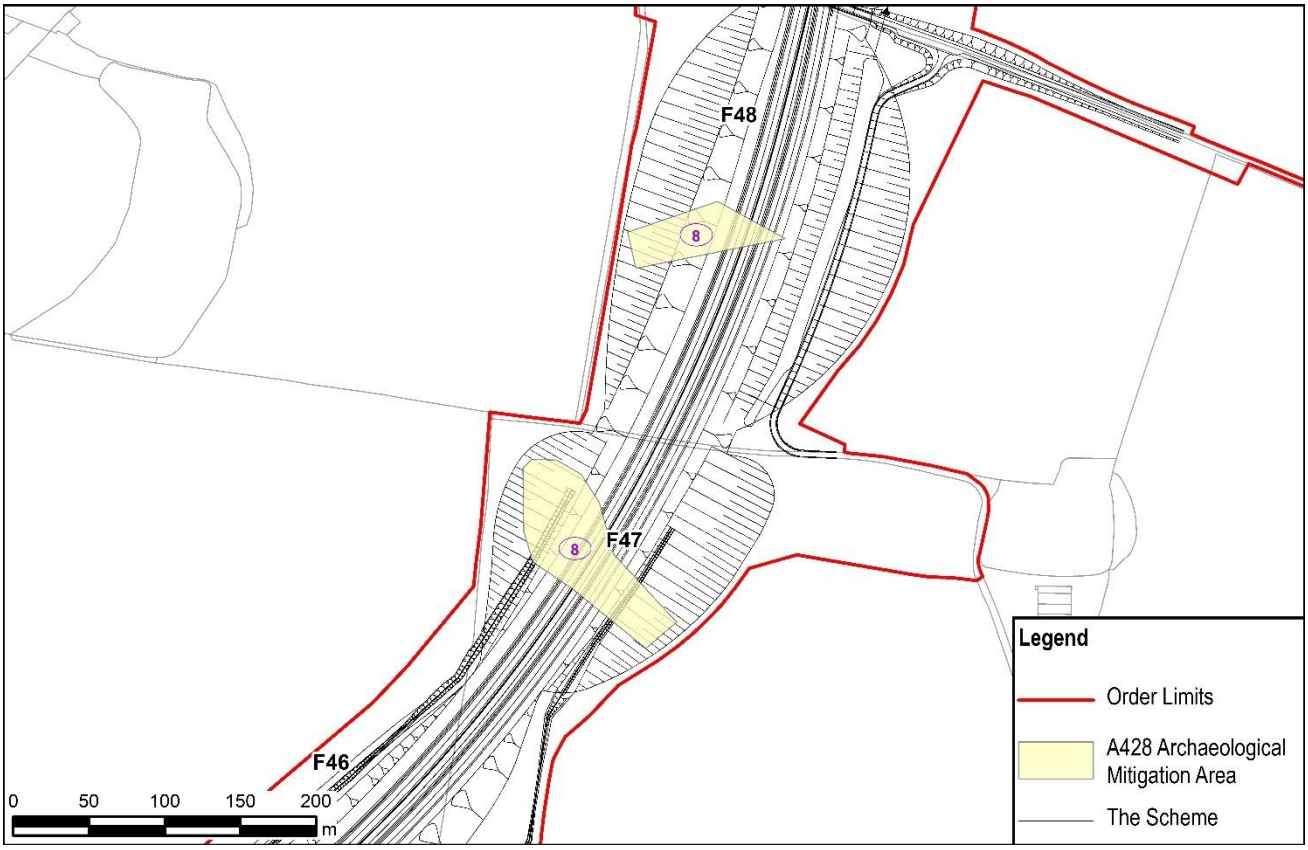
a. Romanisation

b. Rural settlements and landscapes

c. Dating

i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 8	
Designation:	Non-designated
Field Number:	47, 48
Reference IDs:	None
Location (NGR):	519193, 255974
Site area (approximate):	0.8 ha



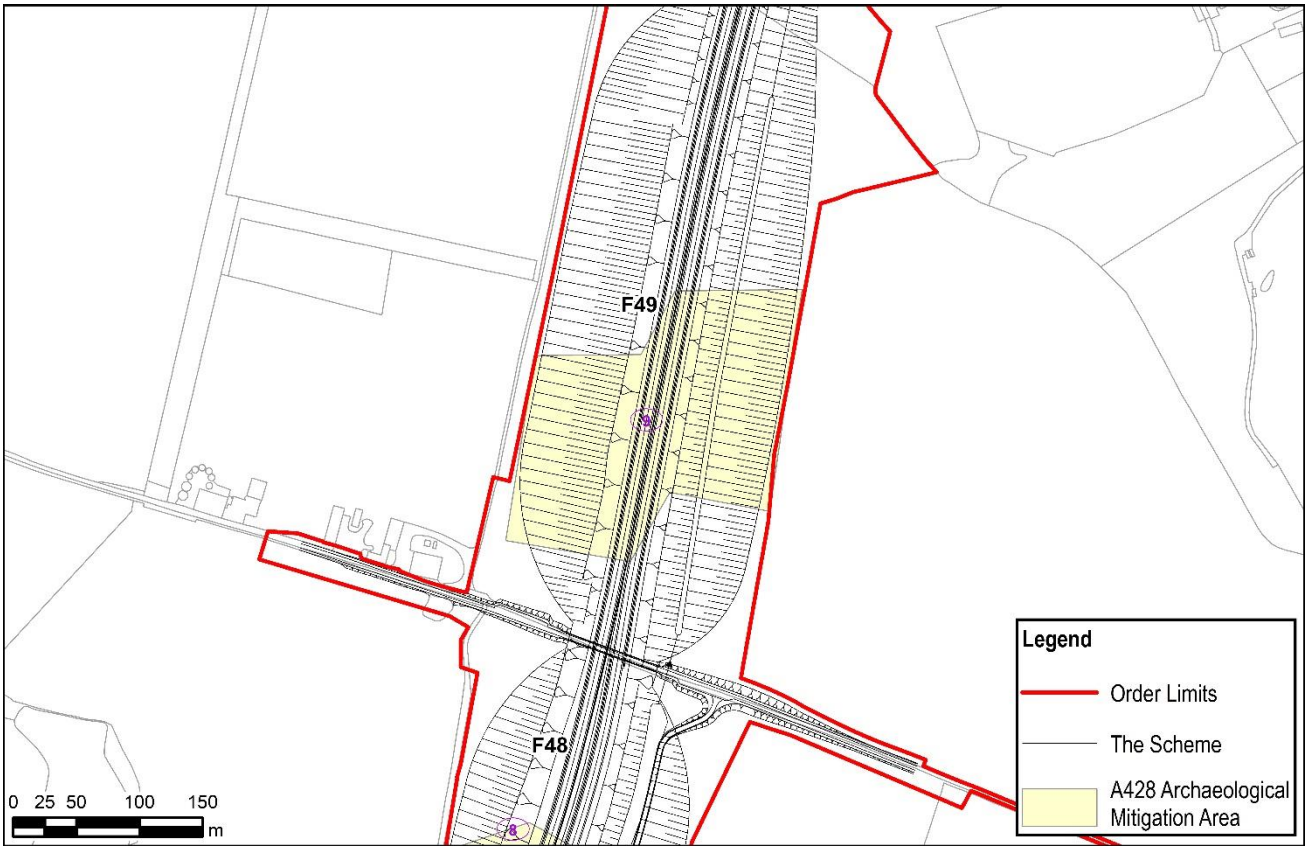
Description

Field 47 contained a sub-oval enclosure, c.35m across located in the north-west side of the field. The enclosure contained a possible gully creating an internal partition. Elsewhere in the field there are a small number of dispersed linear anomalies which probably represent boundary ditches of indeterminate date.

Sixteen 50m trenches were excavated in Field 48. Three large shallow pits in T1071 and T1072 which produced pottery of Late Iron Age date and fragments of animal bone. Elsewhere in the field a shallow gully in T1075 and a pit in T1076 were undated. None of the archaeological features excavated were identified through geophysical survey.

Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a slight adverse significance of effect on this site.
Mitigation
Sampling of enclosure and boundaries in F47 and pits in F48
Research objectives
Iron Age a. Settlement types b. Dating e. Depositional practices l. With regard to the Scheme's east-west axis, at what point did the different character of Bedfordshire's Iron Age settlements – with a greater frequency of grain storage pits and pit alignments – become apparent. Was the Ouse a divide in this or was it a matter of gravel vs. clay geologies? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 9	
Designation:	Non-designated
Field Number:	49
Reference IDs:	**473** - Giants Parlour, a field name shown on the 1840 tithe map
Location (NGR):	519372, 256591
Site area (approximate):	3.4 ha



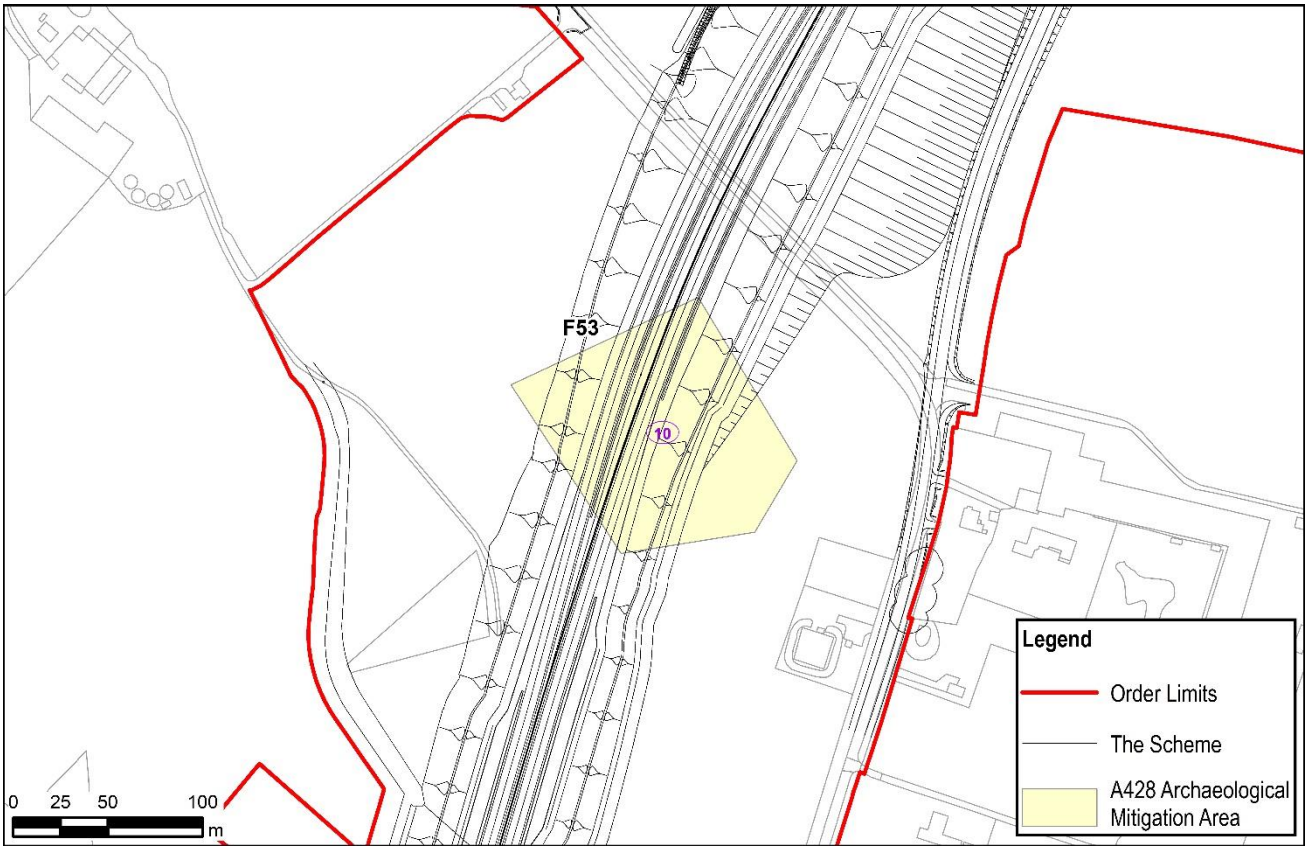
Description

Thirty-three trenches were excavated within this field.

A number of ditches are recorded within the centre of the field, two of which run parallel spaced c.10m apart and may show the edges of a trackway. The ditches produced pottery of late Iron Age date although several features produced pottery dating to either 25 BC-AD 70 or 50 BC – AD70, suggesting more than one phase of activity may be represented. Towards the east of these ditches was a ring ditch which contained a human skull, possibly related to a complete burial. 50m to the west of this is a ring gully, which may indicate the presence of a roundhouse that was not visible on the geophysical survey results. Approximately 70m to the north, is an isolated ditch which contained Roman pottery. Crossing the central part of the field and truncating the Iron Age features was a pair of straight ditches which may represent a trackway aligned E-W. Further features

including pits, gullies and ditches were identified across the Site, to the north and south of the features already described; however, they were not visible on the geophysical survey results. The possible trackway identified through the ditches could help to identify inter-relationships between nearby settlements. If dating evidence is recorded this could be useful in connecting the trackway to other sites of the same period.
Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a slight adverse significance of effect on this site.
Mitigation
Excavation targeted on features in the centre and north of the field
Research objectives
Iron Age a. Settlement types b. Dating d. The agrarian economy, field systems, and the areas between e. Depositional practices f. Burial and the treatment of human o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 10	
Designation:	Non-designated
Field Number:	53
Reference IDs:	**MCB17211** – Undated and medieval features recorded during watching brief and evaluation. Features consisted of three undated gullies and the furrows of a medieval ridge and furrow field system. Also finds of a single prehistoric flake and a small quantity of medieval pottery.
Location (NGR):	519653, 257587
Site area (approximate):	1.23 ha



Description

Twenty-seven trenches were excavated in this field. In Field 53 an oval enclosure identified by the geophysical survey on the south-facing slope was revealed to be middle to late Iron Age in date. Elsewhere two pits, a possible waterhole and two ditches were present but undated. The large oval enclosure measured 94m in length, north-west to south-east, by at least 60m wide. The interior of the enclosure contained the remains of a possible roundhouse, a possible internal subdivision in and a pit. The location of the enclosure is perhaps significant, in that it was on a prominent south

facing slope, although not visible from the other side of the hill to the north-east, and there was easy access to water at the base of the slope to the south-west.

Colluvium and a paleochannel were recorded along the beck and this area will undergo geoarchaeological assessment (not just within area on plan).

Scheme impact

The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a moderate adverse significance of effect on this site.

Mitigation

Excavation

Geoarchaeological Assessment

Mapping of ridge and furrow

Research objectives

Iron Age

a. Settlement types

b. Dating

e. Depositional practices

o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

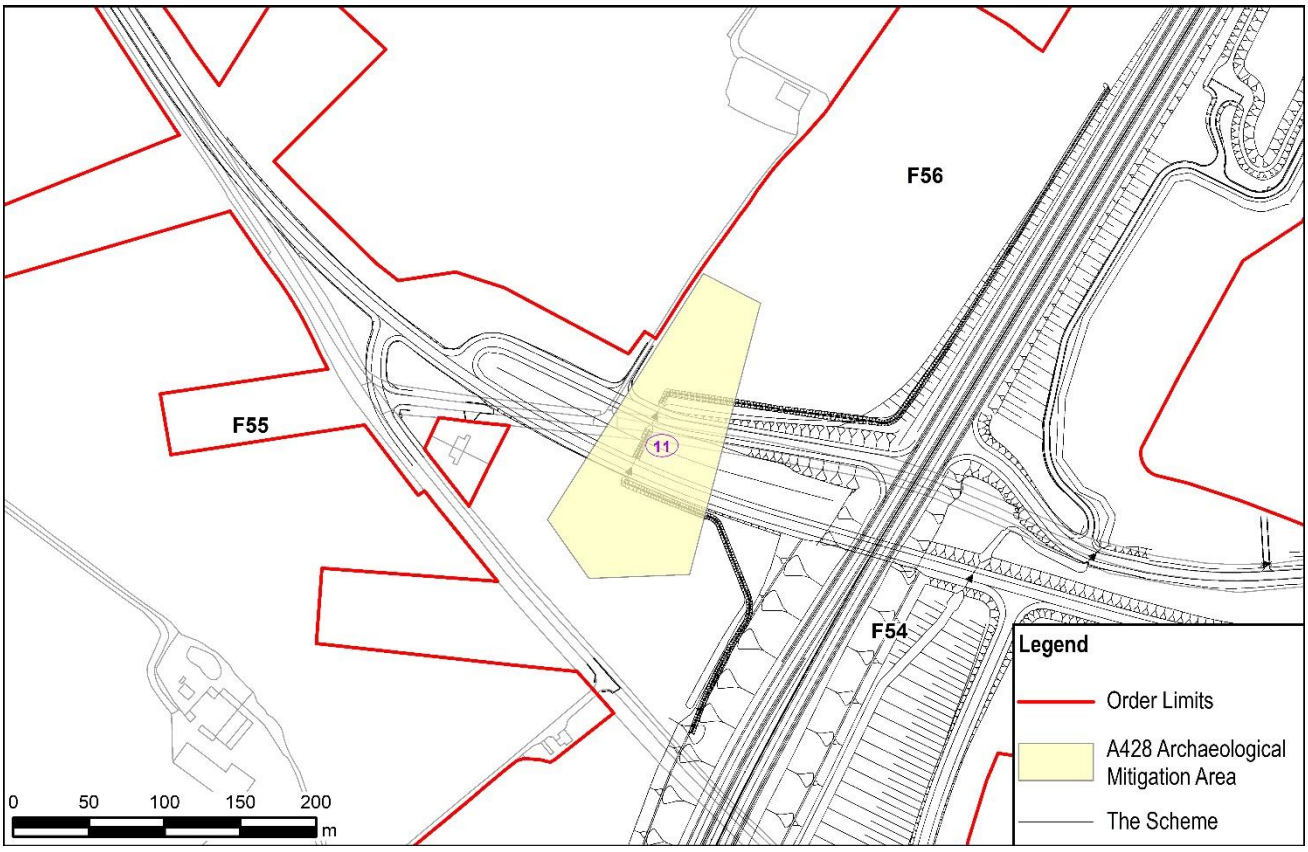
u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Post-Medieval

b. Landscape

Site 11	
Designation:	Non-designated
Field Number:	54, 56
Reference IDs:	**MCB21136** - Enclosures adjacent to Rectory Farm Cottages, Abbotsley. Recorded from 2013 aerial photography. **ECB2121** - Watching brief and trial trenching were undertaken at Potton Lane, Eynesbury Hardwicke. Evidence of medieval ridge and furrow was found along with medieval and post-medieval pottery and a single prehistoric flint flake.
Location (NGR):	519800, 257816
Site area (approximate):	1.48 ha



Description

Forty trenches were excavated in this area.

Field 54 contains a large oval ditched enclosure which measured approximately 50m long, north to south, by 45m wide, east to west. A possible entranceway into the main enclosure is visible in the

geophysical survey data for the field. The interior of the enclosure exhibited a complex arrangement with a central internal space surrounded by five or six enclosures. Possible annexes to the exterior of the enclosure were located to the east and north-west sides (the latter may have been part of the original enclosure rather than an annex), and a ditch extended south from the southern side of the enclosure. It is possible that the internal enclosure ditches recorded in T40 represent a possible roundhouse. The enclosure complex and associated features have been broadly dated to the Iron Age based on the pottery recovered from the excavated sections.

Field 54 presents an almost complete Iron Age settlement; however, the absence of isolated features and structures (pits and postholes) within the evaluation may indicate a higher level of truncation than other similar sites, but as it was possibly sitting amongst other nearby and possibly contemporary Iron Age settlements (Fields 53 and Fields 56/7) the remains are considered of regional significance.

Scheme impact

The site would be permanently affected by the construction of the new dual carriageway, amendments to Potton Road, a soil storage area and a multiple purpose construction area. The construction of the Scheme would have a moderate adverse significance of effect on this site.

