



UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks
and adjoining land, Bedford

Environmental Statement Volume 3

Appendix 10.3 - Archaeological Mitigation Strategy

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1. This Archaeological Mitigation Strategy (AMS) has been prepared in support of the planning proposals for the Proposed Development as described in **Chapter 2: Description of the Proposed Development (Volume 1)**.
- 1.1.2. This report comprises **Appendix 10.3: Archaeological Mitigation Strategy (Volume 3)** produced in support of **Chapter 10: Cultural Heritage (Volume 1)**.

1.2 THE PURPOSE OF THE AMS

- 1.2.1. This document has been prepared following review and comment provided by Bedford Borough Council (Bedford BC) and Historic England. The AMS defines the scope, guiding principles and methods for the planning and implementation of archaeological mitigation at areas identified following analysis of the results of desk-based research (**Appendix 10.1: Historic Environment Desk-Based Assessment (Volume 3)**), and trial trench evaluation (**Appendix 10.2: Archaeological Trial Trench Evaluation Report (Volume 3)**). It also draws on the results of a geophysical survey and previous trial trench evaluation (Museum of London Archaeology (MOLA) 2019a, 2019b) completed as part of an earlier planning application.
- 1.2.2. The archaeological mitigation will reduce the effect of the development proposals on the archaeological resource, either by protection/preservation of archaeological remains where they do not need to be excavated, or through a structured programme of archaeological fieldwork.
- 1.2.3. The approach to stakeholder engagement and approvals, project management, fieldwork methodology and post-excavation assessment, analysis and publication is defined.
- 1.2.4. A summary historic environment baseline derived from the desk-based research is included and, where necessary, is supported by results of previous evaluation. A research agenda is also provided, and this has informed the described scope of mitigation.
- 1.2.5. In summary, the AMS:
- Is the framework for the programme of archaeological mitigation to be undertaken at identified areas of archaeological interest in advance of and as part of the Construction Phase of the Proposed Development;
 - Details the principles and methods for the preparation of Site-Specific Written Scheme(s) of Investigation (SSWSI) to be produced by UDX's Archaeological Consultant and Archaeological Contractor for identified areas of archaeological interest. The SSWSIs may include single or multiple areas of archaeological interest and address single or multiple mitigation methods; and Detailed SSWSI's will be prepared based on this AMS in consultation with the Bedford Archaeological Advisor and submitted for approval post consent and prior to mitigation works being carried out.
- 1.2.6. The scope of this document is to define proportionate mitigation of significant adverse effects on buried heritage assets. Potential significant effects arising from the Proposed Development upon above ground heritage assets and mitigation proposals for these assets is addressed separately in **Chapter 10: Cultural Heritage (Volume 1)**.

1.3 THE IMPLEMENTATION OF THE AMS

- 1.3.1. The AMS provides the scope, guiding principles and methods of archaeological mitigation to be implemented at the Site. The implementation of the requirements of the AMS will be set out in SSWSIs produced by UDX's Archaeological Consultant and Archaeological Contractor. The intention is to produce one SSWSI for each of the Proposed Development zones (Core Zone, Lake Zone, West Gateway Zone and East Gateway Zone; see **Figure 1A: Proposed Mitigation Plan of Annex 3: Figures**).
- 1.3.2. The SSWSIs will be prepared following the principles and methods set out in this AMS, the scope and content of SSWSIs will be consulted upon with the Curators (Archaeological Advisors for Bedford Borough Council (Bedford BC), and, where relevant, Historic England).
- 1.3.3. The SSWSIs will be prepared taking account of the Research Frameworks (Section 4.2) and Research Themes (Section 4.3) identified in the AMS, with the scope of work designed to respond to the AMS research agenda (Section 4.4) in order to advance knowledge gain, or to ensure the protection of archaeological features, whilst being mindful of public benefit.
- 1.3.4. Not all areas of archaeological interest will be subject to archaeological mitigation, as the primary aim of the AMS is to maximise knowledge gain. The archaeological mitigation will not complete recording for recording's sake but rather focus on archaeological remains which have intrinsic or group value (for definition see Section 5.1.2) where investigation will add to the corpus of knowledge for the region. This approach is consistent with the approach used on projects such as the A303 (Highways England 2019), High Speed 2 (HS2 2017) and the A428 (Highways England 2021).

1.4 ROLES AND RESPONSIBILITIES

- 1.4.1. The following terminology is used throughout this document:
 - UDX – Universal Destinations & Experiences. UDX will be funding all archaeological work. All decisions regarding archaeological requirements that have a cost or programme implication will need UDX approval prior to commencement.;
 - The Principal Contractor (PC; in control of other contractors during the construction phase of the Proposed Development);
 - Archaeological Consultant – consultant acting on UDX's behalf on archaeological matters, including the Planning Proposal and any post-consent work, including liaison with curators, preparation of SSWSIs alongside the Archaeological Contractor, site monitoring and assurance in the role of an ACoW, and independent technical review of all deliverables if required by UDX;
 - Archaeological Clerk of Works (ACoW) - the ACoW will on behalf of UDX, monitor adherence to the AMS, SSWSIs and relevant construction management plans.
 - Archaeological Contractor (will produce the SSWSIs alongside the Archaeological Consultant and complete the archaeological investigations detailed therein); and
 - Curators – the Archaeological Advisor to Bedford BC, as well as representatives of Historic England (including, but not limited to, the Inspector of Ancient Monuments and the Regional Scientific Advisor).
- 1.4.2. An Archaeological Contractor will be appointed and will be responsible for the delivery of the archaeological mitigation, as set out in this AMS. This responsibility will include all on-Site and off-Site archaeological works, including preparation of SSWSIs (alongside UDX's Archaeological Consultant), reporting, archiving and publication.

- 1.4.3. The Archaeological Contractor's Project Manager will be responsible for oversight of the archaeological mitigation and will be the point of contact with the ACoW and the Principal Contractor during the construction phase.
- 1.4.4. An ACoW will be appointed and will be responsible for monitoring adherence of the work undertaken by the Archaeological Contractor to the AMS and the SSWSIs. The ACoW will be responsible for liaising with the Principal Contractor during the construction phase so that work follows the AMS and relevant construction management plans. The ACoW will be the principal point of contact with Curators and will also organise and attend regular site meetings.
- 1.4.5. The Curators will monitor the archaeological mitigation to ensure that it is carried out to the required standard and specification as set out in this AMS and the SSWSIs. The Curators will attend site meetings, to be arranged by the ACoW, to review the progress and results of the fieldwork and to inform sign off of areas of archaeological interest once fieldwork is complete.

