A12 Chelmsford to A120 widening scheme

TR010060

6.3 ENVIRONMENTAL STATEMENT

APPENDIX 7.10 ARCHAEOLOGICAL MITIGATION STRATEGY

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 6

July 2023

Infrastructure Planning

Planning Act 2008

A12 Chelmsford to A120 widening scheme

Development Consent Order 202[ ]

ENVIRONMENTAL STATEMENT APPENDIX 7.10 ARCHAEOLOGICAL MITIGATION STRATEGY

Regulation Reference	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010060
Application Document Reference	TR010060/APP/6.3
Author	A12 Project Team & National Highways

Version	Date	Status of Version
Rev 1	August 2022	DCO Application
Rev 2	July 2023	Revised for Deadline 7

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 Introduction

1.1 Project background

1.1.1 National Highways (the Applicant) has submitted an application under section 37 of the Planning Act 2008 (the '2008 Act') to the Secretary of State for Transport via the Planning Inspectorate (the Inspectorate) for an order to grant development consent for the A12 Chelmsford to A120 widening scheme (the proposed scheme).

1.1.2 The proposed scheme comprises improvements to the A12 between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange), a distance of approximately 24km, or 15 miles. The proposed scheme involves widening the A12 to three lanes throughout (where it is not already three lanes) with a bypass between junctions 22 and 23 and a second bypass between junctions 24 and 25. It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders (WCH) to existing routes along the A12, which would be removed.

1.2 Overview of this document

1.2.1 This archaeological mitigation strategy (AMS) sets out the proposed scope, guiding principles and methods for the planning and implementation of mitigation measures for each archaeological site identified following analysis of the results of desk-based research, geophysical surveys, aerial investigation and mapping, trial trenching, and Palaeolithic assessment (Appendix 7.8 of the Environmental Statement [TR010060/APP/6.3]) undertaken as part of the proposed scheme.

1.2.2 It details the measures proposed to reduce the effect of the proposed scheme on the archaeological resource 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 proposed scheme.

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

1.2.5 The measures set out in this document are derived from the mitigation proposals presented in Chapter 7: Cultural heritage of the Environmental Statement [TR010060/APP/6.1] and expressed in the Register of Environmental Commitments (REAC), within the first iteration Environmental Management Plan (EMP) [TR010060/APP/6.5].

1.3 Status of this document

1.3.1 This AMS has been prepared following discussion with Essex County Council, Colchester Borough Council and Historic England, and forms an Appendix to Chapter 7: Cultural heritage, of the Environmental Statement [TR010060/APP/6.1].

1.3.2 Consultation with stakeholders is ongoing to agree the scope and scale of mitigation at some sites. Where the result of these consultations is different to the proposals contained in this document, the changes will be captured in a Written Scheme of Investigation which will be produced before the start of construction works.

1.4 Aim of this document

1.4.1 This document sets out the scope, guiding principles and methods for the planning and implementation of the required written scheme of investigation (WSI).

1.4.2 A WSI is a document that relates to particular elements of archaeological fieldwork and details specific measures to be applied or adopted as part of the programme of archaeological mitigation works. It will be prepared by the Archaeological Contractor for the proposed scheme in accordance with the principles and methods set out in this AMS, in consultation with the Archaeological Clerk of Works (ACoW) and will be approved by the archaeological advisors for Essex County Council (ECC), Colchester Borough Council (CBC) and, where relevant, Historic England (the Curators). The WSI will be prepared prior to the commencement of mitigation fieldwork and will be 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:

- The Client – National Highways, or their representative (hereafter referred to as the Client's representative).
- The Principal Contractor (i.e. the construction contractor for the proposed scheme).
- Archaeological Clerk of Works (as appointed by the Principal Contractor).
- Archaeological Contractor (as appointed by the Principal Contractor).
- Curators – the local planning authority archaeologists for ECC and CBC, as well as representatives of Historic England (including, but not limited to, the Inspector of Ancient Monuments, Inspector of Historic Buildings and the Regional Scientific Advisor).

1.5.2 The AMS has been produced by the Applicant in consultation with the Curators.

1.5.3 A group of expert archaeological advisors will be established to comment on and provide specialist advice on the implementation of this mitigation strategy. Members of the group will comprise experts in the Palaeolithic, Bronze Age, Iron Age and Roman periods of the region.

1.5.4 The Archaeological Contractor will be responsible for the delivery of the archaeological mitigation programme, as set out in this AMS. Their responsibilities will include all on-site and off-site works, including preparation of the WSI, post-fieldwork 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 the expert archaeological advisors and the Curators.

1.5.5 The ACoW will be appointed by the Principal Contractor and will be responsible for monitoring the work undertaken by the Archaeological Contractor to ensure compliance with the AMS and WSI. They will also be responsible for liaising with the Principal Contractor to monitor construction activities to ensure compliance with this AMS and the first iteration EMP [TR010060/APP/6.5]. The ACoW will also organise and attend regular site meetings with the Curators to keep them fully informed of progress and significant discoveries.

1.5.6 The Curators will monitor the fieldwork to ensure that it is carried out to the required standard and in compliance with this AMS and the WSI, and ensure that it achieves the stated aims and objectives. The 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 AMS conforms with current good practice and takes account of guidance outlined in:

- National Networks National Policy Statement (Department for Transport, NNNPS) (2014).
- National Planning Policy Framework (NPPF) (MHCLG, 2021) and National Planning Practice Guidance.
- Design Manual for Roads and Bridges (DMRB): LA 104 Environmental Assessment and monitoring (Revision 1) (Highways England 2020a).
- DMRB: LA 106 Cultural heritage assessment (Revision 1). (Highways England 2020b).
- DMRB: LA 116 Cultural heritage asset management plans (Revision 1) (Highways England 2019a).
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England 2015a).
- Understanding Historic Buildings: A Guide to Good Recording Practice (Historic England 2016).

- Understanding the Archaeology of Landscapes: A Guide to Good Recording Practice (Historic England 2017).
- Standards and guidance issued by the Chartered Institute for Archaeologists (CIfA): Code of Conduct (2021); archaeological excavation (2020a); archaeological watching brief (2020c); the creation, compilation, transfer and deposition of archaeological archives (2020b); and for the collection, documentation, conservation and research of archaeological materials (2020d).
- Historic England have also issued a variety of guidance notes for environmental archaeology, human remains, scientific dating, preservation of archaeological remains and archaeological conservation many of which (but not all) are referenced in the references list at the end of this document.

1.7 Structure of this document

1.7.1 This document comprises of the following parts.

Part one - the archaeological mitigation strategy

1.7.2 It describes the principles to be applied in undertaking archaeological mitigation on the proposed scheme and proposed strategies. Sections in this part of the document detail 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, drawing on (but not limited to):

- Research and Archaeology Revisited: a revised framework for the East of England (Association of Local Government Archaeological Officers, 2021).
- Understanding the British Iron Age: an agenda for action (Champion *et al*., 2001).
- The Rural Settlement of Roman Britain (Allen *et al.,* 2016).

1.7.4 Scheme-specific research questions will also be developed in consultation with the Curators and recorded in the WSI.

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 the WSI.

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 also outlined.

Part one - the archaeological mitigation strategy

2 Purpose and objectives

2.1 Purpose of the 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 proposed scheme on both archaeological sites and built heritage assets. The strategy for each site is designed to answer specific research questions to advance knowledge gain.

2.1.2 Not all sites will be fully excavated, as the primary aim of the AMS is to maximise knowledge gain. The mitigation of the proposed 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 A428 Black Cat to Caxton Gibbet Improvements (Highways England 2021), A303 (Highways England 2019b) and High Speed 2 (HS2) (HS2 2017).

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

- Observe professional codes, guidance and standards.
- Consider archaeological and cultural heritage evidence from all periods and its contribution to the understanding of the historic landscape and its use over time.
- Only undertake extensive intrusive works in areas where there will be a direct impact through development (as identified in the Environmental Statement [as certified by the DCO]), or where there is a need to consider design changes.
- Utilise the information provided by other disciplines (for example, geotechnical investigations).

2.1.4 Where relevant, all works will take account of statutory designations.

2.2 Objectives

2.2.1 All those undertaking archaeological work associated with the proposed scheme will:

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

- The results of archaeological investigation will be published within an appropriate period following assessment and analysis (see Section 14 of this document). The results of fieldwork interventions should be combined into a single report.

- Ensure that the results of the investigations (i) are made publicly available in an appropriate format for assimilation into the ECC and Colchester Historic Environment Records (HER), (ii) develop an understanding of the historic environment resource of the proposed scheme by the public at large; and (iii) disseminated in a timely manner via the Online Access to the Index of Archaeological Investigations and the Archaeological Data Service.

- Ensure the physical archive (artefacts and ecofacts) is publicly accessible through their deposition at an appropriate Museum.

2.3 Aims of specific intervention types

2.3.1 Archaeological mitigation for the proposed scheme will take several forms, ranging from archaeological excavation, and strip, map and sample of archaeological sites, to the recording of non-designated canal mileposts, their removal and safe storage during construction and replacement close to their original location. Further details of these techniques are contained within the following sections of this document.

Archaeological excavation

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

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

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

- 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.

Strip, map and sample

2.3.3 The aim of strip, map and sample excavation is to mitigate the impact of construction of the proposed scheme on known archaeological remains, by ensuring that they are investigated, recorded in sufficient detail to ensure their interpretation.

Palaeolithic investigation

2.3.4 A further stage of evaluation to determine the scope and scale of mitigation may be required in four affected areas of high potential for the presence of *in situ* Palaeolithic archaeological remains (Assets 978, 979, 980 and 981), the need for and scope of which will be subject to the outcome of ongoing consultation with the relevant stakeholders. This will be followed by archaeological excavation or strip map and sample of defined areas based on the results, and in agreement with the appropriate Curator(s).

Built heritage recording

2.3.5 The photographic recording, removal, storage and reinstatement of two distance marker posts on the Chelmer and Blackwater Navigation (Assets 47 and 48) is to ensure they are protected during construction and reinstated as close as possible to their original setting, such that their context is retained.

2.3.6 The photographic recording of a section of a water feeder ditch for the Chelmer and Blackwater Canal (Asset 43), to preserve a record of the affected part of the asset.

Historic landscape recording

2.3.7 The recording of the affected elements of six historic landscape types (HLT 7, 11, 12, 13 and 14) and Boreham House Landscape Park (Asset 67) to Historic England Level 2 (2017) to ensure a record of their condition is made before construction.

3 Archaeological background

3.1 Introduction

3.1.1 The archaeological background of the proposed scheme has been presented in Chapter 7: Cultural heritage, of the Environmental Statement [TR010060/APP/6.1]. This includes the historical and archaeological background of the proposed scheme within a defined 1km study area and the results of archaeological evaluations undertaken as part of the proposed scheme. The archaeological background is summarised here.

3.2 Aerial investigation and mapping

3.2.1 The Aerial Investigation and Mapping report in Appendix 7.4 of the Environmental Statement [TR010060/APP/6.3] comprised a desk-based review of aerial photographs, and specialist interpretation to identify potential new archaeological sites. This process identified one previously unknown site (Asset 955, Cropmarks south-east of Hole farm), and provided additional detail for two sites identified by the geophysical survey (Asset 954, Geophysical Anomalies west of Inworth Hall, and Asset 958, Enclosures west of Sniveller's Lane), as well as enhancing the understanding of a further 18 known assets recorded in the HER (Assets 121, 130, 182, 194, 277, 383, 411, 439, 458, 495, 600, 657, 673, 688, 696, 771, 775 and 776).

3.3 Geophysical survey

3.3.1 Archaeological evaluation of the route through geophysical survey was conducted in two phases between December 2019 and March 2020, and comprised a magnetometer survey of approximately 635 hectares. The results of the geophysical surveys are presented in Appendices 7.5 and 7.6 of the Environmental Statement [TR010060/APP/6.3]. Anomalies detected by the geophysical survey resulted in the identification of ten previously unrecorded archaeological sites (Assets 407, 430, 949, 950, 951, 953, 954, 956, 957 and 958), mostly interpreted as being of prehistoric or Roman date, and ranging in value between negligible and medium depending on their apparent complexity. All have been taken into account when assessing the impact of the proposed scheme, and details are included in the Gazetteer (Appendix 7.1 of the Environmental Statement [TR010060/APP/6.3]).

3.4 Trial trenching

3.4.1 Archaeological evaluation by trial trenching was conducted throughout the Order Limits to test the interpretation of assets identified from desk-based sources, as well as those identified by the geophysical survey and aerial investigation and mapping, and also to identify archaeological remains which may not be responsive to any of the non-invasive means previously employed. A total of 2,117 linear trenches were used to target known HER assets, specific geophysical survey anomalies and cropmarks, and to test blank areas. A full report on the results of the trial trenching is presented in Appendix 7.7 of the Environmental Statement [TR010060/APP/6.3].

3.4.2 Eighteen previously unknown archaeological sites have been identified by the trial trenching (Assets 952, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974 and 975), mostly comprising field boundaries, enclosures and associated pits and post holes of late prehistoric or Roman date, with some sites of post-medieval date also being identified. All have been taken into account when assessing the impact of the proposed scheme, and full details are included in the Gazetteer (Appendix 7.1 of the Environmental Statement [TR010060/APP/6.3]).