Mitigation

Excavation

Research objectives

Iron Age

a. Settlement types

b. Dating

e. Depositional practices

o. There is the potential to explore whether there were ‘different’/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

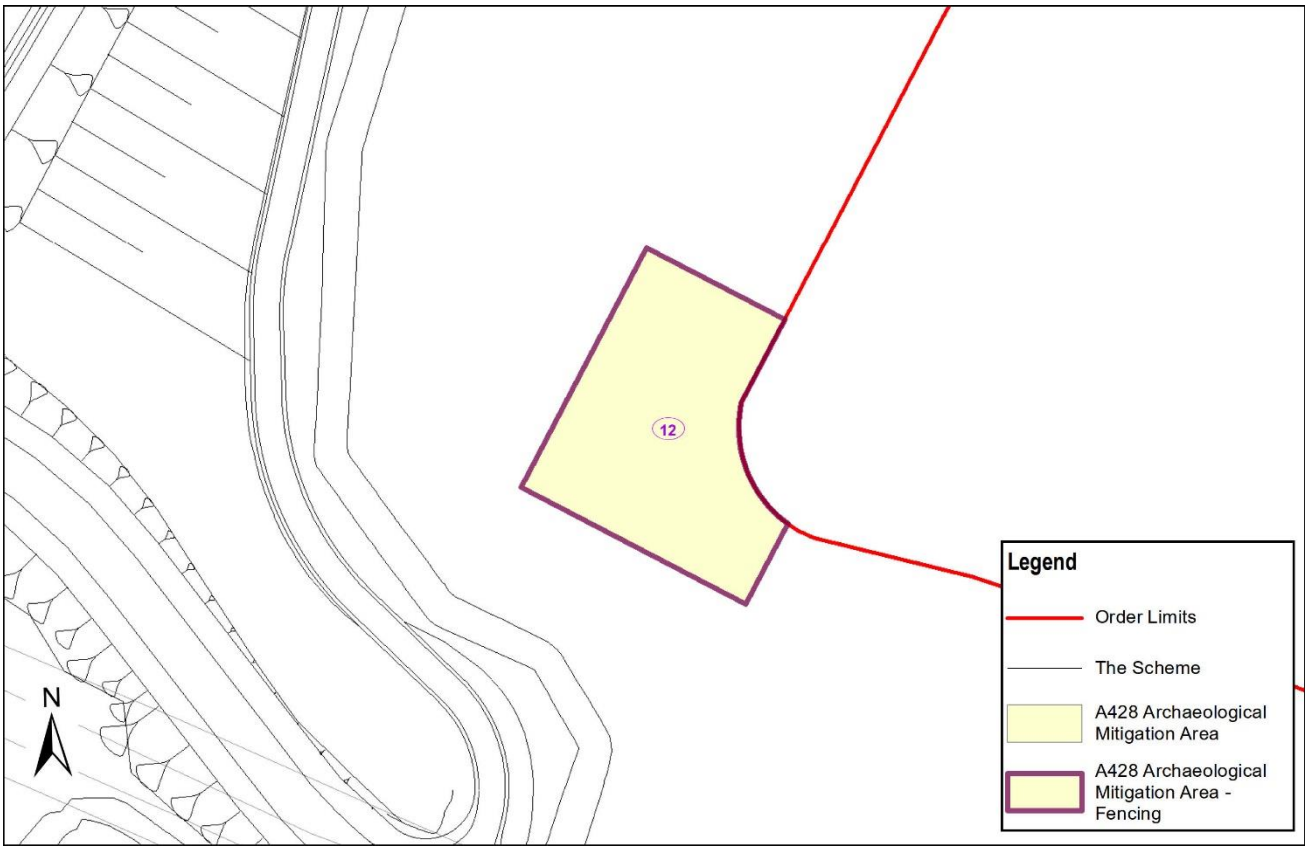
s. What was the purpose and function of the various cellular enclosures? Do these relate to functional differences (e.g. livestock vs. occupation) and/or multiple family-unit usage?

t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 12	
Designation:	Non-designated
Field Number:	56
Reference IDs:	**MCB18832** – Pits recorded on 1996 aerial photography in Eynesbury Hardwicke. **MCB18836** – Ditches forming possible enclosure plus adjacent ditches, recorded on 1996 aerial photography in Eynesbury Hardwicke.
Location (NGR):	519794, 258082
Site area (approximate):	0.09 ha



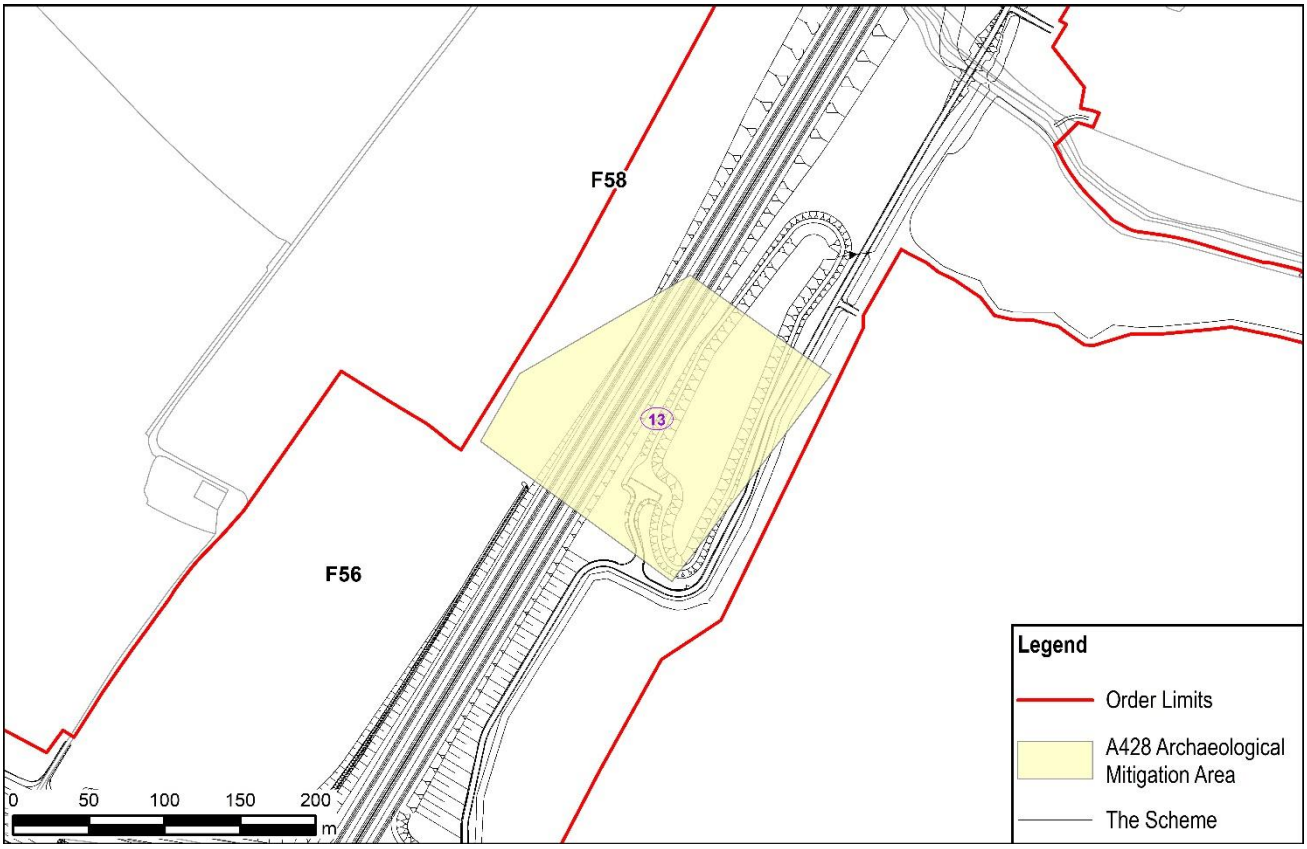
Description

Twenty-eight trenches were excavated in this field.

A cluster of Middle to Late Iron Age features in the east of the field relate to a group of enclosures which extend westwards beyond the DCO into Field 57, and form part of the enclosure complex recorded in Field 54. A second enclosure extending to the south appeared to be cut by the main enclosure ditch, so could relate to an earlier phase, but it seems likely that the features are contemporary, and both contained pottery of Middle to Late Iron Age date. Further to the south in the same trench an undated ditch may be part of the same complex, and an undated pit in another

trench may also be associated. A second cluster of features of Middle to Late Iron Age date correlated with an anomaly on the geophysics survey in the south-east of the field.
Scheme impact
None.
Mitigation
Fence off
Research objectives
N/A

Site 13	
Designation:	Non-designated
Field Number:	58
Reference IDs:	**MCB18833** – Ditches forming a possible enclosure recorded on 1996 aerial photography. **MCB18835** – Levelled ridge and furrow recorded on 1996 aerial photography in Eynesbury Hardwicke.
Location (NGR):	520015, 258389
Site area (approximate):	2.5 ha



Description

A sub-square Iron Age/Roman enclosure was located in the south-east corner of Field 58. The external boundary ditch was revealed and excavated. Within the enclosure, divisions are present, separating the north-east corner of the enclosure. Two roundhouse drip gullies have been excavated as well as a number of internal pits/postholes. A further possible drip gully was present. Boundary ditches outside the enclosure were excavated but undated.

Within the enclosure, divisions are present in T1172, separating the north-east corner of the enclosure. Two roundhouse drip gullies have been excavated in T1176 (one of these contained

large quantities of slag) as well as a number of internal pits/postholes. A further possible drip gully was present in T1183.

T1236 had soil build-up possibly related to Hen Brook and/or ploughing, and four small possible pits (more likely rooting) were sealed by this. F62 contains a possible palaeochannel, and the field was waterlogged. Potential for palaeoecology/geoarchaeology.

Scheme impact

The site would be permanently affected by the construction of the new dual carriageway and an attenuation basin. The construction of the Scheme would have a moderate adverse significance of effect on this site.

Mitigation

Full excavation

Research objectives

Iron Age

a. Settlement types

b. Dating

e. Depositional practices

g. Iron Age/Roman transition

n. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute?

o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

s. What was the purpose and function of the various cellular enclosures? Do these relate to functional differences (e.g. livestock vs. occupation) and/or multiple family-unit usage?

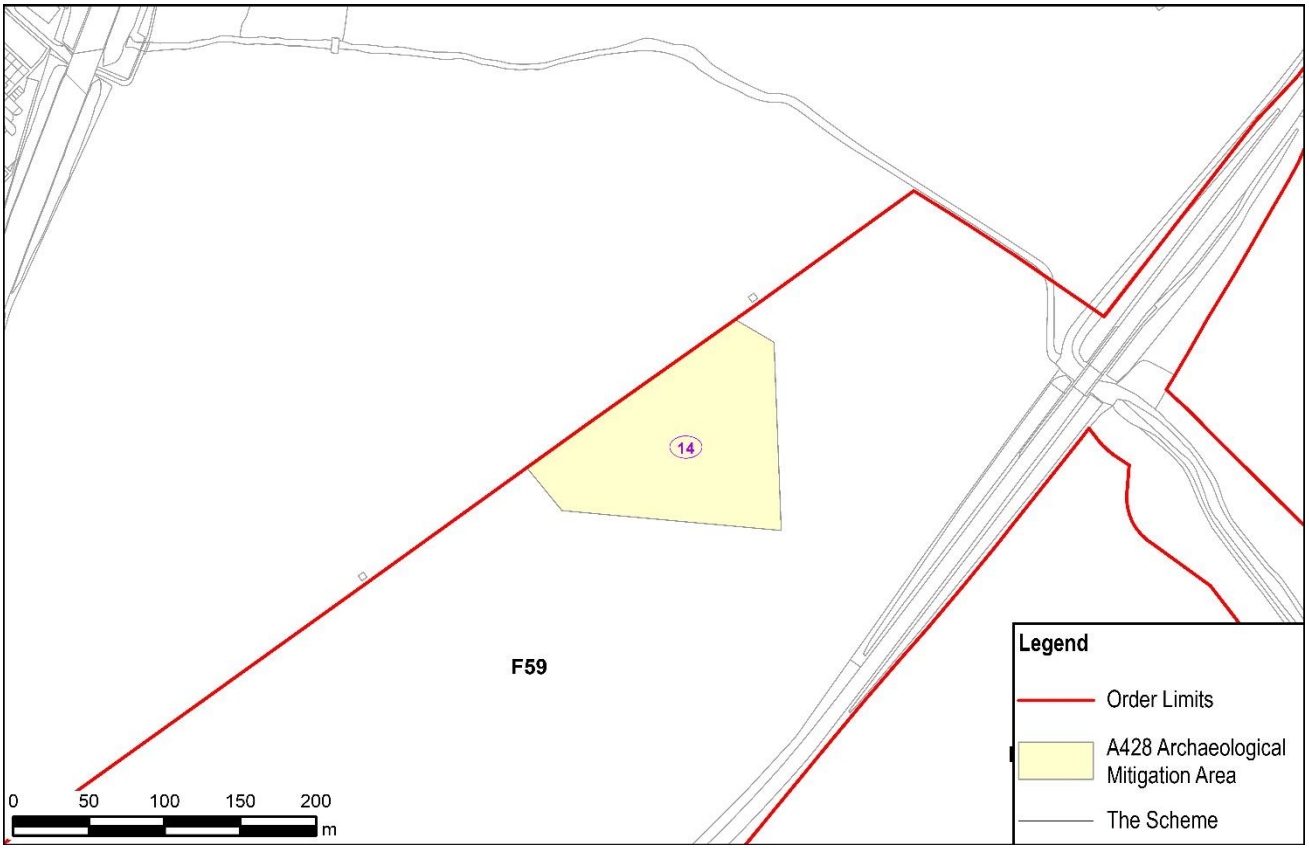
u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Roman

a. Romanisation

Site 14	
Designation:	Non-designated
Field Number:	59
Reference IDs:	**MCB18829** – A rectangular enclosure with adjacent ditches forming another enclosure/ field division, recorded on 1996 aerial photography. **09972** - Rectilinear enclosures recorded on aerial photography as two enclosures with attached linear features. **01319** - A flint blade found in a drainage ditch. **ECB3024** – Evaluation carried out at Wintringham ahead of a housing scheme. Extensive archaeological remains were identified by geophysical survey and trial trenching. Iron Age settlement evidence was recorded and remains were truncated by medieval ridge and furrow and modern ploughing.
Location (NGR):	519478, 258642
Site area (approximate):	1.46 ha



Description
A fieldwalking survey, air photo survey, geophysical survey and trial trench evaluation were undertaken within the Site in 2008-2009 by Oxford Archaeology East. The air photo survey identified cropmarks in the south-west of field 59 but did not locate the features now known to be located within the Site. The geophysical survey identified a larger density of features than the air photos suggested with further features identified across the field including a trackway and associated settlement features located within the Site. The fieldwalking survey only picked up a background scatter of Roman and medieval pottery across the field and surprisingly, no finds were identified within the immediate vicinity of the Site. The trial trenching results were consistent with the geophysical survey results, confirming the presence of a later Iron Age trackway, discrete pits and other discrete features and linears associated with the settlement activity. The trackway consisted of two roughly parallel ditches aligned north-west to south-east. The southern-most ditch measured between 1.7m and 2.6m wide, and between 0.28 and 0.53m deep with a U-shaped profile and the northern-most ditch measured between 0.2m and 1.54m wide, and between 0.04m and 0.4m deep, also with a U-shaped profile. Evidence for a mettled surface was identified within the trackway, consisting of a layer of compacted pebbles measuring 2.8m long, 1.8m wide and 0.1m thick. A number of discrete features consisting of five pits and a post hole were identified within the Site with the largest pit measuring 1.58m wide and 0.39m deep. Several other features were identified in the geophysical survey which were not confirmed by the trial trenching including a sub-circular feature which probably represents a roundhouse or small enclosure and further linear features to the south and parallel with the trackway. A further geophysical survey was undertaken in 2019 as part of the pre-application archaeological evaluation for the Scheme which identified the same features that were located during previous archaeological investigations. Namely, two parallel diches, c15m apart with a C-shaped ditch to the south, which possibly defined part of a small incomplete enclosure. Further anomalies suggested the presence of pits and other linear features in the same area.
Scheme impact
The site would be permanently affected by the construction of the main site compound. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation. NB It is proposed that this site will be excavated as part of Urban and Civic's ongoing programme of archaeological work. This has yet to be confirmed.
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation

e. Depositional practices

h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'.

i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction?

o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

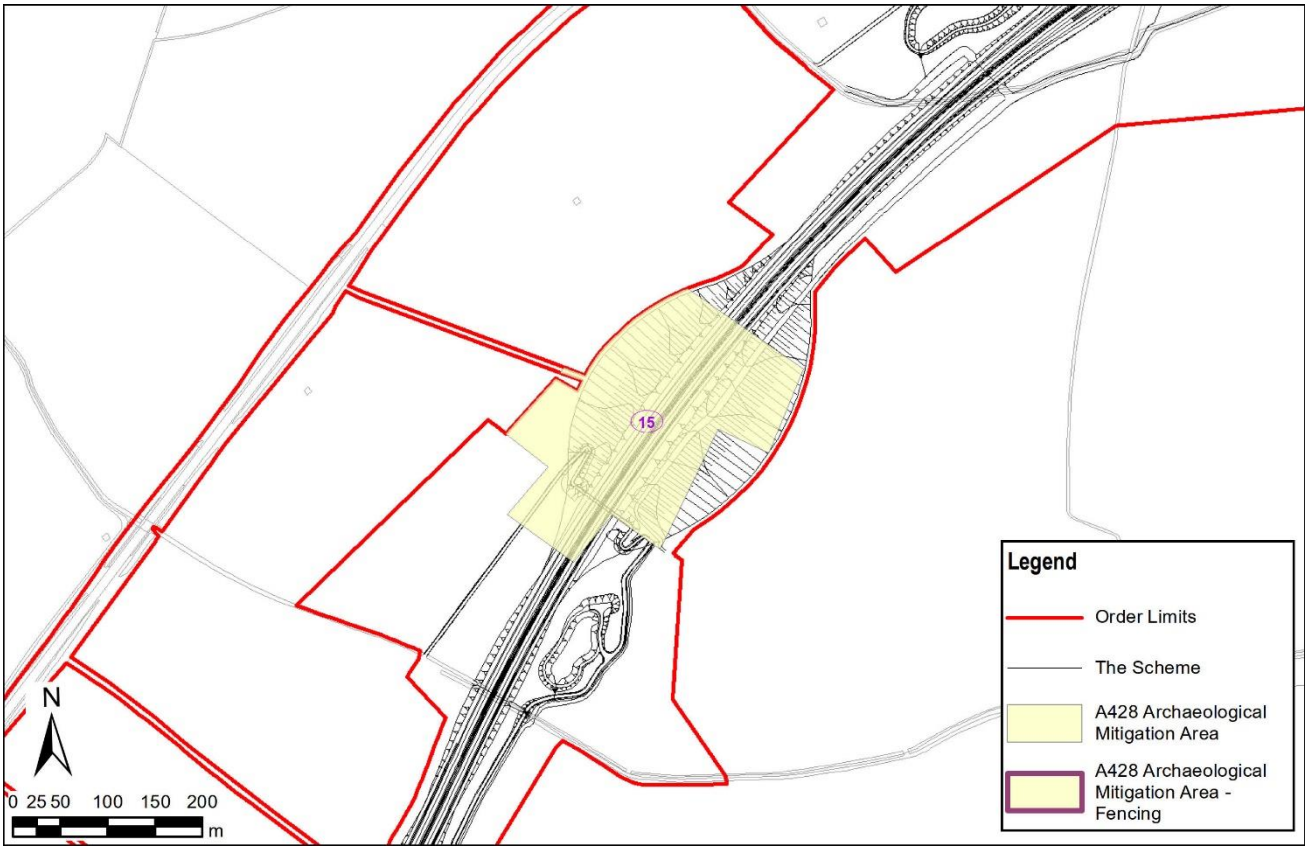
q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 15	
Designation:	Non-designated
Field Number:	64, 65
Reference IDs:	**MCB18824** – Ditches forming a possible enclosure recorded on 1996 aerial photography. **04064** – A pit observed in section, measuring 6m long and 0.5m deep. **ECB2017** - Field walking carried out in 1984 at the St Neots Bypass.
Location (NGR):	520702, 259587
Site area (approximate):	4.86 ha



Description

A large Roman farmstead was recorded within this field. This was recorded on geophysical survey and aerial photography (MCB18824) and confirmed during evaluation excavation. The geophysical survey results show that a significant proportion of the settlement extends to the north and beyond the Order Limits. On the eastern edge of the site, two trenches contained the only confirmed Iron Age archaeology identified within the field. There are a small number of ditches likely forming enclosures focused outside of the Order Limits. The main site contained the eastern portion of a predominantly Roman settlement dating from the 2nd – 3rd century AD. Relatively large quantities of

pottery have been recovered from the features. Large shallow pits were identified as likely used for the extraction of clay. West of these, but within the same enclosed area, is a possible kiln. To the west and north of this industrial area are a series of sub-square enclosures with evidence of multiple recuts and containing ceramics of Late Iron Age and Roman date. At the north end of the field, a trench contained an isolated pit filled with burnt stones, although no dating evidence was recovered from it. A ditch found to be truncated by a pit was also recorded through the geophysical survey and trenching, and was interpreted as a quarry, similar to those found to the south, but dating to the Early to Middle Saxon period.

Scheme impact

The site would be permanently affected by the construction of the new dual carriageway, a soil storage area and landscape planting. However, a large portion of the site extends outside of the Scheme boundary and these remains will be unaffected. The construction of the Scheme would have a moderate adverse significance of effect on this site.

Mitigation

Full excavation

No work is anticipated along the footpath to the west. Should this be required, archaeological work will be needed.

Research objectives

Iron Age

g. Iron Age/Roman transition

n. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute?

Roman

a. Romanisation

b. Rural settlements and landscapes

c. Dating

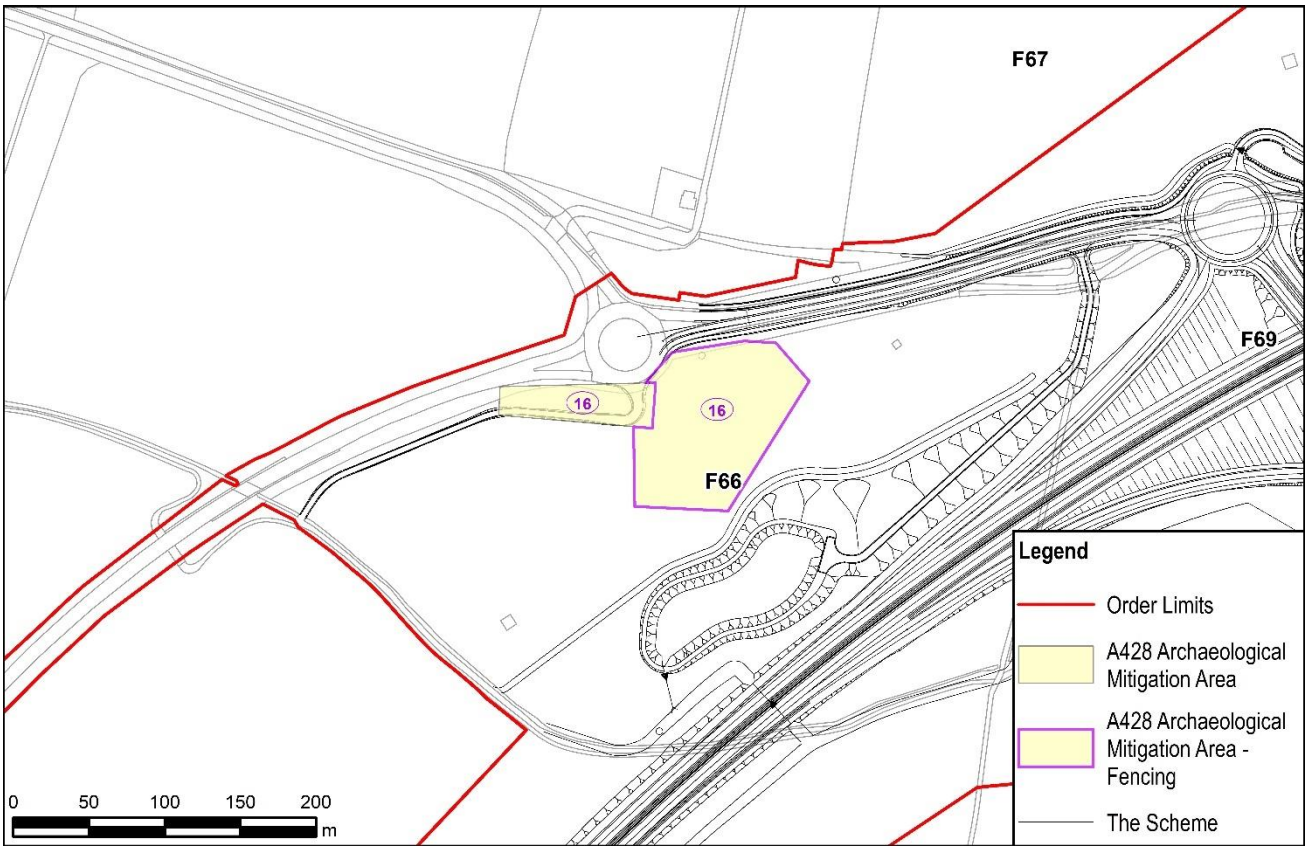
e. Manufacturing and industry

g. Questions concerning the status of the Romano-British settlements along the Scheme and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham. There, closely packed and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements?

i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

m. Does the large number of local kilns indicate that pottery was largely locally produced?