1.5 POLICY AND GUIDANCE

- 1.5.1. The AMS conforms with current good practice and takes account of policy and guidance provided in:
- National Planning Policy Framework (Department for Levelling Up, Housing and Communities, revised December 2024);
 - Ancient Monuments and Archaeological Areas Act 1979;
 - Hedgerow Regulations 1997;
 - Local Plan 2030 (adopted January 2020);
 - Standards and guidance issued by the Chartered Institute for Archaeologists, including the Code of Conduct and guidance for archaeological excavation, archaeological watching brief and archaeological archives (e.g., ClfA 2020a-2023b);
 - Historic England guidance on subjects including environmental archaeology, geoarchaeology, human remains, scientific dating, preservation of archaeological remains and management of historic environment research projects (e.g. HE 2011-2023); and
 - **Appendix 3.1: Legislation, Policy and Guidance for all ES Technical Topics (Volume 3).**

2 AIMS AND OBJECTIVES

2.1 AIMS

2.1.1. The aims of the AMS are to:

- Set out an overarching strategy to proportionately mitigate impacts on archaeological assets identified at the Site;
- Provide specific research questions for mitigation that will add to the corpus of knowledge for the region; and
- Provide a framework for completion of mitigation within a defined budget and programme.

2.1.2. The approach set out in this AMS will be developed and implemented through the SSWSIs, which will provide the detailed methods for the work and set out how the research potential will be realised against the East of England research agendas.

2.1.3. Principles observed throughout implementation of the AMS will include:

- Adherence to professional codes, guidance and standards;
- Consideration of archaeological evidence from all periods and its contribution to the understanding of the historic landscape;
- Focussing proportionate intrusive works at areas where there will be a direct impact through development, or where there is a need to consider management issues;
- Integration of relevant multidisciplinary information into archaeological mitigation (for example, geotechnical investigations);
- Adherence to construction management plans and codes of practice;
- Consideration of relevant policy and guidance; and
- Observation of all statutory designations.

2.2 OBJECTIVES

2.2.1. The objectives of the AMS are:

- To determine (via targeted Metal Detector Survey) whether metallic artefacts, perhaps moved by bioturbation from secure archaeological contexts, are present in the ploughsoil and examine whether the date and distribution of any such finds offers any information about chronology and zoning of activity;
- To proportionately sample and record archaeological remains at mitigation areas, in order to clarify their nature, date, extent, survival and their contribution to research questions.
- To refine chronological frameworks for archaeological remains through recovery of finds, supplemented by scientific dating;
- To enhance understanding of the environment and economy during different phases of activity through recovery of palaeoenvironmental and ecofactual information;
- To carry out post-excavation assessment and analysis; and
- To publish the results of the mitigation to bring the findings into the public and academic domain.

3 SUMMARY OF ARCHAEOLOGICAL BASELINE

3.1 INTRODUCTION

- 3.1.1. The archaeological baseline for the Site is presented in detail in **Chapter 10: Cultural Heritage (Volume 1)** and is reproduced in the AMS in summary only.
- 3.1.2. The Site is situated in the basin of the River Great Ouse; the river and its tributaries have shaped the local topography, provided diverse resources and fertile floodplains which have been a focus of human activity since the early prehistoric periods.
- 3.1.3. East Gateway Zone receives limited consideration in the following text. This Zone is not known to have been previously disturbed but archaeological investigation has not been completed due to existing groundcover (woodland).

3.2 PREVIOUS ARCHAEOLOGICAL EVALUATION

- 3.2.1. Previous evaluation at the Site comprises geophysical survey (MOLA 2019a), preliminary trial trench evaluation (MOLA 2019b), supplemented by additional trial trench evaluation completed in support of the present application (AOC 2024).

GEOPHYSICAL SURVEY 2019

- 3.2.2. Geophysical survey (magnetometry) was completed at suitable parts of the Core Zone, Lake Zone and the West Gateway Zone (MOLA 2019a). Remains of a number of rectilinear settlement enclosures and surrounding trackways of probable Iron Age and Roman date were identified. The location of a medieval moated site known from historic mapping and documentary sources, and potential contemporary enclosures, was also confirmed.

TRIAL TRENCH EVALUATION 2019

- 3.2.3. The Core Zone and West Gateway Zone were examined with a total of 64 (50m long by 1.8m wide) archaeological evaluation trenches (MOLA 2019b).
- 3.2.4. Four concentrated areas of archaeological remains were confirmed at the Core Zone and were interpreted as Site 1 (Roman farmstead), Site 2 (Iron Age enclosures and routeway), Site 3 (Iron Age and Roman enclosures), and Site 4 (medieval moated site and contemporary enclosures). At West Gateway Zone a potential Roman field system and associated trackways were identified.
- 3.2.5. Where applicable, and for ease of reference, the following baseline text references the 'Site' nomenclature used in Section 3.2.4, which was defined in the 2019 trenching report for areas of concentrated archaeological remains.

TRIAL TRENCH EVALUATION 2024

- 3.2.6. A total of 321 trenches (generally 50m long by 1.8m wide) were completed at Core Zone (158 trenches), Lake Zone (107 trenches), and the West Gateway Zone (56 trenches) as part of the present application (AOC 2024). Results of the trenching are summarised in the archaeological baseline text below.

3.3 ARCHAEOLOGICAL BASELINE

PALAEOLITHIC

- 3.3.1. The Lower (800,000 to 250,000 BC) and Middle (250,000 to 40,000 BC) Palaeolithic saw intermittent Hominin occupation of Britain as the climate alternated between long cold (glacial) and short warm (interglacial) stages. The Upper Palaeolithic is the last of the Old Stone Age periods (40,000–10,000 BC), spanning the last glacial cycle of the Pleistocene (the British Devensian). The archaeology of the Upper Palaeolithic is characterised by new stone-working techniques, the use of bone and other materials, art and anatomically modern humans (*Homo sapiens sapiens*).
- 3.3.2. The BGS identifies Great Ouse river terrace deposits (Terrace 2; Stoke Goldington Member) approximately 600m to the north and to the east of the Site (those to the east crossed by the lower reaches of the Elstow Brook). Terrace 1 (Felmersham Member) and Terrace 3 deposits (Biddenham Member) are recorded closer to the course of the existing Great Ouse, more than 1km north of the Site.
- 3.3.3. The terrace deposits located to the north and east of the Site are known to contain unstratified and stratified Quaternary paleoenvironmental ecofacts and palaeoenvironmental deposits along with Palaeolithic artefactual evidence. The closest artefactual evidence to the Site includes hundreds of poorly provenanced handaxes of Lower Palaeolithic date recovered from 19th century gravel pits on Terrace 3 deposits around 1km to the north at Kempston (Luke 2007, 24). Hundreds more poorly provenanced handaxes of Lower Palaeolithic date were also recovered from 19th century gravel pits on Terrace 3 deposits near Biddenham (ibid.), around 4km to the north of the Site.
- 3.3.4. Middle Palaeolithic stone tools have also been recovered, these finds mainly comprise small numbers of poorly provenanced but distinctive cores and flakes from the Terrace 3 Kempston and Biddenham gravel pits (Wymer 1999, 124) although a single Bout Coupe handaxe was found during fieldwalking at Biddenham Loop (Luke 2008). The area where this handaxe was discovered was within 100m of a 19th century gravel pit and it was interpreted as originating from deep within the terrace gravels disturbed during the quarrying.
- 3.3.5. Evidence for the Upper Palaeolithic was very limited in Bedfordshire at the last review of the County Palaeolithic resource assessment (Luke 2007, 24). Little has changed in subsequent years though a substantial Terminal Palaeolithic flint tool assemblage has recently been identified at river terraces on the north bank of the Great Ouse near Willington, around 8km northeast of the Site (East of England Regional Research Framework, 2021).
- 3.3.6. Recent ground investigation (GI: Arcadis 2023) at Core Zone and Lake Zone has not identified any terrace deposits at the Site but has confirmed the presence of extensive areas of Head directly overlying Peterborough Mudstone of the Jurassic Oxford Clay. The Head is of uncertain origin and date, but it may have been deposited as a consequence of climate change occurring during the late Pleistocene and early Holocene and, if so, it may contain or cover contemporary archaeological and palaeoenvironmental remains.
- 3.3.7. Previous archaeological investigations and HER data do not identify any Palaeolithic remains within the Site.