3.5 Palaeolithic evaluation

3.5.1 A combination of specialist geophysical techniques, machine-dug test pits and boreholes were used to evaluate the potential for *in situ* Palaeolithic archaeological remains to be present within the Order Limits. The results are presented in Appendix 7.8 of the Environmental Statement [TR010060/APP/6.3].

3.5.2 The central area lake deposits (Asset 979) identified between junction 22 (Colemans Interchange) and Borrow Pit I, east of Rivenhall End and including the known Palaeolithic site at Coleman's Farm (Asset 362) east of Witham comprised complex sequence of infilled lakes surrounded by marginal wetland. These deposits contained several areas considered to be of high potential for the presence of *in situ* palaeolithic remains. Further areas of high potential were identified south of the A12 close to Howbridge Hall Road (Asset 978), partially within Borrow Pit J between Highfields Lane and Ewell Hall Chase, Kelvedon (Asset 980), and between the railway and Queensbury Avenue, north of Copford (Asset 981). Areas assessed by the same study to be of very high or high palaeoenvironmental potential coincide with the same areas, with the exception of an area south of junction 19 (Boreham Interchange), close to the River Blackwater (Asset 977).

3.6 Archaeological baseline

Prehistoric (up to AD43)

Palaeolithic

3.6.1 The East of England is recognized as a nationally and internationally important area for the study of the Palaeolithic (up to 10,000BC), and the proposed scheme passes through a part of Essex where geological conditions are considered suitable for the preservation of *in situ* remains and palaeoenvironmental evidence from this period, as demonstrated by the geoarchaeological evaluation carried out at Colemans Farm, Rivenhall (Asset 362) and Hoxnian lake deposits recorded at Marks Tey (Asset 906). A detailed desk-based assessment (DBA) of the potential for the presence of Palaeolithic archaeological remains was carried out to inform the assessment and can be found in Appendix 7.3 of the Environmental Statement [TR010060/APP/6.3]. The early prehistoric period (up to 2500BC) is largely represented by isolated finds such as hand axes dating from the Palaeolithic (Assets 150, 362, 378, 388, 393, 685 and 813).

Mesolithic and Neolithic

3.6.2 The Mesolithic (10,000 – 4000BC) and Neolithic (4000 - 2500BC) periods are also mostly represented by chance finds of flint implements and evidence of their manufacturing (Assets 335, 342, 391 and 395), although more substantial evidence such as the Scheduled long mortuary enclosures at Rivenhall (Asset 399) and Frame Farm Feering (Asset 737), and a non-designated possible long barrow at Colemans Farm, Rivenhall (Asset 391) are also known.

Bronze Age

3.6.3 There is an increase in evidence from the Bronze Age (2500 – 800BC). Many of the recorded sites are structural in nature or linked to potential areas of activity, such as ring ditches, pit alignments and enclosures (Assets 19, 122, 688, 863, 954, 960 and 964), as well as finds of pottery and other artefacts (Assets 37, 76, 390, 449, 664 and 820). Evidence gathered during trial trenching also suggests that there may be long continuity of occupation at some sites, meaning that Bronze Age occupation may have been obscured by later and more extensive activity in the Iron Age and Roman periods.

Iron Age

3.6.4 The progression into the Iron Age (800BCC – AD43) is illustrated in the increase in assets providing clear evidence of settlement activity. The unenclosed settlements of the late Bronze Age progressed to a more enclosed form towards the middle of the period. As with earlier periods, evidence at many locations comes from stray finds of pottery and flint of which there are many in the study area (Assets 84, 316, 409, 422, 454, 459, 469, 639, 653, 659, 660, 704, 714, 722, 809 and 873). Settlement evidence includes enclosures, roundhouses, ditches, post-holes and pits. Sixteen such sites are known within the study area for the proposed scheme, of which five have been newly identified during archaeological evaluations conducted to inform the Environmental Statement (Assets 951, 963, 968, 969 and 971).

3.6.5 There are few overtly ceremonial Iron Age monuments within the study area, although the findspot of the Kelvedon Iron Age Warrior (Asset 657) is of particular note as a high status individual, buried with arms and armour including a sword which appeared to have been deliberately broken. At Church Road & Plantation Road, Boreham an Iron Age cremation cemetery (Asset 855) depicting more typical burials was discovered during construction of a housing development.

Roman (AD43 to 410)

3.6.6 The Roman period (AD43 – 410) is well represented in the HERs. Archaeological evaluation and aerial photography analysis, undertaken mainly as part of the National Mapping Programme and recorded in the HER, has identified a significant number of assets dating to the period and range from settlement evidence to individual finds, which reflects the extent of movement and trade that was common at this time. The route of the existing A12 follows a Roman precursor for much of its length east of Chelmsford (Roman *Caesaromagus*) (Assets 1, 111, 112 and 780) except where it deviates south of the towns of Witham and Kelvedon. Although it is likely that evidence of the

Roman road would have been removed by construction of the existing A12, it is possible that it could be preserved in places. Elsewhere in the study area, seven sections of Roman road are also known (Assets 376, 736, 761, 772, 774, 926 and 927), indicating the potential for it to have influenced the development of settlements and farming.

3.6.7 A single high status site of the Roman period has been identified. The Scheduled Monument of a Roman villa, Anglo-Saxon hall, cemetery and church site, around and to the north and east of St Mary and All Saints Church, Rivenhall (Asset 976) is located a little over 1km north-west of the proposed scheme.

3.6.8 As with the preceding periods, much evidence for the location and extent of Roman activity within the study area is derived in the first instance from stray finds of artefacts, of which 55 are known. Seventeen sites of Roman date have been recorded within the study area (Assets 177, 348, 354, 411, 530, 673, 729, 949, 950, 956, 958, 965, 966, 967, 970, 975 and 976), which range in scale from a cemetery at Kelvedon (Asset 530); industrial sites and a pottery kiln (Assets 729 and 966); agricultural field systems (Assets 967, 675); and enclosures potentially associated with domestic activity (Assets 177, 354, 411, 673, 949, 950, 956, 958, 965 and 970). Of these assets, nine were identified during evaluations carried out to inform the Environmental Statement (Assets 949, 950, 956, 958, 965, 966, 967, 970 and 975).

Early medieval (AD410 to 1066)

3.6.9 The earliest changes within the early medieval period (AD410 – 1066) are often difficult to identify due to the continuation of Roman influence in the area. There are 20 sites dated to the Early medieval period within the study area, of which 13 are stray finds of artefacts from the ploughsoil. Among the more substantial archaeological remains are funerary sites, including the Scheduled Monument of an Anglo-Saxon cemetery 150m east of Easterford Mill (Asset 646), as well as non-designated Anglo Saxon Cemeteries at Witham, Little Braxted and Kelvedon (Assets 187, 348 and 648). There are also field systems at White Hart Lane, Springfield (Asset 2), the site of a demolished house dated from documentary sources (Asset 135), and the site of Burgate Field Enclosure (Asset 354). The latter was, however, shown to potentially be the continuation of an extensive Roman domestic site as a result of evaluation carried out to inform the Environmental Statement.

Medieval (AD1066 to 1540)

3.6.10 As well as 52 findspots of pottery, metalwork and other materials there are a further 20 archaeological sites of medieval date (AD1066 – 1540).

3.6.11 Among some of the high-status medieval sites within the study area were hunting or deer parks, of which two are known: New or Little Park, New Hall, Boreham (Asset 5) and Red Deer Park, New Hall, Boreham (Asset 45). Neither are designated heritage assets, and their existence can be traced mainly through documentary sources and the survival of some elements of their boundaries in the modern field pattern. New or Little Park was considered to be the highest status parkland site in Essex based on its size alone.

3.6.12 Moated sites consist of wide ditches, often water-filled, and partly or completely enclosing one or more islands on which stood domestic or religious buildings. The majority served as high status residences with the moat intended to function as a status symbol rather than a practical means of defence. Typically constructed between the mid-13th and mid-14th centuries AD, they are particularly common in eastern England. Many examples provide conditions favourable to the survival of organic remains and their enclosing ditches are often the only extant part of the site. Five moated sites have been identified within the study area (Assets 105, 706, 818, 862 and 932), including the recently designated Scheduled Monument at Marks Tey Hall Moated Site (Asset 818).

3.6.13 Deserted settlements like Church Hills (Asset 134) are a common site type dating from the medieval period, although earlier and later examples also exist. They are often preserved in the landscape as earthworks or cropmarks. The reasons for their desertion are many and various although reduction of populations through illness during events like the Black Death in the 14th century, and migration of their inhabitants to larger settlements and cities during the post-medieval and later periods are often cited.

3.6.14 Potts Green, Marks Tey (Asset 909) is an example of a village green, many of which were of medieval origin when they were created to provide communal grazing as protection from animal predators and theft. They also functioned as a location for recreation.

3.6.15 Many of the towns and villages in the study area have their origins in the medieval period and this is reflected in the designation of the Witham (Chipping Hill) (Asset 195), Witham Town Centre (Newland Street) (Asset 251), Kelvedon (Asset 566) and Feering (Asset 666) Conservation Areas, which all have medieval buildings in the cores.

Post-medieval (AD1540 to 1900)

3.6.16 Assets from the post-medieval (AD1540 – 1901) period are the most numerous in the study area, with 97 archaeological sites, 359 historic buildings and structures, and ten historic landscape types. This reflects both the growth of settlements, agriculture and infrastructure like canals and railways in this period, and the longevity of the structures and their re-use into the modern era. Examples include the Chelmer and Backwater Navigation (Asset 152) constructed in the late 18th century to transport goods and people between Chelmsford and Maldon. There are 18 individual assets associated with the canal within the study area, and a measure of its value can be seen in the five Grade II listed locks and bridges (Assets 20, 35, 36, 51 and 78), and its designation as a Conservation Area (Asset 68). The Wickham Bishops timber trestle railway viaduct (Asset 290) is a unique example of this type of structure in Britain, and the importance of industrial heritage is demonstrated by the Circular brick kilns, W H Collier Brick and Tile Works, Church Lane (Asset 804), both of which are designated as Scheduled Monuments.

3.6.17 As with the preceding periods, there are numerous stray finds of artefacts from this period with 41 recorded within the study area.

Modern (1900 to present)

3.6.18 Relatively few assets of modern (AD1901 – Present) date have been identified, comprising 23 archaeological sites, 10 built heritage assets, and five historic landscape types.

3.6.19 The strategic importance of the industries and military sites in this part of Essex is reflected in the number of military assets within the study area. As well as the site of night landing ground established by the Royal Flying Corps at Easthorpe during WWI (Asset 778), there are 14 sites of demolished pillboxes and other defensive sites (Assets 22, 38, 39, 41, 46, 49, 108, 294, 299, 311, 315, 331, 343, 778 and 858) and four extant similar assets (Assets 44, 53, 310 and 312). The most recent military asset is a Cold War Royal Observes Corps monitoring post at Hatfield Peverel (Asset 172). Military commemorative assets include the Grade II listed war memorials at Witham (Asset 279) and Marks Tey (Asset 913).

3.6.20 Other modern assets include the early 20th century Kelvedon-Tiptree-Tollesbury Light Railway (Crab and Winkle) (Asset 735), Inworth Pumping Station (Asset 693), K6 Telephone Kiosk, Feering (Asset 745) and a former Methodist Church, London Road, Marks Tey (Asset 928).

4 Research agendas

4.1 Introduction

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 proposed scheme.

4.1.3 The AMS 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 are not fixed and will be reviewed and updated throughout the project. 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 WSI, 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. However, the WSI will have an updated research section and questions. The questions presented in this document are not fixed and the questions set in the WSI should reflect the potential of the individual assets under investigation.

4.2 Relevant agendas

4.2.1 The relevant research agendas for the AMS are:

- Research and Archaeology Revisited: a revised framework for the East of England (Medlycott 2011).
- The East of England Regional Research Framework (Association of Local Government Archaeological Officers 2021). This document was designed to update and augment the revised framework for the region published in 2011.
- Research and Conservation Framework for the British Palaeolithic (Historic England 2008).
- Understanding the British Iron Age: an agenda for action (Champion *et al*., 2001).
- The Rural Settlement of Roman Britain: an online resource (Allen *et al*., 2018).