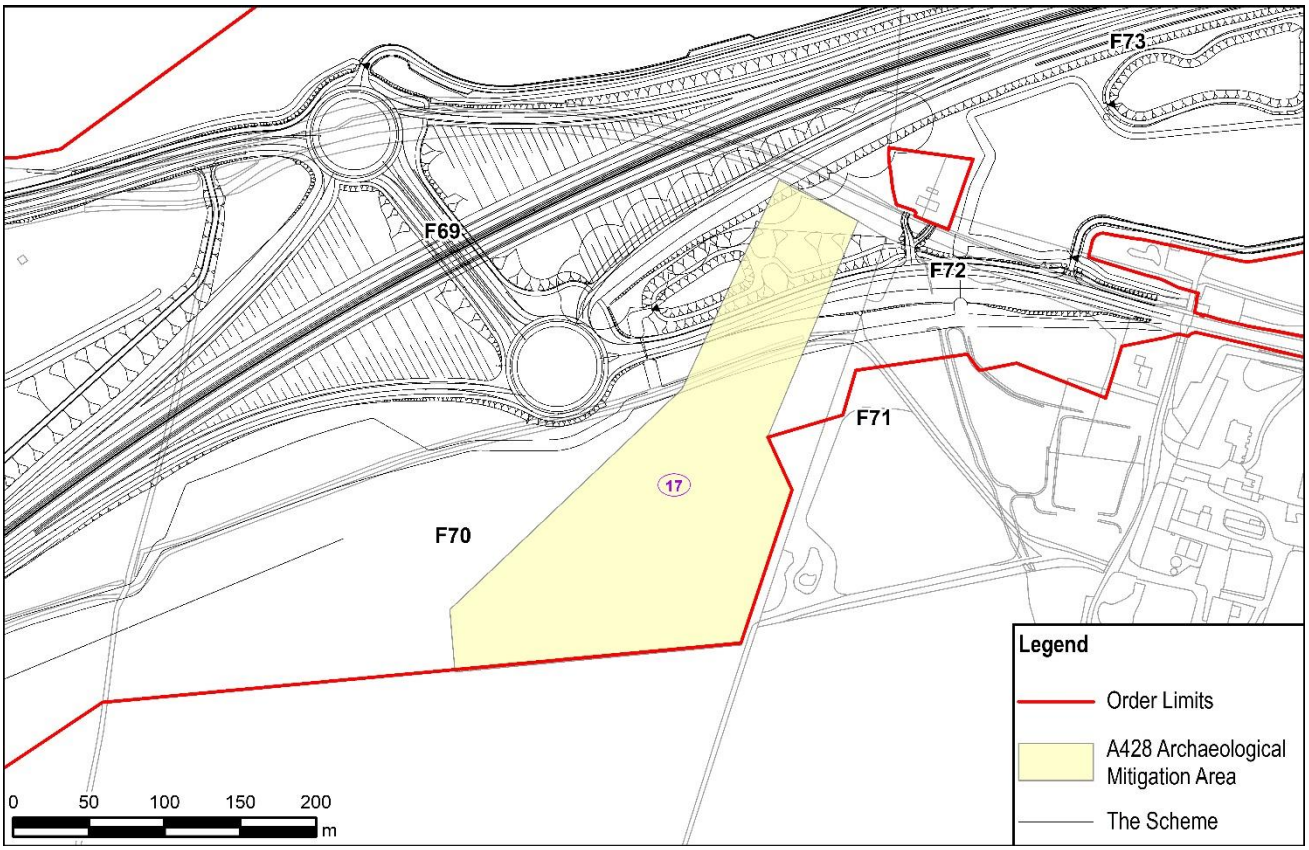
Site 16	
Designation:	Non-designated
Field Number:	66
Reference IDs:	**MCB19041** – Ditches which may represent part of an irregular enclosure and adjacent features with possible pits nearby, recorded on 1996 aerial photography. **04062** - Undated V-shaped ditches observed in section, 1m wide and 0.4m deep below top of subsoil. **03535** – A flint flake found in a drainage ditch. **03539** – A flint flake found in a drainage ditch. **505** – Roman road running from Sandy to Godmanchester. A section measuring 17ft (5m) wide and surfaced with rammed gravel was revealed in 1954. **ECB2017** - Field walking carried out in 1984 at the St Neots Bypass.
Location (NGR):	520970, 259889
Site area (approximate):	1.17 ha (0.25 ha excavation, 0.92 ha fenced off)



Description

Twenty-seven trenches were excavated in this field. A probable Iron Age or Roman complex is located in the north of the field. Geophysical survey identified features consisting of a series of linear and an irregular shaped feature, defining separate phases of enclosure ditches. There is also a short linear anomaly parallel to the adjacent field boundaries which does not follow the curves of the surrounding ridge and furrow. It may represent a side ditch of the Sandy to Godmanchester Road, the projected line of which runs close to this feature. Excavations revealed a large hilltop enclosure and additional external boundaries which largely match the geophysical survey results, as well as 1st and 2nd century pottery which was identified from the surface of these features. All of the boundaries (including internal divides) were found to represent substantial features. A potential roundhouse drip gully was also identified. A dump of sand and cobbles was located close to the existing trackway, although its purpose is unknown.
Scheme impact
A small part of the site will be permanently affected by the construction of a local access road. The majority of the site will not be affected by the Scheme and will be fenced off to preserve it. The construction of the Scheme would have a slight adverse significance of effect on this site.
Mitigation
Sampling of the area impacted by the Scheme Preservation of the rest of the Site
Research objectives
Roman b. Rural settlements and landscapes c. Dating g. Questions concerning the status of the Romano-British settlements along the Scheme and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham Park. There, closely packed and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements? i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 17	
Designation:	Non-designated
Field Number:	69, 70
Reference IDs:	**MCB17569/505** – Roman road running from Sandy to Godmanchester. A section measuring 17ft (5m) wide and surfaced with rammed gravel was revealed in 1954.
Location (NGR):	521334, 259989
Site area (approximate):	3.49 ha



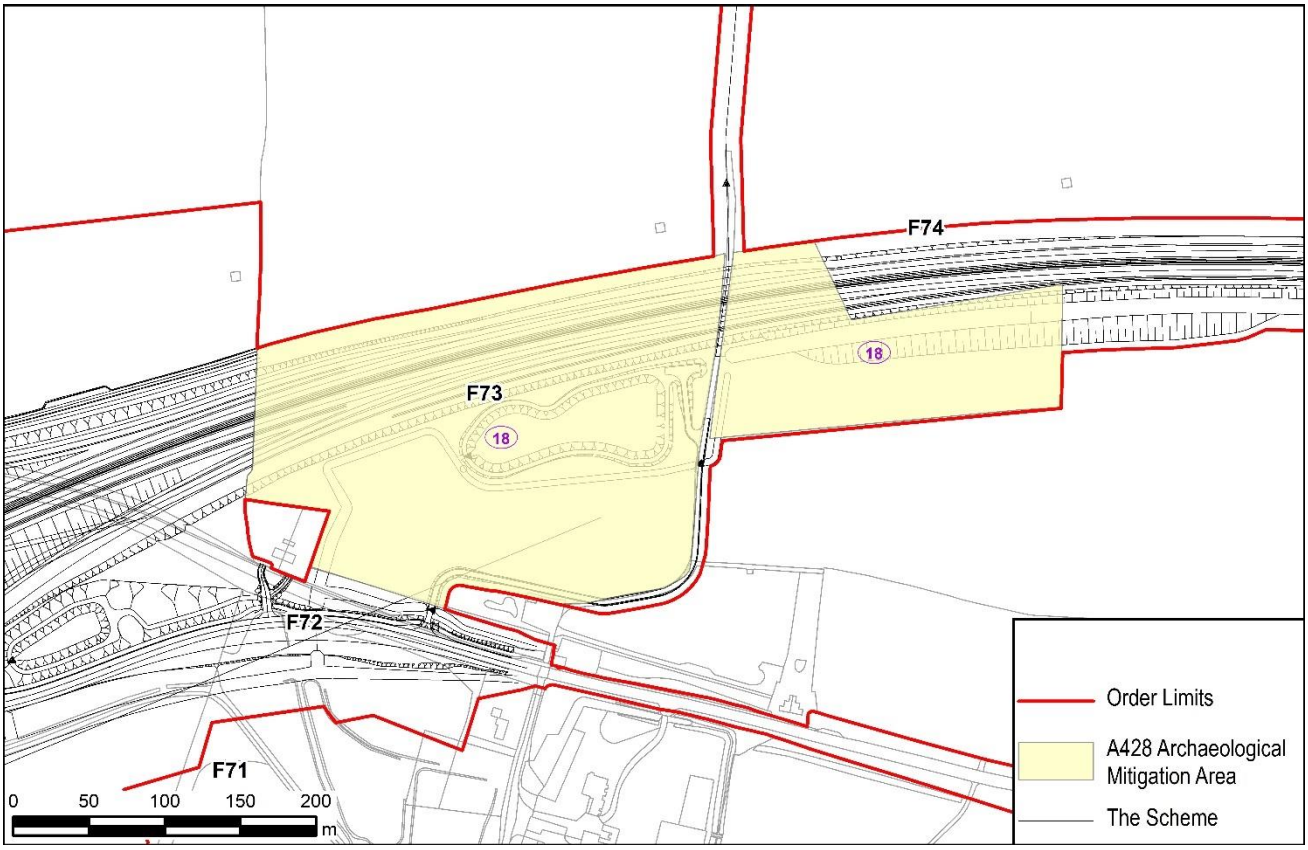
Description

Towards the south of Field 70 was a small number of features of late Bronze Age and Iron Age date. A possible roundhouse drip gully and a stone-filled pit and associated gully produced late Bronze Age pottery and a number of ditches produced Iron Age pottery.

A linear trackway with associated enclosures was identified through the geophysical survey in the east of the field and was confirmed as medieval in date during the trial trenching. Features produced pottery dating to the 11th and 12th centuries. The settlement extends along a gently curving linear trackway, which is bordered on either side by ditches. Either side of the trackway were a number of enclosures, defined by ditches. Several

isolated features were also identified in the field, which were not visible on the geophysical survey results.
Scheme impact
The site would be permanently affected by a soil storage area. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation of Bronze Age features. Sampling of Saxon-Norman remains to establish the relationship with the associated DMV Mapping of ridge and furrow
Research objectives
Bronze Age a. Settlement activity b. Dating c. Field Boundaries and Field Systems d. Mitigation should focus on relationships between site clearance, landscape partition, settlement and farming practices; e. The site in Field 70 site lies at a higher elevation than the sites in Fields 34/35 and 44, which lie within the valley of the River Great Ouse. What is the relationship between settlement and topography/geology? (See also settlement activity section above). Iron Age m. Was there any relationship to the area's more scant evidence of preceding (unenclosed) Late Bronze/earlier Iron Age usage? Were these in anyway ancestral to the subsequent Iron Age enclosed settlements, perhaps representing seasonal forays onto the heavier lands prior to permanent settlement? Early Medieval and Medieval a. Rural settlement b. Landscapes Post-Medieval b. Landscapes

Site 18	
Designation:	Non-designated
Field Number:	73, 74
Reference IDs:	None
Location (NGR):	521853, 260133
Site area (approximate):	7.57 ha



Description

Twenty seven trenches were excavated in Field 73 and 22 trenches were excavated in Field 74.

Two small Iron Age enclosures were located in the centre of Field 73, likely related to the larger enclosure to the east in Field 74. To the north-east and west of these is a predominantly Roman site, dated to the 1st – 2nd century AD. A rectangular enclosure measuring c.75 metres x 55 metres was recorded containing several smaller ditches, pits and post-holes.

To the north-east and south of this enclosure are further enclosures and boundaries which extend from Field 73 and into Field 74. These features extend outside the Order Limits and are of Iron Age date. The evidence detailed a complex settlement and a long period of occupation. In the north-east corner of Field 73, several ditches were recorded. These systems could be related and date to

the 1st – 2nd century. A further small enclosure that has been excavated likely related to the Roman activity. The southern portion of the site contained medieval/post-medieval field boundaries (matching existing boundaries to the west and east) as well as further Roman features that included a possible east-west aligned trackway.
Scheme impact
The Site would be permanently affected by the construction of the new dual carriageway, an attenuation basin and a soil storage area. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices g. Iron Age/Roman transition h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? n. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Roman

a. Romanisation

b. Rural settlements and landscapes

c. Dating

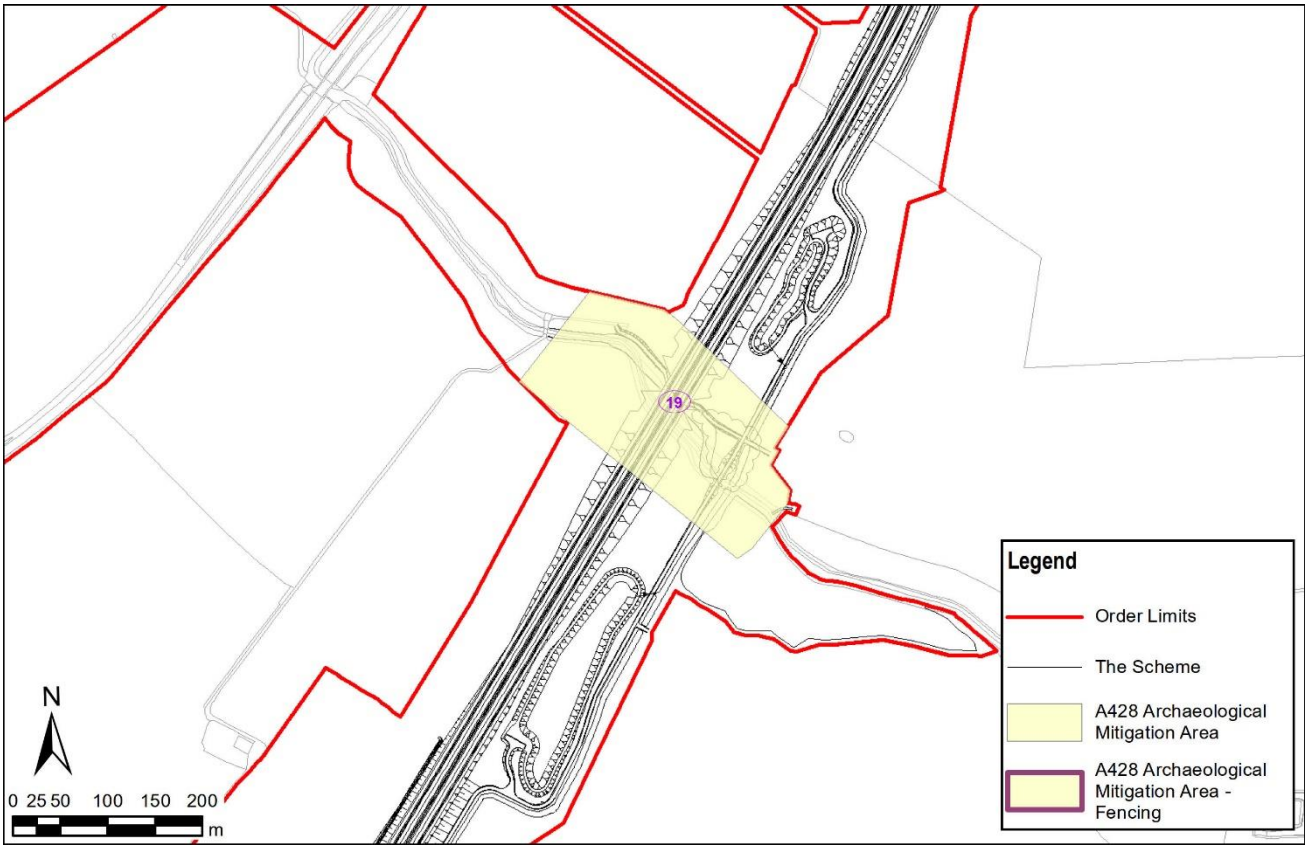
d. Infrastructure

g. Questions concerning the status of the Romano-British settlements along the Scheme and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham. There, closely packed and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements?

h. Did the line of the Roman roads influence settlement location, such as those in Fields 75 and 76? Are settlements linked by Roman roads, such as those in Field 73, Field 77 and those at Loves Farm to the north?

i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 19	
Designation:	Non-designated
Field Number:	58, 62
Reference IDs:	None
Location (NGR):	520158, 258538
Site area (approximate):	4.21



Description

Soil build-up in Field 58 south of Hen Brook. Palaeochannel recorded in Field 62 to the north.

Scheme impact

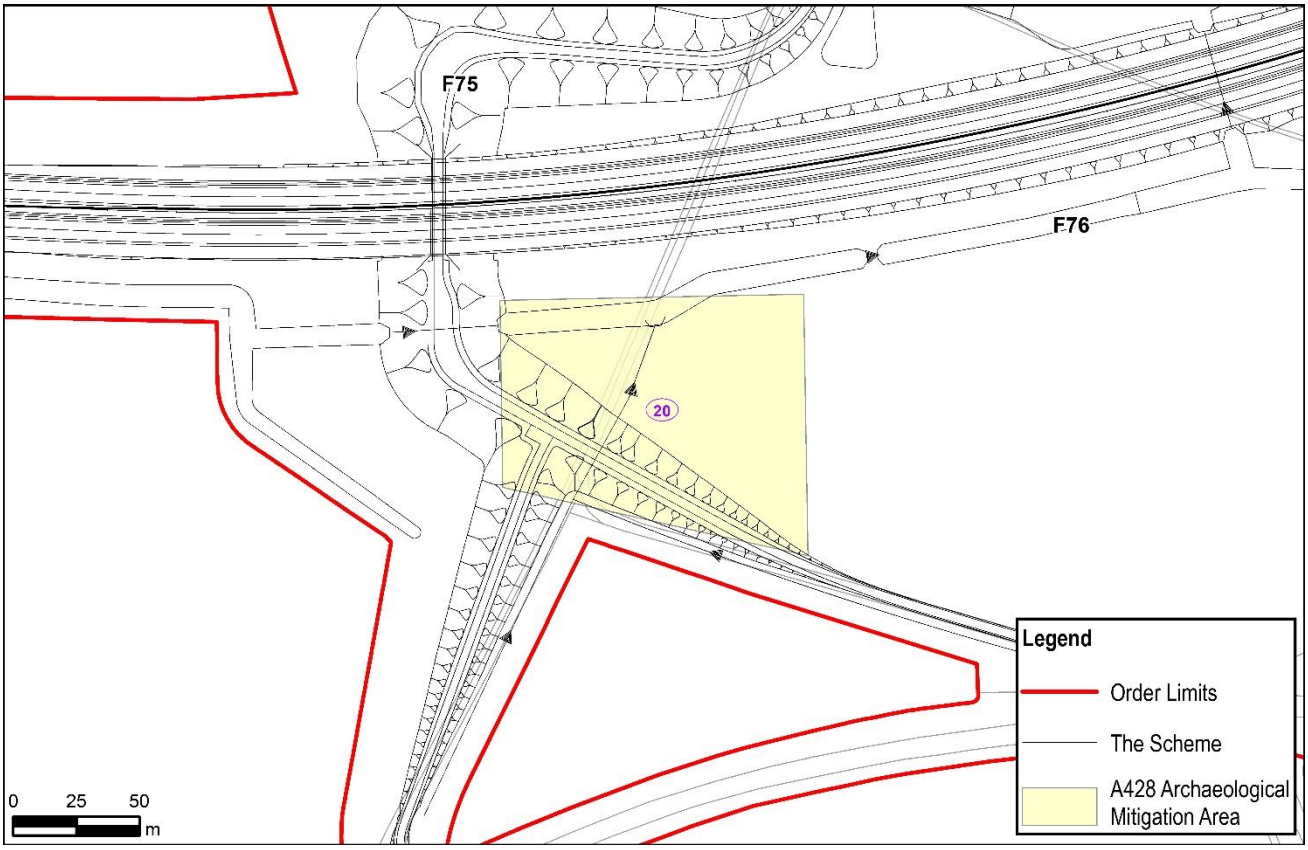
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a slight adverse significance of effect on this site.

Mitigation

Geoarchaeological and palaeoecological assessment.

Research objectives
Iron Age t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

Site 20	
Designation:	Non-designated
Field Number:	75, 76
Reference IDs:	None
Location (NGR):	522930, 260210
Site area (approximate):	1.08 ha



Description

21 trenches were excavated in this Field 75 and 19 in Field 76.

A small Iron Age enclosure was identified in the south-west corner of Field 76 and the eastern edge of Field 75, crossed by Roman Way. The external boundary ranged from 0.7 metres – 1.6 metres deep with Mid-Late Iron Age pottery and animal bone recovered from this. A small number of shallower internal divisions were present within this enclosure, most of which contained Iron Age pottery.

Scheme impact

The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a slight adverse significance of effect on this site.

