

M25 junction 28 improvement scheme

TR010029

9.45 Outline Archaeological Management Plan (AMP)

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9.45 OUTLINE ARCHAEOLOGICAL MANAGEMENT PLAN (AMP)

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Table of contents

Chapter	Pages
1. Introduction	5
1.1. Scheme background	5
1.2. Scope of brief	5
1.3. Roles and responsibilities	6
2. Purpose and scope	7
2.1. Purpose	7
2.2. Compliance with technical standards	7
3. Baseline	10
3.1. Previous archaeological assessment	10
3.2. Archaeological and historic background	10
3.3. Potential to Contribute to Local, Regional, and National Research Objectives	10
4. Potential archaeological impacts	11
4.1. Overview	11
5. General methodology	12
5.1. Health and Safety	12
5.2. Consultation	12
5.3. Written Schemes of Investigation	12
6. Fieldwork	13
6.1. Setting out and access	13
6.2. Geophysical survey	13
6.3. Evaluation trenching	13
6.4. Construction Integrated Recording (Archaeological strip, map, and sample	17
6.5. Archaeological monitoring	21
7. Finds	24
7.1. Overview	24
7.2. Methodology	24
7.3. Post-excavation	25
8. Human remains	26
8.1. Overview	26
8.2. Methodology	26
8.3. Recording	27
8.4. Reporting	27
8.5. Archiving	27
9. Environmental sampling	29
9.1. Overview	29
9.2. Methodology	29
9.3. Post-excavation	30

10. Recording and reporting	32
10.1. Recording	32
10.2. Human remains	33
10.3. Finds	33
10.4. Report preparation	34
10.5. Post investigation assessment and updated project design	35
11. Archive preparation and deposition	37
11.1. Overview	37
11.2. Methodology	37
11.3. Physical archive	37
11.4. Human remains	39
11.5. Digital archive	39
12. Post-excavation requirements	40
12.1. Interim reporting	40
12.2. Post-excavation analysis	40
12.3. Reporting	40
12.4. Archiving	40
13. Communication and monitoring	41
14. Programme	42
15. Bill of Quantities (if required)	43
16. References	44

Tables

Table 6-1 - Minimum sampling requirements by archaeological feature type	19
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1. Introduction

1.1. Scheme background

- 1.1.1. This document has been produced on behalf of Highways England by Atkins in relation to the M25 junction 28 Improvement Scheme (the Scheme).
- 1.1.2. The Scheme comprises an alteration of the existing junction 28 on the M25 which includes the provision of a dedicated loop road from the M25 northbound carriageway heading eastbound onto the A12, the demolition and reconstruction of the existing A12 eastbound off-slip and of the M25 northbound entry slip road, together with other improvements to the existing junction 28 roundabout, M25 and A12 carriageways.
- 1.1.3. This document is an Archaeological Management Plan (AMP) required under requirement 9 of the draft Development Consent Order (dDCO). It also serves as an overarching Written Scheme of Investigation (oWSI) for the pre-commencement archaeological works necessary under legislative and policy framework set out in Chapter 11 of the Environmental Statement for the Scheme¹.
- 1.1.4. The final Archaeological Management Plan will be prepared by the Principal Contractor and must be largely in compliance with this Outline Archaeological Management Plan.

1.2. Scope of brief

- 1.2.1. This brief sets out the archaeological investigations that the Principal Contractor (PC) would need to implement in respect of the Scheme during the detail design and construction stages. The investigations will be delivered by the PC who will appoint an archaeology contractor.
- 1.2.2. The document provides sufficient information for archaeological contractors to tender for the design and implementation of the required archaeological investigations. The archaeological investigations undertaken will record and qualify the archaeological resource within the area of the Scheme ahead of and during construction through one or more of the following:
 - Production of a Written Scheme of Investigation (WSI) utilising this specification as its basis to include outline aims and research objectives of the project.
 - Archaeological geophysical surveys for site compounds and ancillary works, where ground conditions allow.
 - Targeted archaeological evaluation trenching based on the findings of the geophysical survey.
 - Random archaeological evaluation trenching in areas where geophysical survey is not suitable, at a percentage agreed in consultation with the Greater London Archaeology Advisory Service (GLAAS).

¹ 6.1 Environmental Statement Chapter 11: Cultural heritage (planninginspectorate.gov.uk)

- Construction-integrated recording of archaeological remains through archaeologically controlled stripping, with subsequent sampling as identified in the WSI above, to preserve by record significant archaeological remains impacted by the Scheme.
- Archaeological watching briefs for minor works associated within sensitive areas as identified through evaluation trenching.
- Interim reporting on programme and budget, with the goal of enabling construction to remain on programme.
- Reporting and analysis of the results of the investigations and creation of a stable archive to inform subsequent post excavation work.
- Post excavation assessment and analysis to inform the final assessment on the archaeological finds.
- Reporting and publication of assessments, analysis, and findings commensurate with the nature of the findings.
- Archiving of the digital and physical archives with the appropriate curator.

1.2.3. The document is to be followed for all pre-commencement archaeological surveys and evaluations as well as those archaeological investigations required during and following the commencement of works under the dDCO.

1.3. Roles and responsibilities

1.3.1. For the purposes of this scope of works (outlined in section 1.2 of this document), an Archaeological Consultant will be appointed to provide specialist consultancy expertise to deliver the archaeological investigation works. Specific roles and responsibilities are outlined below:

- The Client – Highways England
- The Principal Contractor (PC) – The nominated contractor employed by the Client to prepare the final designs and construct the Scheme
- Archaeological Contractor – the nominated archaeological company employed by the Client or PC to carry out the archaeological works
- Archaeological Consultant – the nominated consultancy employed to oversee the implementation of the Archaeological Management Plan
- Consulting parties – GLAAS acting for London Borough of Havering and Historic England where noted. Whilst part of the Scheme is located within Essex, consultations conducted for the Environmental Assessment led to the decision for GLAAS to take the lead regarding archaeological impacts, as the majority of the ground-disturbing construction activities will take place within its jurisdiction. Whilst not Statutory consultees for the work conducted under the terms of the DCO, pre-commencement work conducted in advance of the DCO under national and local planning policy require consultation with these parties.

2. Purpose and scope

2.1. Purpose

- 2.1.1. Section 11.9 in Chapter 11 (Cultural Heritage) of the Environmental Statement (ES) (TR010029/APP/6.1) identified measures to be undertaken to evaluate, and/or mitigate potential impacts of the Scheme on the archaeological resource. The ES chapter also identified the requirement to preserve significant archaeological remains in situ through detailed design and construction stages.
- 2.1.2. This document acts as an overarching Written Scheme of Investigation (OWSI) designed to provide an outline within which task-specific WSIs can be developed for the individual evaluation and mitigation works. The task specific WSIs will be forwarded to the Consulting Parties (GLAAS) for their review and comment in advance of the tasks being undertaken.
- 2.1.3. The planning and delivery of a programme of archaeological management and mitigation required for the Scheme will be further developed by the PC and Archaeological Contractor during the detailed design, pre-construction and construction stages of the Scheme.
- 2.1.4. The archaeological investigation work will fall into three broad categories:
- Identification of where the Scheme will and will not impact upon hitherto identified and recorded archaeological remains;
 - further evaluation, if and where required, to identify, characterise and establish the significance of hitherto unidentified archaeology; and
 - mitigation through archaeological investigation, recording and publication of any archaeological remains that cannot be preserved in situ within the scheme footprint.