4.3 Overarching themes

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

- Holocene environment
- Palaeolithic environment
- Palaeolithic activity
- Bronze Age chronology
- Bronze Age settlement patterns
- Bronze Age to Iron Age transition
- Iron Age settlement and field patterns
- Iron Age enclosure and settlement types
- Iron Age to Roman transition
- Roman roads and interconnectivity of settlements
- Roman industry
- Roman to Early medieval transition
- Early medieval settlement and field patterns
- Medieval and post-medieval agricultural systems and land use

4.4 Research questions by period

Palaeolithic

4.4.1 Four areas of Palaeolithic potential have been identified within the Order Limits (Assets 978, 979, 980 and 981).

4.4.2 Priorities for research which the proposed scheme has the potential to address from the research agendas are identified as follows:

Dating

- An understanding of the chronological framework of Quaternary geology is vital — it is relied on it for stratigraphic markers, deposit modelling and the identification of potential locations of sites (Medlycott 2011).
- There have been substantial developments in understanding of the chronology of the Upper Palaeolithic and Mesolithic in recent years and it is essential that work carried out within the region is undertaken, and contributes to, these wider themes. For both periods there has traditionally been a heavy reliance on certain typologically distinctive flint tools for dating purposes. In recent years, and particularly for the Late Upper

Palaeolithic, studies of lithic assemblages have demonstrated chronologically significant differences in technology which have the potential of assemblages lacking strictly diagnostic forms to be placed in a more detailed chronological sequence. Studies of Late Upper Palaeolithic assemblages from the region should draw on this growing body of work. There has been less work of this kind in relation to the Mesolithic and dating remains heavily reliant on microlith typology. There have, however, been important developments in this area, especially in terms of the recognition of the diachronous appearance of narrow-blade, later Mesolithic across Britain and an increasingly detailed understanding of chronological developments in the earlier part of the period. Again, it is essential that work on Mesolithic assemblages in the region engages with this work (Billington 2018).

- At present, evidence from the region makes little contribution to chronological understandings of the Upper Palaeolithic and Mesolithic at a national scale, with a very small number of sites with reliable associated 14C dates (radiocarbon dating). Where such sites are located and investigated every effort should be made to secure reliable samples for dating and the implications of such dates will invariably be of more than regional significance (Billington 2018).

Environment

- A fuller understanding of the Holocene environment is still required for the region, including the area now submerged beneath the North Sea (Medlycott 2011).

- Geoarchaeological deposit models need to be developed across the region. Deposit/predictive modelling has great potential for use in development management. HERs need access to information about site stratigraphy and superficial deposits. Any such deposit/predictive models should be devised with a view to their being regularly updated to take account of new information, and should be embedded into HERs via GIS (Billington 2018).

Settlement activity and artefact recovery

- The discovery of the cremation deposit at Langford, Essex raises the possibility that a hitherto unrecognised tradition of Mesolithic cremation burial may be present in parts of southern Britain and emphasises the requirement for deposits of this kind to be routinely dated. Attention should also be directed to other putatively Mesolithic cut features which have been reported during excavations. There are a growing number of sites where small pits, generally containing only small assemblages of flintwork, have been suggested to date to this period and it would be useful if analysis of these features and their finds and 14C dating could examine this issue in more detail (Billington 2018).

- Improving fieldwork methodologies for locating and investigating Upper Palaeolithic and Mesolithic sites remains a key concern. This applies

especially to those rare, but disproportionately important sites where minimally disturbed/*in situ* lithic scatters survive, and are sometimes associated with other evidence such as faunal remains and palaeoenvironmental proxies. Within the region the best opportunities for investigating sites of this kind come from the alluviated floodplains of the river valleys and from areas of former coastal wetland. There is a real need for effective strategies for locating and investigating sites of this kind to be implemented in areas of high potential and it is important to note that these periods are often poorly served by watching brief/strip-map-and-sample type briefs, where it is difficult to anticipate and adequately deal with ephemeral artefact scatters. Aside from alluvial contexts, important *in situ* scatters of Upper Palaeolithic and Mesolithic date continue to be recovered from beneath colluvial deposits and within near surface sub-soil layers, occasionally in locations where it would be difficult to anticipate the survival of such deposits. This again highlights the need for effective modelling and sampling of deposits encountered during evaluation phases (Billington 2018).

Palaeolithic/Neolithic transition

- The Mesolithic/Neolithic transition remains a key research topic for the region, especially given the ubiquity of scatters with both Mesolithic and Neolithic material. Given the progress in understanding the Early Neolithic sequence in recent years, it is important to recognise the poor chronological control we have over the Mesolithic, a period that spans over 5,000 years. As Frances Healy has recently emphasised, at many sites where both Early Neolithic and Mesolithic material are found the activity they represent could often be separated by millennia, and at present, unlike some other areas of Britain, evidence from the Mesolithic side of the transition can contribute little to ongoing debates on the subject. One area that could be of considerable interest is comparing, in detail, lithic assemblages from what seem to be the earliest Neolithic sites in the region (e.g. those associated with very early dates and/or carinated bowl pottery) with those from discrete Later Mesolithic assemblages, although absolute dating of the relevant Mesolithic assemblages might be seen as an essential pre-requisite for this (Billington 2018).

Bronze Age

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

4.4.4 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. 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 proposed scheme has the potential to address from the research agendas are identified as follows:

Settlement activity

- 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 (Medlycott 2011).

- 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? (Brudenell 2018).

Dating

- The application of Bayesian modelling to radiocarbon dates based on rigorously selected samples will help to refine chronologies. Further dating of monuments would undoubtedly refine our understanding of their role in the landscape. Equally, ceramic studies would be enhanced by better cross referencing between typological methods of dating and scientific methods (Medlycott 2011).

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 (Brudenell 2018).

Iron Age

4.4.6 Priorities for research which the proposed scheme has the potential to address, identified from the research agendas, are as follows:

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 (Medlycott 2011).

- 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? (Brudenell 2018).

- 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 (Evans 2019).

Dating

- 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 wheel-made pottery, affords a good illustration of this point (Champion *et al.,* 2001).

- 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 also 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 (Medlycott 2011).

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 (Champion *et al* 2001).

- 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 (Champion *et al* 2001).

- 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 (Medlycott 2011).

- 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 (Brudenell 2018).

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 (Brudenell 2018).

- 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 (Brudenell 2018).

- 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 (Brudenell 2018).

- 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 (Evans 2019).

Burial and the treatment of human remains

- 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 (Brudenell 2018).

Iron Age to 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? (Medlycott 2011).

Roman

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

4.4.8 Priorities for research which the proposed scheme has the potential to address, identified from the research agendas, are as follows:

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 reorganisation several decades after the Roman Conquest (Medlycott 2011).

Rural settlements and landscapes

- 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 (Medlycott 2011).

- 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 (Evans 2019).

- 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 (Smith *et al* 2016).

- 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 (Smith *et al* 2016).

Dating

- 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 (Smith *et al* 2016).

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 understudied. 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? (Medlycott 2011).

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? (Medlycott 2011).

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 (Medlycott 2011).

- 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? (Evans 2019).

4.4.9 Further questions raised by the proposed scheme are as follows:

- Did the line of the Roman roads influence settlement location or density?

- Did the proximity of Roman roads contribute to soe settlements continuing from the late Iron Age into the Roman period?

Early medieval and medieval

4.4.10 Priorities for research which the proposed scheme has the potential to address from the research agendas are identified as follows:

Rural settlement

- 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 (Medlycott 2011).

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 (Medlycott 2011).

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 (Medlycott 2011).

Post-medieval

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

Industry and infrastructure

4.4.12 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) (Medlycott 2011).

Landscape

4.4.13 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 (Medlycott 2011).

Part two – overarching scope of works

5 Strategy

5.1 Mitigation requirements

5.1.1 A total of 81 sites have been identified that require archaeological mitigation. These are summarised in Table 5.1 below, and their locations and extents are shown on Figure 7.10 at the end of this report.

5.1.2 The basic principle for the mitigation strategy is to mitigate impacts on archaeological sites identified as a result of the proposed scheme. Rather than taking a standard blanket 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 proposed 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 proposed scheme boundary, will be fenced off during construction to ensure they are preserved.

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 proposed scheme. The principal mitigation techniques to be used are:

- Archaeological excavation
- Strip, map and sample
- Gridded test pitting (Palaeolithic investigation)
- Watching brief during construction
- Geoarchaeological and palaeoenvironmental assessment
- Photographic survey (historic building mitigation)
- Level 2 Historic Landscape Survey

5.1.4 Because of land access difficulties and design changes it was not possible to carry out trial trenching at seven known sites where mitigation may be required (Assets 45, 54, 349, 383, 385, 388, and 688). There are also areas of land required for the proposed Cadent gas main diversion, and pinch-point widening of Inworth Road that were not part of the proposed scheme when the trial trenching was conducted. In these cases, trial trenching in line with the previously agreed Written Scheme of Investigation (Headland Archaeology 2021) will be undertaken and the results used to inform the need for and choice of mitigation measure, in consultation with the Curators.

Table 5.1 Sites requiring mitigation

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
1	43	P/14.1	Water feeder, Chelmer and Blackwater Navigation 2	• Photographic Survey	Construction of an outfall drain would remove archaeological remains associated with a small section of this asset. Photographic survey of this asset would make a record of its appearance before construction.
2	48	P/14.1	Post, Chelmer and Blackwater Navigation 2	• Photographic Survey; • Careful removal and safe storage; • Replacement close to original location	Construction of an outfall drain would require removal of this asset. A photographic survey before construction would preserve a record of its current condition. Careful removal and safe storage off-site would preserve the physical remains of the asset, and replacement close to its original location would preserve its relationship with the Chelmer and Blackwater Canal and associated water feeder.
3	47	P/14.1	Post, Chelmer and Blackwater Navigation 1	• Photographic Survey; • Careful removal and safe storage; • Replacement close to original location	Construction of an outfall drain would require removal of this asset. A photographic survey before construction would preserve a record of its current condition. Careful removal and safe storage off-site would preserve the physical remains of the asset, and replacement close to its original location would preserve its relationship with the Chelmer and Blackwater Canal and associated water feeder.
4	65	P/14.1	Boreham Hall Cropmarks	• Strip Map and Sample	Trial trenching in this area was largely unproductive, although a single trench at this location produced an un-urned cremation burial. Strip map and sample of this area would confirm the presence or absence of any further similar deposits and enable a record to be made before their removal.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
5	1	P/237	Roman Road Extending North East From Chelmsford	• Trial Trenching	Construction activity at Junction 19 would remove remains associated with this asset if they are present. A watching brief of the affected area would allow any remains to be identified and recorded before their removal. Because of the length of this asset (particularly in combination with other Roman Road routes), trial trenching of a sample section is proposed. The sample location will be selected by the Contractor in consultation with the Curators..
6	45	P/85	Red Deer Park, New Hall, Boreham	• None Proposed	This area has been disturbed by recent development and all remains within the Order Limits are believed to have been removed.
	54		South of Bulls Lodge		
7	72	P/14.3	Lionfield Cottages Cropmarks	• Archaeological excavation • Palaeoenvironmental Assessment, Analysis and Reporting	Trial trenching in this area identified a number of ditches and pits believed to represent an enclosure with evidence for settlement. Pottery and other finds dated the site to the late Bronze Age or early Iron Age, although one unexcavated feature was interpreted as a potential early medieval sunken-featured building. An organic rich deposit containing a diverse selection of wetland taxa and aquatic plants was identified during trial trenching and may have been deposited *in situ*, and may be related to the neighbouring late prehistoric settlement to the north. Taking its potential complexity into account, archaeological excavation is proposed to make a full record of the site before construction, as well as palaeoenvironmental assessment, analysis and reporting of suitable features and deposits.
	952		Lionfield Cottages Area of Palaeoenvironmental Potential		