Mitigation
Sample ditch and excavate enclosure. Note that work may need to be phased to enable the bridleway to be used until an alternative access is available.
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices g. Iron Age/Roman transition h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? n. A number of the major Romano-British settlements along the Scheme appear to have seen Iron Age origins. Yet, there are also many small Iron Age enclosures that clearly did not see use into Roman times. Was the Conquest the cause of their abandonment or did other factors and events contribute? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Roman

a. Romanisation

b. Rural settlements and landscapes

c. Dating

d. Infrastructure

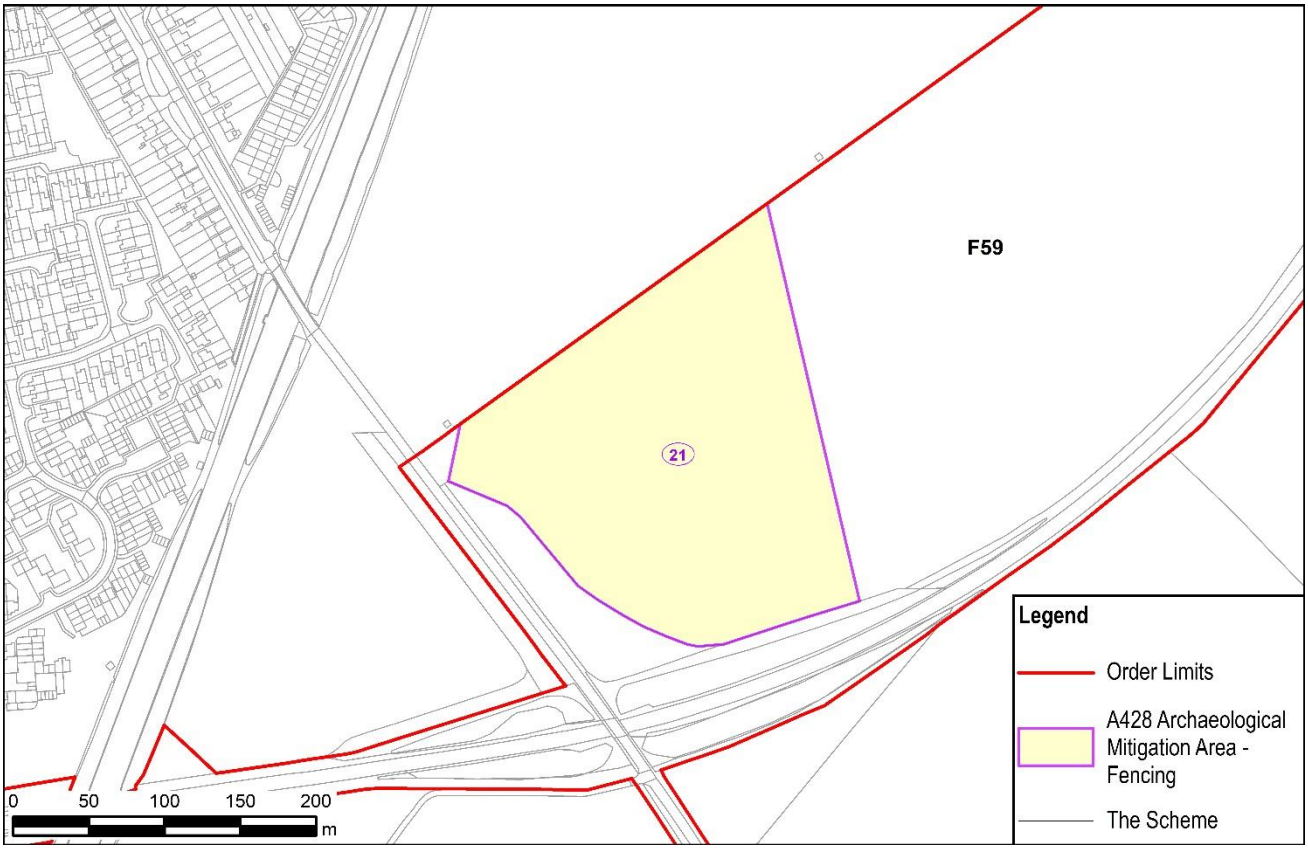
f. Finds studies

g. Questions concerning the status of the Romano-British settlements along the Scheme and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham. There, closely packed and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements?

h. Did the line of the Roman roads influence settlement location, such as those in Fields 75 and 76? Are settlements linked by Roman roads, such as those in Field 73, Field 77 and those at Loves Farm to the north?

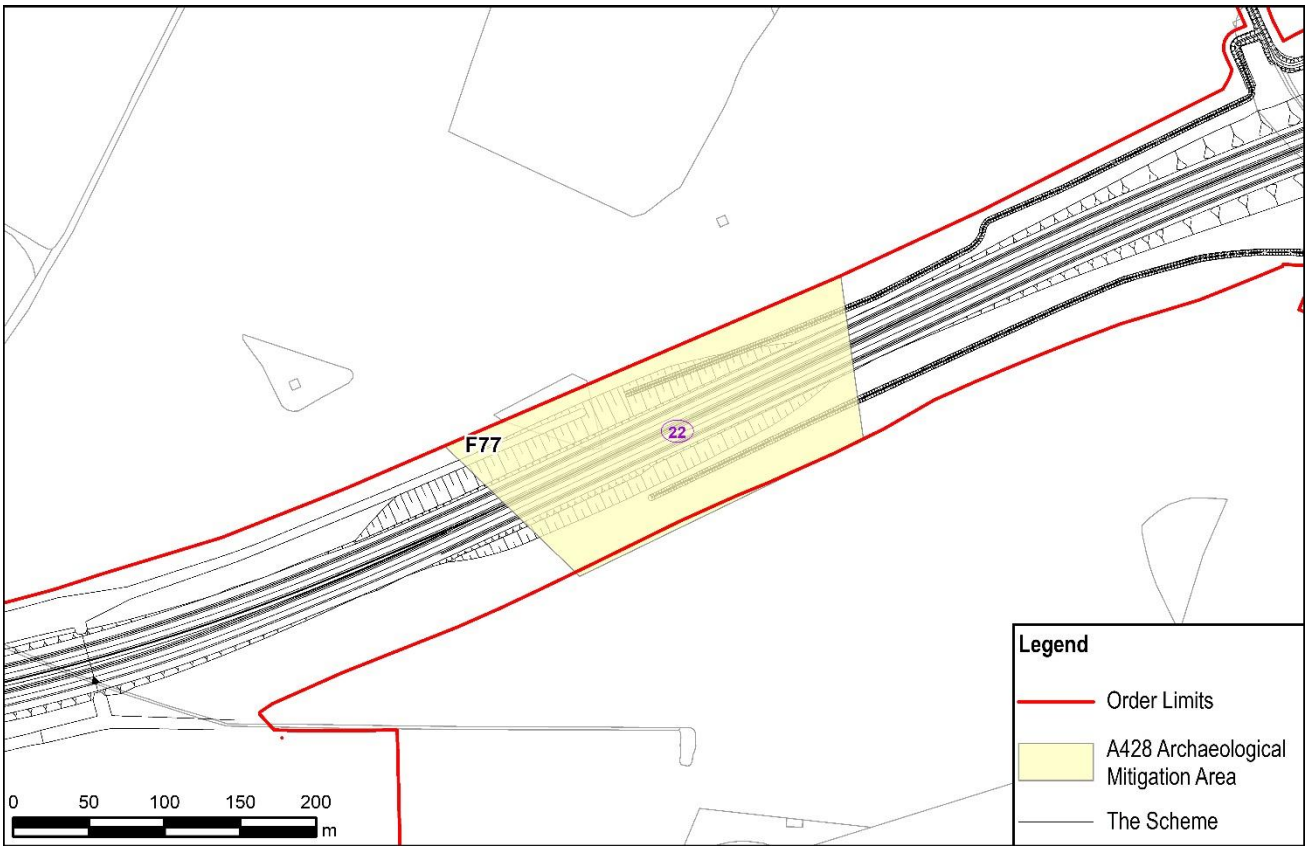
i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 21	
Designation:	Non-designated
Field Number:	59
Reference IDs:	**MCB18829** – A rectangular enclosure with adjacent ditches forming another enclosure/ field division, recorded on 1996 aerial photography. **09972** - Rectilinear enclosures recorded on aerial photography as two enclosures with attached linear features. **01319** - A flint blade found in a drainage ditch. **ECB3024** – Evaluation carried out at Wintringham ahead of a housing scheme. Extensive archaeological remains were identified by geophysical survey and trial trenching. Iron Age settlement evidence was recorded and remains were truncated by medieval ridge and furrow and modern ploughing.
Location (NGR):	519288, 258465
Site area (approximate):	4.58



Description
Wintringham Site 1. During the Iron Age, the settlement in Site 1 is described as dispersed with two separate enclosed settlements of different forms and a third smaller enclosure of unknown function. The site contained evidence of habitation, including an unusual (for the period) rectilinear building and roundhouses. In the later Pre-Roman Iron Age, activity was centred around a rectilinear field with further boundaries running parallel and perpendicular to it. There was no one area of concentrated occupation. In the Early Roman period, the large rectilinear enclosure was re-cut and a sub-enclosure added. In the south-west corner of the Site, there was a concentration of occupation debris in the area of a possible small enclosure. There could well be a house associated with this enclosure, which was not identified during trial trenching, or alternatively this area could have been associated with an area of occupation that was located to the west or south of the site. The Later Roman period (2nd – 5th century) saw a contraction of the settlement.
Scheme impact
None
Mitigation
Area to be fenced off.
Research objectives
N/A

Site 22	
Designation:	Non-designated
Field Number:	77
Reference IDs:	**MCB24576** - Linear features recorded as cropmarks on aerial photography in 2009. The cropmarks may form several enclosures.
Location (NGR):	523409, 260315
Site area (approximate):	2.72 ha

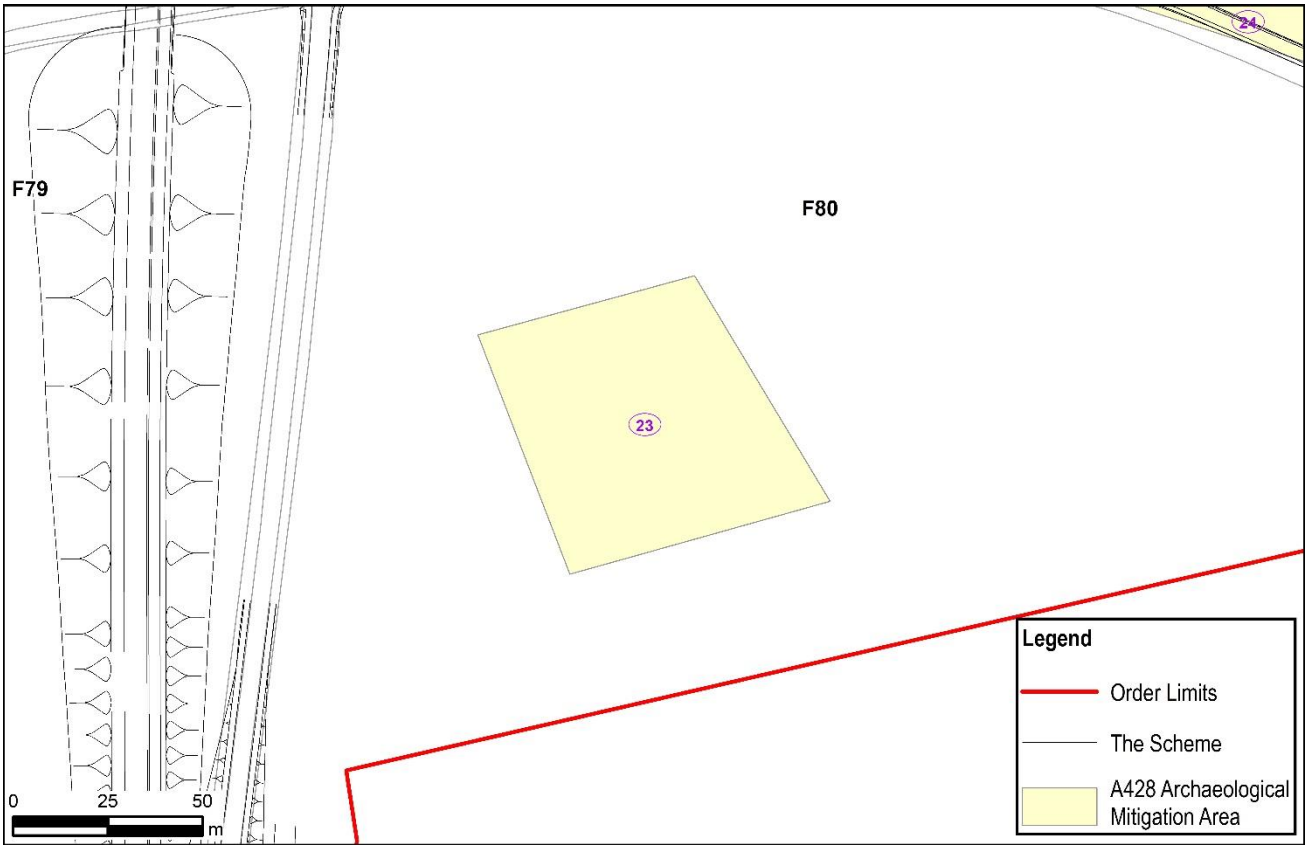


Description

The area immediately east of the exclusion zone contained the north-eastern limit of the archaeological area in F77; this comprised several sub-square enclosures dating to the early Roman period. The site has been truncated by well-preserved furrows, masking large areas of the trenches. A further large curvilinear ditch was excavated to the east of the main settlement. This dated to the same period and is probably contemporary to the site, possibly marking a field boundary or livestock area. Possible sample of this area with multi-spectral geochemical analysis of the soils.

Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Full excavation Removal of woodland under archaeological supervision. Comparison of Roman bedding trenches against ridge and furrow alignment.
Research objectives
Roman b. Rural settlements and landscapes c. Dating d. Infrastructure g. Questions concerning the status of the Romano-British settlements along the Scheme and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham. There, closely packed and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements? h. Did the line of the Roman roads influence settlement location, such as those in Fields 75 and 76? Are settlements linked by Roman roads, such as those in Field 73, Field 77 and those at Loves Farm to the north? i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings is also important. j. While lazy-bed planting plots only seem associated with the settlement in Field 77, it is likely that field system boundaries will be found to extend beyond the period's main settlement cores. As highlighted in recently revised Regional Research Framework document (Evans 2018), it will be imperative that further trenching is conducted along them to facilitate pollen sampling in an effort to elucidate what crops were grown where (and, potentially, identify the location of woodlots). **Early Medieval and Medieval** b. Landscapes Investigation of medieval ridge and furrow will inform the relationship to Roman bedding trenches. Did the alter medieval ridge and furrow respect or replace the earlier bedding trenches? **Post-Medieval** b. Landscapes

Site 23	
Designation:	Non-designated
Field Number:	80
Reference IDs:	None
Location (NGR):	524672, 260692
Site area (approximate):	0.44 ha



Description

Fifteen trenches were excavated in Field 80.

The results of the geophysical survey did not suggest that archaeological remains would be present in the field, but a small number of dispersed archaeological features were recorded during the trial trench evaluation.

A pit that contained a possible cremation burial was located in Trench 373. The pit contained middle to late Iron Age pottery, three lithics and small quantities of burnt bone in the basal fill. Three worked flint flakes recovered from the pit fill were broadly dated to the Neolithic or possibly the early Bronze Age. The pit was located less than 7m south-east from an undated curvilinear drip gully, and it is possible that the two features are associated.

Three slots were excavated through the curvilinear drip gully and these indicated two phases of activity. The earlier phase was evidenced by a small remnant of the gully curving towards the south and this had been re-cut. The later gully was at least 6.6m long and terminated to the north. The gully continued beyond the trench to the east but was not discernible on the geophysical survey. A circular posthole cut the western edge of the gully terminus and is likely to be broadly contemporary. No datable material was recovered from either the drip gully or the posthole. No features were located within the interior of the ring gully.
Scheme impact
The site would be permanently affected by a multi-use construction area. The construction of the Scheme would have a slight adverse significance of effect on this site.
Mitigation
Sampling around the roundhouse.
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices f. Burial and the treatment of human remains h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

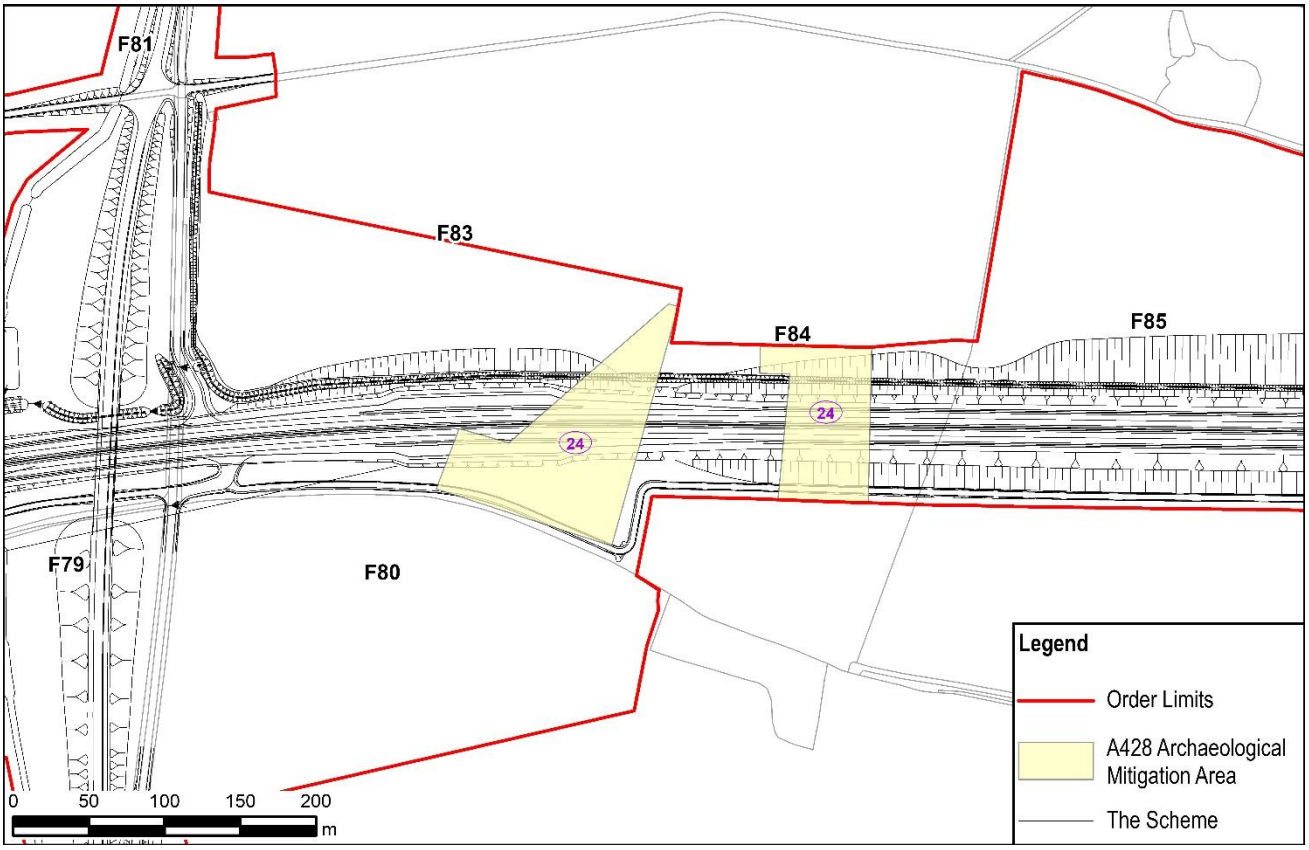
q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 24	
Designation:	Non-designated
Field Number:	83, 84
Reference IDs:	None
Location (NGR):	524831, 260910
Site area (approximate):	1.68 ha



Description

Thirteen trenches were excavated in Field 83. 8 trenches were excavated in Field 84.

Two associated middle to late Iron Age enclosures and connected boundary ditches were identified. The southern end of a middle–late Iron Age sub-oval enclosure was excavated in at the extreme northern end of Field 84. A long, slightly curving sinuous ditch was aligned approximately north to south through Field 84 and connected the enclosure to a smaller sub-oval enclosure/roundhouse located in Trench 1 and continued on to join one of two rectangular enclosures beyond the DCO limits to the south. The linear ditch can be traced on the geophysical survey for approximately 660m and may have formed a ditched 'road' or trackway and is similar to other sinuous Iron Age boundary 'strings' found in the region linking settlement and other enclosures. Extends into F83.