MESOLITHIC

- 3.3.8. The Mesolithic period saw mobile hunter-gatherer communities exploiting natural resources, with archaeological evidence usually limited to scatters of worked flint tools. Dense flint scatters found near the Great Ouse suggest that Mesolithic hunter-gatherers may have returned to favoured locations on a seasonal basis. Archaeological features defining settlement evidence of the Mesolithic period are extremely rare.
- 3.3.9. No Mesolithic evidence has been identified during archaeological investigation at the Site.

NEOLITHIC

- 3.3.10. The Neolithic saw the gradual introduction of a more sedentary lifestyle, with the rearing of domestic animals and the cultivation of early forms of cereal. Evidence is rare and often restricted to clustered pits, but activity of this period is known in the Great Ouse Valley with the river seemingly acting as a focus of settlement and ritual activity.
- 3.3.11. Areas, notably at the confluence of a watercourse, saw focussed construction of monuments which may have defined areas of ritual and communal significance. Some of Bedfordshire's most well-known Neolithic monuments are found in the Bedford area, including putative (Luke 2007, 33) cursus monuments recorded at Biddenham Loop (3.5km north), Kempston (4.5km north), and near Cardington adjacent to the Elstow Brook (8km north).
- 3.3.12. Excavations at Marsh Leys Farm (Luke and Preece 2011), immediately west of Lake Zone, produced residual evidence for Late Neolithic to Early Bronze Age activity in the form of a small assemblage of worked flint, although no settlement features of this period were identified.
- 3.3.13. During the 2019 evaluation trenching eight flint blades and flakes of probable Neolithic date were recovered from the surface of a potential colluvial deposit identified slightly to the west of the Elstow Brook at West Gateway Zone. A small residual or unstratified assemblage of ten other struck flints, perhaps of Neolithic or later date, was also recovered across Core Zone and West Gateway Zone.
- 3.3.14. No definitively Neolithic evidence was recovered during the 2024 evaluation trenching.

BRONZE AGE

- 3.3.15. Settlement evidence of this period remains rare and as for the Neolithic, it is often restricted to clustered pits such as examples revealed c.5km north near Biddenham, though a palisaded enclosure and cremation burials were also found near Biddenham (Luke and Barker 2022).
- 3.3.16. Bronze Age funerary monuments (ring ditches) are widespread near the Great Ouse and its tributaries. For example, cropmarks of probable Bronze Age ring ditches are identified alongside the putative Neolithic monuments located near Cardington with early Bronze Age Beaker burials found nearby (Luke 2007, 39-41). At Elstow, around 3km away, excavation has confirmed the presence of Bronze Age ring ditches close to the Elstow Brook (BCAS 1997; BCAS 1995).
- 3.3.17. Slightly to the west of Core Zone, circular cropmarks of potential ring ditches (HER ref: MBD14756) are recorded at the eastern side of the Elstow Brook.
- 3.3.18. The only definitive Bronze Age evidence at the Site is a barbed and tanged flint arrowhead recovered from ploughsoil at Core Zone during the 2024 evaluation trenching. A further thirty-one residual or unstratified worked flints were also recovered across the Site during the 2024 evaluation; the distribution suggests occasional loss or discard rather than any discrete focus of activity.

IRON AGE AND ROMAN

- 3.3.19. The landscape of the River Great Ouse valley became increasingly settled from the Middle Iron Age onwards. Continuity of some settlement from the Iron Age into the Roman period is known, although in some cases it is evident that settlement was abandoned in the Late Iron Age, with new settlements established on previously unoccupied land (Luke and Barker 2022).
- 3.3.20. In the early to mid-Roman period a reorganisation of the landscape occurred, a phenomenon known within the Bedford area and further afield in southern Britain. This transformation may have been associated with agricultural expansion to meet the growing needs of the Roman state.
- 3.3.21. The archaeological investigations of the Site have defined remains of a number of large rectilinear settlement enclosures, surrounding trackways and field system ditches of Iron Age and Roman date. Discreet areas of activity are referred to as 'MOLA sites 1–3'.

Core Zone

Early Roman farmstead

- 3.3.22. *MOLA Site 1* (proposed WSP mitigation area **E2**) encompasses a core area of around 3ha situated at a plateau of high ground at the northeast of the Zone; geophysical survey results indicated a concentration of relatively small rectilinear farmstead enclosures, with large potential stock or field system enclosures appended to the south and west and a network of trackway ditches extending to the west, southwest and east.
- 3.3.23. During the 2019 evaluation trenching a small assemblage of Roman pottery, mainly dating 1st century AD, was recovered from investigated enclosure ditches at the farmstead, along with one fragment of slag likely derived from a smithing hearth and a fragment of roof tile. Pottery dated to the 3rd century AD was recovered from the surface of the fills of one of the enclosure ditches, suggesting that the farmstead may have been abandoned by the mid Roman period.
- 3.3.24. The 2024 evaluation trenching further examined the farmstead and surrounding area. The extent of core activity and recovered dating evidence (Late Iron Age to early Roman pot sherds) was consistent with the earlier results and an absence of intercutting features suggests that the farmstead may have been relatively short-lived.

Iron Age farmstead and trackway

- 3.3.25. *MOLA Site 2* (proposed WSP mitigation area **E3**) encompasses a core area of c.4ha with geophysical survey results indicating presence of a broad north-northeast to south-southwest aligned trackway with appended small sub-square enclosures and perhaps some unenclosed roundhouses situated to its east and west. The densest Iron Age settlement activity may be focussed at the north of the core area, east of the trackway and adjacent to an unnamed stream. This focus perhaps comprises a minimum of four roundhouses located within a sub-square enclosure ditch.
- 3.3.26. A small assemblage of pot sherds recovered during the 2019 trench evaluation suggested that the settlement focus was in use during the mid to late Iron Age, with minimal evidence of Roman activity identified. However, finds indicated that some of the small sub-square enclosures and parts of the trackway extending to the south may have remained in use during the Iron Age/Roman transition.