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
8	952	P14.3	Lionfield Cottages Area of Palaeoenvironmental Potential	• None Proposed	An organic rich deposit containing a diverse selection of wetland taxa and aquatic plants was identified during trial trenching and may have been deposited *in situ*, and may be related to the neighbouring late prehistoric settlement to the north (Asset 72). This area was combined with location 7 (above) following consultation with the Curator.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
9	111	P/237	London To Colchester Roman Road 1	• Trial Trenching	Construction of Junction 21 would remove remains associated with this asset if they are present. A watching brief of the affected area would allow any remains to be identified and recorded before their removal. Because of the length of this asset (particularly in combination with other Roman Road routes), trial trenching of a sample section is proposed. The sample location will be selected by the Contractor in consultation with the Curators.
	112		London To Colchester Roman Road 2		
10	956	P/110; P113.2	Geophysical Anomalies south of the Railway, Hatfield Peverel	• Archaeological excavation	Construction of a temporary compound would remove archaeological remains associated with an enclosure, associated field boundaries and associated features identified by geophysical survey and confirmed by trial trenching and interpreted as being a Romano-British settlement with evidence for industrial activity. Taking its apparent complexity into account, archaeological excavation is proposed to make a full record of the site before construction.
11	174	P/02.1	Cropmarks north of Sandfords Farm	• Archaeological Excavation	Construction of a temporary haul road and soil storage area west of Borrow Pit F would remove archaeological remains associated with this asset. , archaeological excavation is proposed to make a full record of the site before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
12	949	P/51	Geophysical Anomalies south-east of Junction 21	• Archaeological excavation	Excavation of Borrow Pit F would remove archaeological remains associated with features dated to between the early 2nd and late 3rd centuries AD. Although no settlement features were identified in the trial trenching, finds of Roman brick and tile, metalwork, human and animal bone suggest that such remains are likely to be present in the area. Taking its apparent complexity into account, archaeological excavation is proposed to make a full record of the site before construction.
13	194	P/01	Cropmarks near Dengie Farm	• Strip Map and Sample	Construction of a temporary haul road east of Borrow Pit F would remove archaeological remains associated with this asset. Sparse undated remains were identified at this location but because of the proximity of a more complex site approximately 190m north-west Strip map and sample of this area would confirm the presence or absence of any further similar deposits and enable a record to be made before their removal.
14	349	TBC	Cropmarks South of Little Braxted	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
15	959	P/57.1	Possible Prehistoric features south-west of Little Braxted Lane	• None Proposed	Although the majority of features excavated during trial trenching at this site were interpreted as being related to post-medieval farming activity, a small number of ditches believed to be of medieval date were recorded and would be removed by construction of an offline section of new highway, attenuation ponds, access tracks and a laydown area. This area was scoped out of mitigation following consultation with the Curator.
16	337	TBC	Transco Pipeline, Colemans Farm, Rivenhall End	• Strip Map and Sample	Geophysical survey and other investigations carried out for a previous application identified ditches, pits and other features as well as abundant finds suggesting the presence of a settlement of late Iron Age or Roman date. The affected section of this site was preserved *in situ* during quarrying activity to the north and east. Strip map and sample would confirm the presence of absence of any further features and enable a record to be made before their removal.
17	354	P/57.3	Burgate Field enclosure, Rivenhall End	• Strip Map and Sample	Trial trenching of cropmark features recorded in the HER identified a number of ditches, pits and other features which produced animal bone and pottery spanning the late Bronze Age to Roman periods. Strip map and sample would allow these features to be better understood and enable a record to be made before their removal.
18	383	P/57	North of Appleford Farm, Prehistoric and Roman funerary site	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
19	960	P/23.2	Prehistoric Settlement north-east of Henry Dixon Road	• Archaeological excavation; • Palaeoenvironmental Assessment, Analysis and Reporting	Construction of Borrow Pit I would remove archaeological remains associated with this asset. Trial trenching at this site identified a number of features identified as potentially peripheral to a late Bronze Age settlement close to a palaeochannel which produced finds of preserved worked wood. Taking its apparent complexity into account, archaeological excavation is proposed to make a full record of the site before construction.
20	395	P/83	Durward's Hall, Prehistoric and Post-medieval remains	• Watching Brief	It was not possible to evaluate this area during the main geophysical survey and trial trenching, although it is peripheral to a site that included late prehistoric and post-medieval features recorded ahead of an earlier development. A watching brief would allow any associated remains to be identified and recorded before their removal.
21	957	P23.2	Geophysical Anomalies north of Hare Lodge	• None Proposed	This area was scoped out of mitigation following consultation with the Curator.
22	385	P/57	Geophysics at Durwards Field, Colemans Farm, Witham	• Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Construction of the proposed scheme including a balancing pond would result in removal of archaeological remains associated with this asset. Strip map and sample would allow any features potentially connected with the nearby scheduled Neolithic long mortuary enclosure (Asset 399) to be identified and enable a record to be made before their removal.
	388		Field Southwest Of Durwards Hall, Rivenhall Findspot		

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
23	958	P/88	Enclosures west of Sniveller's Lane	• Archaeological excavation	Trial trenching confirmed the presence of a complex series of linear, rectilinear and curvilinear ditches originally identified from aerial photographs and the geophysical survey. Pottery dated to the Bronze and Iron Ages as well as worked flint from the Mesolithic were also found, as were Roman roof tile and pottery suggesting the presence of a high status building nearby. Construction of the B1024 London Road link, attenuation ponds, temporary haul road, laydown area and soil storage would remove archaeological remains associated with these assets. Taking its apparent complexity into account, archaeological excavation is proposed to make a full record of the site before construction.
24	407	P/88	Geophysical Anomaly: Circular enclosure and field system	• Archaeological Excavation	
	411		Hole Farm		
25	439	P/88	Cropmarks along Crane's Lane	• Archaeological excavation	
26	955	P/12	Cropmarks south-east of Hole Farm	• Strip Map and Sample	As well as evidence for post-medieval agricultural activity and possible artificial ponds, ephemeral traces of prehistoric activity were also noted in the trial trenching. Construction of a temporary haul road, laydown area, soil storage as well as an attenuation pond and access road would remove archaeological remains associated with this asset. Strip map and sample would allow these features to be better understood and enable a record to be made before their removal.
27	473	P/57	Ashmans Farm Cropmarks 1	• None Proposed	This area was scoped out of mitigation following consultation with the Curator.
28	961	P/120.1	Prehistoric Features north of Highfields Lane	• None Proposed	This area was scoped out of mitigation following consultation with the Curator.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
29	495	P/118.1	Ashman's Farm Cropmarks 2	• Strip Map and Sample	Construction of the Highfields Lane realignment would remove archaeological remains associated with a series of linear ditches believed to be of late Iron Age or early Roman date. Strip map and sample would allow these features to be better understood and enable a record to be made before their removal.
30	968	P/118.1	Possible Iron Age Settlement south of Highfields Lane	• Strip Map and Sample • Archaeological excavation	This asset comprised a series of linear and curvilinear ditches forming a series of small enclosures of late Iron Age or early Roman date. Construction of the Highfields Lane realignment, a temporary haul road, an attenuation pond and access track, as well as flood plain compensation and a flood bund would remove archaeological remains associated with this asset. Because of its potential complexity and relationship with neighbouring sites of similar date, archaeological excavation of the eastern part of the site is proposed to make a full record of it before construction. Strip map and sample of an area at the west edge of the site is proposed to clarify the nature of features identified and their relationship with others to the east, and enable a record to be made before their removal.
31	962	P/120.2	Prehistoric field boundaries west of Maldon Road	• Archaeological excavation	Trial trenching recorded a series of intermittent ditches as well as pits and produced pottery of Bronze and Iron Age date. Neolithic worked flint suggested the presence of an earlier precursor. Construction of a temporary haul road, soil storage and laydown areas, as well as an attenuation pond and access track would remove archaeological remains associated with this asset. Because of the possible association with more focussed settlement activity to the north and east, archaeological excavation is proposed to make a full record of the site before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
32	963	P/118	Prehistoric pit and ditch east of Maldon Road	• Strip Map and Sample	Trial trenching at this location identified relatively sparse evidence for prehistoric settlement activity. However, given the proximity of more complex late prehistoric or early Roman sites to the east, west and south, strip map and sample is proposed to allow the extent and function of these features to be better understood and enable a record to be made before their removal.
33	600	P/118.2	Cropmarks south of Ewell Hall	• Strip Map and Sample	Trial trenching at this location identified relatively sparse evidence for prehistoric settlement activity. However, given the proximity of more complex late prehistoric or early Roman sites to the east, west and north, archaeological excavation is proposed to allow the extent and function of these features to be better understood and enable a record to be made before their removal.
	964		Possible late prehistoric enclosure south of Ewell Hall Chase		
34	969	P/118.4	Prehistoric Features east of Koorbaes	• Strip Map and Sample	An undated trackway and features dating to between the Neolithic and Bronze Age were found at this asset. Construction of Borrow Pit I would remove archaeological remains associated with this asset. Strip map and sample is proposed to allow the extent and function of these features to be better understood and enable a record to be made before their removal.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
35	954	P/118.4	Geophysical Anomalies west of Inworth Hall	• Archaeological excavation	Trial trenching revealed a complex series of features dating to the Mesolithic or Neolithic periods, as well as the Bronze and Iron Age and Roman periods. Early medieval finds were also recovered suggesting the presence of a settlement spanning an exceptionally long period of time. Construction of Borrow Pit I would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of the site before construction.
36	657	P/118.4	Kelvedon Iron Age Warrior	• Archaeological excavation	The complex series of features identified in this area include many dated to the Iron Age, suggesting they may represent a settlement related to the warrior burial. Construction of Borrow Pit I would remove archaeological remains associated with this asset. To ensure the fullest understanding of the relationship between these assets is made, archaeological excavation is proposed to make a full record of the site before construction.
37	673	P/118.4	West Of Inworth Hall, Cropmarks And Geophysical Anomalies	• Archaeological Excavation	Trial trenching revealed a complex series of features dating to the Mesolithic or Neolithic periods, as well as the Bronze and Iron Age and Roman periods. Early medieval finds were also recovered suggesting the presence of a settlement spanning an exceptionally long period of time. Construction of Borrow Pit J and Junction 24 would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of the site before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
38	735	P/118.4 P/118.7	Kelvedon-Tiptree-Tollesbury Light Railway (Crab and Winkle)	• Strip Map and Sample	This asset is located within a larger area of archaeological interest for its prehistoric and Roman features (see Area 40 below). Construction of Junction 24 would remove archaeological remains associated with this asset. Strip map and sample would allow a record to be made of any surviving traces of the dismantled railway.
39	972	P/118.4	Undated Features north of Inworth Hall	• None Proposed	This area was scoped out of mitigation following consultation with the Curator.
40	965	P/118.7	Possible Roman enclosure west of Park Farm	• Strip Map and Sample	Trial trenching at this location identified what was interpreted as agricultural activity on associated with the potential settlement site to the west. Construction of Junction 24, a temporary haul road, soil storage and laydown areas would remove archaeological remains associated with this asset. Because of its potential relationship with neighbouring sites, strip map and sample is proposed to allow its extent and function to be better understood and enable a record to be made before its removal.
41	966	P/118.7	Roman industrial activity west of Park Farm	• Strip Map and Sample	A small number of pits found at this location contained evidence for *in situ* burning and were interpreted as being of industrial origin. Construction of a temporary haul road, soil storage and laydown area would remove archaeological remains associated with this asset. A watching brief would allow any associated remains to be identified and recorded before their removal.
42	970	P/118.6	Roman Features south-east of Kelvedon	• Archaeological Excavation	Sparse archaeological remains of Iron Age date with evidence for earlier occupation were found here. Construction of the northern part of Junction 24 would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of the site before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
43	647	P/118.5	Kelvedon Enclosure	• Archaeological excavation	A rectilinear enclosure known from aerial photographs was confirmed by trial trenching, and the presence of many other features suggested it represents a settlement of some complexity. Minimal dating evidence was recovered, although charred plant remains were interpreted as evidence for crop processing. Construction of a soil storage area, attenuation pond and access track would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of the site before construction.
44	688	P/118	West of Brick Kiln Farm	• Archaeological excavation	Although minimal features were identified in the trial trenching at this asset, a ditch and pit containing prehistoric pottery and evidence for burning were interpreted as potentially associated with the neighbouring enclosure. Construction of the northern part of Junction 24, an attenuation pond and access track would remove archaeological remains associated with this asset. Because of its potential relationship with the neighbouring enclosure, archaeological excavation is proposed to make a full record of the site before construction.
	888		Cropmarks West of Brick Kiln Farm		
45	951	P145.2	Geophysical Anomalies west of Prested Hall	• Archaeological excavation	Trial trenching confirmed the presence of a rectilinear enclosure of Iron Age or Roman date and containing a high density of pits and other features. Construction of an offline section of highway, attenuation ponds, an access track and soil storage areas would remove archaeological remains associated with this asset. Because of its apparent complexity, archaeological excavation is proposed to make a full record of this site before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
46	780	P/237	Course of Roman road seen at Marks Tey vicinity	• Trial Trenching	Construction activity at Junction 24 including the Feering East roundabout would remove remains associated with this asset if they are present. A watching brief of the affected area would allow any remains to be identified and recorded before their removal. Because of the length of this asset (particularly in combination with other Roman Road routes), trial trenching of a sample section is proposed. The sample location will be selected by the Contractor in consultation with the Curators.
47	950	P/152.1	Circular Enclosure north-west of Prested Hall	• Archaeological excavation	Trial trenching identified a curvilinear enclosure with evidence of settlement activity dating to the Roman to early medieval periods. Construction of an off-line section of highway and temporary soil storage would remove archaeological remains associated with this asset. Because of its apparent complexity, archaeological excavation is proposed to make a full record of this site before construction.
48	967	P/152.1	Prehistoric field system west of Prested Hall Farm	• Strip Map and Sample	Sparse features of Bronze Age to Roman date possibly related to a more complex site to the east were recorded here. Construction of an offline section of highway, an attenuation pond and access track would remove archaeological remains associated with this asset. A watching brief would allow any associated remains to be identified and recorded before their removal.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
49	775	P/152.1	Cropmarks East Of Hill House Farm	• Strip Map and Sample	A pit and a series of ditches interpreted as being part of a water management on uncertain age were identified here, and may be peripheral activity associated with a multi-period settlement immediately to the east. Construction of an offline section of highway, temporary soil storage areas, an attenuation pond and an access track would remove archaeological remans associated with this site. Strip map and sample would allow the extent of this asset to be established as well as any relationship with sites to the west and east, and enable a record to be made before its removal.
50		P/152.1		• Archaeological excavation	A rectilinear enclosure and other features at this location produced strong evidence for a domestic settlement in use between the Bronze Age and Roman periods. There was also evidence for a Mesolithic or Neolithic precursor. Construction of an offline section of highway, temporary soil storage areas, an attenuation pond and an access track would remove archaeological remans associated with this site. Because of its apparent complexity, archaeological excavation is proposed to make a full record of this site before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
51	971	P/152.1	Possible late prehistoric field system west of Easthorpe Road	• Strip Map and Sample	A series of ditches interpreted as being part of a water management on uncertain age were identified here, and may be peripheral activity associated with a multi-period settlement immediately to the west. Construction of an offline section of highway, temporary soil storage areas, an attenuation pond and an access track would remove archaeological remans associated with this site. Strip map and sample would allow the extent of this asset to be established as well as any relationship with site to the west, and enable a record to be made before its removal.
52	774	P/237	Roman road route seen at Easthorpe	• Trial Trenching	Construction activity at Easthorpe Road would remove remains associated with this asset if they are present. A watching brief of the affected area would allow any remains to be identified and recorded before their removal. Because of the length of this asset (particularly in combination with other Roman Road routes), trial trenching of a sample section is proposed. The sample location will be selected by the Contractor in consultation with the Curator.
53	776	P/152.2	Cropmarks at Little Domsey	• Archaeological excavation	Trial trenching identified the presence of a rectilinear enclosure dated to the late Bronze Age or Iron Age using pottery. Construction of Easthorpe Road and an attenuation pond would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of this site before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
54	973	P/152.2	Possible Iron Age enclosure north of Easthorpe Road	• Archaeological excavation	Trial trenching identified the presence of a rectilinear enclosure dated to the late Bronze Age or Iron Age using pottery. Construction of Easthorpe Road and an attenuation pond would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of this site before construction.
55	900	P/153.2	New Barn, Copford (site Of)	• Watching Brief	The site of a demolished post-medieval barn was recorded at this location in the HER. Construction activity at Easthorpe Road would remove archaeological remains associated with this asset. A watching brief would allow any associated remains to be identified and recorded before their removal.
56	779	P/155.1	Cropmarks west of Domsey Brook	• None Proposed	This area was scoped out of mitigation following consultation with the Curator.
57	974	P/159.1	Multi-period field system west of Wishingwell Farm	• Strip Map and Sample	Construction of a temporary soil storage area, the access road to Wishingwell Farm, an attenuation pond and access track would remove archaeological remains associated with what were interpreted as Roman horticultural features following trial trenching. Strip map and sample would allow the extent, function and date of this asset to be confirmed, and enable a record to be made before its removal.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
58	953	P/159.2	Geophysical Anomalies south and east of Potts Green	• Strip Map and Sample	Construction of an offline section of highway including the Potts Green Bridge, a temporary access road, laydown area and soil storage area would remove archaeological remains associated with Roman and medieval features found in this area. Strip map and sample would allow the extent, function and date of this asset to be confirmed as well as any relationship with more complex features to the east, and enable a record to be made before its removal.
59				• Archaeological excavation	Geophysical survey and trial trenching identified a series of features including a curvilinear enclosure of late Iron Age or Roman date, which contained evidence for industrial activity. Construction of an offline section of highway would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of this site before construction.
60				• Archaeological excavation	Geophysical survey and trial trenching identified the presence of archaeological features and deposits dating from the late Iron Age and Roman periods, interpreted as traces of a potential roadside settlement south of a Roman road the route of which is followed by the existing A12. Construction of a temporary soil storage area, an offline section of highway and a sideroad, and Marks Tey roundabout would remove archaeological remains associated with this asset. Archaeological excavation is proposed to make a full record of this site before construction