Fields 80, 83 and 84 all provided evidence for activities within landscapes that were peripheral to a larger settlement area just beyond the proposed DCO limits. These sites are deemed to have regional significance as they could potentially inform how landscapes were utilised surrounding larger settlements, with special attention to relationship of the enclosures in Field 84 and the boundary that connected sites to the south and north, beyond the DCO limits.
Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The site extends beyond the Scheme boundary to the north and south and these remains would be unaffected. The constriction of the Scheme would have a slight adverse significance of effect on this site.
Mitigation
Sampling to compare with other examples.
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? j. What was the influence of east–west landscape divisions along the Scheme? This includes the river and the string system boundaries. k. What was the purpose of the string system boundaries? Were they strictly agricultural/pastoral or did they relate to larger territorial-blocking units? Do any recut earlier pit alignments? What is the relationship of the boundary strings to settlement activity, if any? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites.

p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

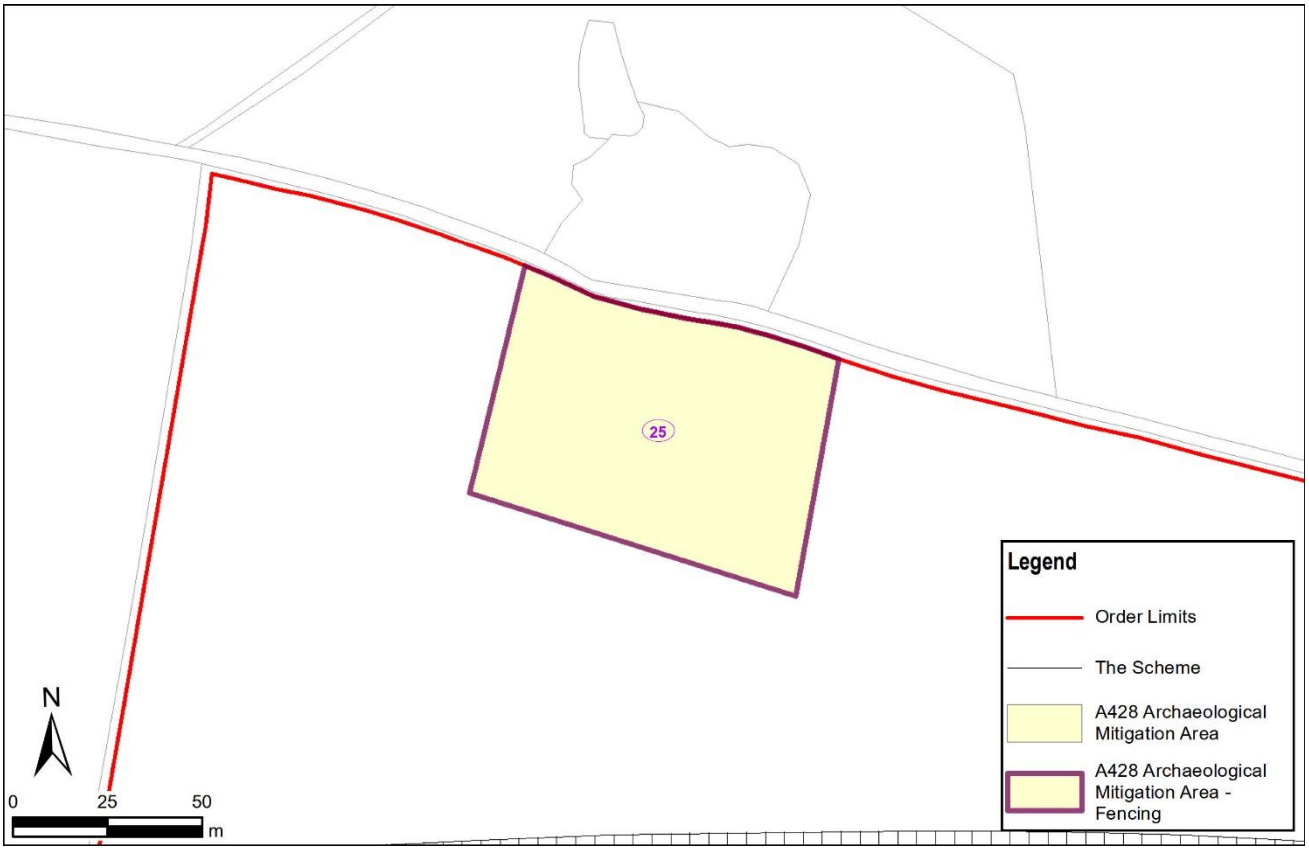
r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 25	
Designation:	Non-designated
Field Number:	85
Reference IDs:	**MCB24563** – The site of High Hayden, a former house or farm recorded on the 1st edition OS map.
Location (NGR):	525195, 260781
Site area (approximate):	0.54 ha



Description

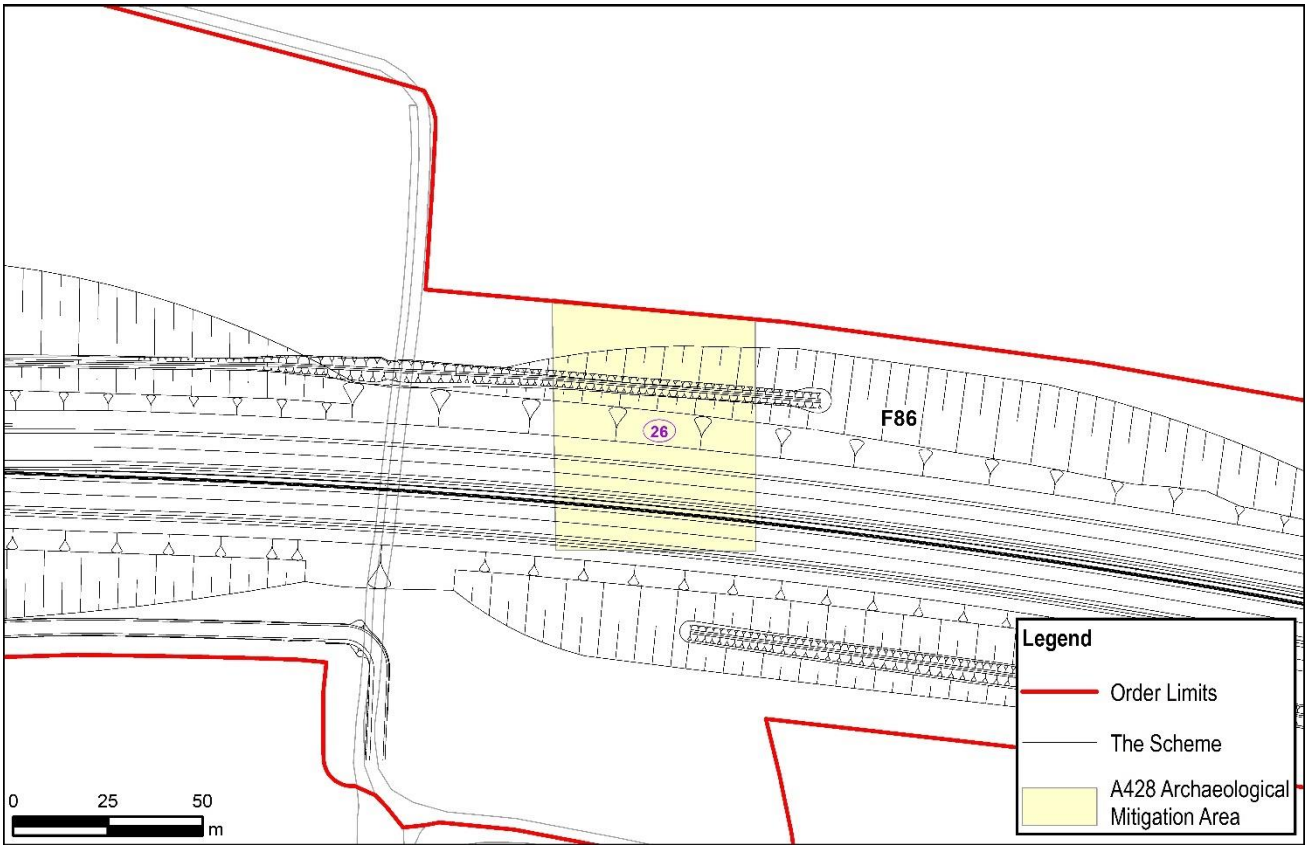
High Hayden Farm complex. The historic mapping suggests that this was a notable farm, that was highly developed and included a significant house (possibly late medieval in origin), with formal gardens, fishponds, model farm type buildings to the north in the rear courtyard and woodland planting, including triangular plantations at the corners of the boundaries. Also contained an agricultural landscape comprising relict field boundaries and furrows, probably related to High Hayden Farm.

Scheme impact

None

Mitigation
Fence off
Research objectives
N/A

Site 26	
Designation:	Non-designated
Field Number:	86
Reference IDs:	None
Location (NGR):	525744, 260746
Site area (approximate):	0.34 ha



Description

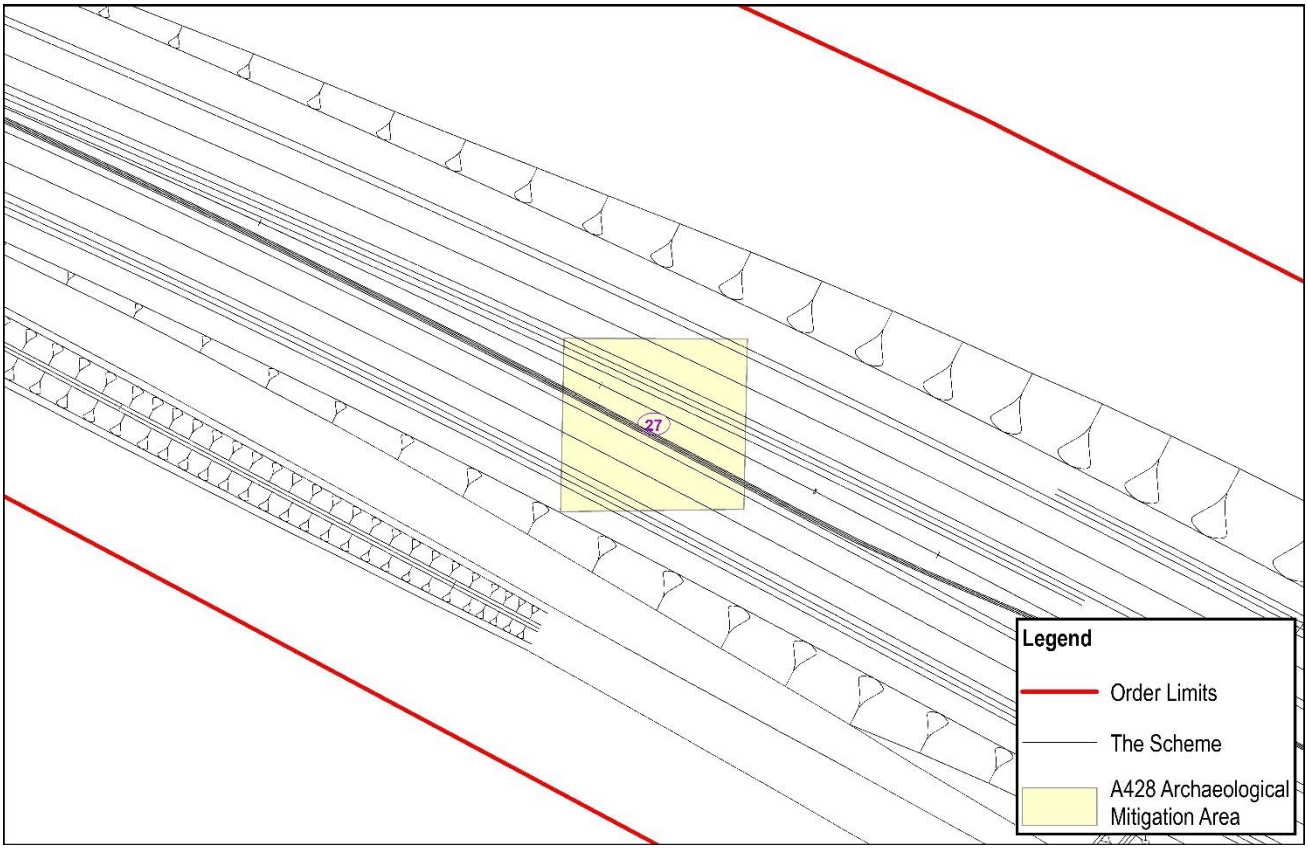
The southern half of an Iron Age curvilinear enclosure, which continued north beyond the DCO limits Excavations through the outer boundary ditch located Iron Age pottery. This large enclosure ditch cut through an earlier ditch that also contained Iron Age pottery. It is unlikely any further work in this area would provide additional understanding of the site.

Scheme impact

The site would be permanently affected by the construction of the new dual carriageway. However, the site extends outside of the Scheme boundary and these remains will be unaffected. The construction of the Scheme would have a slight adverse significance of effect on this site.

Mitigation
Preliminary Works
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 27	
Designation:	Non-designated
Field Number:	88
Reference IDs:	None
Location (NGR):	526228, 260644
Site area (approximate):	0.06 ha



Description

Fifteen trenches were excavated in Field 88.

The Site contained several ditches and gullies, but none produced datable material. The only datable archaeological feature was a stone-lined pit in trench 709, comprising three sherds of Iron Age pottery recovered from the environmental sample.

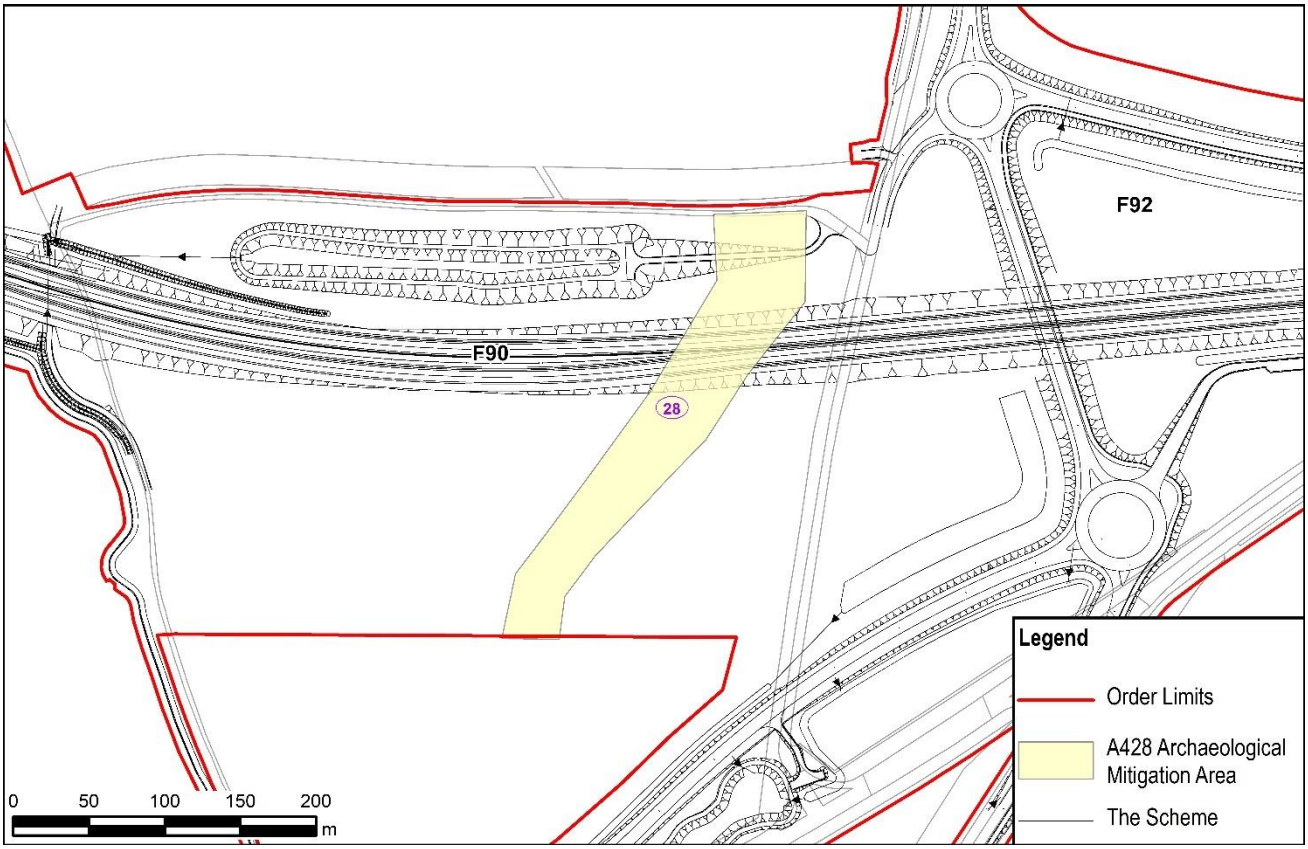
The features identified during the trial trenching were not visible on the geophysical survey results.

Scheme impact

The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a slight adverse significance of effect on this site.

Mitigation
Sampling of area around Iron Age pit.
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 28	
Designation:	Non-designated
Field Number:	90
Reference IDs:	**MCB24586** – A single enclosure recorded as cropmarks. It measures roughly 37x26m.
Location (NGR):	526999, 260307
Site area (approximate):	1.52 ha



Description

Thirty six trenches were excavated in Field 90.

Enclosure and boundary ditch, middle to late Iron Age in date. The enclosure located in the north-east corner of Field 90 extended northwards, beyond the DCO limits. The elongated D-shaped main enclosure was approximately 50m north to south by 25m east to west and divided internally by two parallel ditches. These ditches contained middle to late Iron Age pottery. Extending south and turning south-westwards from the southern side of the enclosure was a long sinuous boundary ditch. Two further ditches were identified and probably associated with the sinuous boundary ditch as they terminated just short of it and contained middle to late Iron Age pottery. These two perpendicular

ditches may represent small enclosures appended to the sinuous ditch. Immediately south of the main enclosure were three possible unenclosed roundhouses.
Scheme impact
The site would be permanently affected by the construction of the new dual carriageway, access to an attenuation basin and a multi-use construction area. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Sampling to compare to other examples, including Sites 29 and 30.
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? j. What was the influence of east–west landscape divisions along the Scheme? This includes the river and the string system boundaries. k. What was the purpose of the string system boundaries? Were they strictly agricultural/pastoral or did they relate to larger territorial-blocking units? Do any recut earlier pit alignments? What is the relationship of the boundary strings to settlement activity, if any? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity?

q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work.

r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

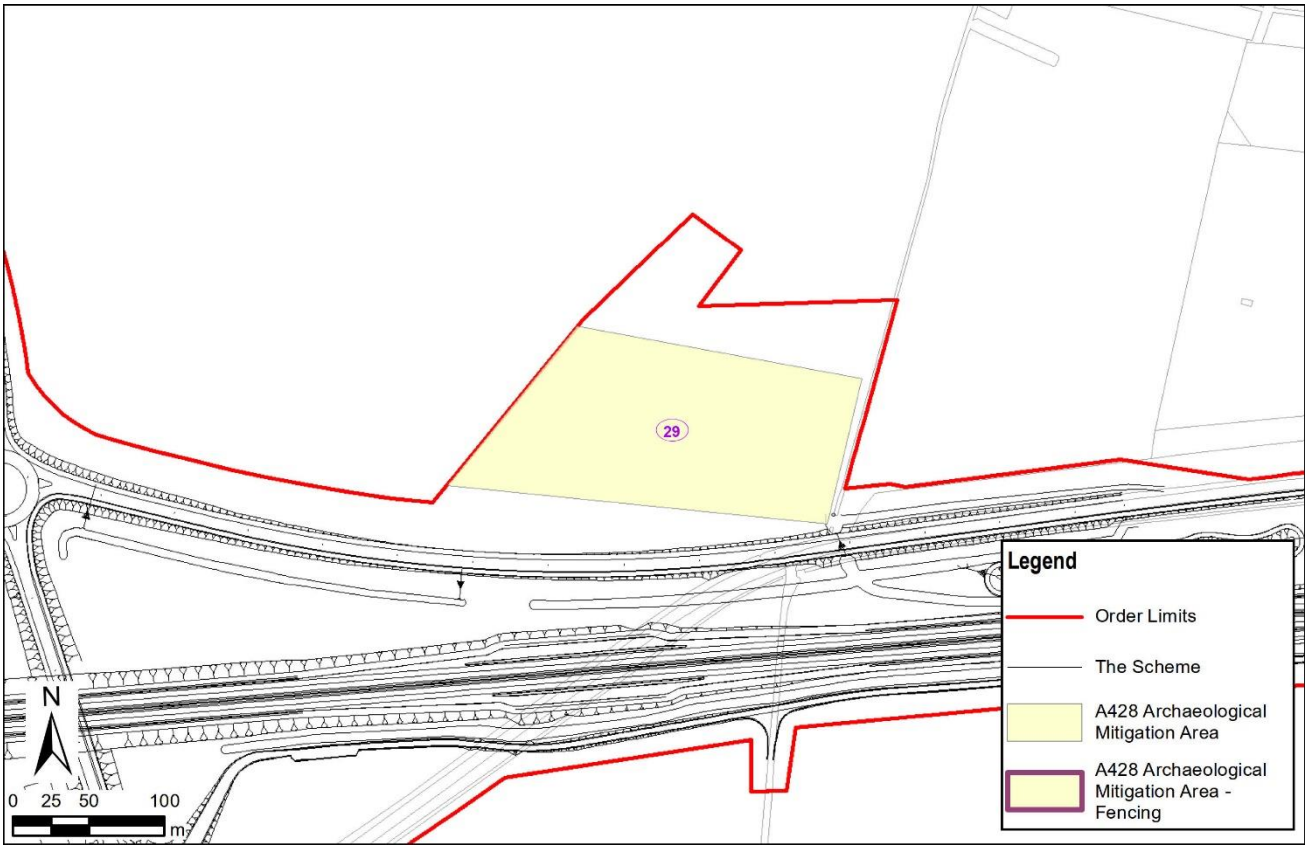
Early Medieval and Medieval

b. Landscape

Post-Medieval

b. Landscape

Site 29	
Designation:	Non-designated
Field Number:	92
Reference IDs:	**MCB24587** – A single enclosure visible as cropmarks measuring c.65x55m. **MCB24588** – An oval enclosure visible as cropmarks, measuring c.40x27m. **05753** – Extensive ridge and furrow.
Location (NGR):	527387, 260390
Site area (approximate):	2.38 ha



Description

Forty six trenches were opened within the field. Two single enclosures were recorded on aerial photographs. Archaeological evaluation trenching investigated these enclosures and also identified an associated boundary ditch in the north-east corner of the field. In the north-east corner, a pair of sub-rectangular enclosures of Iron Age date were confirmed from the evaluation. The main boundary ditches survived to a depth of up to 1.3m with evidence for several re-cuts. Middle to Late Iron Age pottery was present within the boundary ditches of both enclosures. No internal divisions were located within the enclosures, with the only internal feature being a potential oven/hearth.