2.2. Compliance with technical standards

- The Scheme is being undertaken pursuant to development consent order (DCO). It follows the appropriate guidance pertaining to cultural heritage found within Volumes 10 and 11 of the Design Manual for Roads and Bridges (DMRB).
- The approach to delivering archaeology for a road scheme of this type is outlined within LA106 of Volume 11, Section 2 of DMRB.
- All archaeological works will be planned, managed and undertaken based on the guidance provided by, but not limited to the following documents.
- Whilst the DCO acts as the authorising instrument for the overall Scheme, the following industry legislation and guidelines are applicable to all sections of the Scheme. The legislation outlined below applies to works conducted in advance of the DCO being made, while the technical guidance is applicable to all archaeological works conducted under this AMP., whether under the DCO or not

Legislation

- Highways Act 1980

- Ancient Monuments and Archaeological Areas Act 1979
- National Heritage Act 1983
- Treasure Act 1996
- Burial Act 1857

Guidance

2.2.1. The following general guidance and standard documents will guide all work undertaken. Where relevant other documents, are referred to directly in the appropriate Specific Methodologies as set out in Section 7 of this document.

- Chartered Institute for Archaeologists (CIfA), 2019a. Code of Conduct.
- Chartered Institute for Archaeologists, 2020a. Standard and guidance for archaeological field evaluation.
- Chartered Institute for Archaeologists, 2020b. Standard and guidance for archaeological geophysical survey.
- Chartered Institute for Archaeologists, 2020c, Standards and Guidance for Archaeological Excavation.
- Chartered Institute for Archaeologists, 2020d, Standards and Guidance for and Archaeological Watching Brief.
- Chartered Institute for Archaeologists, 2019b, Standards and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures.
- Chartered Institute for Archaeologists, 2020e, Standards and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives
- Chartered Institute for Archaeologists, 2020f, Standard and Guidance for the collection, documentation, conservation and research of archaeological materials.
- DCLG, 2018. National Planning Policy Guidance.
- Campbell, G, Moffett, L and Straker, V 2011 'Environmental Archaeology. A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition)'. Portsmouth: English Heritage.
- Historic England, 2008, MoRPHE Project Planning Note 3: 'Archaeological Excavation'.
- Historic England, 2011, Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation.
- Historic England, 2015a. Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide.
- Historic England, 2015b. Conservation Principles, Policies and Guidance: For the sustainable management of the historic environment.
- Historic England, 2016. Preserving Archaeological Remains: Decisions-taking for Sites under Development.
- Museum of London, 1994. Archaeological Site Manual (Third Edition).

- Watkinson, D and Neal, V., 2001. First Aid for Finds.

3. Baseline

[The Archaeology Contractor appointed by the PC will be required to include a summary (in sections 3.1 to 3.3 below) of known archaeological background, potential for as-yet unknown archaeology, and the research themes considered appropriate to guide archaeological investigations. This section will build on and collate information from the DBA, ES, and geophysical watching brief]

3.1. Previous archaeological assessment

3.2. Archaeological and historic background

3.3. Potential to Contribute to Local, Regional, and National Research Objectives

- 3.3.1. Junction 28 of the M25 extends over multiple local jurisdictions. As the majority of the Scheme is located within the London Borough of Havering, the most appropriate research framework for the archaeological investigations is found with *A Research Framework for London Archaeology*². This section outlines how the archaeological investigations are expected to fit into local, regional and national research objectives.

Early Prehistoric

Palaeolithic

Mesolithic

Neolithic

Later Prehistoric

Bronze Age

Iron Age

Romano-British

Early Medieval

Medieval

Post-Medieval

² 2002, Museum of London and Historic England

4. Potential archaeological impacts

[The Archaeological Contractor appointed by the PC is to describe the known and anticipated impacts to archaeological remains with specific reference to the types of impacts anticipated from the final design/construction activities (in section 4 below)]

4.1. Overview

4.1.1. During construction, direct physical impacts could occur to archaeological assets from construction activities such as: site vegetation clearance, earthmoving operations, creation of site compounds, road and bridge construction, and excavations for provision of all associated infrastructures (gantries, signage, drainage, utilities etc.).

5. General methodology

5.1. Health and Safety

- 5.1.1. Health and Safety considerations will be of paramount importance in conducting all fieldwork. Much of the archaeological fieldwork is expected to be conducted immediately preceding construction activities through a strip, map, and sample approach. As such the Construction (Design and Management) regulations (CDM regulations) will apply. Safe working practices will override archaeological considerations at all times.
- 5.1.2. All work will be carried out in accordance with the Health and Safety at Work etc. Act 1974 and the Management of Health and Safety Regulations 1992, and all other relevant Health and Safety legislation, regulations and codes of practice in force at the time for the fieldwork.
- 5.1.3. A Risk Assessment and Method Statement (RAMS) for the work will be prepared prior to the commencement of fieldwork and submitted to the Archaeological Consultant for review and acceptance.
- 5.1.4. Appropriate Personal Protective Equipment (PPE) will be worn by all archaeologists and monitoring visitors while on site and in line with Health & Safety requirements. Any specific PPE will be confirmed following appointment.
- 5.1.5. The PC will need to implement appropriate safe methods of work in the form of a method statement.

5.2. Consultation

- 5.2.1. Task-specific WSIs should be developed in consultation with GLAAS. Draft copies of the individual WSI should be submitted by the Archaeological Contractor to the Archaeological Consultant for review against this specification and for submission to GLAAS.

5.3. Written Schemes of Investigation

- 5.3.1. Following consultation with the relevant parties, task-specific WSIs will be prepared for specific phases of work, under the auspices of this outline WSI, such as:
 - Geophysical Survey
 - Field walking
 - Evaluation Trenching
 - Strip, Map, and Sample
 - Area Excavation
 - Archaeological Watching Briefs

6. Fieldwork

[The Archaeological Contractor appointed by the PC is to describe the types and locations of various fieldwork activities required for the Site, noting any specific requirements agreed with the consulting parties in the sections below]

6.1. Setting out and access

- 6.1.1. PC to provide digital copies (ESRI compatible shapefiles) of the relevant excavation areas, areas for archaeological monitoring and borehole locations to be monitored and logs assessed to the Archaeological Contractor.
- 6.1.2. The PC will be responsible for ensuring that areas of work are clear of all services, and individual work locations are scanned using appropriate cable avoidance equipment by an appropriately qualified member of the Archaeological Contractor's team.
- 6.1.3. Areas of excavation, boreholes and structures subject to historic building record will be tied in to the Ordnance Survey National Grid and Ordnance datum. Any control points used to locate these relative to base mapping and/or absolute position on the Earth's surface, must be located to survey-grade accuracy ($\pm 0.01\text{m}$).
- 6.1.4. Access will be arranged by Highways England in advance of all site works and confirmed by the Archaeological Consultant.

6.2. Geophysical survey

- 6.2.1. While geophysical survey is not anticipated to be suitable for most of the Scheme area due to geology and vegetation cover, it may be conducted as part of advanced works at locations for the primary and secondary site compounds and for ecological compensation areas. Geophysical surveys may be initiated prior to the completion of this AMP, under separate specification and a task-specific WSI in order to enable advanced works to proceed prior to the construction phase of the Scheme. The aims of any geophysical survey are to identify areas of archaeological potential for targeted evaluations.

6.3. Evaluation trenching

Overview

- 6.3.1. Trial trench evaluation provides a means of sampling a large area to record the density of archaeological features and finds and determine levels of recent disturbance. It is also employed to test the results of geophysical and topographic survey.
- 6.3.2. Trial trenching can help to identify the archaeological potential of a site and to locate specific zones of activity within the site.
- 6.3.3. Trial trenching will be used to inform the need for further archaeological works and/or mitigation; and to allow for an understanding of the risks posed by the archaeology on site and therefore, to effectively inform detailed design and construction activities.