- 3.3.27. The 2024 evaluation trenching further examined the core and the surrounding area. The extent of core activity was consistent with previous results, but pot sherds recovered from the settlement focus have been provisionally dated to the Late Iron Age to early Roman period, which may suggest that activity continued during the Iron Age/Roman transition.

Mid Roman rectilinear settlement enclosures

- 3.3.28. *MOLA Site 3* (proposed WSP mitigation areas **E4**), the densest area of archaeological remains at Core Zone, encompasses a core area of c.5ha. The Iron Age trackway and occasional sub-square enclosures at *Site 2* extend south into *Site 3* with parts of the trackway and some of the sub-square enclosures perhaps remaining in use into the early Roman period. However, a large rectilinear settlement enclosure system was established on a slightly different orientation to the earlier trackway and sub-square enclosures during the mid Roman period.
- 3.3.29. Several small, perhaps contemporary trackways extend to the east and west of the mid Roman rectilinear settlement enclosures and may have served agricultural areas located toward the east of Core Zone and at West Gateway Zone.
- 3.3.30. Pot sherds recovered at the rectilinear enclosure system during the 2019 evaluation were mainly dated to the early-mid Roman period though a small assemblage of late Roman pottery (4th century AD) was also present.
- 3.3.31. The 2024 evaluation trenching further examined the rectilinear enclosures, trackways and the surrounding area. The extent of core activity was consistent with previous results and multiple recutting of some features was identified, which supports reorganisation of the enclosure system and trackways during the Roman period. Recovered pot sherds suggest that this spatial reorganisation may have occurred during the 2nd to 4th century AD.

Lake Zone

- 3.3.32. The densest area of archaeological remains encompasses c.5ha and comprises multi-phase rectilinear settlement enclosures situated at the large arable field at the north of Lake Zone (proposed WSP mitigation areas **E1**, **S1** and **S2**). In addition to the enclosure ditches a few potential roundhouses are visible on geophysical survey results and discrete magnetic anomalies may indicate pits, hearths and industrial activity. Similar Iron Age and Romano-British rural settlement enclosures have been excavated immediately to the west at Marsh Leys Farm (Luke and Preece 2011).
- 3.3.33. The 2024 evaluation trenching at Lake Zone confirmed that the densest area of settlement activity is broadly consistent with the results of geophysical survey. However, four cremation burials, limited evidence of potential unenclosed settlement activity and an infilled palaeochannel of the Elstow Brook were identified to the east of the rectilinear enclosures. The cremation burials and alluvial deposits within the palaeochannel are currently undated, but they may define an unenclosed cremation cemetery and the course of the Elstow Brook contemporary with the rectilinear enclosures.

- 3.3.34. The evaluation trenching suggests that the rectilinear enclosures surround a main north-south aligned trackway and are delimited at the north by a substantial boundary ditch. Intercutting features, including a potential roundhouse cut by an enclosure ditch, define multiple phases of activity with recovered pot sherds suggesting commencement in the 1st century AD and a continuing presence into the 4th century AD, though the focus of later activity may have shifted slightly north.
- 3.3.35. An isolated sub-square enclosure (c.1.0ha) to the southeast and an isolated sub-square enclosure (c.0.8ha) to the northeast of the rectilinear settlement enclosure system are also dated to the Roman period by finds. The enclosure to the northeast may have been an outlying stock or field system enclosure, but finds from the enclosure to the southeast, including multiple fine tableware pot sherds and a bone pin, suggest another area of settlement, perhaps subsidiary to the rectilinear enclosure system, although it is situated on the opposite side of the former course of the Elstow Brook and could define the margin of another large enclosure system extending to the east, which will have been removed by 20th century clay extraction.

West Gateway Zone

- 3.3.36. The 2019 geophysical survey results suggested that archaeological remains at West Gateway Zone would comprise dispersed features consistent with agricultural use.
- 3.3.37. The 2019 evaluation trenching at much of this area identified a small number of mainly undated trackway ditches perhaps contemporary with, but peripheral to, the mid Roman settlement activity identified at Core Zone MOLA Site 3. However, the second largest assemblage of pottery discovered during the 2019 evaluation was recovered at the north of this Zone; it comprised early-mid Roman pot sherds within a potential enclosure ditch, shallow gullies, and a possible midden deposit. The character of the archaeological features and quantity of pot sherds here suggests that the remains of an early Roman farmstead may be situated to the north of West Gateway Zone.
- 3.3.38. The 2024 evaluation trenching further examined this Zone with results broadly consistent with previous investigation. Two east west aligned trackways are probable continuations of trackways extending west of Core Zone, MOLA Site 3. A substantial (c.1m deep) northeast-southwest aligned ditch crosses the centre of this Zone and appears to form the eastern boundary of the peripheral early Roman farmstead activity identified at the north of the Zone in 2019.
- 3.3.39. Further investigation of the peripheral early Roman farmstead activity suggests presence of a rectilinear enclosure ditch appended to the west side of the large boundary ditch, and within the enclosure closely spaced and perhaps contemporary furrows were present (proposed WSP mitigation area **S4**). Little artefactual evidence was recovered from the features examined in 2024, though a very small assemblage of Late Iron Age to mid Roman pot sherds suggests a general date.

Other Iron Age/Roman archaeology

Core Zone

- 3.3.40. The 2019 geophysical survey results suggested that a small area of potential pits, enclosure and trackway ditches was located at the northwest of Core Zone (proposed WSP mitigation area **S3**). The largest assemblage of pottery from the 2019 evaluation trenching was recovered from features examined here; dateable pot sherds included later Iron Age coarse ware but were mainly early-mid Roman.

- 3.3.41. Further investigation of this area during 2024 evaluation trenching identified a probable trackway ditch which contained sherds of two near complete Roman pots.
- 3.3.42. The evidence may locate the periphery of an early Roman farmstead which was focussed to the north at the area now crossed by Manor Road and truncated by 20th century activity associated with construction and operation of Kempston Hardwick brickworks.

East Gateway Zone

- 3.3.43. The Bedford Borough Historic Environment Record notes a small number of finds of Iron Age and Roman pottery in proximity to this zone, perhaps made prior to, or during, clay extraction for Kempston Hardwick Brickworks.

EARLY MEDIEVAL

- 3.3.44. Settlement pattern altered in the 5th century with dispersed early-medieval farmsteads or isolated hamlets often focussing on river valleys, and many of the local Roman sites appear to have been abandoned, though some show limited continued use.
- 3.3.45. In the 9th and 10th centuries, the dispersed settlement pattern began to be replaced with nucleated settlements often focussed on a manor house and a parish church.
- 3.3.46. Two small (weight 1g and 7g) non-diagnostic pot sherds, with fabrics indicative of an Early to Middle Anglo-Saxon date, were recovered during evaluation trenching (AOC, 2024, 444) at Lake Zone from the fill of a potential enclosure ditch located to the southwest of the area of dense Roman archaeological remains discussed in Sections 3.3.32 – 3.3.35. The difficulty of distinguishing between Iron Age and Early to Middle Saxon pottery of this type in the absence of diagnostic form and decoration was highlighted during a subsequent re-examination of the sherds by a pottery specialist, but a probable Saxon date was reaffirmed (AOC, Oct 2024, pers. comm.).
- 3.3.47. The two small sherds are from different pots and are the only potential evidence of the Early to Middle Saxon periods recovered at Lake Zone, or the remainder of the Site. It is unclear if they securely date the ditch from which they were recovered as they could be intrusive finds incorporated into its fill by later ploughing or bioturbation. The two probable Saxon pot sherds are suggested to 'attest to little more than the presence of contemporary activity in the vicinity of site' (AOC, 2024, 448).