Scheme impact
The enclosures would be permanently affected by soil storage. Construction of the Scheme would have a moderate adverse effect on these remains.
Mitigation
Excavation
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

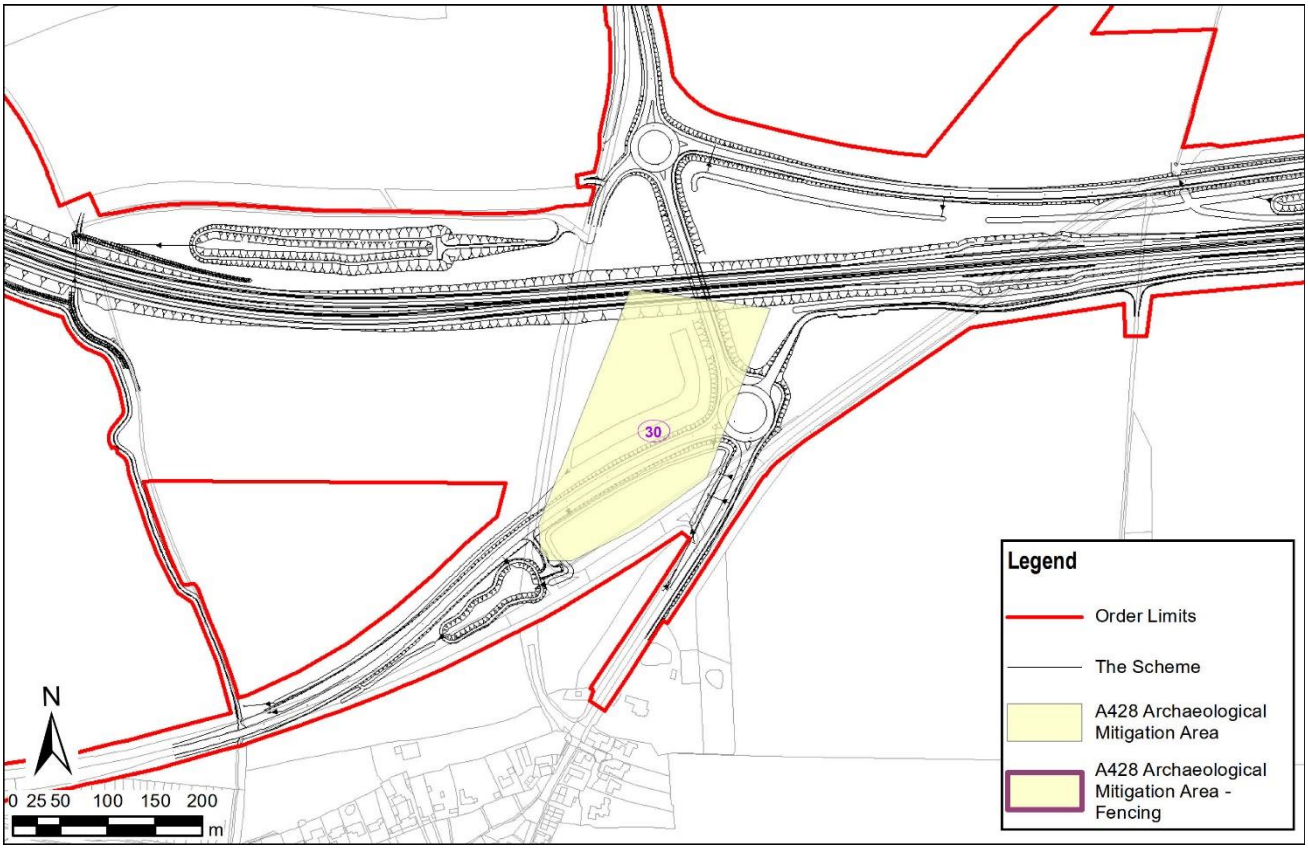
Early Medieval and Medieval

b. Landscape

Post-Medieval

b. Landscape

Site 30	
Designation:	Non-designated
Field Number:	92
Reference IDs:	**MCB24587** – A single enclosure visible as cropmarks measuring c.65x55m. **MCB24588** – An oval enclosure visible as cropmarks, measuring c.40x27m. **05753** – Extensive ridge and furrow.
Location (NGR):	527387, 260390
Site area (approximate):	3.9 ha



Description

Forty six trenches were opened within the field. A large D-shaped enclosure complex was recorded to the south-west which had been recorded through geophysical survey. Pottery was found in the ditches of the two sub-rectangular enclosures and dated them to the Iron Age. The more substantial D-shaped enclosure contained pottery dating to the Late Iron Age and represents a later period of occupation. Adjoining the west side of the main enclosure a small subsidiary enclosure was also recorded containing pits/post-holes and a shallow gully. It is considered that this may represent a roundhouse. To the south of the main enclosure ditches, pits and a circular enclosure,

several of which were not recorded through the geophysical survey, were also found. These features also date to the Iron Age and Roman periods.
Scheme impact
Much of the main D-shaped enclosure and the associated enclosures in the south-west of the field would be affected by the construction of the new dual carriageway, the Eltisley link south roundabout and other construction activities. Construction of the Scheme would have a moderate adverse effect on these remains.
Mitigation
Excavation
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

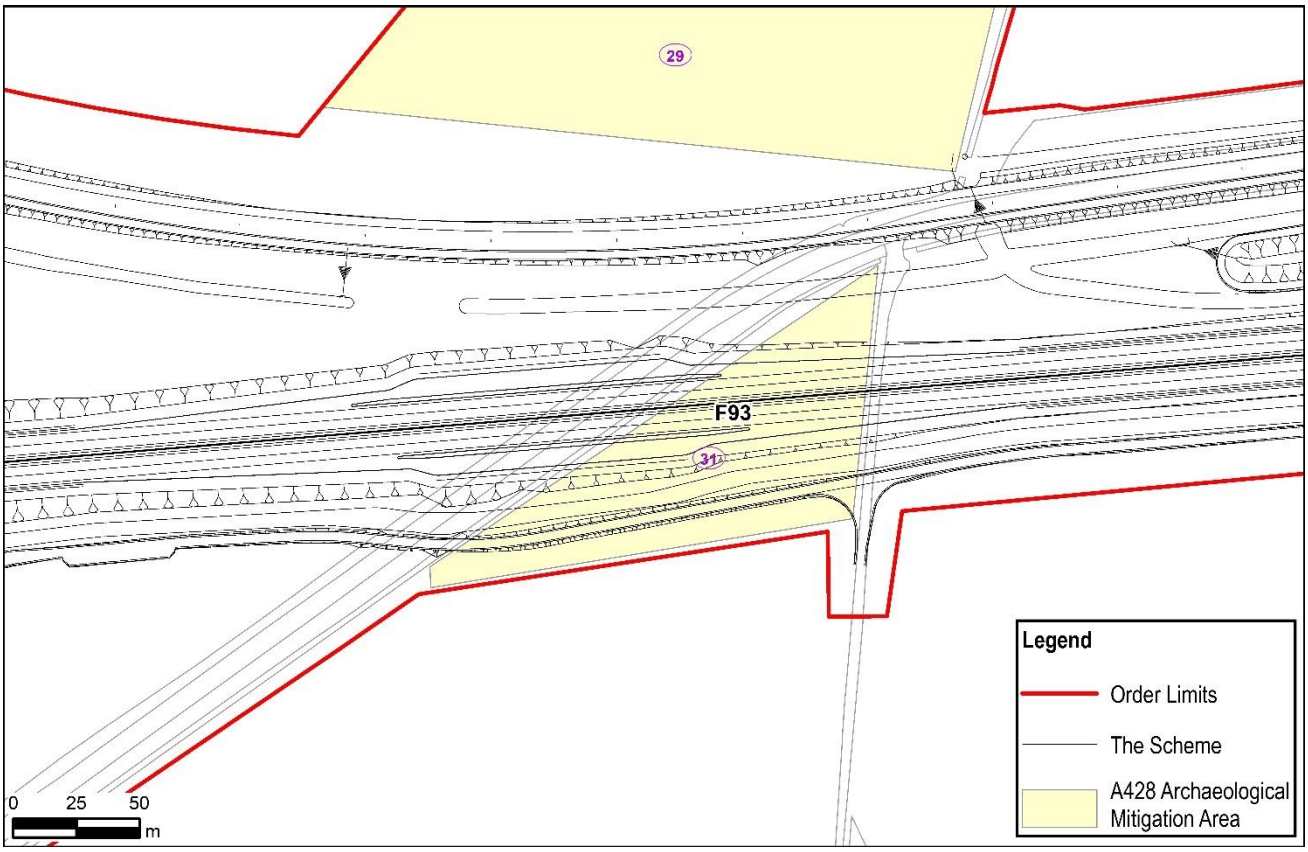
Early Medieval and Medieval

b. Landscape

Post-Medieval

b. Landscape

Site 31	
Designation:	Non-designated
Field Number:	93
Reference IDs:	**02541** – A probable windmill mound, consisting of a levelled ditched mound and no surface finds have been found. **02463** – The site of a post-medieval windmill, recorded as 'Mill Hill' surrounded by a wet moat on early 19th century OS maps.
Location (NGR):	527756, 26041
Site area (approximate):	0.9 ha



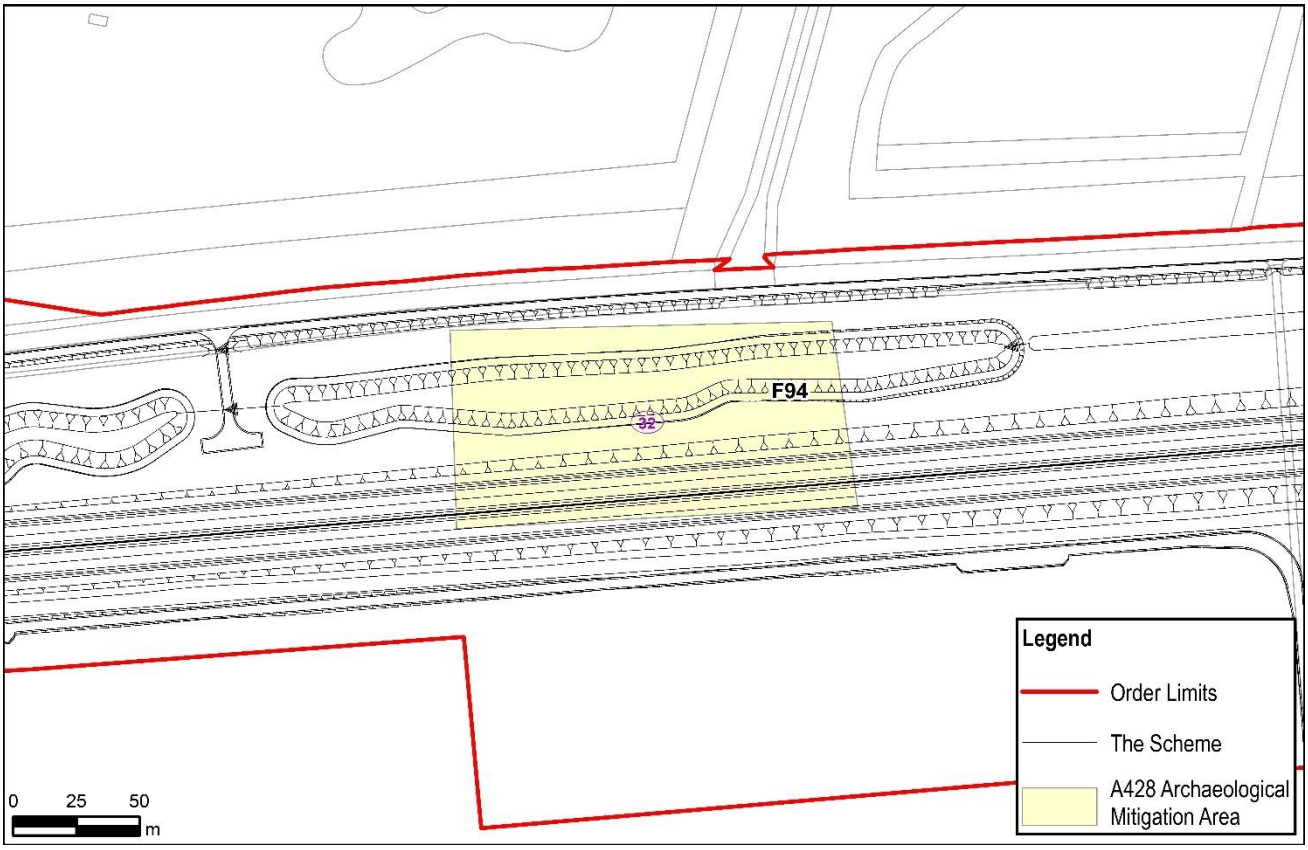
Description

Five trenches were excavated in Field 93.

The geophysical survey identified a penannular ditch which supported the assertion put forward in the desk-based assessment that a windmill mound and encircling moat was located on / near the site. This site is depicted as upstanding earthworks, names Mill Hill, on the OS map dated 1835, but no earthworks now survive.

Trench 407 was positioned over the penannular ditch which measured approximately 35m in diameter south-west to north-east by at least 20m north-west to south-east. The ditch contained a small assemblage of pottery that ranged from the late Saxon/early medieval period, medieval period and the post-medieval period. No evidence survived of an internal mound, although very little of the interior was within the trench. Further features were identified within the field including a small pit / possible ditch, pits, gullies and ditches, although none produced any datable finds.
Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation
Research objectives
Early Medieval and Medieval c. Industry and infrastructure **Post-Medieval** a. Industry and infrastructure

Site 32	
Designation:	Non-designated
Field Number:	94
Reference IDs:	None
Location (NGR):	528408, 260460
Site area (approximate):	1.19 ha



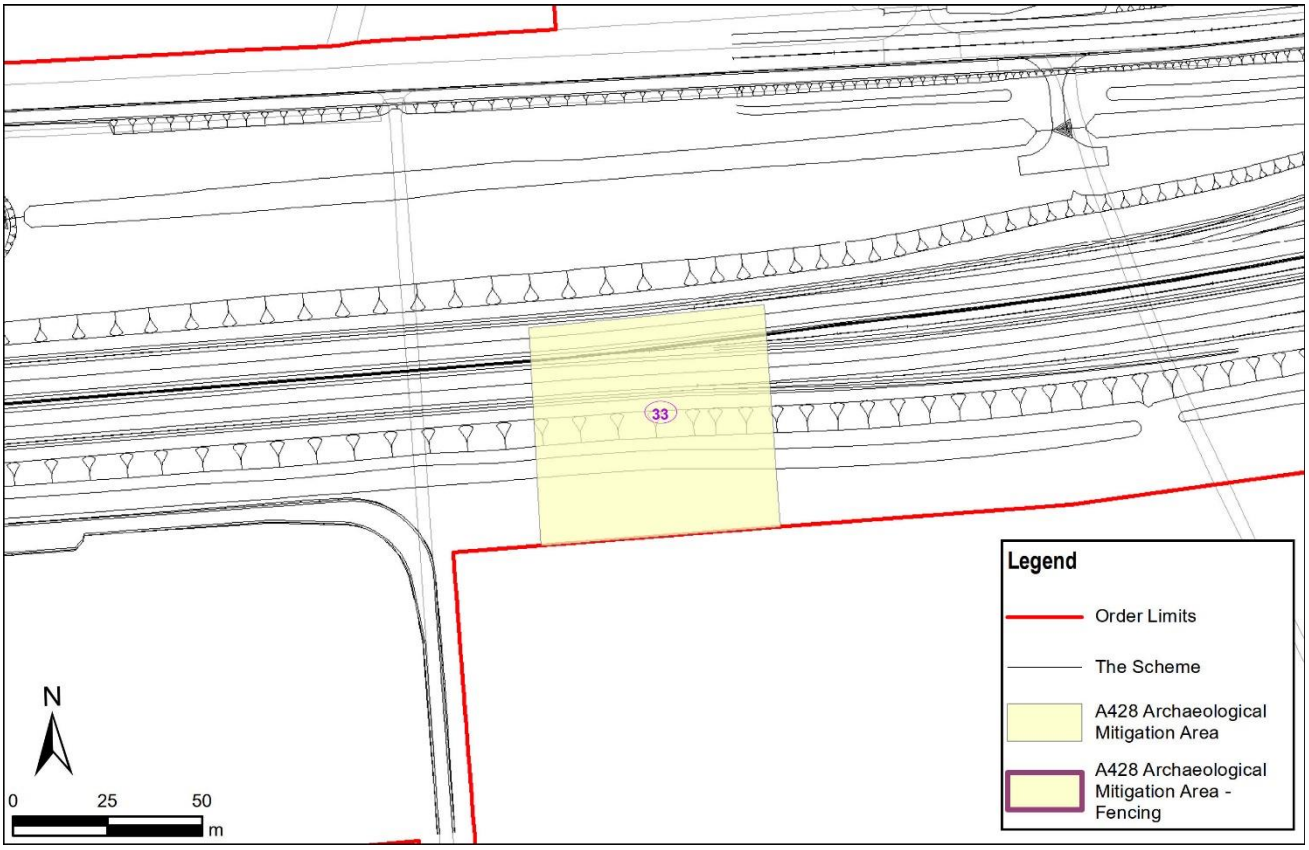
Description

There are a collection of enclosures and fields between Fields 94, 95, 96 and 97.

The Site comprises three conjoined subcircular enclosures that are orientated approximately south-west to north-east for over 60m. A field system of at least three rectangular fields or paddocks extended eastwards from the enclosures. The southern-most enclosure measured 22m north-east to south-west and 24m east to west, and was defined by a U-shaped ditch containing middle to late Iron Age pottery, as well as residual Neolithic flint flake. The middle enclosure in the group was appended to the southern enclosure and extended to the north-east, measuring 16m north-east to south-west and 19m north-west to south-east. The fill also contained middle to late Iron Age pottery and another residual Neolithic flake. The larger northern-most enclosure was not evaluated during the trial trenching but analysis of the geophysical survey results shows it to measure at least 24m north-east to south-west and 28m east to west.

A large ditch extended from the southern enclosure towards the south-east and formed the southern boundary of an associated square/rectangular enclosure. The ditch contained middle to late Iron Age pottery and a narrow gully and two pits were present south of the enclosure, but contained no finds.
Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Selected and targeted excavation.
Research objectives
Iron Age a. Settlement types Sites b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 33	
Designation:	Non-designated
Field Number:	94
Reference IDs:	None
Location (NGR):	528408, 260460
Site area (approximate):	0.37 ha



Description

There are a collection of enclosures and fields between Fields 94, 95, 96 and 97.

Thirty eight trenches were excavated in Field 94.

Site 33 comprises an Iron Age enclosure / roundhouse which was excavated within trench 18. The circular enclosure measured 30m east to west and 33m north to south, with an opening to the south-east. The enclosure was defined by a large outer V-shaped ditch which contained middle to late Iron Age pottery. Two pits and a smaller ditch were investigated within the interior of the enclosure. The ditch contained middle to late Iron Age pottery and was part of an internal division that divided the enclosure into two halves. The north-eastern half was further divided into two quadrants by a ditch identified on the geophysical survey. Further features were identified within the enclosure from the geophysical survey results but were not investigated during the trial trenching,

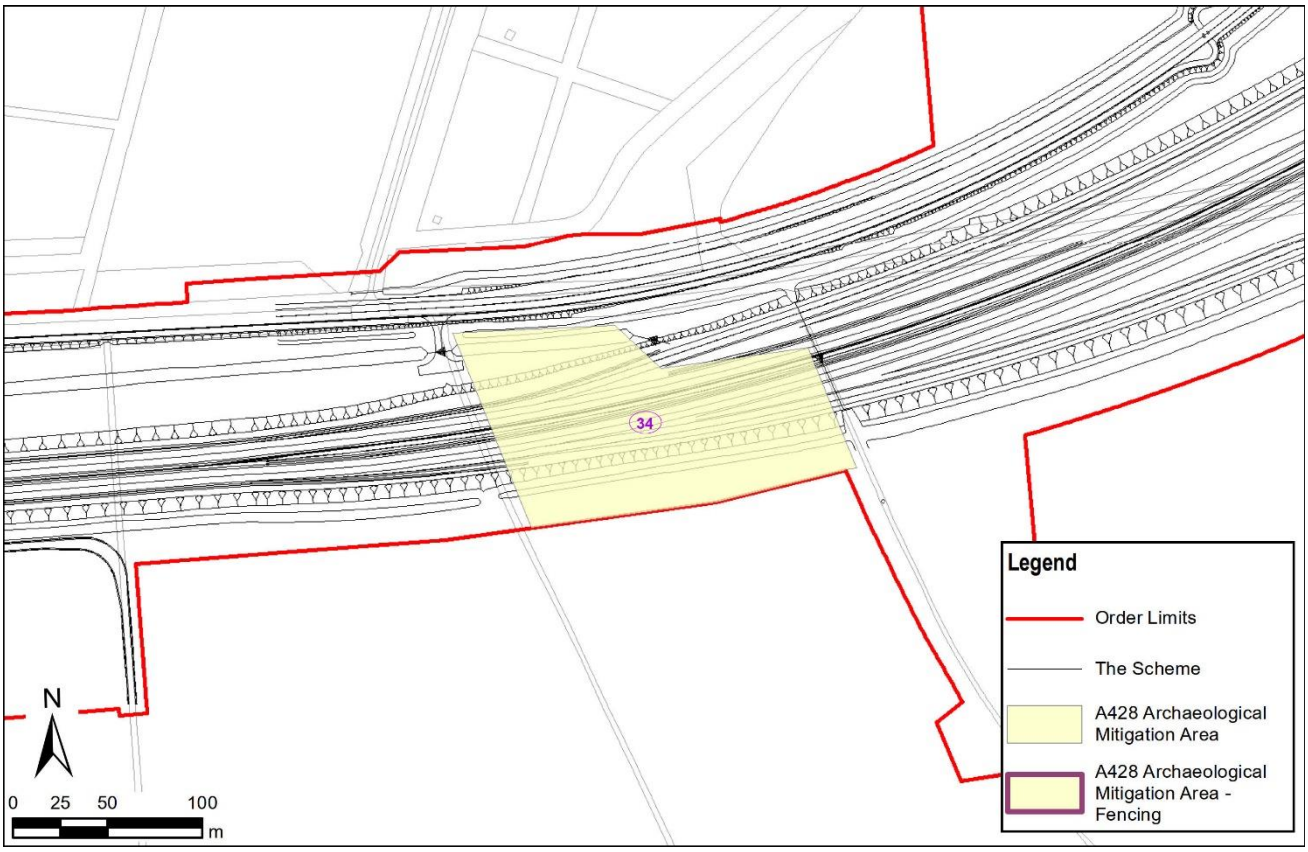
including several pits and a possible circular structure / roundhouse comprised of seven postholes with an opening to the south-east. In addition to the Iron Age activity within the Site, Field 94 contained many other ditches, gullies, pits and furrows of undetermined or medieval / post-medieval date.
Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Selected and targeted excavation.
Research objectives
Iron Age a. Settlement types Sites b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme?

t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised?

u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 34	
Designation:	Non-designated
Field Number:	95, 96
Reference IDs:	**11873** – Two early Bronze Age flints found during field walking. **MCB16333** – Ridge and Furrow
Location (NGR):	528964, 260518
Site area (approximate):	1.55 ha



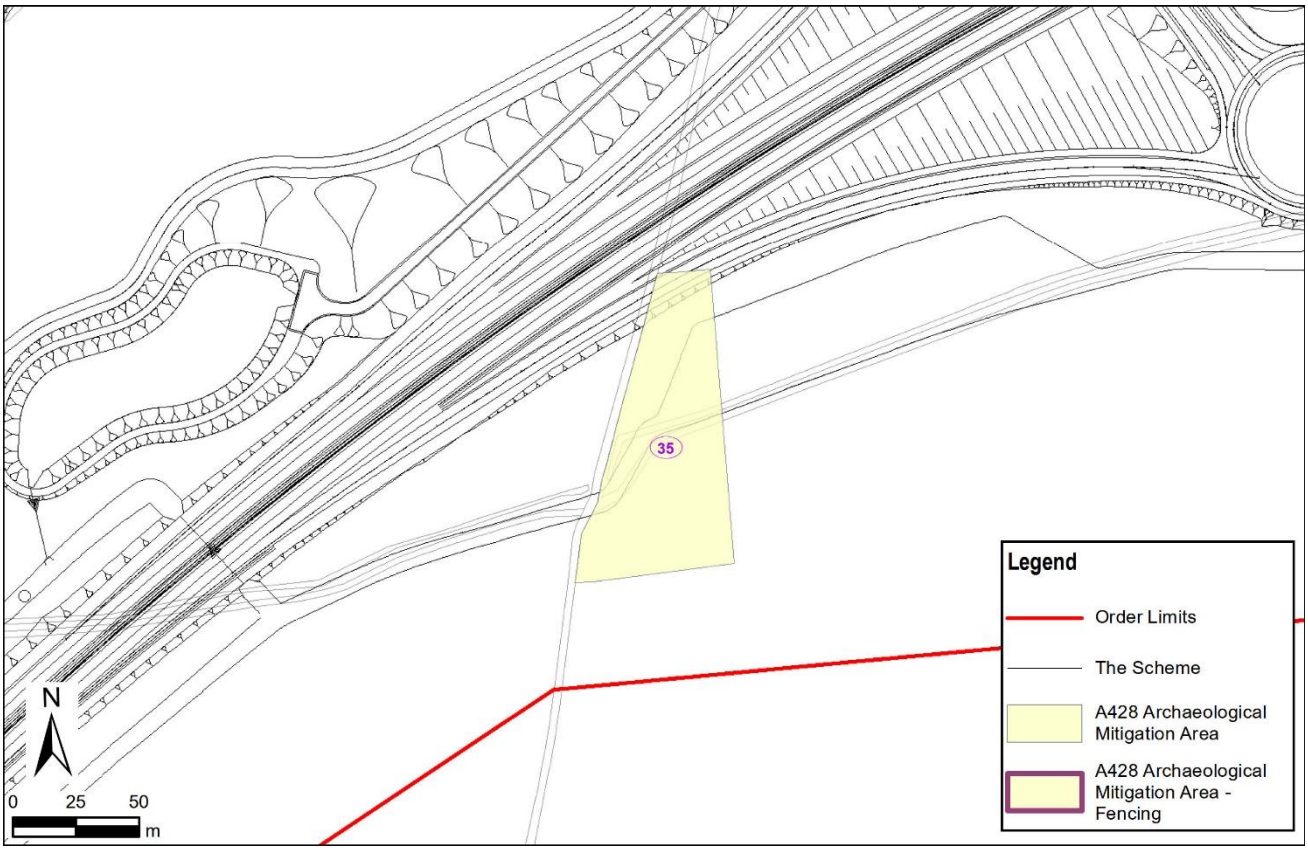
Description

Eight trenches were excavated in Field 95 and 15 trenches were excavated in Field 96. The Site comprises a small Romano-British farmstead extending through Field 95 into Field 96. Field 95 contained at least two sub-square enclosures with potentially related boundaries and field systems to the west, north and east, extending into Field 96. Large quantities of Roman pottery (1st and 2nd centuries AD) were recovered from pits and post-holes, which were possibly associated with structures.