- 6.3.4. A percentage of the specified works area will be excavated by machine by means of linear trenches. All archaeological trial trenching will be carried out by the archaeological contractor in accordance with national, regional and local policies and guidelines and in particular will be carried out in accordance with the ClfA Standard and guidance for archaeological field evaluation (2020a).

Aims and Objectives

- 6.3.5. The purpose of archaeological trial trenching is to identify the presence or absence of archaeological remains and record any archaeological features and deposits within the sampled area. The findings of the investigation will then inform the need for further archaeological works.
- 6.3.6. The aims of the archaeological trial trenching within the specified works area will be:
- To establish the presence/absence of archaeological remains within the Site.
 - To determine the significance, extent, condition, nature, character, quality and date of any archaeological remains encountered.
 - To record and sample excavate any significant archaeological remains encountered.
 - To assess the eco-factual and environmental potential of any significant archaeological features and deposits.
 - To assess and investigate the palaeoenvironmental potential of the Site.
 - To determine the extent of previous truncations of the archaeological deposits.
 - To inform the Client, PC and Archaeological Consultant of the nature of archaeological remains within the specified area, thus allowing for a decision on the necessity for further works and/or mitigation.
 - To make available to interested parties, including Consulting Parties, the results of the investigation.

Methodology

- 6.3.7. A task-specific WSI detailing the methodology to be used for the excavation and recording of the trial trench evaluation will be prepared by the Archaeological Contractor appointed by the PC.
- 6.3.8. The sample requirements will be agreed with the Archaeological Consultant on a site by site basis; contingencies may be required where archaeological remains are encountered.
- 6.3.9. Trench plans will be set out prior to the commencement of the investigations. The trenches will largely target features identified through previous field investigations (i.e. geophysical survey). The remainder of the trenches will be located evenly across the Site with varying alignments to ensure for widespread coverage. The trench locations will be included within the WSI for the works which will be communicated to the Consulting Parties for their review and comment.
- 6.3.10. Prior to the commencement of the archaeological works, the Archaeological Consultant will be notified so that monitoring visits can be arranged.

Fieldwork

- 6.3.11. The trial trench evaluation will adhere to task-specific WSI noted above, wherever reasonably practicable e.g. where site conditions and health & safety consideration allow. Any significant variations, such as movement of trenches or reduction of samples size due to site condition or live services etc. to the WSI must be agreed verbally with all relevant parties (i.e. the Client and Archaeological Consultant) prior to the works, to allow for variations to be dealt with rapidly in the field. However, such agreements must be confirmed as soon as practicable in writing.
- 6.3.12. On-site conditions, as well as the results of the geophysical survey, may mean that the trenches have to be re-located at the beginning of the works. The archaeological site supervisor will take that decision on site upon consultation with the Archaeological Consultant and Consulting Parties. Welfare will be sited on Site to minimise impact on the Site and the environment.
- 6.3.13. Service plans must be provided for the Site by the Client. Buried services and overhead lines require appropriate buffers and this should be taken into consideration during the creation of the trenching plan. Trench locations will be CAT scanned by appropriately qualified staff before excavation and where overhead lines are present goal posts will be required to mark locations for plant crossings. Any plant crossing under an overhead line will require to be supervised by a banksman with the hydraulic arm depressed to the maximum extent. Crossings of underground services, such as high pressure mains, will also be strictly monitored and the necessary permissions sought.
- 6.3.14. The trenches will be opened using a mechanical excavator equipped with a toothless bucket. Trenching will be carried out under constant archaeological direction under the control of an experienced archaeologist. Plant of an appropriate size will be used and will be equipped with a 1.4-1.8m wide bucket in most cases.
- 6.3.15. Undifferentiated topsoil or overburden of recent origin will be removed in successive level spits down to the first significant archaeological horizon, or the natural geology, whichever is encountered first. Topsoil and subsoil will be stored separately and will be visually scanned and where appropriate subject to metal detecting.
- 6.3.16. Trenches will be excavated only to a safe working depth, although can be stepped if deemed necessary. The trenches will be fenced from access with road pins and barrier mesh, if required.
- 6.3.17. Where structures, finds, soil features and layers of archaeological interest are exposed in the evaluation trenches, the Archaeological Contractor will observe, clean, assess, excavate by hand where appropriate, sample and record these features and finds. Archaeological features will be excavated sufficiently to identify and characterise, where possible, the nature, quantity and significance of the deposits as well as establishing date and depths.
- 6.3.18. The PC and Client will be informed as soon as possible of the discovery of any significant archaeological remains, such as human burials or hoards, or changes in the programme of ground works on Site. In the event of the discovery of human remains the Archaeological Contractor should also seek further consultation with the Consulting Parties.

- 6.3.19. On completion of machine excavation, all faces of the trench that require examination or recording will be cleaned using appropriate hand tools e.g. trowels and brushes. All investigation of archaeological horizons will be by hand, with cleaning, inspection, and recording both in plan and section.
- 6.3.20. Where archaeological features are encountered the following samples will be excavated:
- Linear features: a minimum sample of 10% of their length, with a minimum individual slot length of 1m
 - The termini of any linear features: 100% excavated
 - Pits: a minimum of 50%
 - Complex features (such as hearths): 100% excavated
- 6.3.21. Significant solid or bonded structural remains, building slots or postholes will be preserved intact, even if fills are sampled.
- 6.3.22. A metal detector will be made available on Site to aid in the recovery of metal artefacts if required. The detector will not be set to discriminate against iron. Any metal detection will be undertaken by an experienced operator.

Finds

- 6.3.23. Full details of the specific methodology for archaeological finds is outlined in Section 7.

Human remains

- 6.3.24. Any human remains will be handled in line with the specific methodology for Human Burials in Section 8.

Environmental sampling

- 6.3.25. Where archaeological remains are uncovered, bulk samples will be taken from appropriate contexts for the recovery and assessment of both archaeological features and the natural deposit sequence in which archaeological remains are discovered. Sampling methods will follow the specific methodology in Section 9.

Recording

- 6.3.26. Archaeological recording will comply with the specific methodology set out in Section 10.

Backfilling and reinstatement

- 6.3.27. Where backfilling of archaeological trenches is required, the excavated areas will be backfilled with the excavated material and compacted with the machine bucket only. If significant archaeology is identified, this will be covered and protected by terram, a protective geotextile (or other suitable protective covering), prior to backfilling.

Reporting

- 6.3.28. Reporting of the archaeological works will comply with the specific methodology set out in Section 10.

Archiving

- 6.3.29. Archiving of the physical and digital record will comply with the specific methodology set out in Section 11.

6.4. Construction Integrated Recording (Archaeological strip, map, and sample

Overview

- 6.4.1. Construction Integrated Recording (CIR) is a programme of observation, investigation and recording of archaeological remains. It is used where the likely extent of the remains has been demonstrated, but it is not practicable or appropriate to investigate the remains in detail before the main construction programme (e.g. due to safety or logistical considerations or environmental or engineering constraints, as noted above).
- 6.4.2. The PC's preferred method of working would be controlled as necessary to allow archaeological recording to take place to the required standard. The specified area will be machine stripped utilising appropriate plant fitted with toothless ditching blade under archaeological supervision to the first archaeological horizon, or to the natural geology where no archaeological remains are encountered. All archaeological features will be recorded in plan and a sample of features will be excavated. The archaeological works will be conducted simultaneously with construction works and will be directed by an archaeologist. All CIR will be carried out by the Archaeological Contractor in accordance with national, regional and local policy and guidelines.