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
61	975	P/159.3	Roman field system east of Hall Chase	• Strip Map and Sample	Trial trenching identified ditches believed to be part of a Roman field system potentially related to contemporary settlement activity recorded a short distance to the south-west. Construction of realigned Hall Chase and roundabout, an attenuation pond and access track, and a temporary laydown area would remove archaeological remains associated with this asset. Although the features recorded here appeared to be of relatively low complexity strip map and sample is proposed because of the potential relationship with the nearby settlement site and enable a record to be made before its removal.
62	736	P/237	Stane Street - Roman Road	• Trial Trenching	Construction activity associated with Marks Tey signalised junction, Prince of Wales roundabout, widening of the mainline and improvements to B1408 London Road would remove remains associated with this asset if they are present. A watching brief of the affected area would allow any remains to be identified and recorded before their removal. Because of the length of this asset (particularly in combination with other Roman Road routes), trial trenching of a sample section is proposed. The sample location will be selected by the Contractor in consultation with the Curator.
63	834	P/173	Brickworks north of Copford Lodge	• Watching Brief	This site was identified by the HER as having potential to preserved important evidence for 18th and 19th century brick making. Construction of an attenuation pond, access track and temporary soil storage area would remove archaeological remains associated with this asset. A watching brief would allow any associated remains to be identified and recorded before their removal.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
64	977	P/14	River Blackwater area of palaeoenvironmental potential	• A further stage of evaluation may be required subject to the outcome of ongoing consultation with the relevant stakeholders; • Archaeological Excavation or Strip Map and Sample, the extent of which will be subject to the outcome of ongoing consultation with the relevant stakeholders; • Palaeoenvironmental assessment, analysis and reporting.	An area of palaeoenvironmental potential associated with the River Blackwater at the southern end of the proposed scheme and identified by test pits. The proposed mitigation would contribute to a better understanding of prehistoric environmental conditions in the region.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
65	978	P/02	Area of Palaeolithic potential 1	• A further stage of evaluation may be required subject to the outcome of ongoing consultation with the relevant stakeholders; • Archaeological Excavation or Strip Map and Sample, the extent of which will be subject to the outcome of ongoing consultation with the relevant stakeholders	An area assessed to be of high Palaeolithic potential located south of Witham and between the existing A12 and B1018 Maldon Road. The proposed mitigation would contribute to a better understanding of the nature and distribution of Palaeolithic activity at a regional scale.
66	979	P/23; P/57; P/88	Area of Palaeolithic potential 2	• A further stage of evaluation may be required subject to the outcome of ongoing consultation with the relevant stakeholders; • Archaeological Excavation or Strip Map and Sample, the extent of which will be subject to the outcome of ongoing consultation with the relevant stakeholders	An area assessed to be of high Palaeolithic potential north-east of Witham and including the known site at Coleman's Farm Quarry. The proposed mitigation would contribute to a better understanding of the nature and distribution of Palaeolithic activity at a regional scale.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
67	980	P/118	Area of Palaeolithic potential 3	• A further stage of evaluation may be required subject to the outcome of ongoing consultation with the relevant stakeholders; • Archaeological Excavation or Strip Map and Sample, the extent of which will be subject to the outcome of ongoing consultation with the relevant stakeholders	An area assessed to be of high Palaeolithic potential south of Kelvedon, between Ewell Hall Chase and Highfields Lane. The proposed mitigation would contribute to a better understanding of the nature and distribution of Palaeolithic activity at a regional scale.
68	981	P/173; P/237	Area of Palaeolithic potential 4	• A further stage of evaluation may be required subject to the outcome of ongoing consultation with the relevant stakeholders; • Archaeological Excavation or Strip Map and Sample, the extent of which will be subject to the outcome of ongoing consultation with the relevant stakeholders	An area assessed to be of high Palaeolithic potential north of Copford, between the railway and Queensbury Avenue. The proposed mitigation would contribute to a better understanding of the nature and distribution of Palaeolithic activity at a regional scale.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
69	N/A	TBC	Inworth Road additional area 1	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.
70	N/A	TBC	Inworth Road additional area 2	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.
71	N/A	TBC	Inworth Road additional area 3	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.
72	N/A	TBC	Inworth Road additional area 4	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
73	N/A	TBC	Inworth Road additional area 5	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.
74	N/A	TBC	Inworth Road additional area 6	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.
75	N/A	TBC	Inworth Road additional area 7	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.
76	N/A	TBC	Inworth Road additional area 8	• Trial Trenching; • Strip Map and Sample, the need for and extent of which will be informed by archaeological trial trenching	It was not possible to evaluate this area during the main geophysical survey and trial trenching. Because of the confined area affected by the proposed scheme, trial trenching is proposed to confirm the presence or absence of archaeological remains, followed by strip map and sample if appropriate.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
77	67/HLT 7	P/136	Boreham House, Landscape Park	• Level 2 Historic Landscape Recording	Construction of improvements to the B1137 Main Road south-east of Junction 19 would remove vegetation close to the northern edge of the registered park and garden of Boreham House. Level 2 historic landscape recording is proposed to ensure a record is made of the asset and its setting before construction.
78	HLT 11	TBC	Enclosed Meadow Pasture	• Level 2 Historic Landscape Recording	Construction of the proposed scheme would remove sections of field boundaries associated with this HLT. Level 2 historic landscape recording is proposed to ensure a record is made of the asset and its setting before construction.
79	HLT 12	TBC	Pre-18th Century Enclosure	• Level 2 Historic Landscape Recording	Construction of the proposed scheme would remove sections of field boundaries associated with this HLT. Level 2 historic landscape recording is proposed to ensure a record is made of the asset and its setting before construction.
80	HLT 13	TBC	18th and 19th Century Enclosure	• Level 2 Historic Landscape Recording	Construction of the proposed scheme would remove sections of field boundaries associated with this HLT. Level 2 historic landscape recording is proposed to ensure a record is made of the asset and its setting before construction.
81	HLT 14	TBC	Modern Agriculture	• Level 2 Historic Landscape Recording	Construction of the proposed scheme would remove sections of field boundaries associated with this HLT. Level 2 historic landscape recording is proposed to ensure a record is made of the asset and its setting before construction.

Mitigation location	Asset No.	Land Parcel Ref.	Asset Name	Mitigation	Justification
82	N/A	P/113.2	Late Bronze Age and Iron Age finds, Hatfield Peverel	• Strip Map and Sample	Construction of the proposed scheme would remove archaeological remains associated with isolated finds of an un-urned cremation, and finds of late Bronze Age and early Iron Age pottery from trial trenching north-east of Hatfield Peverel. Strip map and sample would allow the extent, function and date of these features to be confirmed, and enable a record to be made before their removal.

5.1.5 Prior to the start of the archaeological works, procedures will be adopted in the first iteration EMP [TR010060/APP/6.5] to ensure that sites of archaeological interest are protected, as detailed in this document, and as certified by the DCO. This will involve fencing for sites to be retained 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. 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.

5.1.6 In addition, the Archaeological Contractor must prepare a detailed outreach strategy, which should follow the outline approach presented in Section 16 of this document.

Unexpected discoveries

5.1.7 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 WSI will be prepared by the Archaeological Contractor in consultation with the ACoW and the relevant Curator(s).

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

5.1.9 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 archaeological 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 Archaeological project team

5.2.1 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 the WSI, and attend regular site meetings with the Curators.

5.2.2 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.

5.2.3 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, periods and artefacts expected.

5.2.4 The names and qualifications of the individuals forming the project team 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.

5.2.5 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 WSI, 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.

5.2.6 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 previous phases of archaeological work.

5.3 Iterative development of the mitigation strategy

5.3.1 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.

5.3.2 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 applied than that previously agreed. Unexpected discoveries (see Section 5.1 above) will also be considered. Consultation must be undertaken with the Curators before any changes to the agreed sampling strategy or general approach are made.

5.4 Phases of work

5.4.1 There are three stages of construction:

- Advanced Works
- Enabling Works
- Main Works

5.4.2 Archaeological mitigation will be undertaken in all three stages with some archaeological works to be undertaken during the Advanced Works stage of the construction programme, as Advanced Archaeological Works. The majority of the archaeological mitigation will be undertaken during the Enabling Works stage. Where site conditions prevent archaeological mitigation at the Enabling Works stage, archaeological fieldwork may be required during the Main Works stage.

6 Written scheme of investigation

6.1 Contents

6.1.1 The Archaeological Contractor shall produce a WSI for the proposed mitigation, detailing the exact scope of the archaeological fieldwork or protection. The WSI 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 review it within four weeks of receipt and approve the final document.

6.1.2 The WSI should include the following sections as a minimum (see CIfA Standard and Guidance for Archaeological Excavation (2020a) for further information):

- A statement on the technical, research and ethical competences of the project team, including relevant professional accreditation.
- A non-technical summary.
- Site location (including map) and descriptions.
- The appropriate event and accession numbers as allocated by the receiving museum or archive.
- Context of the site.
- Geological and topographical background.
- Archaeological and historical background.
- General and specific research aims of each site, with reference to Regional Research Frameworks, as well as earlier phases of work.
- Methods to be employed.
- A strategy for collection and disposal of artefacts, ecofacts, and all paper, graphic and digital materials.
- Arrangements for immediate conservation of artefacts.
- Arrangements for post-fieldwork assessment and analysis of project data.
- Publication and dissemination proposals, as required.
- Copyright.
- Details of finds packaging and storage.
- Data Management Plan for digital archiving.
- Methods for preparation of the physical archive, including accession numbers.
- Timetable or programme of works.

- 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 (e.g. for finds and environmental work). The availability of the environmental specialists (and laboratory) to do analysis for inclusion within the WSI should also 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.

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

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

- Environmental protection considerations.

6.1.3 Where necessary, such as at those locations where evaluation is required due to access restrictions earlier in the scheme design process, or sites of Palaeolithic potential where further work is proposed to establish the extent of areas of high potential, a supplementary WSI(s) will be prepared by the Archaeological Contractor for agreement with the appropriate Curator(s). Any such supplementary WSI(s) should follow the approval process set out in paragraph 6.1.1 above, and the principles and format set out below paragraph 6.1.2.