The former parish boundary between Caxton and Papworth Everard was parallel to the present A428 road at the north end of Field 96.

Scheme impact
The site would be permanently affected by the construction of the new dual carriageway. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation Fence off southern part of Field 96.
Research objectives
Roman b. Rural settlements and landscapes c. Dating d. Infrastructure g. Questions concerning the status of the Romano-British settlements along the Scheme and the relationship they might have had to the series of close-set farmsteads to the west at Love's Farm and Wintringham. There, closely packed and seemingly located on the edge of the (fertile) clays above the Ouse's floodplain terraces, were all of the route-corridor farms over this length road/trackway-linked to these western settlements? h. Did the line of the Roman roads influence settlement location, such as those in Fields 75 and 76? Are settlements linked by Roman roads, such as those in Field 73, Field 77 and those at Loves Farm to the north? i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important. k. What influence did Ermine Street have of the density and character of the settlement in the area? l. Did the proximity of Ermine Street contribute to some settlements continuing from the Late Iron Age into the Roman period?

Site 35	
Designation:	Non-designated
Field Number:	69 & 70
Reference IDs:	**MCB17569/505** - Roman road running from Sandy to Godmanchester. A section measuring 17ft (5m) wide and surfaced with rammed gravel was revealed in 1954.
Location (NGR):	521334, 259989
Site area (approximate):	0.5 ha



Description

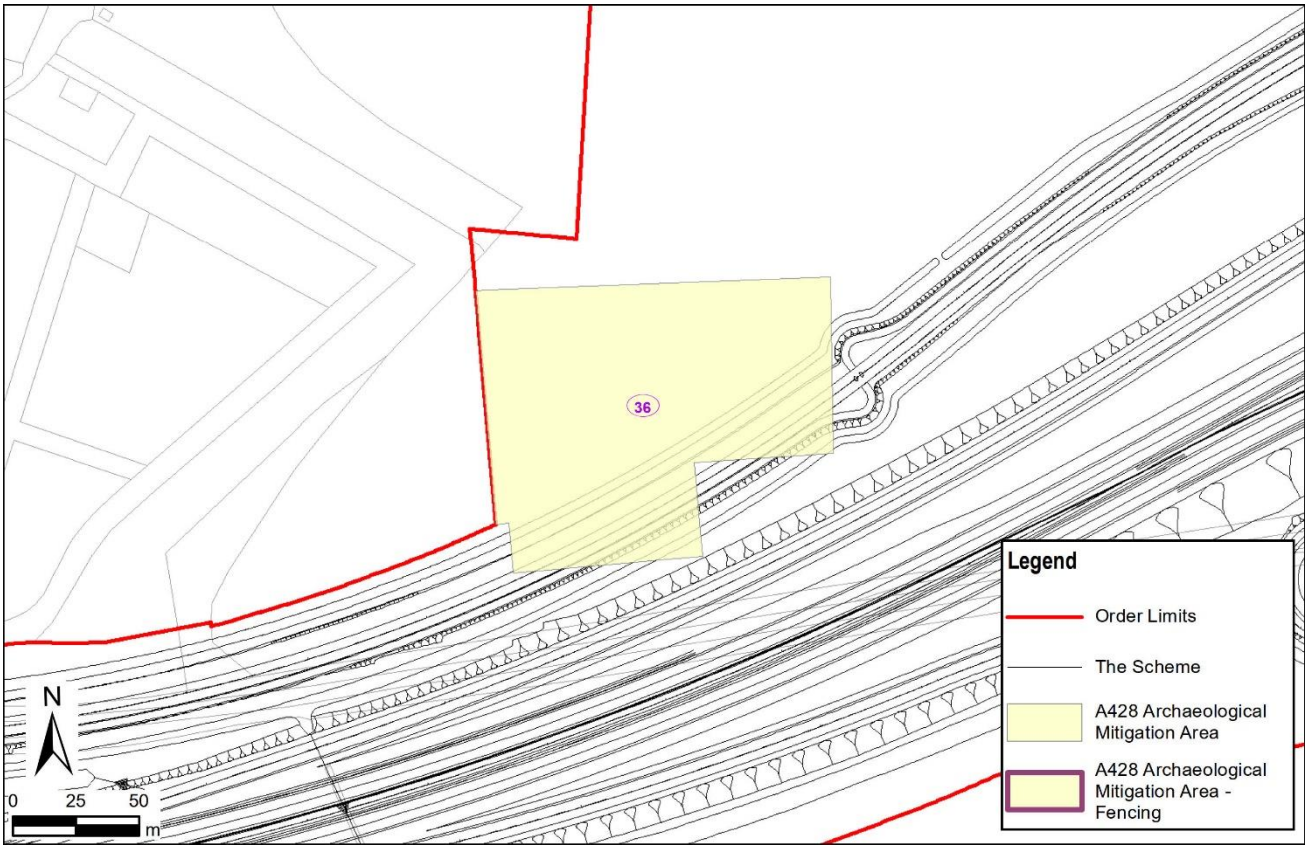
The eastern part of the field contains evidence of Bronze Age and medieval date. This area contained limited evidence but is close to an unnamed brook and a possible alignment of a Roman road. It has geoarchaeological potential.

Scheme impact

The site would be permanently affected by a soil storage area. The construction of the Scheme would have a moderate adverse significance of effect on this site.

Mitigation
Sampling and geoarchaeology
Research objectives
Roman d. Infrastructure h. Did the line of the Roman roads influence settlement location, such as those in Fields 75 and 76? Are settlements linked by Roman roads, such as those in Field 73, Field 77 and those at Loves Farm to the north? i. The recovery of Roman-period buildings should be prioritised. Due to shallow-footed construction techniques and the later robbing of any masonry, in far too many of the period's settlements too few and, in some cases no, convincing buildings have been recovered. Every effort must be made to realize their plans and, where their location is suspected, 'hard' machining should be avoided. The role of aisled buildings, is also important.

Site 36	
Designation:	Non-designated
Field Number:	97 (Areas 2 & 3)
Reference IDs:	**CB15034** – Ermine Street Roman road, visible as a gravel track without agger. **02494** – Find of a Neolithic patinated, polished axe.
Location (NGR):	529333, 260923
Site area (approximate):	1.29 ha



Description

Fifty seven trenches were excavated in Field 97. There are four areas of archaeology recorded within Field 97 comprising Sites 35, 36, 37 and 38. Area 2 formed an enclosure with a single internal roundhouse. Other ditches were located south of the enclosure, and one of these may have formed the southern side of a lager outer enclosure. Area 3 formed an enclosure complex in the south-western corner of the field. A large rectangular enclosure was appended to the north-eastern side of the main complex. It was possible that the sites in Area 2 and Area 3 were connected via a system of fields between them. Ditches, possibly associated with field systems, were also identified.

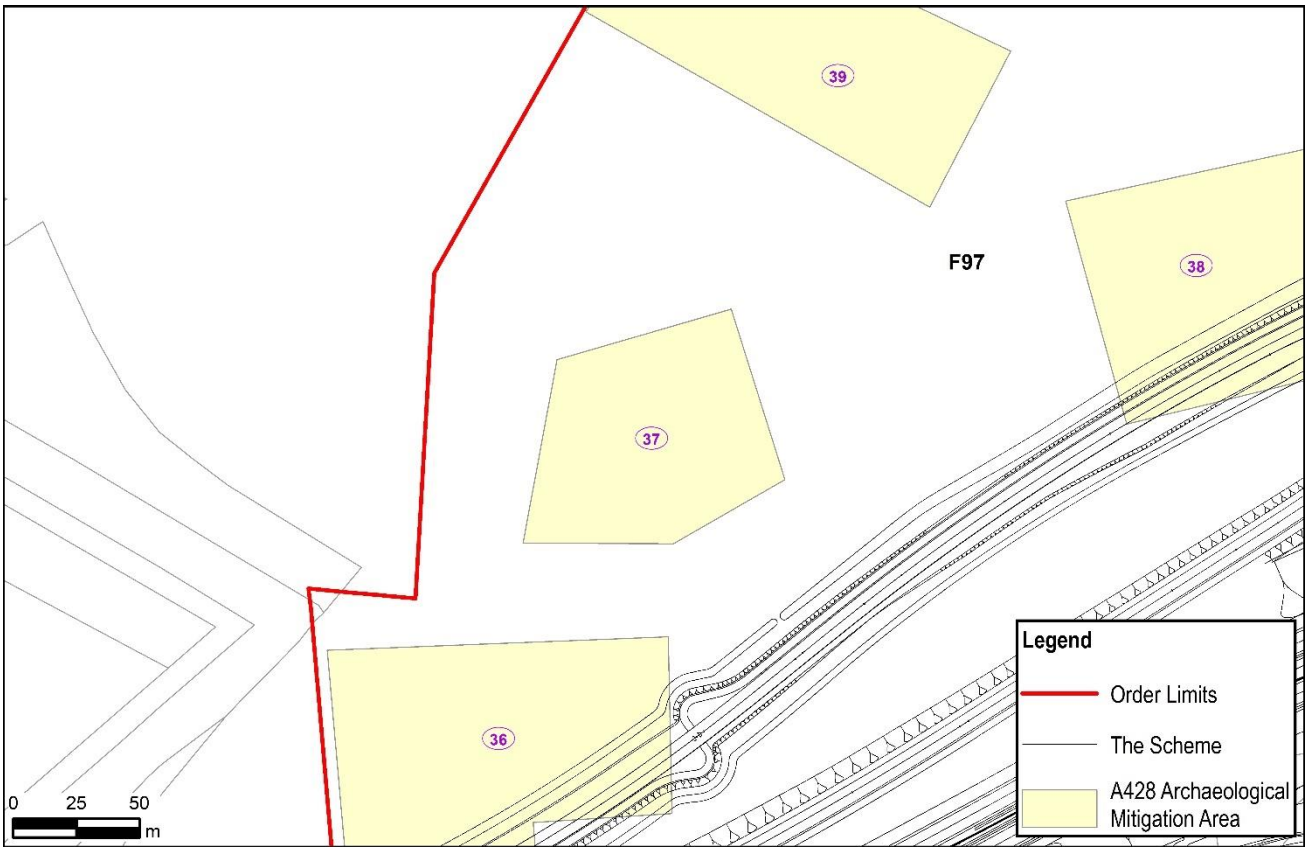
Scheme impact
The site would be permanently affected by the construction of a side road to the south of the field. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised? u. What does the pottery show about trading patterns and external influences?

v. Is it possible to determine which settlements were active concurrently? How were they connected?

Post-Medieval

b. Landscape

Site 37	
Designation:	Non-designated
Field Number:	97 (Area 5)
Reference IDs:	**CB15034** – Ermine Street Roman road, visible as a gravel track without agger. **02494** – Find of a Neolithic patinated, polished axe.
Location (NGR):	529333, 260923
Site area (approximate):	0.69 ha



Description

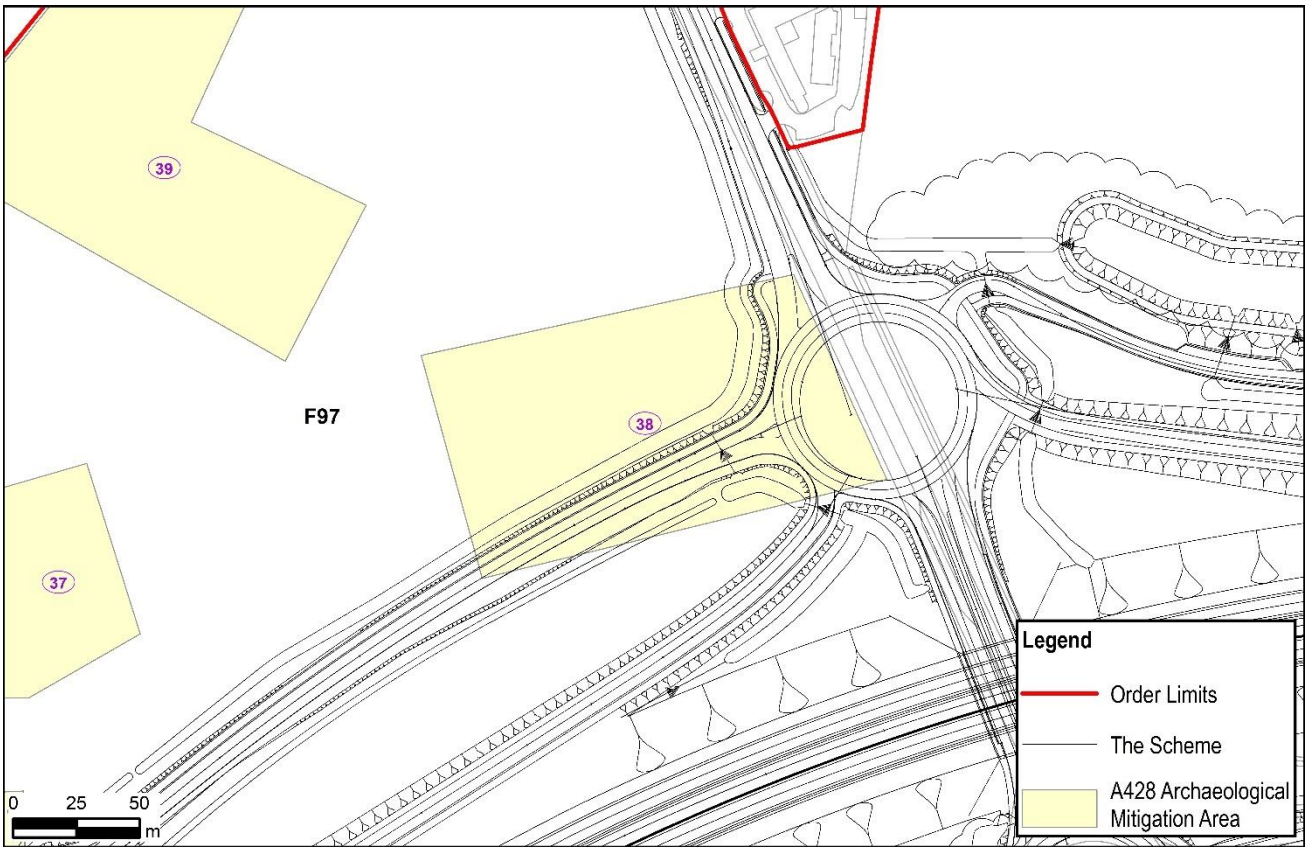
Fifty seven trenches were excavated in Field 97. A small curvilinear gully was identified in Area 5, which may be a roundhouse drip gully, based on its shape and size. This feature produced four sherds of Late Iron Age/Roman pottery. Two shallow ditches also contained pottery of similar date. A number of undated linear ditches of various size and alignment were recorded nearby. They may be related to the areas of Iron Age and Roman settlement to the east or south, but this is uncertain.

Scheme impact
The site would be permanently affected by the construction of a side road to the south of the field. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation.
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

Post-Medieval

b. Landscape

Site 38	
Designation:	Non-designated
Field Number:	97 (Area 1)
Reference IDs:	**CB15034** – Ermine Street Roman road, visible as a gravel track without agger. **02494** – Find of a Neolithic patinated, polished axe.
Location (NGR):	529333, 260923
Site area (approximate):	1.42 ha



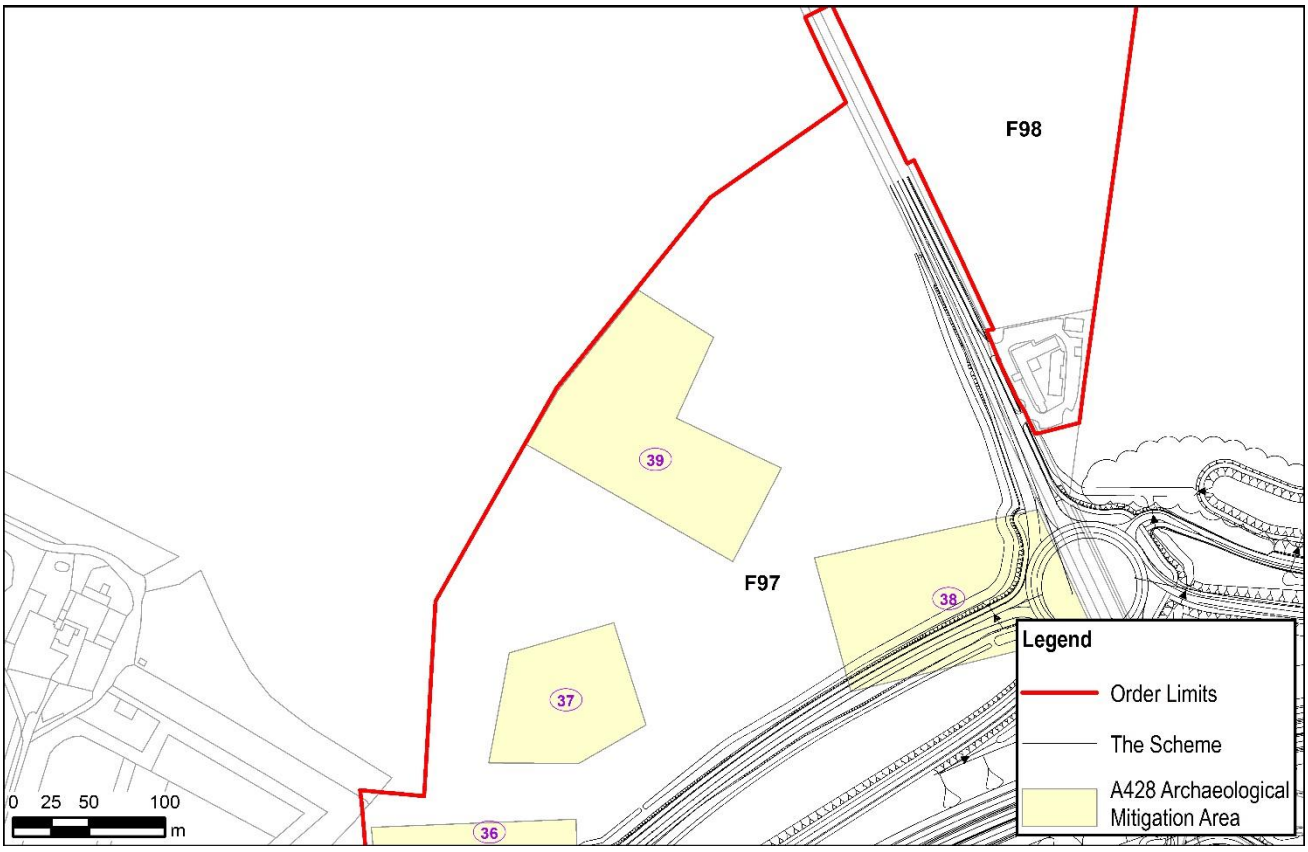
Description

Fifty seven trenches were excavated in Field 97.

Area 1 contained a sub-rectangular, Middle to Late Iron Age enclosure with rounded corners, on the east side of the field towards Ermine Street. Internally it appeared to contain at least four roundhouses. The enclosure measured 57m north to south and 50m east to west. Outside of the enclosure to the west were other, likely associated, features.