Aims and objectives

- 6.4.3. The purpose of CIR is to identify and record any archaeological remains within the specified area during construction works or site investigations. The works will aim to avoid delays and substantial impacts on the construction programme, wherever possible.
- 6.4.4. The aims of CIR within the specified works area will be:
- To identify the presence and/or absence of archaeological remains.
 - To provide a comprehensive record of identified archaeological features and analysis of the results.
 - To determine the significance, extent, condition, nature, character, quality and date of any archaeological remains encountered.
 - To record and sample or fully excavate any significant archaeological remains encountered.
 - To assess the eco-factual and environmental potential of any significant archaeological features and deposits.
 - To assess and investigate the palaeoenvironmental potential of the Site.
 - To make available to interested parties the results of the investigation.

Methodology

- 6.4.5. A task specific WSI will be prepared in accordance with current policy and practice and investigations will adhere to the specific methodologies set out. However, the documents may be subject to change depending on the results of future works, such as geophysical survey, and developments in industry policies and standards. Any changes to the WSIs must be agreed in writing by the Archaeological Contractor with the Archaeological Consultant prior to the commencement of the works.
- 6.4.6. Prior to the commencement of the archaeological works, the Consulting Parties will be notified.

Fieldwork

- 6.4.7. CIR will adhere to the following methodology, wherever reasonably practicable e.g. where site conditions and health & safety consideration allow. Any significant variations, such as reduction of sample size due to site condition or live services etc. to the WSI must be agreed verbally with all relevant parties (i.e. the Employer, Consulting Parties) prior to the works, to allow for variations to be dealt with rapidly in the field. However, such agreements must be confirmed as soon as practicable by in writing.
- 6.4.8. In areas subject to CIR, the construction works and site investigations will be carried out under the direct supervision of an archaeologist working for the archaeological contractor. The archaeological contractor will be given prior notice of the nature of the construction work and site investigation works to be carried out.
- 6.4.9. All topsoil stripping will be monitored and directed by an experienced archaeologist. Archaeological supervision of topsoil stripping will be at a ratio of at least one archaeologist per mechanical excavator.
- 6.4.10. The removal of topsoil and overburden must be carried out using a mechanical excavator utilising a flat bladed bucket (toothless), and in horizontal spits. Plant will work away from, and not track across the, machined surface until the monitoring archaeologist has given permission to do so. Movement of plant over the remainder of the Site will be minimised to prevent rutting or damage to sub-surface archaeological features as far as is practicable.
- 6.4.11. A team of experienced archaeologists will carry out the archaeological works where archaeological remains are uncovered. The number of archaeologists should be proportional to the scale of the construction works and the number and scale of archaeological remains so as to ensure the requisite sample of features are adequately investigated and recorded within the necessary timeframe.
- 6.4.12. The PC's preferred method of working would be controlled as necessary to allow archaeological recording to take place to the required standard. In general, topsoil and overburden will be removed in successive level spits down to the first archaeological horizon, or the natural sub-stratum, whichever is encountered first. At this point, ground works will cease while archaeological recording is carried out where necessary.
- 6.4.13. Where no archaeological remains are identified within the works area, this should be noted in the form of written records and photographs of the area to demonstrate the lack of features and deposits. The construction programme may

continue in areas where no archaeological remains have been identified, so long as the Archaeological Contractor and Consulting Parties (GLAAS) consent and the works do not preclude archaeological investigations on other parts of the Site from being carried out based on Health and Safety, access etc.

- 6.4.14. Investigation of archaeological horizons and features will be by hand. Minimum requirements for sample excavation will be limited to the works area and to the formation depth and follow national, regional and local guidelines. The minimum sample requirements are identified in Table 6-1 below.

Table 6-1 - Minimum sampling requirements by archaeological feature type

Feature type	Minimum sample requirements
Complex/ significant features/ deposits/ artefact assemblages/ artefacts	Sampling to be subject of further discussion with the Consulting Parties
Hearths, ovens, kilns	100% of domestic/industrial working features (hearths, ovens). These are also to be sampled for archaeomagnetism as standard if appropriate (this applies to any in-situ burnt features unless agreed otherwise on-site following discussion).
Possible prehistoric roundhouses or other post-built structures	Total excavation of all post-holes, spreads/ occupation layers and cut features (e.g. ring-gullies) directly associated with structures. Metal detector to be used at all stages of excavation/ removal, for better artefact recovery (e.g. for droplets of bronze).
Possible cremation burials	Total excavation; lifting of intact/ semi-intact pottery vessels with following micro-excavation in laboratory.
Linear features	Excavation by hand of sections across all termini, all junctions or intersections of cut features and, in the body of the features if datable, ancient and manifestly rich in ancient palaeoenvironmental remains, the following scope of works: linear features <10m long: at least one 1.0 metre-wide section. linear features >10m long: 1.0 metre-wide sections at maximum 10.0-metre intervals. Partial excavations within a linear at junctions of cut features will not be a substitute for sections across the body of the linear, away from such junctions, because of possible contamination between intercutting contexts. With prior agreement with the Consulting Parties, the remainder of the fills of large linear features may be excavated mechanically under close archaeological supervision and control and with thorough metal detecting.
Discrete cut features general	Total excavation by hand of all discrete, potentially datable and ancient cut features of less than 2 sq. metres plan area, and of such features manifestly rich in ancient palaeoenvironmental remains; except where deeper than 1 metre, when half-sections will be acceptable.
Post-holes	Post-holes probably associated with structures - complete excavation by hand.
Pits	Default - half-section. Further sampling to be decided on basis of Health & Safety considerations/ vulnerability of fill/ contents. In general, all pits would be subject to this sampling; however, if substantial numbers of pits are encountered then the local planning

Feature type	Minimum sample requirements
	authority archaeologist will be consulted to establish percentage of pits requiring sampling to allow for characterisation.
Structural Features	All structural features will be fully revealed in plan and recorded. All individual elements including walls, floors, doorways, and any negative features will have context boundaries distinguished facilitating a full written, drawn and photographic record.
Demonstrably 19th/20th century features	If not evidently part of a structure, e.g. a structure of industrial archaeological interest, or if without good artefact assemblage, record and sample only that sufficient to confirm late date. If artefact-rich/ part of a structure, treat as with pits and post-holes above.
Highly/nationally significant features (e.g. high-status burials)	The Client and Consulting Parties, to be notified immediately on discovery/recognition. Strategy for excavation/scientific investigation/conservation etc to be agreed before work resumes.

- 6.4.15. Where nationally significant remains are uncovered, further mitigation may be required. The Client and the Consulting Parties should be consulted as soon as possible to identify the appropriate site investigations within the specified area prior to construction works.

Environmental sampling

- 6.4.16. Where archaeological remains are uncovered, bulk samples will be taken from appropriate contexts for the recovery and assessment of both archaeological features and the natural deposit sequence in which archaeological remains are discovered. Provision will be made for column and other appropriate samples to be taken. Sampling methods will follow the specific methodology in Section 9.

Human remains

- 6.4.17. Any human remains will be handled in line with the specific methodology for Human Burials in Section 8.

Recording

- 6.4.18. Archaeological recording will comply with the specific methodology set out in Section 10.

Reporting

- 6.4.19. Reporting of the archaeological works will comply with the specific methodology set out in Section 10.

Archiving

- 6.4.20. Archiving of the physical and digital record will comply with the specific methodology set out in Section 11.

6.5. Archaeological monitoring

Overview

- 6.5.1. A programme of observation, investigation and recording of archaeological remains will be undertaken during construction where appropriate. It is used where archaeological remains have not been identified by a detailed desk-based assessment or field evaluation, but where there is a realistic potential for archaeological discoveries. The PC's method of working would not be directly controlled for archaeological purposes, unless important archaeological discoveries are found (in which case the site method may change to Construction Integrated Recording – see Section 9).
- 6.5.2. All work will be carried out by the Archaeological Contractor in accordance with national, regional and local policy and guidelines and in particular will be carried out in accordance with the ClfA Standard and guidance for archaeological field evaluation (2014b) and the ClfA Standard and guidance for an archaeological watching brief (2014c).