MEDIEVAL

- 3.3.48. The medieval period at this area is characterised by open field farming systems controlled by manorial estates usually including a principal settlement situated around a parish church. The Site is situated in a landscape densely populated with moated sites, which became popular in the 12th and 13th centuries and were often built as a show of status and wealth.
- 3.3.49. The previous archaeological investigations have confirmed the presence of a medieval moated site and contemporary enclosures at the south of Core Zone.

Core Zone

- 3.3.50. The geophysical survey (MOLA 2019a) identified extensive evidence of ploughed out ridge and furrow across this area suggesting that the north, centre and east was located within open field systems. However, subsequent evaluation trenching has revealed little surviving evidence of the open field systems.

- 3.3.51. An area of extant field boundary hedges at the northeast of the Zone may identify a remnant of ancient enclosures recorded to the north of Manor Road (HER ref: MBD22920) but since removed by quarrying.
- 3.3.52. The HER identifies a shrunken medieval settlement at the north of the Zone adjacent to Manor Road (HER ref: MBD3286); along with a 13th-15th century Preceptory of the Knights Hospitaller (HER ref: MBD14757) known to have been present at Kempston Hardwick from documentary evidence. No medieval features were identified at the north of Core Zone during the 2019 and 2024 evaluation trenching.

Moated Site and enclosures

- 3.3.53. *MOLA Site 4 (proposed WSP Mitigation areas **E5** and **E6**)*: at the south of Core Zone close to Broadmead Road a moated site (HER ref: MBD8294) known from documentary sources, along with potential contemporary enclosures, were located by the 2019 geophysical survey. The moat is known to have been deliberately infilled in the late 20th century.
- 3.3.54. The 2019 evaluation trenching examined the eastern arm of the moat; the c.2.4m wide v-shaped moat ditch contained c.0.8m of modern infill overlying c.1m of organic moat fills. A single internal pit was revealed within the area enclosed by the moat and late 12th to mid-14th century pot sherds were recovered from its fill. A small assemblage of 12th century pot sherds was also recovered at curvilinear and rectilinear enclosures located to the northwest of the moated site.
- 3.3.55. The 2024 evaluation trenching examined the western arm of the moat, and a small rectilinear enclosure appended to the northern arm of the moat. In contrast to 2019 results the examined part of the moat had suffered significant truncation, surviving to a depth of approximately 0.4m. A small assemblage of medieval pot sherds was recovered from the fill of the moat and the appended enclosure ditch.
- 3.3.56. A deserted medieval village (Wooton Broadmead: HER ref: MBD16992) is located slightly to the southeast of the moated site and Core Zone.

Lake Zone

- 3.3.57. This area may have mainly seen agricultural use during the medieval period though the results of geophysical survey showed no definitive evidence of the presence of ploughed out ridge and furrow (MOLA 2019a).
- 3.3.58. The 2024 evaluation trenching identified shallow northwest-southeast aligned remains of ploughed out furrows of a probable medieval open field system in several trenches.
- 3.3.59. A shrunken medieval settlement (HER Ref: MBD3286) is identified from mid-20th century aerial photographs at the area now crossed by Manor Road and truncated by 20th century activity associated with construction and operation of Kempston Hardwick brickworks. The shrunken settlement lay west of an extant moated site, the remains of which are located immediately adjacent to the Site and are now a scheduled monument (Kempston Hardwick Moated Site. NHLE Ref: 1012312).

West Gateway Zone

- 3.3.60. Ploughed out ridge and furrow of medieval open field systems was identified in several trenches at West Gateway Zone.

East Gateway Zone

- 3.3.61. The Bedford Borough Historic Environment Record (HER) notes the findspot of a medieval coin in proximity to this zone, perhaps discovered in advance of clay extraction for Kempston Hardwick Brickworks. An area of ancient enclosures (HER ref: MBD22920) and another potential moated site, since removed by quarrying, are recorded to the east of the extant scheduled Kempston Hardwick moated site.

POST-MEDIEVAL AND MODERN

- 3.3.62. The medieval open fields were subdivided and enclosed with hedgerow field boundaries by the early 19th century, though much of the site remained in agricultural use throughout the post-medieval period.
- 3.3.63. The enclosure field boundaries were rationalised in the 20th century and archaeological trenching at the southeast of Core Zone has identified several removed post medieval field boundary ditches.
- 3.3.64. A small area at the northeast of Lake Zone may fall within the boundary of a late 18th-mid 19th century racecourse (HER ref: MBD13312). The 2024 evaluation trenching revealed no evidence of this heritage asset.
- 3.3.65. Kempston Hardwick Brickworks (HER ref: MBD6678) was established in the early 20th century at the centre and south of Lake Zone. Local brickworks had significant effects on the area, including large scale extraction and establishment of the model village of Stewartby in 1926; they were instrumental in the creation of Bedfordshire's rich multi-cultural society.

4 RESEARCH AGENDA

4.1 INTRODUCTION

- 4.1.1. Historic environment research frameworks form the basis for understanding the potential evidential significance of archaeological remains and for defining the focus of archaeological mitigation.
- 4.1.2. Historic environment research frameworks provide an overview of current understanding, define research agenda to address gaps in current knowledge and explore strategies to provide maximum information to answer the research questions pose by the agenda.
- 4.1.3. The AMS has taken relevant research frameworks (Section 4.2) into account during preparation of a mitigation strategy designed to provide maximum information to enhance current understanding of select relevant regional, local and if applicable national research agenda questions (Section 4.4) that will be addressed by mitigation of the archaeological remains known at the Site.
- 4.1.4. The research questions specified by the AMS will be iteratively reviewed and updated throughout the project, during preparation of the SSWSIs, during fieldwork and during preparation of the post-excavation assessment reporting. For example, the character and date of archaeological remains revealed at an area may lead to amendment or addition of research questions, or mitigation at one area may lead to different or additional research questions for mitigation at a nearby area.
- 4.1.5. The following section provides overarching period-based research questions, derived primarily from the regional and thematic research frameworks. The SSWSIs will review and if necessary, update the AMS research questions applicable to each mitigation area to capture and address alterations in current understanding resulting from the programme of mitigation.