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 WSI. This will include (but not be limited to):

- Monitoring of all aspects of archaeological fieldwork.
- 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 the approved WSI, 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 WSI, 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.

7.2 Sign off procedure

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 WSI will include a programme for the required work. Once the Archaeological Contractor determines the fieldwork to be completed at a certain location, 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 the format and content of which should be set out in the WSI.

7.2.3 Sites that have been completed (approved by the ACoW in consultation with the Client's representative and the appropriate Curator(s)) 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(s) for their confirmation (in consultation with Historic England where required) that the relevant works have been completed in compliance with the WSI.

7.2.4 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 archaeological excavation

8.1 Introduction

8.1.1 Archaeological excavation will be carried out at the locations identified in Table 5.1. All archaeological excavation will be carried out in accordance with the WSI, and any further instructions from the Client's Representative and the ACoW.

8.1.2 Consultation is ongoing with the curators to agree the need for, scope and scale of this mitigation measure, and the outcome of these consultations will be reflected in the WSI.

8.2 Machine excavation

8.2.1 All machine excavation will be undertaken under constant archaeological supervision. In areas of sensitive archaeology, 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.

8.2.5 A toothless bucket is to be used at all other times. 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 AMS and confirmed in the Archaeological Contractor's WSI, 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 Section 8.4 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 WSI 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 focussed 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 WSI.

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.

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 WSI.

8.3.7 Unless it is agreed otherwise at the pre-excavation site meeting, the following excavation strategy will be employed:

- **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.

- **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.

- **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 sufficiently to understand their dimensions, extent, composition, sequence and relationships.

- **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.

- **Occupation surfaces**: These features should be subject to spatially distinct environmental sampling to confirm their function and identify the potential for different functions to have been conducted in the same space.

- **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 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 Maximum Linear Dimension should be bagged according to an appropriate spatial recording system consistent with context.

- **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 (McKinley and Roberts 1993) and Updated Guidelines to the Standards for Recording Human Remains (Mitchell and Brickley 2017). 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 (Historic England 2018). 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 and any local environmental health requirements. Further detail is contained in Section 8.8 below.

- **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.

- **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.

8.3.8 Archaeological recording will proceed in accordance with the methodologies outlined in this AMS and accepted national, regional and professional standards and guidance as set out in an agreed WSI.

8.4 Recording

8.4.1 All archaeological remains shall be recorded to best practice standards including the CIfA Standard and Guidance for Archaeological Excavation (2020a).

8.4.2 To minimise the use of paper resources during fieldwork, recording could be undertaken on a suitable digital device using appropriate software. Recording should be in a format accessible to all relevant parties and will be outlined in the Archaeological Contractor's WSI. Where required, hand drawn plans may be required for detailed drawings of specific features (e.g. human remains, kilns etc.).

8.4.3 Archaeological recording is to include as a minimum:

- 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 (Harris 1989).

- 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.

- 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.

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

8.4.4 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 un-interpolated images of at least 10 megapixels taken using a camera with an Advanced Photo System type-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.

8.4.5 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.

8.4.6 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.

8.5 Artefact recovery

8.5.1 Artefacts will be collected, stored and processed in accordance with standard methodologies and national guidelines 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.

8.5.2 Except for modern artefacts, all finds will be collected and retained. The Archaeological Contractor will clarify in their WSI their site-specific Selection Strategy and will ensure that it is in-line with the CIfA Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (2020d) and local authority guidelines as appropriate.

8.5.3 Where necessary, the artefacts will be stabilised, conserved and stored in accordance with the guidelines of the Institute of Conservation (2011). 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 on site, the project manager will arrange the removal of the finds to suitable facilities.

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

8.6 Environmental sampling

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

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

8.6.3 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.

8.6.4 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 (2011).

8.6.5 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.

8.6.6 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 in line with relevant guidance (Chartered Institute for Archaeologists 2020d).

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

8.6.8 A provisional environmental sampling strategy is proposed in Table 8.1.

Table 8.1 Provisional environmental sampling strategy

Potential data	Method	Context type	Sample size (litres)	Excavated feature sample
Charred Plant Remains	Bulk	Structural/occupation features	40	100%
		Pits (prehistoric)	40	50%
		Pits (Roman)	40	50%
		Pits (medieval)	40	50%
		Pits (Post-medieval)	40	50%
		Ditch/gully (settlement)	40	10%
		Ditch/gully (outfield)	40	5-10%
Waterlogged and organic remains	Bulk	All contexts	10-20	Layer
Small bones	Bulk	All contexts	40	50%
Mollusca	Incremental	Deposit sequence	As advised by specialist	n/a
Pollen	Monolith	Deposit sequence	As advised by specialist	n/a

8.6.9 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 (2011) 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 (Historic England 2018; 2015b; 2011).

8.6.10 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.

8.7 Finds processing

8.7.1 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 recipient museum or archive should be consulted during finds processing.

8.7.2 The CIfA finds Toolkit (nd) should be utilised to develop a selection strategy. This strategy should be developed for each site to ensure the most appropriate methodology is applied. This will follow the strategy to be agreed with the recipient museum or archive and should be advised by the specialists.

8.7.3 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).

8.7.4 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 (2011). The Archaeological Contractor will ensure that the processing of the assemblage is in accordance with the requirements of the recipient museum.

8.7.5 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.

8.7.6 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.

8.8 Human remains

8.8.1 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 once the Archaeological Contractor has obtained a Ministry of Justice licence and under the appropriate Environmental Health regulations and the Burial Act 1857. In the event of the discovery of human remains, the Archaeological Contractor will inform the Client's Representative and ACoW before contacting H.M. Coroner.

8.8.2 Excavation of human remains will be undertaken as per the strategy outlined in Section 8.3 above.

8.9 Treasure

8.9.1 Any artefacts which are recovered that fall within the scope of the Treasure Act 1996 and Treasure (Designation) Order 2002 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.

8.9.2 Artefacts that are defined as Treasure according to the above legislation will be vested in the franchisee, 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.

8.9.3 Artefacts that are classified as 'treasure' will be removed to a safe place. 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 Strip, map and sample excavation

9.1 Introduction

9.1.1 Strip, map and sample excavation will be carried out at the sites identified in Table 5.1. All strip, map and sample will be carried out in accordance with the WSI, and any further instructions from the Client's Representative and the ACoW, who may consult the Curators.

9.1.2 Consultation is ongoing with the curators to agree the need for, scope and scale of this mitigation measure, and the outcome of these consultations will be reflected in the WSI.

9.2 General methodology

9.2.1 The methods used for setting out, surveying and mechanically stripping the strip, map and sample areas shall be the same as those set out in Section 8.2 of this document.

9.2.2 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.

9.3 Map

9.3.1 Both during and immediately following the removal of the topsoil and any other overburden, the whole area stripped shall be inspected for archaeological features. Rapid hand-cleaning with shovels or hoes shall be carried out in selected areas to define the extent of archaeological features prior to mapping.

9.3.2 An overall plan shall be prepared by instrument survey and, where appropriate, hand planning. The survey data and any hand-drawn plans shall be accurately tied in to the Ordnance Survey National Grid and Ordnance Datum. The Archaeological Contractor will ensure that sufficient points are taken on any feature to provide a true reflection of its form in plan. The plan shall also show any areas of visible damage or destruction of the archaeology caused by recent activity e.g. service trenches, quarry pits etc. The overall plan shall show grid-references for at least two points and spot-heights related to Ordnance Datum as appropriate.

9.3.3 The print out of the plan shall be checked for accuracy on site. The excavated area must be independently re-locatable on the ground by a third party, by measurement to local permanent features.

9.3.4 The overall plan shall be submitted to the ACoW as a georeferenced AutoCAD drawing (.dwg) to show the extent of area stripped, the extent of cleaning, location and extent of features identified and areas of visible damage. Features shown on the drawing shall be annotated with a preliminary archaeological interpretation.

9.4 Sample excavation

9.4.1 Archaeological remains will be investigated and recorded in line with the aims of this AMS and as detailed in the WSI. Not all features will require excavation and some features may only be recorded in plan.

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

- **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.

- **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%. Stake-holes will be fully excavated but only a reasonable proportion will be sampled.

- **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%.

- **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.

- **Occupation surfaces**: These features should be subject to spatially distinct environmental sampling to confirm their function and identify the potential for different functions to have been conducted in the same space.

- **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 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 Maximum Linear Dimension should be bagged according to an appropriate spatial recording system consistent with context.

- **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 (McKinley and Roberts 1993) and Updated Guidelines to the Standards for Recording Human Remains (Mitchell and Brickley 2017). 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 Proje*ct* (Historic England 2018). 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 and any local environmental health requirements. Further detail is contained in Section 8.8 of this document.

- **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.

- **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.

9.4.3 Archaeological recording will proceed in accordance with the process outlined in this AMS and accepted national, regional and professional standards and guidance.

9.4.4 The methodology for recording, artefact recovery, environmental sampling, finds processing, human remains and treasure should follow the methodology detailed in Section 8 of this document.

10 Watching brief

10.1 Introduction

10.1.1 Archaeological watching brief is defined by the Chartered Institute for Archaeologists in the Standard and Guidance for an Archaeological Watching Brief (CIfA 2020c) as '*a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. within a specified area or site on land where there is a possibility that archaeological deposits may be disturbed or destroyed*.'

10.1.2 In this case, watching brief is proposed as a mitigation for archaeological sites assessed to be of low value based on the results of previous evaluation.

10.1.3 Watching brief will be carried out at the sites identified in Table 5.1. All watching briefs will be carried out in accordance with the WSI prepared by the Archaeological Contractor, and any further instructions from the Client's Representative and the ACoW, who may consult the Curators.

10.1.4 Consultation is ongoing with the curators to agree the need for, scope and scale of this mitigation measure, and the outcome of these consultations will be reflected in the WSI.

10.2 General methodology

10.2.1 Removal of topsoil, hard surfaces or other overburden and any relevant deeper excavations undertaken by the Principal Contractor (or their sub-contractors) will be under continuous observation of the Contractor's archaeological staff. Where excavation is in progress at more than one location, at least one member of the Archaeological Contractor's staff shall be present at each location. Where more than one mechanical excavator is in use at any given location, sufficient members of the Archaeological Contractor's staff shall be present to ensure that all stripping is properly monitored.

10.2.2 During the monitoring process, the Archaeological Contractor shall endeavour to identify archaeological features or artefacts by visual inspection. Immediately on recognition of any potential archaeological remains during monitoring works, the Archaeological Contractor shall take the following steps:

- Seek to define the extent of the archaeological remains through close monitoring of ongoing topsoil stripping in adjacent areas.
- Mark out the area of the remains in such a manner that they are clearly visible, with a 'buffer' of at least 10m beyond all of the archaeological features (so far as possible while remaining within the works area). Any such boundary to be adjusted as required as new remains are identified.
- Liaise with the ACoW and and/or the Principal Contractor as appropriate to ensure that no plant enters the marked out areas and no works shall be carried out in those areas until they have been cleared for construction works to proceed.

- Within 24 hours, report the discovery to the Principal Contractor, ACoW and the Curator.

10.2.3 Where archaeological remains are identified which in the judgement of the Archaeological Contractor are of low density or complexity, and where they can reasonably do so without compromising ongoing monitoring work, the Archaeological Contractor shall investigate and record the remains according to the methodology set out below. Where in the judgement of the Archaeological Contractor this is not feasible because the remains are too complex or extensive to be investigated with the available resources or without compromising ongoing monitoring, then the arrangements for unexpected discoveries set out in Section 5.1 of this document shall be implemented.

10.2.4 Hand-cleaning of features or selected areas shall be undertaken to clarify the extent of, or relationship between, features/deposits. Discrete features shall be investigated by hand-excavation of a half section, or otherwise as appropriate. Linear features shall be investigated by excavation of one or more cross-sections as appropriate; hand-excavation is preferred, but where necessary, this may be done by mechanical excavation of the section followed by cutting-back the exposed face by hand excavation. Relationships between intersecting features shall be determined by hand-excavation. All hand-excavation shall be carried out in a stratigraphic manner in accordance with best industry practice.

10.2.5 Small-scale hand-excavation shall be undertaken where necessary to clarify the nature or significance of features or deposits, or to facilitate recording, or for hand-cleaning of sections or other surfaces as part of the recording process. In areas of deep excavation, it is anticipated that features and deposits shall largely be excavated by machine.

10.2.6 The methodology for recording, artefact recovery, environmental sampling, finds processing, human remains and treasure should follow the methodology detailed in Section 8 of this document.

11 Palaeolithic investigation

11.1 Introduction

11.1.1 Investigations to confirm the presence or absence of in-situ palaeolithic archaeological remains may be required at four locations identified in Table 5.1.

11.1.2 Consultation is ongoing with the curators to agree the need for, scope and scale of any Palaeolithic investigation, and the outcome of these consultations will be reflected in the WSI.

11.1.3 In line with the results of the Palaeolithic and Palaeoenvironmental Evaluation Report (Appendix 7.8 of the Environmental Statement [TR010060/APP/6.3]), a staged approach to mitigation of sites with potential for the presence of *in situ* Palaeolithic archaeological remains.