Aims and objectives

- 6.5.3. In line with ClfA standard and guidance (2014c), the purpose of archaeological monitoring is to:

to allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works

to provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard (ibid, 4).

Methodology

- 6.5.4. A task specific WSI will be prepared in accordance with current policy and practice and all archaeological monitoring will adhere to the specific methodologies set out. However, the documents may be subject to change depending on future works and developments in industry policies and standards. Any changes to the WSIs must be agreed in writing with the Archaeological Consultant prior to the commencement of the works.
- 6.5.5. Prior to the commencement of archaeological monitoring the WSI will be communicated to the Consulting Parties and they will be informed of the timings of the work.

Fieldwork

- 6.5.6. The archaeological monitoring will adhere to the WSI wherever reasonably practicable e.g. where site conditions and health & safety consideration allow. Any significant variations, such as reduction of sample size due to site condition or live services etc. to the WSI must be agreed verbally with all relevant parties

(i.e. the Client and Archaeological Consultant) prior to the works, to allow for variations to be dealt with rapidly in the field. However, such agreements must be confirmed as soon as practicable by in writing.

- 6.5.7. An archaeologist will be present to monitor all intrusive ground-works involving the removal of modern material, made ground, topsoil and subsoils (including any temporary works and site set up and demolition works which may have an impact on archaeological deposits) within the specified works area. They will be positioned at a safe distance, beyond the limits of the working area of any mechanical excavator. Should access to the machined area be required, the machine will cease operations and if necessary, relocate to ensure safe access.
- 6.5.8. Any machining undertaken under archaeological monitoring will be done, where practicable, with a flat bladed bucket (toothless) and in horizontal spits. The machined area should be exposed to a 'clean' state which allows for the identification, definition and investigation of any archaeological remains.
- 6.5.9. Should there be unsupported sections deemed unsafe by the onsite staff, no member of staff will enter the excavated area. In this instance recording of the excavated areas will be conducted from ground level unless shoring has been installed by a competent person.
- 6.5.10. In the event that significant archaeological remains are revealed, additional excavation staff should be made available. The ground work in the location of the archaeology can be temporarily halted in order to determine the extent and character of any remains revealed. The degree of further work will be defined in discussions with the Archaeological Consultant, the Employer and the Consulting Parties. Delays to development can be minimised by continuing to monitor areas of watching brief while the archaeological resource is recorded.
- 6.5.11. A full written and photographic record of the on-site works should be maintained at all times.

Finds

- 6.5.12. Full details of the specific methodology for finds is outlined in Section 7.

Human remains

- 6.5.13. Any human remains will be handled in line with the specific methodology for Human Burials in Section 8.

Environmental sampling

- 6.5.14. Where archaeological remains are uncovered, bulk samples will be taken from appropriate contexts for the recovery and assessment of both archaeological features and the natural deposit sequence in which archaeological remains are discovered. Provision will be made for column and other appropriate samples to be taken. Sampling methods will follow the specific methodology in Section 9.

Recording

- 6.5.15. Archaeological recording will comply with the specific methodology set out in Section 10.

Reporting

- 6.5.16. Reporting of the archaeological works will comply with the specific methodology set out in Section 10.

Archiving

- 6.5.17. Archiving of the physical and digital record will comply with the specific methodology set out in Section 11.

7. Finds

7.1. Overview

- 7.1.1. The following methodology will apply wherever finds are uncovered and collected. All finds will be treated in accordance with national, regional and local policies and guidance and in particular with ClfA's Standard and Guidance for the collection and documentation, conservation and research of archaeological materials (2014d), Historic England's Archaeological Conservation guidance documents (English Heritage, 2006; English Heritage 2008; Historic England 2018); ICON's professional standards and ethics (2014); and ICON Archaeology Group guidelines: A brief guide to the principles of archaeological conservation (2009).

7.2. Methodology

- 7.2.1. All finds shall be recorded by context; individually significant finds ("special finds" or "small finds") shall also be recorded three-dimensionally using a sequence of unique numbers. To inform the investigation strategy finds processing shall be carried out during the course of the investigations and provisional spot dates and information provided to the Archaeological Consultant who will provide the information to the Consulting Parties as appropriate.
- 7.2.2. All identified finds and artefacts will be collected and retained. Certain classes of material, i.e. post-medieval pottery and building material, may on occasion be discarded after recording if a representative sample is kept. No finds will be discarded without the prior approval of the archaeological representative of the local authority and the receiving museum.
- 7.2.3. Any finds covered by the provisions of the Treasure Act (1996, amended 2003) and Treasure (Designation) Order 2002, including gold and silver, will be moved to a safe place and reported to the coroner's office according to the procedures determined by the Act. They will also be reported to the local finds liaison officer from the Portable Antiquities Scheme.
- 7.2.4. Exposed finds will be lifted at the end of each working day. Where removal cannot be undertaken on the same working day as the discovery, suitable security measures will be taken to protect the artefacts from theft or damage.
- 7.2.5. On site a representative sample of finds will be examined to establish the date range of the assemblage, with particular reference to pottery. In addition, the artefacts will be used to characterise the site, and to establish the potential for all categories of finds should further archaeological work be necessary.
- 7.2.6. All finds of gold and silver will be moved to a safe place. Where removal cannot be undertaken on the same working day as the discovery, suitable security measures will be taken to protect the artefacts from theft or damage.
- 7.2.7. Provision for onsite conservation and finds treatment, in addition to any scientific dating of materials uncovered, will be undertaken where appropriate.
- 7.2.8. All finds will be treated in a proper manner and to standards agreed in advance with the recipient museum. Finds will be retrieved and cared for in accordance with Historic England Archaeological Conservation guidance documents (English Heritage, 2006; English Heritage 2008; Historic England 2018); ICON's

professional standards and ethics (2014); and ICON Archaeology Group guidelines: A brief guide to the principles of archaeological conservation (2009).

- 7.2.9. The protection of all finds on site and during transportation to the post-excavation facility will be the responsibility of the Archaeological Contractor
- 7.2.10. Upon completion of the project, the landowner will be contacted regarding the preparation, ownership and deposition of the archive and finds. The local museum will also be contacted to ascertain whether deposition can be attained.

7.3. Post-excavation

- 7.3.1. Where artefacts are encountered and collected, a post-excavation research strategy should be prepared by the Archaeological Contractor following the completion of the on-site archaeological investigations.
- 7.3.2. Artefacts will be cleaned and conserved, where necessary, to allow for identification and to accommodate further investigation.
- 7.3.3. Post-excavation storage will be secure and appropriate to the material and significance of the object. Analysis will be in line with national best practice guidelines for artefact conservation and may include x-radiography and consolidation as part of the process.
- 7.3.4. All post-excavation work will be undertaken in accordance with Historic England Archaeological Conservation guidance documents (English Heritage, 2006; English Heritage 2008; Historic England 2018); ICON's professional standards and ethics (2014); and ICON Archaeology Group guidelines: A brief guide to the principles of archaeological conservation (2009).