4.2 RESEARCH FRAMEWORKS

- 4.2.1. The research frameworks relevant to the AMS are:
 - East of England Regional Research Framework for the Historic Environment (EAA 2021) which augments previous versions published in 1997, 2000 and 2011;
 - Bedfordshire Archaeology Research and Archaeology: Resource Assessment, Research Agenda and Strategy (Oake et al. 2007); and
 - Medieval Settlement Research Framework (MSRG 2024)

4.3 RESEARCH THEMES

- 4.3.1. The overarching research themes identified by the AMS are:
 - Can the Site contribute to understanding of the Terminal Palaeolithic period;
 - Iron Age settlement and field patterns;
 - Iron Age enclosure types;
 - Iron Age – Roman transition;
 - Landscape context and development of Roman rural settlement, including interconnectivity of settlements and the role of roads;
 - Is an early – mid Anglo-Saxon phase of activity present at the Lake Zone;
 - Rural medieval settlement and manorial estates; and
 - Medieval and post-medieval agricultural systems.

4.4 RESEARCH AGENDA

- 4.4.1. As no known foci of Lower or Middle Palaeolithic, Mesolithic, Neolithic or Bronze Age prehistoric activity has been identified at the Site the AMS omits research questions for these periods.
- 4.4.2. In response to very limited current baseline evidence only high-level research questions are identified for the Terminal Palaeolithic and Early Medieval periods.
- 4.4.3. Research questions will be reviewed throughout the mitigation and the Archaeological Consultant, following discussion with Curator's may identify a need to add or supplement research questions, either in addendums to SSWSIs or during post excavation assessment, to respond to the date, character and significance of archaeological remains present.

TERMINAL PALAEOOLITHIC

- 4.4.4. Terminal Palaeolithic remains are not currently known at the Site, but extensive Head deposits may include or cover archaeological and palaeoenvironmental evidence of the period.
- 4.4.5. There is potential to address the following research question, identified from the research frameworks:

How can East Anglian sites contribute to our understanding of the Upper Palaeolithic and Mesolithic periods nationally?

- 4.4.6. Study of existing information regarding the Head deposits followed by proportionate purposive sampling and, if warranted, further mitigation at areas of deep construction impact will determine the presence/absence of remains with potential to contribute to this research question and may prompt addition of research questions relevant to the character and contribution of any identified remains.

EARLY MEDIEVAL

- 4.4.7. The only current indication of activity of the Early – Middle Anglo-Saxon period comprises two small pot sherds recovered from one ditch section at Lake Zone; it is currently uncertain if the pot sherds are securely dated or were incorporated into the fill of the ditch as residual or intrusive material.
- 4.4.8. There is limited potential to address the following research questions, identified from the research frameworks:

To what extent is it possible to demonstrate absence of Early Anglo-Saxon occupation rather than absence of evidence?

How can we better understand the extent of Middle and Late Anglo-Saxon landscape reorganisation?

- 4.4.9. Mitigation at Excavation Area E1 will determine the presence/absence of remains with potential to contribute to these research questions and may prompt addition of research questions relevant to the character and contribution of any identified remains.

IRON AGE

- 4.4.10. The Iron Age is well represented at the Site, with large late Iron Age enclosed settlement foci identified through desk-based research, geophysical survey and trial trenching at Core Zone and Lake Zone.

- 4.4.11. There is also potential evidence for unenclosed Iron Age settlement at Core Zone, this is suggested by dispersed features including at least one potential roundhouse located to the west and east of a broad trackway. The trackway may have formed a hub for unenclosed and later enclosed settlement activity during the mid and late Iron Age. The relationship between unenclosed and enclosed sites is not well understood.
- 4.4.12. Some settlements continued in use into the Roman period, as seems to be the case for some of the small enclosures and parts of the broad trackway at Core Zone. Investigation of this potential continuity may address questions about late Iron Age settlement, for example, whether its character was influenced by changes to trade/supply/distribution networks and shifting ethnic identity resulting from interaction with the Roman world.
- 4.4.13. There is potential to address the following research questions, identified from the research frameworks:

Settlement types

- 4.4.14. Why were settlements increasingly enclosed during this period and to what extent may the progress of enclosure have varied regionally?
- 4.4.15. How and why did 'village' or 'ladder' settlements develop?
- 4.4.16. Why did large, nucleated settlements develop, how do they relate to each other and is there evidence of developing settlement hierarchy.
- 4.4.17. What can we deduce about the morphology, spatial extent and functions of settlements, and in particular the processes underlying the development in some areas of enclosed occupation or activity foci?

Settlement distribution

- 4.4.18. What mechanisms may underlie intra-regional variations in site densities?
- 4.4.19. May the density and/or spatial extent of settlements of particular types and periods and within particular landscape zones be underestimated?

Depositional practice

- 4.4.20. What is the nature of structured deposits in this region, and may sub-regional patterns or trends be discerned?

Burial and the treatment of human remains

- 4.4.21. What may further analysis of burials and of settlement architecture and morphology contribute to studies of social and political organisation?

Finds studies

- 4.4.22. How can we refine further the ceramic chronology for the first millennium BC?

Dating

- 4.4.23. How can we maximise the potential of scientific dating methods as tools for refining the regional chronological framework for the first millennium BC?

ROMAN

- 4.4.24. The early Roman period perhaps saw a shift away from the Iron Age settlement foci at Core Zone. The broad trackway and some of the small enclosures appended to it may have remained in use, but the Iron age settlement appears to have been replaced by two enclosed early Roman farmsteads at the north of Core Zone, with perhaps another enclosed early Roman farmstead established slightly to the north of West Gateway Zone.
- 4.4.25. The early-mid Roman period saw reorganisation of the landscape with extensive rectilinear enclosure systems established close to the Elstow Brook at Core Zone and Lake Zone.
- 4.4.26. A cremation cemetery of potential early-mid Roman date is present to the southwest of the rectilinear enclosure system at Lake Zone.
- 4.4.27. There is potential to address the following research questions, identified from the research frameworks:

Romanisation

- 4.4.28. How did the Conquest impact upon rural settlements and landscapes?

Rural settlement types

- 4.4.29. How did rural settlements relate to each other and to towns and military sites, and how may this have varied regionally and over time?

Rural settlement distribution

- 4.4.30. What patterns can be discerned in the location of settlements in the landscape?

The agrarian economy

- 4.4.31. How did integration into the Roman Empire impact upon the agrarian economy, including the introduction of new crops, herbs and fruits?

Burial and the treatment of human remains

- 4.4.32. Why have so few early Roman burials been found, and may practices have varied regionally and between different communities?

Finds studies

- 4.4.33. How may information on temporal and regional variations in Romano-British pottery typology and vessel fabrics best be disseminated?
- 4.4.34. How can we advance our knowledge of the chronology of Romano-British metal finds, particularly brooches?

Dating

- 4.4.35. What are the priorities for scientific dating, particularly radiocarbon, and how may targeted dating programmes be developed for the Romano-British period?

MEDIEVAL

4.4.36. The medieval period saw establishment of several moated sites and nucleated settlements in the vicinity of Kempston Hardwick. For example, the extant and Scheduled Kempston Hardwick moated site lies immediately to the southeast of the boundary of Lake Zone, with an infilled moated site and contemporary enclosures situated within the southern part of Core Zone. The site of a deserted medieval village (Wooton Broadmead) is recorded immediately south of Core Zone.