Scheme impact
The site would be permanently affected by a borrow pit area. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?
Site 39

Designation:	Non-designated
Field Number:	97 (Area 4)
Reference IDs:	**CB15034** – Ermine Street Roman road, visible as a gravel track without agger. **02494** – Find of a Neolithic patinated, polished axe.
Location (NGR):	529333, 260923
Site area (approximate):	1.41 ha

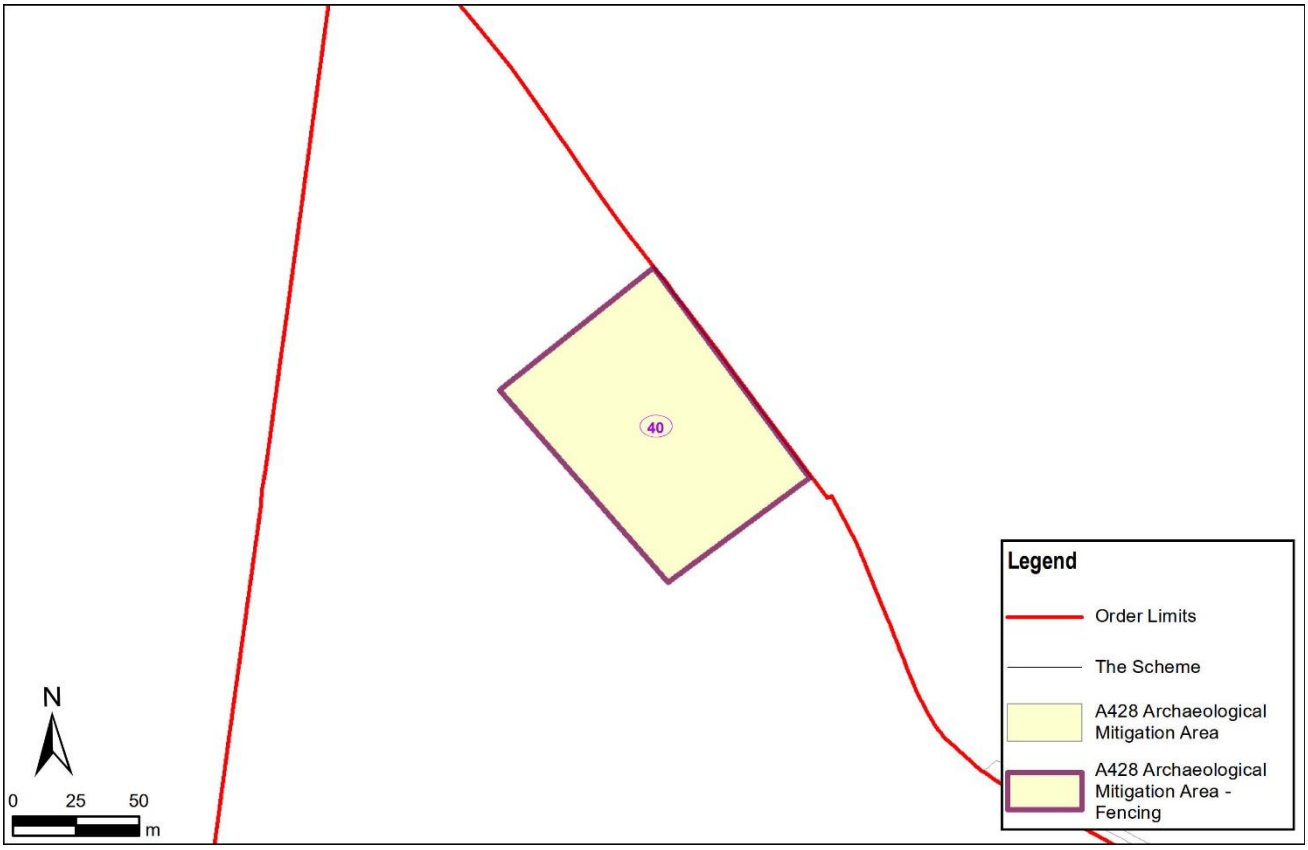


Description

Fifty seven trenches were excavated in Field 97. Area 4 comprised a possible rectilinear enclosure or field system identified by the geophysical survey in the north-west corner of the field. The main enclosure contained two possible roundhouses and had parallel ditches leading from its south-eastern corner to another possible smaller enclosure to the south-east. During the evaluation trenching a small curvilinear gully was recorded and interpreted as a possible roundhouse drip gully. In addition, the boundary between the parishes of Papworth Everard and Yelling was also seen.

Scheme impact
The site would be permanently affected by a borrow pit area. The construction of the Scheme would have a moderate adverse significance of effect on this site.
Mitigation
Excavation
Research objectives
Iron Age a. Settlement types b. Dating c. Clayland settlement and exploitation d. The agrarian economy, field systems, and the areas between e. Depositional practices h. Did the colonisation of the clays in the Middle/later Iron Age and, then, subsequently, the impact of any incoming Late Iron Age communities 'influence' settlement location? In terms of the latter, crucial is the recognition the A428's route effectively amounts to a transect along the northern limits of the Aylesford-Swarling zone, thereby giving the fieldwork a north-south dynamic or 'impetus'. i. Given the degree to which there seems to have been an influx onto the region's 'heavy lands' during the later/Middle Iron Age, what determined this? While large-scale social dynamics may well have contributed, did this relate to developments in plough technology and were the clays held to be more agriculturally fertile when compared to what may then have been more depleted soils on riverside gravel terraces? In other words, were the clays a positive agricultural attraction? o. There is the potential to explore whether there were 'different'/multiple Late Iron Age communities within the area, with some having more direct south-eastern connections. Not only can this be suggested by varying frequencies of wheel-made ceramics, but also by diverse burial rites. p. It remains the case that though sites of Middle–Late and Late Iron Age date are closely spaced these sites may have differing chronologies, and a key aim is to elucidate how they are related across both space and time – which may be contemporary, and which are connected by trackways or by proximity? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The scheme lies at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the scheme? t. Can pollen samples indicate what crops were being grown and in what quantities. How were the fields organised? u. What does the pottery show about trading patterns and external influences? v. Is it possible to determine which settlements were active concurrently? How were they connected?

Site 40	
Designation:	Non-designated
Field Number:	99
Reference IDs:	**MCB16333** – Ridge and Furrow
Location (NGR):	529853, 261001
Site area (approximate):	0.76 ha



Description

An Iron Age sub-circular enclosure. Within the main enclosure was a smaller oval enclosure 15m wide and at least 25m long. It has at least one entranceway at its western end, identified within T2071. The ditch had at least two visible recuts.

Scheme impact

None

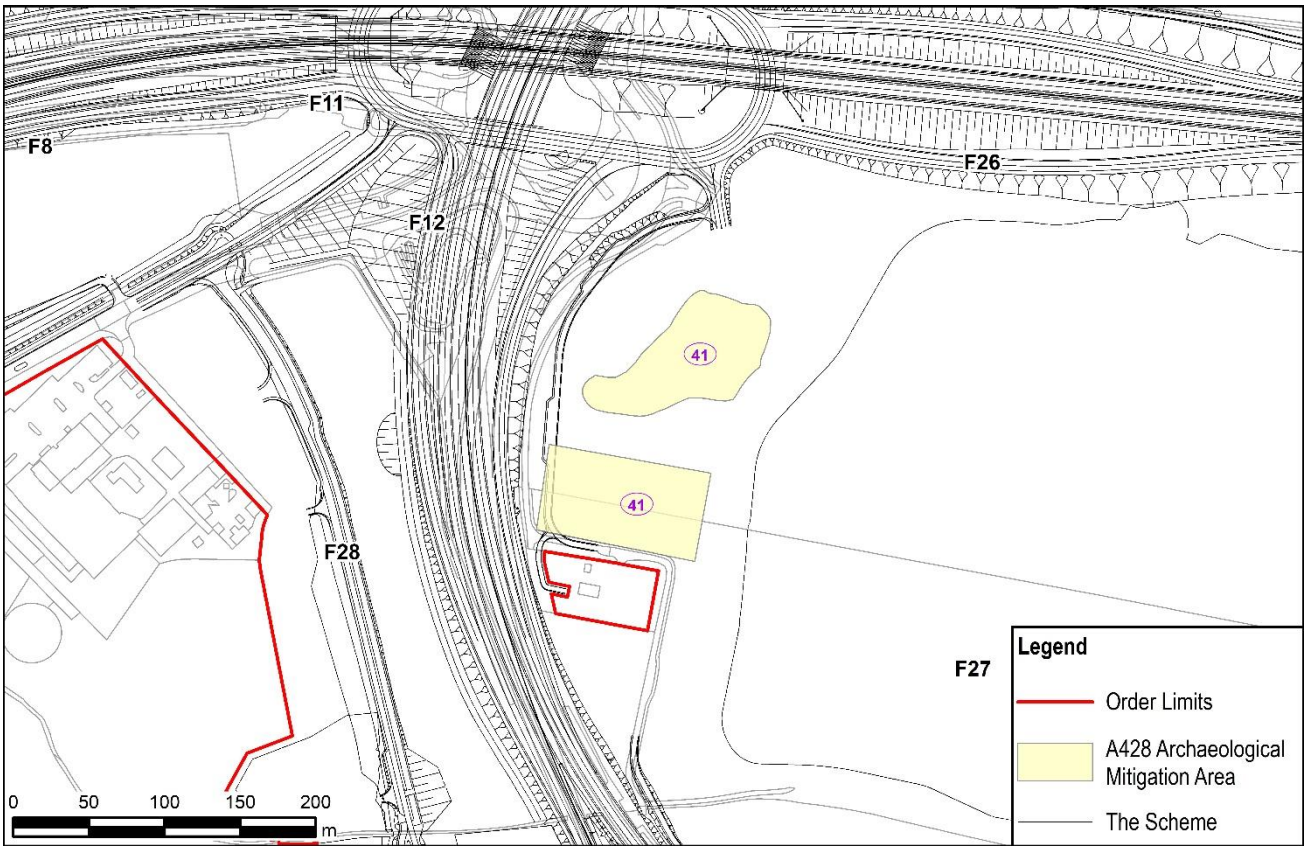
Mitigation

Fence off

NB artefacts recovered during evaluation will require analysis during the post-excavation phase for this Scheme.

Research objectives
N/A

Site 41	
Designation:	Non-designated
Field Number:	26
Reference IDs:	**2664** – Cropmarks of a probable group of sub-rectangular enclosures. Ditches and pits of late Iron Age/early Roman and later Roman date were found during investigation along with two pits containing cremation burials dated to the Roman period.
Location (NGR):	516027, 255186
Site area (approximate):	1.2 ha



Description

Potential for good survival of significant Iron Age and Roman remains. The results of historic geophysical survey revealed a concentration of anomalies, a possible enclosure ditch, enclosures, and parallel ditches in the area. Evaluation and later excavation (not published) identified prehistoric pits, an Iron Age triple ditch boundary and Roman settlement which might all extend into the area of the Scheme. Tempsford Fort and associated remains have been identified in the vicinity.

Scheme impact
The area will be impacted by the construction of a compound and storage areas for the Principal Contractor. It is assumed that the compound structures cannot be built above ground to remove impact on any buried deposits. Where removal of topsoil, subsoil or the bund material is not required archaeological work will not be undertaken.
Mitigation
The surviving bund, topsoil and subsoil should be stripped under archaeological supervision, and any features identified should be sampled.
Research objectives
Iron Age d. The agrarian economy, field systems, and the areas between e. Depositional practices f. Burial and the treatment of human remains g. Iron Age/ Roman transition l. With regard to the Scheme's east-west axis, at what point did the different character of Bedfordshire's Iron Age settlements – with a greater frequency of grain storage pits and pit alignments – become apparent. Was the Ouse a divide in this or was it a matter of gravel vs. clay geologies? q. The refinement of dating in order to place the sites within wider contemporary landscapes should be a goal of any future work. r. The Scheme would be located at the northern limits of the Late Iron Age Aylseford-Swarling zone – what impact did associated changes, including possible influxes of people, on the communities living within the footprint of the Scheme? **Roman** b. Rural settlements and landscapes c. Dating The relationship (in time and place) with Iron Age to Romano-British settlement to the north-west of the Black Cat Roundabout should be investigated. Burials outside the Roman settlement should be investigated to answer questions related to how they relate to the settlement pattern. Information on individuals and populations should also be examined. **Early medieval and medieval** a. Rural settlement b. Landscapes

Appendix E Public archaeology and community engagement strategy

E.1.1 Introduction

E.1.1.1 This Public Archaeology and Community Engagement (PACE) Strategy presents the overarching strategy for the outreach and engagement programme associated with the proposed A428 Black Cat to Caxton Gibbet Improvements Scheme.

E.1.1.2 The Strategy includes site-based activities, initiatives to be undertaken while site work is ongoing, and activities to be undertaken throughout the post-excavation phase.

E.1.1.3 The initiatives aim to maximise the potential influence and learning opportunities resulting from the archaeological works, providing information to the widest variety of audiences, ranging from members of the public living in the vicinity of the Scheme to visitors to the area.

E.1.1.4 It is acknowledged that the events and activities proposed often attract the same group of people every time, generally including those who would frequent local museums and heritage attractions. The Strategy set out below is intended to also reach those who would not usually engage with archaeology or community heritage in the wider area, to create a lasting legacy to the archaeological and other heritage works undertaken as part of the Scheme.

E.1.1.5 The post-excavation phase will focus on making information available in more permanent formats, such as exhibitions, printed and pdf format booklets and web-based media. Lectures could be provided to groups with a specific interest in the archaeology of the area during this phase, though it is noted that this form of outreach is self-selecting and not especially effective in reaching significant audiences: resources are better focused on more general information provision.

E.1.1.6 The Archaeological Contractor will prepare a Scheme specific PACE Strategy, detailing the results of audience mapping, the targeted audiences and the activities to be undertaken. This will include a programme of activities throughout the project lifecycle.

E.1.1.7 Cognisance must be given to the requirements within the Local Authority Investigation Brief (CCC 2020).

E.1.2 Aims and objectives

E.1.2.1 Key research objectives have been identified for the mitigation phase of the A428 Black Cat to Caxton Gibbet Improvements Scheme to ensure that research is focused on the principal questions that the Scheme should answer. The evidence

from these sites also has wider implications for the archaeology of the UK as a whole.

E.1.2.2 The aim of the PACE Strategy will be to raise awareness of the significance of the archaeological landscape, to provide a lasting legacy of the archaeological works, and to encourage the enjoyment, interaction and engagement with the archaeological process and discoveries arising from the mitigation works undertaken along the Scheme.

E.1.2.3 The objectives of the PACE programme will be:

a. Engagement and appreciation: Encouraging engagement with and appreciation of the archaeological landscape.

b. Provide a sense of place: Encouraging a connection to the area for local residents and visitors.

c. Knowledge about archaeology along the Scheme corridor: Advancing public understanding and stimulating interest and public curiosity about archaeology along the Scheme.

d. Public understanding of developer-led archaeology: Making the archaeological process more understandable for the public, particularly in relation to a major road scheme, explaining why the sites selected for investigation have been chosen.

e. Accessible learning: Creating accessible learning opportunities for people to be involved in actively discovering more about their past.

f. Disseminating fieldwork information: Disseminating information about the archaeology along the Scheme to schools, the local community, local societies and groups with a keen interest in history and archaeology, and the academic community via a variety of platforms.

g. Sharing research: Showcasing the research impact of development-led archaeological fieldwork and how it can inform our understanding of the past with local and national audiences, including academic interest.

h. Inclusive participation: Encouraging engagement with those that may not normally engage with archaeology or local history.

E.1.3 Audience mapping

E.1.3.1 A successful PACE Strategy must consider both who the audience is and the activities they want to partake in. The Strategy should be tailored to meet the needs of the identified audience, and provide engaging activities to add enjoyment. Outreach has traditionally been focused on a similar range of activities, such as public talks and site tours, but consideration should be given to other activities to widen the audience.

E.1.3.2 A recent report on *Heritage, Health and Wellbeing* from the Heritage Alliance (2020) states that the intended audience should be engaged with from the outset. They state: “Your target audience is likely to know what will work for them. By engaging with them from the very beginning, you can shape your project to suit their needs most appropriately.”

E.1.3.3 This was reflected in the lessons learnt from the A14 Cambridge to Huntingdon Scheme (MHI 2019). This scheme found that implementing the community engagement at an earlier point in the project would have allowed for communication with local community groups to identify their “needs or desires”.

E.1.3.4 The activities presented in the Suggested Activities section below are just that – suggestions. The audience mapping will dictate the requirements of the identified audiences and the types of activities they will engage with.

E.1.3.5 To undertake the audience mapping, the Archaeological Contractor should utilise existing datasets available in relation to audiences in the region, then liaise with relevant groups to identify their needs.

E.1.3.6 The initial analysis will inform the key proposals for engagement activities and themes which should be refined through consultation with the groups identified. The limitations of COVID-19 at the time these activities take place must also be considered. All outreach activities should be provided in a manner that is COVID secure and safe.

E.1.3.7 The PACE Strategy is likely to predominantly focus on those communities directly impacted by the Scheme, or in its immediate vicinity, specifically those people living and working within or adjacent to the Scheme corridor, and those passing through it. The academic community at relevant universities may also be targeted, through activities such as presentations at conferences, along with the promotion of events or exhibits that may engage with or encourage those who do not normally engage with those targeted by these sorts of events. This will increase the impact of the outreach and the overall project legacy.

E.1.3.8 Audiences could comprise:

a. Local communities, particularly those in villages close to the Scheme, including, but not limited to, Great Barford, Little Barford, Blunham, Roxton, Tempsford, Chawston, Wyboston, Croxton and Eltisley, as well as in St Neots.

b. Primary and secondary school pupils and teachers.

c. Local history groups, both within the Scheme area and the wider area, including history groups in other villages in the wider area.

d. Members of local archaeology, history and civic societies.

e. Council for British Archaeology (CBA) Young Archaeology Clubs, CBA regional groups.

f. Higher education students, including archaeology students.

g. Academic archaeologists and members of subject and period specialist societies.

h. Relevant elected members.

i. Interest-focused and period-focused archaeological research groups.

j. Visitors to the area and people travelling through the landscape.

E.1.3.9 Other groups should not be discounted at this stage.

E.1.4 Suggested activities

E.1.4.1 A range of outreach and public archaeology activities should be proposed. These need to be tailored to the wants and needs of the differing audiences to maximise benefit. The audience mapping will be key to developing this.

E.1.4.2 Activities should be split across the different phases of archaeological work, including excavation and post-excavation. Later phases of work will provide different types of activity, although there will be some overlap (such as talks to local groups).

E.1.4.3 The lessons learnt from the A14 Cambridge to Huntingdon (MHI 2020) should be considered when planning events. That document includes detailed information and feedback on the activities that took place.

E.1.4.4 The following list of suggested activities may not all take place, and other activity types may be more appropriate. As stated above, the audience mapping will determine the exact requirements.

E.1.4.5 At all stages the research questions of the Scheme should be considered, to ensure that the knowledge gained from the Scheme is disseminated to the public.

E.1.4.6 Activities that could be considered are as followed. Please note that this list is not exhaustive, and it is possible that following audience mapping some activities may not be wanted by the target audiences, and that other activities could be identified:

a. A series of presentations to local groups and communities, both during excavation and post-excavation.

b. Site tours during excavations.

c. Community excavation or other fieldwork event (subject to suitable sites, access and health and safety).

d. Liaison with local schools, including educational events, talks and finds handling, continuing to participate in STEM (Science, technology, engineering, and mathematics) events as well as the provision of teaching materials.

e. Project website including information such as dig diaries, key finds, videoblogs from site, post-excavation analysis etc.

f. Provision of information via social media platforms.

g. Reaching a new audience. Activities and displays focused around popular non-heritage events. This strategy minimises the requirement for marketing, as it would make use of existing events that have their own promotional scheme in place. For example, a stall at local food festival could introduce participants to the weird and wonderful world of Roman foods - with information boards, finds from the sites, and food preparation exhibits. Tailored to location.

h. Attendance at local history, archaeology or other heritage events. Regional examples include the Castle Hill Open day; Huntingdon Riverside Festival and the Bedford River & Kite Festival every July.

i. Pop-up displays of artefacts and information at community hubs or museums.

j. Travelling display similar to the 'Time Truck' used on the A14 Cambridge to Huntingdon. The A14 National Highways display vehicle will be used on the A428, it can have some information about archaeology on the interchangeable boards. This allows information to be presented at locations such as supermarkets or service areas which will provide access to heritage for those who might not normally engage with it.

k. Permanent displays at a relevant location, such as the Northstowe Heritage Centre.

l. Production of one or more popular publications, on the Scheme as a whole, or covering thematic topics. A booklet for children should be considered.

m. Mapping of features from historic maps. This could include areas such as around Wintringham or within the parish of Eltisley.

n. Contribution to academic and professional conferences (such as CIfA) and publication of papers.

o. Artefact handling sessions.

p. Volunteer involvement in off-site post-excavation, such as finds cleaning, processing and recording, subject to regulations regarding the use of volunteers on development-led archaeological projects.

q. Provision of permanent information panels at suitable locations, such as local village centres or the Caxton Gibbet service area.

E.1.4.7 The following activities have been identified from the Local Authority Investigation Brief (CCC 2020). Many of these overlap with those identified above. The brief states that the activities 'could include any or all of the following':

a. The issue of press releases/articles to local/national media and popular archaeology magazines and parish magazines.

b. Relevant television programmes.

c. The use of a web-based and social media platforms – to include videoblogs, interactive opportunities.

d. Where appropriate, "Open days" for visitors and school groups.

e. Community excavation/participation in finds work or documentary research.

f. Pop-up displays in public places.

g. Significant evidence should be broadcast to the professional and academic communities at the earlier opportunity, inviting participation/consultation on site as necessary.

h. Parish-based presentations of the evidence during or after the excavation/analysis.

i. Preparation of materials for use by local schools.

j. Museum/gallery displays (requires early partnership working and funding).

E.1.5 Measuring impact

E.1.5.1 The impact of the outreach and public engagement activities shall be measured to identify the change of participant's perceptions of heritage, as well as to identify any benefits to wellbeing, sense of place, social interaction, provision of creative and cultural opportunities and understanding of archaeology and the Scheme.

E.1.5.2 Data will need to be collated prior to the start of the PACE activities to provide a baseline against which to measure. Ongoing data collection will be required to allow change to be assessed. Feedback survey forms should be provided at events to allow the procurement of data, or 'exit surveys' undertaken at events.

E.1.5.3 All survey and feedback information (hard copy, social media analytics and visitor comments) should be collated and presented in an accessible, distilled format within a report that describes the intended and actual outcomes of the programme. This should also consider lessons learnt from the PACE activities from the Scheme.

References

Heritage Alliance (2020) *Heritage, Health and Wellbeing*: *A Heritage Alliance Report*, https://www.theheritagealliance.org.uk/wp-content/uploads/2020/09/Heritage-Alliance-AnnualReport_2020_Online.pdf

MHI (2019) *A14 Community Archaeology Final Report,* Unpublished document

CCC (2020) *Local Authority Investigation Brief,* Unpublished document