8. Human remains

8.1. Overview

- 8.1.1. No known burial sites will be impacted during the works however ground works may result in unexpected human remains being exposed.
- 8.1.2. The following methodology will apply where human remains are encountered. All human remains will be treated in accordance with national, regional and local policies and guidance. In addition, all works will comply with the following relevant best practice guidelines:
- Brickley and McKinley, 2004. Guidelines to the Standards for Recording Human Remains.
 - APABE, 2017. Guidance for Best Practice for the Treatment of Human Remains Excavated from Christian Burial Grounds in England.
 - Historic England, 2018b. The Role of the Human Osteologist in an Archaeological Fieldwork Project.
 - McKinley and Roberts, 1993. Excavation and post excavation treatment of cremated and inhumed human remains.
 - Mitchell and Brickley, 2017. Updated Guidelines to the Standards for Recording Human Remains – December 2017.

8.2. Methodology

- 8.2.1. Any finds of human remains will be left in situ, covered and protected. An initial in situ visual observation and assessment of the remains will be carried out in order to inform the Archaeological Consultant, the Client, the Consulting Parties and notifiable parties. All works will cease within the area until consultation has been undertaken and provision made for an Osteoarchaeologist to attend the site.
- 8.2.2. Where human remains are encountered the Archaeological Contractor will inform the Archaeological Consultant and the Ministry of Justice and the local constabulary immediately.
- 8.2.3. If removal of human remains is deemed necessary following consultation with the client, a coroner's licence from the Ministry of Justice will be required prior to the excavation and removal of the remains.
- 8.2.4. Human remains will be treated with dignity and respect at all times. It may be necessary to screen off the human remains from public view and other construction works and this will be arranged as soon as possible where required.
- 8.2.5. All articulated and disarticulated human remains, including structured burials and charnel, will be excavated and lifted in a logical and appropriate manner with the suitable tools. There should be an awareness that further human remains may be present within the surrounding area.
- 8.2.6. All articulated human remains will be lifted by hand by archaeologists or, if required, an exhumation contractor. Each excavated individual will be bagged separately and permanently labelled as to content and cross referenced with the archaeological records of the excavation (APABE 2017). Different skeletal areas

and bones from the left and right sides will be bagged separately (APABE 2017, Annex S3, 38) and all bags labelled.

- 8.2.7. Unstratified disarticulated human bone is of limited scientific value (APABE 2017, 41) as there is often little opportunity to relate types of data together (e.g. number of individuals, bone size and age). Disarticulated bone will be rapidly screened when discovered and any anomalies, such as anatomically dissected disarticulated remains or remains thought to have been deposited within a deliberate deposit that may have cultural significance (APABE 2017, 44) will be brought to the attention of the Osteoarchaeologist who will determine the appropriate course of further investigation, in consultation with the Archaeological Consultant, and the Client. Any disarticulated remains will be carefully cleared from the spoil. Care will be taken to clearly differentiate disturbed but originally articulated human burials
- 8.2.8. All grave goods and associated exposed artefacts will be recorded and removed at the end of the working day to limit the risk of theft and disruption to the area. If this is not possible, security will be required and should be coordinated in conjunction with the Client.
- 8.2.9. Samples may be taken from the fill around the head and around the torso and feet for the recovery of small bones/teeth and for the possibility of further scientific investigation (e.g. investigation of parasite flora) (APABE 2017, Annex S3, 38).

8.3. Recording

- 8.3.1. All human remains should be bagged and boxed with an assigned identification number or code.
- 8.3.2. All applicable pro forma record forms, including context sheets and skeleton recording sheets, should be completed. Written descriptions should include details about the human remains and their surrounding context as well as the degree of truncation and disruption. The location of all skeletons should be accurately located on plans and mapped using measured photogrammetry and tied in to the OS NGR, with levels given to AOD.
- 8.3.3. Photography is generally recognised as the best way to record in situ human remains. Only authorised photographs should be taken, and these should be carried out in a sensitive manner. A suitable scale should be visible in photographs. The photographic record would be provided jpeg and RAW formats and all photographs would be taken at a minimum of 16 megapixels.

8.4. Reporting

- 8.4.1. Reporting of the excavation and/or removal of human remains will be incorporated into the relevant archaeological investigation report, or independent report if the investigations have been carried out separately.
- 8.4.2. All reporting will comply with the specific methodology set out in Section 10.

8.5. Archiving

- 8.5.1. Archiving of the physical and digital record will comply with the specific methodology set out in Section 11.

- 8.5.2. Generally, human remains should be reinterred at an appropriate location within two years. However, this time limit may be altered after consultation with the Ministry of Justice.

9. Environmental sampling

9.1. Overview

9.1.1. Archaeological science refers to the science-based research methods used in archaeology in the post-excavation phase. Provision must be made during the intrusive on-site works, including trial trenching, Construction Integrated Recording and archaeological monitoring, to ensure that archaeological science can be comprehensive and accurate as the post-excavation analysis can greatly contribute to knowledge creation and can improve the understanding of a Site. The following methodology will be of relevance to environmental samples.

9.2. Methodology

- 9.2.1. All environmental sampling will be conducted in accordance with national, regional and local policies and guidance. All aspects of the collection, selection, processing, assessment and reporting on the environmental sampling shall be undertaken in accordance with the principles set out in Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation (English Heritage 2011) and with reference to the Association for Environmental Archaeology's Working Paper No. 2, Environmental Archaeology and Archaeological Evaluation.
- 9.2.2. Provision shall be made for the removal of samples from all securely stratified deposits which shall be scatter sampled for retrieval and assessment of biological remains. A targeted sampling strategy appropriate to the archaeological features and deposits will be adopted in consultation with the local planning authority. As a minimum this will include bulk samples for most archaeological contexts as well as provision for column and/or other necessary sampling as set out in the paragraphs below. There may be a potential requirement for other types of sampling, for example using a grid to sample an occupation layer. The processing and assessment of samples shall be undertaken in parallel with the trial trenching so that preliminary results are available to inform the development of the sampling programme. If these preliminary results indicate the need for a sampling strategy which deviates from the requirements set out here, this will require to be agreed with the Archaeological Consultant.
- 9.2.3. Bulk samples will be taken using 10L plastic, lidded tubs (with handles) or securely fastened strong polythene bags (double bagged). All sample tubs/bags will be appropriately and clearly labelled with site codes, context details and sample information using permanent ink.
- 9.2.4. Bulk samples of dry context will be taken in the range of 40L-60L as appropriate. Samples of wet (i.e. waterlogged) deposits should total 20L. Where the context is of a lower volume, 100% of the context will be sampled.
- 9.2.5. Monolith and Kubiena box samples should be taken where necessary to allow for specialist analysis of deposits. The location and depth should be accurately recorded, and all samples should be taken with a 50mm overlap where more than one monolith is required. Column samples should also be taken down the length of a section where appropriate. These samples should be neatly packed and secured with plastic and rubber bands. All samples will be appropriately and

clearly labelled with site codes, context details and sample information using permanent ink.

- 9.2.6. In waterlogged conditions, it is possible that timbers will survive below ground. Where there is potential for timbers to be dated, they should be sampled following guidelines in *Waterlogged Wood: Guidelines to the Recording, Sampling, Conservation and Curation of Waterlogged Wood* (Brunning and Watson 2010).
- 9.2.7. All samples will be recorded in a sample register forming part of the site record.
- 9.2.8. The Archaeological Contractor will be responsible for the safekeeping of all samples on-site and during transportation to the processing facility.