4.4.37. The remainder of the Site appear to have been incorporated into medieval open field systems, with ploughed out ridge and furrow evident on geophysical survey results and occasionally identified in evaluation trenching.

4.4.38. There is potential to address the following research questions, identified from the research agendas:

Manors and manorial estates

4.4.39. How can the classification of moated and non-moated manorial sites be improved?

4.4.40. Can we improve our knowledge and classification of moated sites in the region, and how can environmental data add to our knowledge?

4.4.41. What standing buildings are present on moated sites and what functions may associated features found during survey have performed?

Rural settlement

4.4.42. How can we shed further light upon the origin and development of dispersed hamlets and farms in champion and pastoral areas?

4.4.43. Can we clarify further the processes of settlement desertion and shrinkage, especially within zones of dispersed settlement?

The agrarian landscape

4.4.44. What can we deduce about changes in woodland management and animal or crop husbandry (including new crops, crop rotation, more intensive cultivation of clay soils and larger animals, particularly sheep)?

4.4.45. What can environmental remains teach us about diet and living conditions in urban, rural and coastal communities?

4.4.46. Does the Historic Hedgerow identified in the Core Zone include evidence of buried remains that establish a date for the medieval parish boundary which it followed?

5 MITIGATION STRATEGY

5.1 MITIGATION PRINCIPLES

- 5.1.1. The basic principle for the mitigation strategy is to target those areas which will maximise recovery of information to comprehensively contribute to the research themes and questions identified by the AMS, or to additional research themes and questions that may be added through iterative examination of ongoing results.
- 5.1.2. To assist with identifying mitigation, areas have been subdivided into four categories:
- Areas of archaeological interest with intrinsic value i.e. usually spatially extensive, relatively complex, sometimes multi-phase archaeology, which will provide significant contribution to research themes and questions;
 - Areas of archaeological interest with group value i.e., usually less complex or spatially extensive archaeology which, along with similar areas of archaeological interest, will contribute to research themes and questions, but will often require less intensive investigation than areas with intrinsic value;
 - Areas with unknown value (i.e. areas which have not been subject to previous site investigation); and
 - Areas where no further work is required.
- 5.1.3. Where archaeological remains do not fit the mitigation criteria additional work upon them will not be undertaken.

5.2 MITIGATION METHODS

- 5.2.1. The following mitigation methods, considering the extent of previous investigations and the character and significance of known archaeological remains, will be used:
- Excavation;
 - Strip, Map and Sample excavation (SMS);
 - Monitoring and, if required, strip, map and sample excavation; and
 - Purposive Sampling.
 - Hedgerow Sampling
- 5.2.2. A total of twelve areas of potential or known archaeological interest will require mitigation. The areas and the mitigation methods are shown on **Figures 1A – 1C of Annex 3: Figures**, and comprise:
- Six areas (E1 – E6) with intrinsic value which will require excavation. One of these areas (E1) will also be subject to purposive sampling of alluvial deposits (for geoarchaeological assessment and analysis);
 - Four areas (S1 – S4) with group value which will require strip, map and sample excavation;
 - One area (M1) with unknown value which will be subject to monitoring and, if required, strip, map and sample excavation; and
 - One area (P1: Head deposits present at Lake, Core and West Gateway Zones) with unknown value which, where affected by extensive deep construction impact, will be subject to proportionate purposive sampling, deposit modelling and, if required, targeted excavation or strip, map and sample excavation.

- 5.2.3. A Site wide contingency area of up to an additional 1ha of Excavation is allowed for use where localised extension of mitigation areas E1 – E6 and S1 – S4 would allow complete excavation of particularly important archaeological remains. The ACoW will only consider use of contingency to locally extend these areas where this will contribute to the AMS research questions, or to additional research questions informed by the character and date of the relevant archaeological remains. The location, size and scope of contingency excavation will be defined by the ACoW in consultation with Curators. The contingency area is not included in **Table 5-1** or shown on figures as use of the contingency would be a localised response to specific archaeological remains identified at mitigation areas E1 - E6 and S1 - S4.
- 5.2.4. Overarching detail of the mitigation methods are presented in Section 6 of the AMS. The overarching methodologies are informed by consultation with the Curators along with industry standards and guidance provided by ClfA (e.g., ClfA 2020a-2023b) and Historic England (2011-2024).
- 5.2.5. The Archaeological Contractor will follow the overarching mitigation requirements of the AMS as a minimum, but specific detail for the overarching requirements will be developed within their SSWSI.
- 5.2.6. The areas of archaeological interest requiring archaeological mitigation are listed in **Table –5-1** below and, except for P1, are shown in **Annex 3: Figures**.

Table 5-1 – Archaeological Mitigation Areas

Area Number	Zone	Size (hectares)	Summary of Archaeology	Mitigation Requirements
S1	Lake Zone	0.53	Isolated sub-square enclosure (Roman)	Strip, map and sample excavation (SMS)
E1	Lake Zone	5.3	Extensive rectilinear settlement enclosure system, trackways, potential cremation cemetery and potential unenclosed settlement activity (Late Iron Age and Roman) Palaeochannel (likely contemporary with the Iron Age and Roman settlement activity)	Excavation Sampling (Geoarchaeology)
S2	Lake Zone	1.0	Isolated sub-square enclosure (Roman)	SMS
S3	Core Zone	0.46	Roman farmstead (part)	SMS
E2	Core Zone	3.8	Roman farmstead (entire)	Excavation

Area Number	Zone	Size (hectares)	Summary of Archaeology	Mitigation Requirements
E3	Core Zone	3.4	Iron Age/early Roman trackway with appended sub-square enclosures. Enclosed and potential unenclosed settlement.	Excavation
E4	Core Zone	4.9	Extensive rectilinear settlement enclosure system and trackways (Iron Age and Roman)	Excavation
E5	Core Zone	2.5	Medieval enclosures	Excavation
E6	Core Zone	0.86	Medieval moated site	Excavation
S4	West Gateway Zone	0.73	Roman farmstead (part)	SMS
M1	East Gateway Zone	5.0	Unknown	Monitoring and potential SMS
P1	Lake, Core and West Gateway Zones	Defined in response to areas of deep construction impact affecting Head deposits	Potential Terminal Palaeolithic remains (uncertain, possibly low, potential) situated within or beneath spatially extensive Head deposits	Proportionate purposive sampling, deposit modelling and potential targeted Excavation or SMS