11.2 Gridded test-pitting

11.2.1 This methodology, or another suitable form of further evaluation, may be used at sites with the potential for *in situ* Palaeolithic archaeological remains to be present, subject to the outcome of ongoing consultation with the heritage stakeholders.

11.2.2 To enable a more detailed understanding of ground conditions identified in Appendix 7.8 of the Environmental Statement [TR010060/APP/6.3], a more detailed grid of test pits is proposed at each of the four locations identified as having high potential for the presence of *in situ* palaeolithic archaeological remains (Assets 978, 979, 980 and 981).

11.2.3 Sample grids of test pits at 100m spacings is proposed for each area of high potential, to define palae-landscape features such as terrace edges, lake margins and bodies of fine-grained head deposits with better resolution. This data will then be used to identify areas where archaeological excavation or strip map and sample should be employed to mitigate the impact of construction.

11.2.4 Given the variable depths at which potential remains are expected, it will be necessary to allow for the use of mechanical excavation and stepping or shoring of deeper test pits to enable hand excavation, if necessary to fully understand the deposits encountered.

11.2.5 Once the test pits are complete, a consultation meeting(s) will be convened between the Archaeological Contractor, the ACoW, and the relevant Curator(s), to consider the most appropriate methodology to mitigate the impact and the scope and scale of any further work. Depending on the outcome of this consultation, an addendum to the WSI setting out the proposed method and extent of investigation will be prepared by the Archaeological Contractor in consultation with the ACoW and agreed with the relevant Curator(s).

11.3 Hand excavation

11.3.1 In addition to the general methodologies set out above for archaeological excavation (Section 8 of this document) and strip map and sample (Section 9), it is expected that additional detailed hand excavation will be required to ensure the identification and recording of *in situ* Palaeolithic archaeological remains. This will comprise:

- hand excavation of any agreed areas of high potential using a grid of adjacent 1m by 1m squares
- three dimensional recording of all *in situ* Palaeolithic finds, including the deposition angle relative to the horizontal of worked flints to enable a detailed understanding of their mode of deposition

11.3.2 In addition, hand sieving of samples of excavated material to ensure the identification and capture of small Palaeolithic artefacts will be undertaken using a 10mm mesh by suitably trained members of the Archaeological Contractor's staff.

11.4 Specialist advice

11.4.1 The Archaeological Contractor shall engage the services of a suitably qualified period specialist to advise on the scope and scale of mitigation required following completion of the test pits. The specialist will also provide advice on the selection of hand excavation and sampling methodologies for each area of high Palaeolithic potential, and the identification and selection of samples for scientific dating.

12 Geoarchaeological and palaeoenvironmental assessment

12.1 Introduction

12.1.1 Three sites have been identified as requiring geoarchaeological assessment (Assets 952, 960, and 977). Other sites may also require geoarchaeological and palaeoenvironmental analysis and assessment and will be identified during the course of excavation and a methodology proposed and agreed with the Curators.

12.1.2 Consultation is ongoing with the curators to agree the need for, scope and scale of geoarchaeological and palaeoenvironmental assessment. The outcome of these consultations will be reflected in the WSI.

12.1.3 The sites requiring geoarchaeological assessment are outlined in Table 5.1 and the locations shown on Figure 7.10 at the end of this report.

12.2 General methodology

12.2.1 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 5.2 of this document, 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 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 WSI to be prepared by the Archaeological Contractor.

12.2.2 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).

12.2.3 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).

12.2.4 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.

12.2.5 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.

12.2.6 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.

12.2.7 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.

12.2.8 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. 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.

12.2.9 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.

12.2.10 All work must be taken in line with Historic England guidance on Geoarchaeology (2015b) and Environmental Archaeology (2011).

12.3 Assessment report

12.3.1 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.

12.3.2 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. The Contractor shall consult an appropriate specialist before taking samples for archaeomagnetic or dendrochronological analysis.

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

12.3.4 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.

12.3.5 A final geoarchaeological assessment report shall be prepared and will include a complete lithological description, following standard sedimentary conventions and the Troels-Smith system (1955) and incorporating the results of specialist assessment and dating.

12.3.6 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.

12.3.7 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.

13 Built heritage mitigation

13.1 Introduction

13.1.1 Two non-designated canal mileposts associated with the Chelmer and Blackwater Navigation (Assets 47 and 48) are located within the Order Limits and will be affected by the proposed scheme.

13.2 Historic building recording

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

- Milestones will be recorded photographically, including photographs of their setting. Their geolocation will also be recorded before removal.
- Milestones will be removed under archaeological supervision. This removal will be hand dug and machine excavation would not be permitted.
- The milestones will be stored at the proposed scheme main compound in a secure location to ensure their protection.
- The milestones will be reinstated as close as possible to their original location, and their new location would be recorded following reinstatement.

13.2.2 The exact methodology for recording, removal and reinstatement will be detailed in a WSI to be prepared by the Archaeological Contractor and would be in line with Level 1 recoding as described in Understanding Historic Buildings: A Guide to Good Recording Practice (Historic England 2016).

14 Reporting

14.1 Introduction

14.1.1 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 to be produced at the end of the investigations.

14.1.2 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. It is envisaged that the final publication report will be submitted by the date the proposed scheme has been completed. The final programme for the post-excavation work shall be agreed between the Archaeological Contractor, ACoW and the Client, in consultation with the Curators.

14.2 Post-excavation assessment

14.2.1 While each individual site may 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 WSI. 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.

14.2.2 The preparation of the project archive, post-excavation assessments and subsequent analysis and publication phases will be undertaken in accordance with the WSI and Historic England guidelines, and other relevant archaeological standards and national guidelines. 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.

14.2.3 The precise format of the reports shall be dependent upon the findings of the investigations, and the format and contents will be agreed between the Archaeological Contractor, ACoW and the Curators before reporting begins.

14.2.4 The post-excavation assessment reports and Updated Project Design 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.

14.2.5 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 Updated Project Design and will lead to the compilation of a research archive and the production of integrated report texts and illustrations for publication.

14.3 Outline publication and dissemination proposals

14.3.1 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 engagement (see Section 16 of this document).

14.3.2 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 ACoW and the Curators and Historic England. It is envisaged that interim reporting related to mitigation will be published on the Archaeology Data Service archive.

14.3.3 Fieldwork updates would be published annually in fieldwork roundups in appropriate local or regional and period journals. Fieldwork data would be fed into the Essex and Colchester HERs. Discussions should be held with the relevant HER officers to ensure all relevant data is provided in a compatible format.

14.3.4 The recipient museum should be consulted during the publication and dissemination phases of the proposed scheme, as recipient of the project archive.

14.3.5 It is anticipated that academic publications would take the form of either a multiperiod 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 non-specialist audiences may be produced by the Archaeological Contractor in tandem with formal assessment and analytical reporting.

14.3.6 The final scope and publication outlet/format for popular and academic publications 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.

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

15 Archives

15.1 Security and storage

15.1.1 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 (Brown 2011). 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).

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

15.2 Consolidation

15.2.1 The Archaeological Contractor should compile a Data Management Plan in line with CIfA guidelines (2020b) and include details within their WSI. The recipient museum is a stakeholder in this process and should be consulted during the creation of the Data Management Plan.

15.2.2 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.

15.2.3 The Site archive should be quantified, ordered, indexed and made internally consistent, and in line with current good practice. 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 (Historic England 2015a).

15.3 Deposition

15.3.1 The Archaeological Contractor will, prior to the start of fieldwork, liaise with the recipient museum and HERs 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.

15.3.2 Discussions are currently ongoing with the Curators and receiving museums archive officers for the process for the deposition of a digital archive via the Archaeology Data Service. 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 in line with the guidance contained in Dig Digital. A guide to managing digital data generated from archaeological investigations (Historic England, Chartered Institute for Archaeologists, and Dig Ventures, 2019).

15.3.3 Each archaeological mitigation area will have its own unique accession number, which will be obtained from the recipient museum and the HERs 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 WSI.

15.3.4 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 recipient museum and HERs. The archive will be produced to current national standards and in line with any deposition guidance from the recipient museum.

15.3.5 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.

16 Public engagement

16.1 Introduction

16.1.1 This section presents the proposed strategy for the outreach and engagement programme associated with the proposed scheme.

16.1.2 It includes site-based activities, initiatives to be undertaken while site work is ongoing, and activities to be undertaken throughout the post-excavation phase.

16.1.3 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 proposed scheme to visitors to the area.

16.1.4 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 approach 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 proposed scheme.

16.1.5 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 may be better focused on more general information provision.

16.1.6 The Archaeological Contractor will prepare a scheme-specific strategy in consultation with the Client and Curators, 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.

16.2 Aims and objectives

16.2.1 Key research objectives have been identified for the mitigation phase of the proposed scheme to ensure that research is focused on the principal questions that the proposed scheme should answer. The evidence from these sites also has wider implications for the archaeology of the UK as a whole.

16.2.2 The aim of the 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 proposed scheme.

16.2.3 The objectives of the public engagement programme will be:

- Engagement and appreciation: Encouraging engagement with and appreciation of the archaeological landscape.

- Provide a sense of place: Encouraging a connection to the area for local residents and visitors.
- Knowledge about archaeology along the proposed scheme corridor: Advancing public understanding and stimulating interest and public curiosity about archaeology along the proposed scheme.
- 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.
- Accessible learning: Creating accessible learning opportunities for people to be involved in actively discovering more about their past.
- Disseminating fieldwork information: Disseminating information about the archaeology along the proposed 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.
- 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.
- Inclusive participation: Encouraging engagement with those that may not normally engage with archaeology or local history.

16.3 Audience mapping

16.3.1 A successful public engagement 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.

16.3.2 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*.'

16.3.3 This was reflected in the lessons learnt from the A14 Cambridge to Huntingdon Scheme (Mola Headland Infrastructure 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'.

16.3.4 The activities presented in Section 16.4 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.

16.3.5 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.

16.3.6 The initial analysis will inform the key proposals for engagement activities and themes which should be refined through consultation with the groups identified. The potential limitations of COVID-19 must also be considered. All outreach activities should be provided in a manner that is COVID secure and safe.

16.3.7 The public engagement Strategy is likely to predominantly focus on those communities directly impacted by the proposed scheme, or in its immediate vicinity, specifically those people living and working within or adjacent to the proposed 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.

16.3.8 Audiences could comprise:

- Local communities, particularly those in the towns and villages close to the proposed scheme.
- Primary and secondary school pupils and teachers.
- Local history groups, both within the proposed scheme area and the wider area, including history groups in other villages in the wider area.
- Members of local archaeology, history and civic societies.
- Council for British Archaeology (CBA) Young Archaeology Clubs, CBA regional groups.
- Higher education students, including archaeology students.
- Academic archaeologists and members of subject and period specialist societies.
- Relevant elected members.
- Interest-focused and period-focused archaeological research groups.
- Visitors to the area and people travelling through the landscape.

16.3.9 Other groups should not be discounted at this stage.

16.4 Suggested activities

16.4.1 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.

16.4.2 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).

16.4.3 The lessons learnt from the A14 Cambridge to Huntingdon (Mola Headland Infrastructure 2019) should be considered when planning events. That document includes detailed information and feedback on the activities that took place.

16.4.4 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.

16.4.5 At all stages the research questions of the proposed scheme should be considered, to ensure that the knowledge gained from the proposed scheme is disseminated to the public.

16.4.6 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 series of presentations to local groups and communities, both during excavation and post-excavation.
- Site tours during excavations.
- Community excavation or other fieldwork event (subject to suitable sites, access and health and safety).
- 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.
- Project website including information such as dig diaries, key finds, videoblogs from site, post-excavation analysis etc.
- Provision of information via social media platforms.
- 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 world of Roman foods - with information boards, finds from the sites, and food preparation exhibits.
- Attendance at local history, archaeology or other heritage events.
- Pop-up displays of artefacts and information at community hubs or museums.

- Travelling display similar to the 'Time Truck' used on the A14 Cambridge to Huntingdon. This would allow 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.
- Permanent displays at relevant locations, which should be chosen and agreed in consultation with the relevant Curator(s).
- Production of one or more popular publications, on the proposed scheme as a whole, or covering thematic topics. A booklet for children should be considered.
- Mapping of features from historic maps.
- Contribution to academic and professional conferences (such as CIfA) and publication of papers.
- Artefact handling sessions.
- 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.
- Provision of permanent information panels at suitable locations, such as local village centres.

16.5 Measuring impact

16.5.1 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 proposed scheme.

16.5.2 Data will need to be collated prior to the start of the public engagement 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.

16.5.3 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 public engagement activities from the proposed scheme.