9.3. Post-excavation

- 9.3.1. Where archaeological remains are encountered, a post-excavation research strategy should be prepared by the Archaeological Contractor following the completion of the on-site archaeological investigations.
- 9.3.2. Processing and assessment of samples shall be undertaken in line with the agreed strategy for the recovery and sampling of environmental remains and *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage 2011). Subject to variations agreed in writing based on this, samples shall be processed and assessed under the supervision of the Archaeological Contractor's palaeoenvironmental specialist(s).
- 9.3.3. Suitable samples for scientific dating shall also be recovered. Dating techniques shall only be applied where required to meet the aims and objectives of the investigations and on written instruction from the Archaeological Consultant. These may include, but not be limited to:
- Radiocarbon dating.
 - Radiocarbon dating (Accelerator Mass Spectrometry).
 - Optically Stimulated Luminescence (OSL).
 - Archaeomagnetic dating.
 - Dendrochronological dating
- 9.3.4. The following post-excavation analysis techniques may also be adopted where appropriate:
- Sample Flotation
 - Sample Wet Sieving
 - Sample Dry Sieving
 - Residue Sorting
 - Flot Sorting
 - Routine Soil Analysis
 - Soil Micromorphological Analysis (Thin Section Analysis)
 - Charcoal Identification

- Wood Identification
- Non-charcoal charred plant macrofossil analysis
- Faunal remains analysis
- Waterlogged plant analysis
- Dendrochronological analysis

9.3.5. All processing, recording, cleaning, storage and conservation of samples shall be in accordance with the Chartered Institute for Archaeologist's Standard and guidance for the collection, documentation, conservation and research of archaeological materials (2014d).

10. Recording and reporting

10.1. Recording

- 10.1.1. All excavated contexts shall be fully recorded by detailed written context records giving details of location, composition, shape, dimensions, relationships, finds, samples, cross-references to other elements of the record and other relevant contexts.
- 10.1.2. Written and photographic records will be maintained at all sites, even where archaeological features have not been encountered, in order to document the scope of the works, their location and the presence/absence of archaeological remains.
- 10.1.3. The record of archaeological investigations will include, at minimum:
- The site/trench codes as defined by the Archaeological Contractor
 - the location of the works area
 - the date(s) of the works
 - personnel involved in the works
 - a description of the archaeological and/or construction works
 - scope of excavation works and depths, if applicable
 - degree of visibility and capacity to observe archaeological features, noting any areas where obstructions occurred and reasons for this
 - location and description of any archaeological remains
 - location and description of any modern remains
 - areas and depths where archaeological remains were left in situ
- 10.1.4. In order to achieve this, on-site recording of archaeological features, where not precluded by Health & Safety considerations, will consist of:
- Hand cleaning of archaeological features, sections and surfaces sufficient to establish the stratigraphic sequence exposed.
 - Examination of excavated material in order to retrieve artefacts to assist in the analysis of their spatial distribution.
 - Sample excavation of exposed features (see relevant methodology sections for minimum sample requirements).
 - Completion of pro-forma record sheets.
 - Plans and sections of all exposed archaeological features and horizons (including boundaries of natural) at an appropriate scale. A scale of 1:100 and/or 1:200 will be utilised to initially map the entire exposure and will be linked to detail plans at 1:20 of excavated features and sections at 1:10, if necessary. All features will be accurately tied into the Ordnance Survey National Grid and Ordnance Datum.
 - A scaled photographic record of representative exposed sections and surfaces, along with sufficient photographs to establish the setting and scale of the groundworks.

- A record of the datum levels of archaeological deposits.
- 10.1.5. Records will be produced using either pro-forma context or trench record sheets.
- 10.1.6. Digital recording is preferred, but recognised as not always practical. All non-digital written records should be completed with black or permanent ink and all drawings will be completed using a 'hard' pencil (recommended 2H or 4H). All documents will include the unique site code.
- 10.1.7. A record of the full sequence of all archaeological deposits as revealed in the investigation works will be made. Plans and sections of features will be drawn at an appropriate scale of 1:10 or 1:20, with sections drawn at 1:10.
- 10.1.8. A full photographic record will be maintained inclusive of working shots to represent the general context of the archaeological investigations. The principal features and finds will both be recorded in detail and in a general context. This will consist of SLR digital photography (using a minimum of a 16-megapixel camera) capturing RAW and JPEG data. An appropriate scale should be included in detailed images wherever possible.
- 10.1.9. Registers of all contexts, drawings, photographs, finds, and samples will be maintained in a standardised format.
- 10.1.10. Where archaeological features are encountered, linear features and occasional discreet features will be located using a GNSS GPS and tied into the National Grid. Where complex features or groups of features are encountered, these will be recorded at a scale of 1:20 on planning sheets, based on a 5m grid system. The grid will be used for planning features and all other horizontal control on site. Unless otherwise appropriate, all planning should be undertaken utilising GNSS GPS to provide ESRI compatible shapefiles.
- 10.1.11. For trial trenching, trench locations and the extent of the excavated area will be surveyed using a differential GPS. The actual areas of ground disturbance and any features of archaeological interest will be accurately located on a site plan and to a known, permanent location. This will also be required in cases where significant remains are uncovered during a watching brief. A site grid will be accurately tied into the National OS Grid and located on a map of the area.

10.2. Human remains

- 10.2.1. Any human remains will be recorded as per this methodology and in accordance with the Specific Methodology for Human Remains in Section 8.

10.3. Finds

- 10.3.1. Specific methodologies for dealing with finds is set out in Section 7. All finds recording on Site will include, as a minimum:
- The site/trench codes as defined by the Archaeological Contractor;
 - The location of the works area
 - Context number in which the artefact was found
 - Designated find number
 - Material type

- Brief description of the artefact

10.3.2. All finds will be labelled and bagged or boxed, where possible, with attached identification tags in plastic bags and entered into an on-site finds register and numbered accordingly. Any finds that are too large to be bagged will be labelled in an appropriate and visible manner with a finds tag.

10.4. Report preparation

10.4.1. Upon completion of the fieldwork, the Archaeological Contractor will prepare a fieldwork report within four to twelve weeks. This will be dependent upon the scope and nature of the fieldwork and upon the results of the fieldwork and external specialist reports. This timetable may be extended on those sites with extensive and significant archaeological remains; this will be agreed in advance with the Archaeological Consultant.

10.4.2. The contractor and the Archaeological Consultant should agree the reporting timescales in writing once work in the field is complete. Where appropriate an interim report will be provided.

10.4.3. The report will adhere to national standards and will include the following, as a minimum:

- Non-technical summary
- Contents list
- List of Tables, Figures etc.
- Introduction
- Summary of project background
- Description and illustration of the Site location
- Geology and topography of the Site
- Archaeological and historical background details for the Site including relevant previous archaeological interventions
- Statement of objectives and aims
- Statement of methodology
- Results and observations based on the quantitative and stratigraphic record with reference to any specific project constraints
- Discussion of the results in terms of the location, extent, date, nature, condition, quality and significance of any archaeological remains identified during the works
- Statement of archaeological significance and potential of the Site
- Assessment of results in terms of the Site-specific aims and wider context
- Conclusions and recommendations for appropriate further archaeological investigation and mitigation with reference to the specific aims and research agenda as set out in Section 4 of this Strategy
- Bibliography
- Acknowledgements

- Site matrix, if applicable
 - Trench, context, find, drawing and photographic etc. registers, as applicable
 - A copy of the OASIS form
- 10.4.4. Copies of the draft report will be sent to the Archaeological Consultant for onward transmission to the Client and Consulting Parties for comment; final copies of the report (paper & electronic) will also be submitted to be deposited in the GLAAS Historic Environment Record (HER) and/or the Essex HER, as applicable.
- 10.4.5. Any significant variation in the project design, including timetables, proposed after the agreement of the proposals will be communicated by the Archaeological Consultant to the Consulting Parties.
- 10.4.6. An OASIS form will be completed, and a paper copy will be appended to the report. An electronic copy of the post-excavation assessment report will be deposited with the Archaeological Data Service (ADS).