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Figure 7.10 - Archaeological Mitigation Strategy

FIGURE 7.10

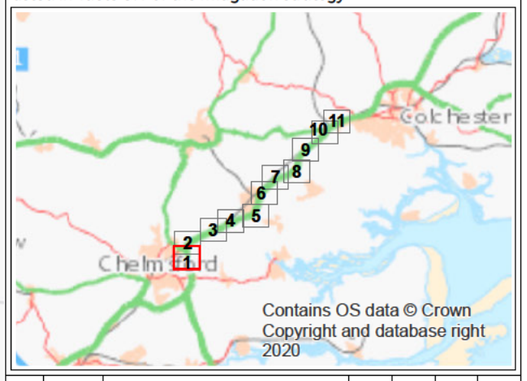
Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:
1. Mitigation site numbers correspond with mitigation locations listed in Table 5.1 of the mitigation strategy



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P01	8/8/22	For DCO application	JC	RM	RM	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 1 OF 11

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

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Client No.	HE551497	Rev	P02

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FIGURE 7.10

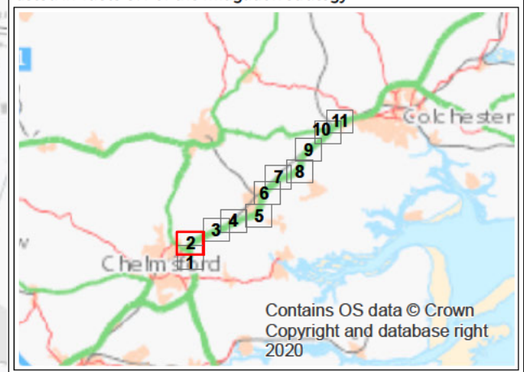
Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:
1. Mitigation site numbers correspond with mitigation locations listed in Table 5.1 of the mitigation strategy



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Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 2 OF 11

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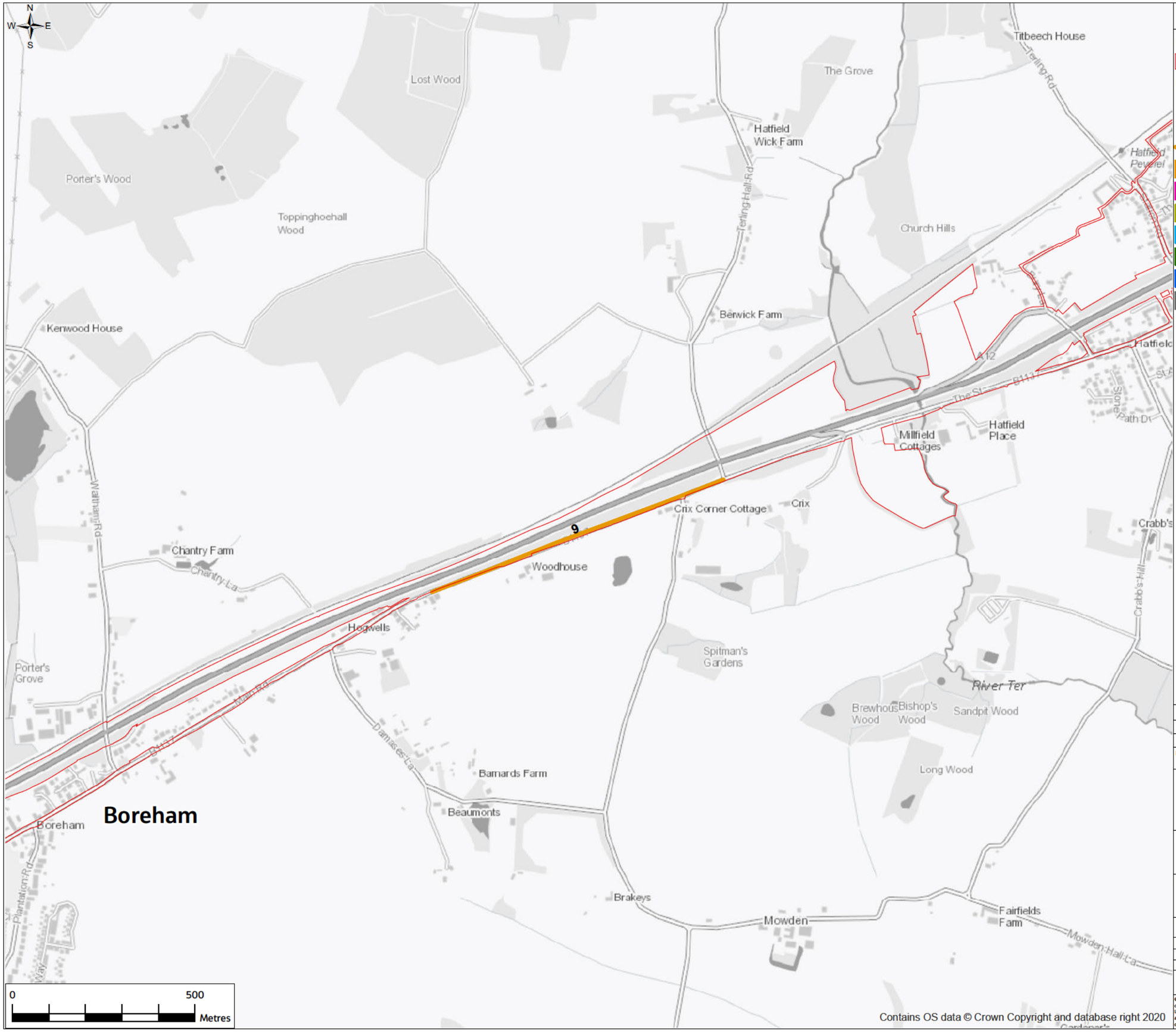


FIGURE 7.10

Legend

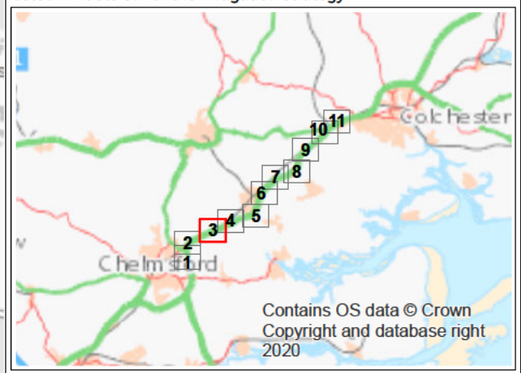
- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:

1. Mitigation site numbers correspond with mitigation locations listed in Table 5.1 of the mitigation strategy



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Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 3 OF 11

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Client No.	HE551497	Rev P02

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0448

FIGURE 7.10

Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

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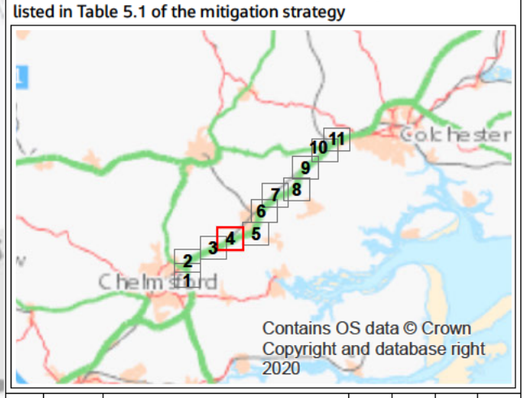

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APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 4 OF 11

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Client No.	HE551497	Rev P02

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0449

FIGURE 7.10

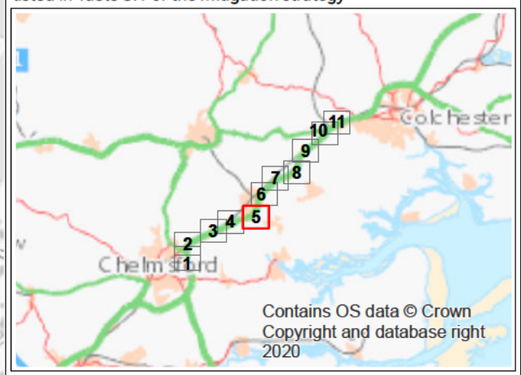
Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:
1. Mitigation site numbers correspond with mitigation locations listed in Table 5.1 of the mitigation strategy



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Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 5 OF 11

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FIGURE 7.10

Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:
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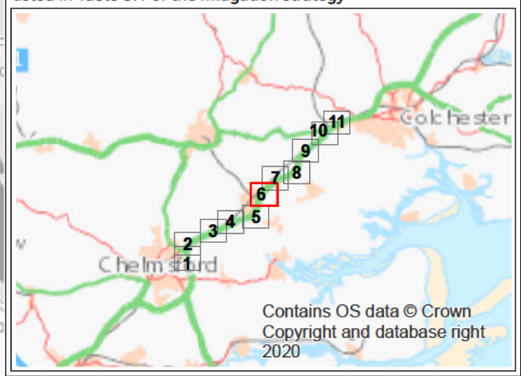

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Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 6 OF 11

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Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0451

FIGURE 7.10

Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:

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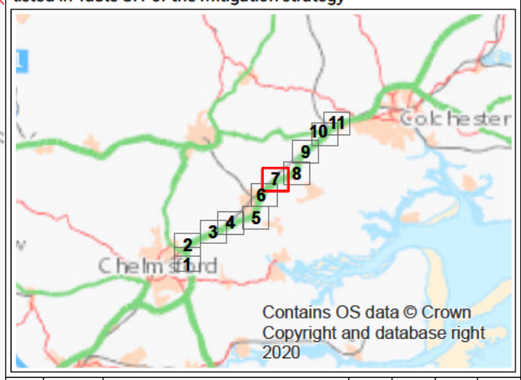

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Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 7 OF 11

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Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0452

FIGURE 7.10

Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:
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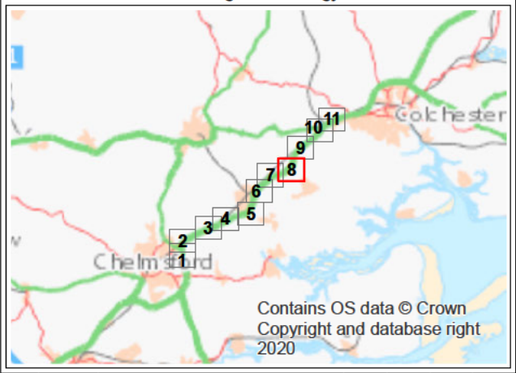

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APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 8 OF 11

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Client No.	HE551497	Rev P02

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0453

FIGURE 7.10

Legend

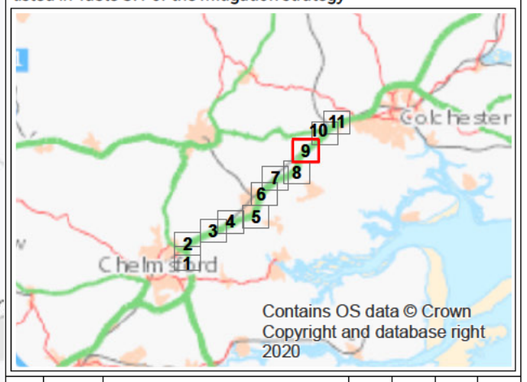
- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:

1. Mitigation site numbers correspond with mitigation locations listed in Table 5.1 of the mitigation strategy



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Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 9 OF 11

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

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Client No.	HE551497	Rev P02

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0454

FIGURE 7.10

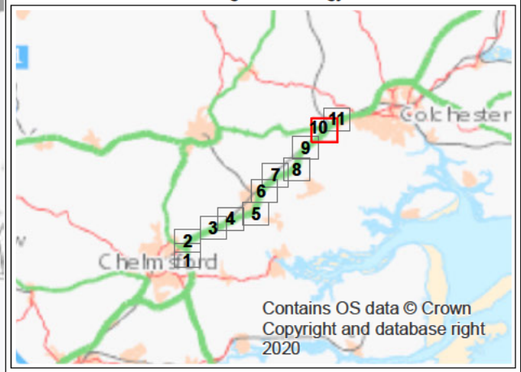
Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:
1. Mitigation site numbers correspond with mitigation locations listed in Table 5.1 of the mitigation strategy



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Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 10 OF 11

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Client No.	HE551497	Rev P02

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0455

FIGURE 7.10

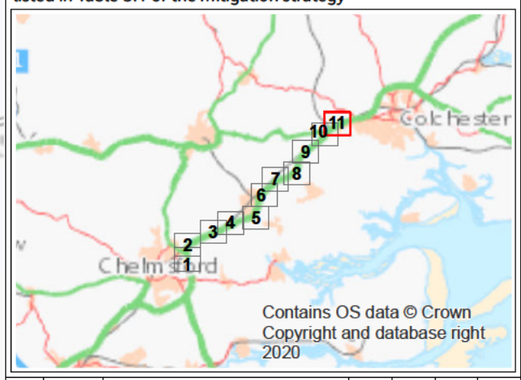
Legend

- Order Limits

Primary Mitigation Measures

- Historic Landscape Recording
- Photographic Survey
- Trial Trenching
- Trial Trenching
- Archaeological Excavation
- Palaeoenvironmental assessment, analysis and report
- Photographic Survey
- Strip Map and Sample
- Watching Brief
- None Proposed

Notes:
1. Mitigation site numbers correspond with mitigation locations listed in Table 5.1 of the mitigation strategy



P02	28/06/23	Address comments from Historic England	HK	RM	CF	KT
P01	8/8/22	For DCO application	JC	RM	RM	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(m)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ARCHAEOLOGICAL MITIGATION STRATEGY
SHEET 11 OF 11

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:10000		DO NOT SCALE
Jacobs No.	B36601D1	Rev	P02
Client No.	HE551497		

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0456