10.5. Post investigation assessment and updated project design

- 10.5.1. On completion of the fieldwork a methodology for processing, sampling and the analysis of all artefacts and ecofacts recovered during the evaluation will be determined, commensurate to the complexity and character of the data recorded. This will enable an informed decision to be made on the need for any further archaeological mitigation. The evaluation report will be prepared in accordance with the guidance given in the ClfA's *Standard and guidance for archaeological field evaluation* (ClfA 2014a). Emphasis will be given to placing the results of the evaluation into the context of the archaeology of the area and include a statement on the archaeological significance of the results.
- 10.5.2. Within four weeks of completion of fieldwork a draft interim report will be prepared and submitted for review by the Archaeological Consultant. Following any necessary revisions, the Archaeological Contractor will submit a final version of the report within a further week of receipt of comment to the Archaeological Consultant for approval and issue to Consulting Parties.
- 10.5.3. The reporting will include as a minimum:
- A non-technical summary
 - Introductory statements
 - The aims and methods used in the investigations
 - Methodology(s)
 - Results and conclusions
 - A table summarising the deposits, features, classes and numbers of artefacts encountered and spot dates of significant finds
 - A synthesis of the findings and research aims achieved to date
 - Proposed further stages of archaeological analysis and reporting through an updated project design
 - A synthesis of the specific research aims that could be answered through implementation of the updated project design (UPD)

- Recommendations for any appropriate and proportionate further fieldwork to achieve the identified objectives within the UPD
- Proposals for deposition of the complete archive, including artefacts and physical and digital archive material

10.5.4. Immediately upon completion of the finalised assessment report, the report and any data or other documentation produced during the post-excavation process shall be integrated into the site archive. The archaeological contractor shall store the archive in suitable conditions in a secure location until instructions are received from the Archaeological Consultant for its deposition.

11. Archive preparation and deposition

11.1. Overview

11.1.1. Archaeological material recovered from fieldwork is irreplaceable and data recorded during the course of fieldwork should be copied and held securely in a separate location in line with current good practice, until it can be deposited in a recipient repository. The recipient repository should be identified by the Archaeological Consultant in consultation with GLAAS. Details of the archival repository will be agreed before the commencement of any fieldwork.

11.2. Methodology

11.2.1. The methodology for archiving the physical and digital record is included in this section:

- Physical archive: All written records, drawings, and photographs as well as artefacts, eco-facts and environmental samples.
- Digital archive: All 'born digital' material such as GIS files, survey data, digital images, databases, spreadsheets, LiDAR data, etc.

11.2.2. The paper and digital archive will be security copied via the Archaeology Data Service (ADS), the only accredited digital archive in the United Kingdom for heritage data. The digital archive copy will be prepared and deposited through ADS-easy 2.0.

11.2.3. All archiving will comply with national, regional and local standards and guidance. In addition, archiving will comply with the following guidelines:

- ADS, 2011. Guides to Good Practice.
- Brown, D.H., 2011. Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation (Second Edition).
- Brown, D.H., 2011b. Safeguarding Archaeological Information. Procedures for minimising risk to undeposited archaeological archives.
- Chartered Institute for Archaeologists, 2014. Standards and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials.
- Society of Museum Archaeologists, 1993. Selection, Retention and Dispersal of Archaeological Collections: Guidelines for use in England, Wales and Northern Ireland.

11.3. Physical archive

11.3.1. The physical archive for all archaeological investigations at every specified Site will comprise all artefacts, environmental samples and written and drawn records. It is to be consolidated after completion of each phase of archaeological works with records and finds collated and ordered as a permanent record which is accessible and secure.

11.3.2. The documentary archive includes written and drawn records and photography generated during Site fieldwork as well as associated site matrix, summary of

key findings, photography, specialist reporting, specialist data and finds and environmental inventories generated during post-excavation.

- 11.3.3. Deterioration and damage of all documents is to be avoided by ensuring that the site records, drawings and post-excavation records are stored in a secure and stable environment.
- 11.3.4. All documents will be appropriately labelled and include the site code and be consistent within the confines of the project. A contents list will be included within the archive.
- 11.3.5. Printed copies of any reports and publications, if applicable, of the archaeological investigations at each Site will be included along with all maps and figures associated with the reports.
- 11.3.6. In addition to deposition with the receiving museum, the documentary archive will be security copied as PDF/A files and deposited digitally, alongside “born digital” material, with the Archaeological Data Service (ADS).
- 11.3.7. The material archive refers to finds and environmental samples. This includes:
 - Small finds
 - Bulk finds of material grouped by type i.e. ceramic fragments, animal bone, etc.
 - Environmental samples, including thin-sections, and other environmental remains
- 11.3.8. Prior to fieldwork, the Archaeological Contractor will have storage facilities in place to temporarily house the Site archive for a period of one year from completion of fieldwork; this should be an appropriate period of time for archive preparation and deposition.
- 11.3.9. Archaeological finds rarely have any monetary value, but they are an important source of information for future research, included in museum exhibits and teaching collections. The Chartered Institute of Archaeologists (CIfA 2014) recommend that finds are publicly accessible and that landowners donate archaeological finds to a local museum.
- 11.3.10. All receiving museums require notification before fieldwork begins. The receiving museum must be identified in advance of fieldwork and archival agreements in place with the task-specific WSI. The appropriate notification forms should be completed and discussions should be had with the museum to discuss arrangements as early as possible. On completion of the project, the archaeological contractor will discuss arrangements for the archive to be deposited with the corresponding local museum and with the client. This will be prepared in the format agreed with local museum services and following national guidance (ADS 2011 and Brown 2011).
- 11.3.11. Prior to the deposition of the material archive, all finds will be kept secure and clean, wherever possible. They will be recorded and catalogued and stored in suitable archive boxes or in conditions suitable to their material composition and size as per national guidelines.
- 11.3.12. All finds will be labelled, with reference to the accession number, and accompanied with catalogues and copies of specialist reports.

- 11.3.13. The retention, selection and dispersal of finds will be carried out after discussion with the receiving museum and relevant specialists prior to museum deposition.
- 11.3.14. In the case where finds are retained, landowner consent will be required to allow transfer of the finds. A Deed of Transfer will be drawn up by the relevant museum for signing by the landowner. The complete finds inventory and further finds information can be provided to the landowner, on request.
- 11.3.15. The Site archive will be deposited with the relevant museum within one year of the completion of all fieldwork (if no further work is required). It will then become publicly accessible.

11.4. Human remains

- 11.4.1. The specific methodology for human remains at section 8 should be followed during the post-excavation stage. Human remains should be reburied unless exceptional circumstance call for their retainment for future study and this is agreed with all relevant parties. All ethical and conservation considerations must be carefully deliberated.

11.5. Digital archive

- 11.5.1. The PC will complete OASIS records for each individual phase of archaeological works resulting in a report as soon as possible after the completion of the works. All applicable sections of the record should be completed.
- 11.5.2. An electronic copy of the final report will be deposited with the ADS.
- 11.5.3. The digital archive shall include all relevant files.

12. Post-excavation requirements

[PC to describe the frequency and content of required interim reporting as required by the Archaeological Consultant from the Archaeological Contractor and any specific post-excavation analysis agreed by the Archaeological Contractor and the Client outside of those outlined in Sections 7-10 in the sections below]

12.1. Interim reporting

12.2. Post-excavation analysis

12.3. Reporting

12.4. Archiving

13. Communication and monitoring

[PC/Archaeological Contractor to describe the communications, public involvement, and monitoring conditions agreed between the Client and the Archaeological Contractor, with input from the Consulting Parties in this section]

14. Programme

[PC to include the programme of all archaeological investigations in this section]

15. Bill of Quantities (if required)

[PC to include the Bill of Quantities if required in this section]

16. References

[References to be included in this section by the Archaeological Contractor (baseline, previous investigations, research objectives, etc) in this section]

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