6 MITIGATION METHODOLOGY

6.1 SITE SPECIFIC WRITTEN SCHEME OF INVESTIGATION

- 6.1.1. Site Specific Written Schemes of Investigation (SSWSI) will be produced for individual or multiple mitigation areas and methods in accordance with the requirements of the following sections of the AMS.
- 6.1.2. The SSWSI will respond to the requirements of the AMS, providing method and logistical detail, including research aims, objectives, method/s, sampling requirements, size and location of mitigation area/s. Constraints information, including utilities and UXO searches will inform preparation of the SSWSI. The SSWSI will also include access arrangements, welfare, site safety, a site and activity specific Risk Assessment and Method Statement (RAMS) and a programme. The SSWSI will provide as appendices, an environment management plan and a carbon mitigation plan specific to the archaeological fieldwork being undertaken.
- 6.1.3. The SSWSI addressing Area P1 will define a strategy for proportionate purposive sampling and deposit modelling of Head deposits where they would be affected by spatially extensive deep construction impacts at Lake, Core and West Gateway Zones. Preparation of this SSWSI will include preliminary deposit modelling using information collected during legacy and recent ground investigation, to inform the purposive sampling strategy. Results of the purposive sampling may prompt production of an addendum SSWSI for Excavation or SMS if earlier prehistoric remains are present within or beneath the Head. The Area P1 SSWSIs will be prepared in consultation with Curators, will consider industry guidance for Palaeolithic sites (HE 2023, 2024) and will identify research questions relevant to the character of any remains identified.
- 6.1.4. The SSWSI will be approved by the Curators prior to the start of on-Site work.
- 6.1.5. The Higgins, the project archive repository, will be contacted by the Archaeological Contractor and a unique project number - an 'accession number' - will be obtained prior to the start of mitigation and will be included in each SSWSI.
- 6.1.6. Consideration will be given during all phases of work as to how results contribute to the AMS and SSWSI research questions, or to additional research questions informed by the character of archaeological features and finds. The sampling strategies presented in the AMS and SSWSI will be iteratively reviewed by the ACoW throughout fieldwork with additions or changes made, in consultation Curators, at whole or part excavation and SMS areas where:
 - It becomes clear that character, survival and significance of archaeological remains and their contribution to the research agenda is more than suggested by results of evaluation; and
 - It becomes clear that character, survival and significance of archaeological remains and their contribution to the research agenda is less than suggested by results of evaluation.

6.2 EXCAVATION

- 6.2.1. Metal Detector Survey will be completed at excavation areas E1 – E6 before soil is stripped.
- 6.2.2. Following any surface cleaning, identification and completion of a digital pre-excavation site plan of archaeological features and deposits, the excavation process will accord with the following minimum requirements:

- The excavation of structural elements including foundation cuts, wall lines and post holes will usually comprise the removal of 50% of archaeological deposits by hand. However, full excavation of structural features may be necessary if they include large assemblages of industrial, economic or environmental evidence or if finds densities are low;
- The excavation of non-structural isolated features, such as pits, will usually comprise the removal of 50% of archaeological deposits by hand. Complete excavation of isolated features, and sieving of selected fills, may be necessary if they contain large assemblages of artefactual, industrial, economic or environmental evidence, or if finds densities are low;
- Non-structural ditches and gullies will be subject to excavation by hand (usually a maximum of 10% by length) to characterise their significance, form, function, condition and date; at the same time retrieving a fully representative artefact/ecofact assemblage;
- All terminal ends of ditches and gullies, and all feature intersections will be investigated to determine stratigraphic relationships;
- Inhumations, cremations and other deposits relating to funerary activity will be 100% excavated by hand following established guidance and industry best practice;
- Shallow deposits which may contribute to understanding the use of an area and any zoning of activity within it, for example surfaces or occupation horizons within structures or enclosures, will be investigated by excavation of representative sections to characterise them and to determine whether they seal earlier archaeological deposits. If earlier deposits are present, it may be necessary to fully excavate shallow deposits in chronological order, then repeat characterisation until the full archaeological sequence is investigated and recorded. Shallow deposits will be subject to spatially discrete sampling for palaeoenvironmental, geoarchaeological and geochemical assessment and analysis;
- Standard palaeoenvironmental bulk samples will usually only be retrieved from securely stratified, single deposits and fills. Bulk samples will be collected from selected features distributed across the mitigation areas paying regard to observed levels of truncation, equitable sampling of different phases and any perceived zoning of activity at the sites. Other types of environmental sampling may be used for suitable fills and deposits, e.g. monoliths for sediment characterisation/pollen assessment, or other purposive environmental samples;
- The stripped surface of mitigation areas will be re-examined on a weekly basis to determine whether previously un-noticed potential archaeological remains have ‘weathered out’; and
- Excavated interventions, features and deposits shall be recorded in sufficient detail to allow calculation of the volume of excavated material and examination of this information against recovered finds densities during post excavation analysis.

6.3 STRIP, MAP AND SAMPLE EXCAVATION

- 6.3.1. Metal Detector Survey will be completed at strip, map and sample areas S1 – S4 before soil is stripped.
- 6.3.2. Following any surface cleaning, identification and completion of a digital pre-excavation site plan of archaeological features and deposits an initial site excavation strategy meeting will be attended by the Archaeological Contractor, ACoW and the Curators.

- 6.3.3. The pre-excavation site plan will be used to guide agreement between the ACoW and the Curators on the initial sampling and recording strategy for strip, map and sample areas. The initial sampling strategy will be iteratively reviewed by the ACoW throughout fieldwork and may be revised, in consultation with Curators, to address the character, survival and significance of archaeological remains present.
- 6.3.4. The strip, map and sample excavation process will be based upon the following general requirements:
- Select sample excavation of structural elements including foundation cuts, wall lines and post holes. However, full excavation of structural features may be necessary if they include large assemblages of industrial, economic or environmental evidence or if finds densities are low;
 - Select sample excavation of non-structural isolated features, such as pits. Complete excavation of isolated features, and sieving of selected fills, may be necessary if they contain large artefactual, industrial, economic or environmental assemblages, or if finds densities are low;
 - Select sample excavation of non-structural ditches and gullies to characterise their form, function, condition and date; at the same time retrieving a fully representative artefact/ecofact assemblage;
 - Terminal ends of ditches and gullies, and all feature intersections will usually be investigated to determine stratigraphic relationships;
 - Inhumations, cremations and other deposits relating to funerary activity will be 100% excavated by hand following established guidance and industry best practice;
 - Standard palaeoenvironmental bulk samples will usually only be retrieved from securely stratified, single deposits and fills. Bulk samples will be collected from selected features distributed across the mitigation areas paying regard to observed levels of truncation, equitable sampling of different phases and any perceived zoning of activity at the sites. Other types of environmental sampling may be used for suitable fills and deposits, e.g. monoliths for sediment characterisation/pollen assessment, or other purposive environmental samples;
 - The stripped surface of mitigation areas will be re-examined on a weekly basis to determine whether previously un-noticed potential archaeological remains have 'weathered out'; and
 - Interventions, features and deposits shall be recorded in sufficient detail to allow calculation of the volume of excavated material and examination of this information against recovered finds densities during post excavation analysis.

6.4 MONITORING

- 6.4.1. Monitoring will be undertaken within the East Gateway Zone (Area M1). It will be undertaken at areas to be impacted by Construction Phase intrusive groundwork where archaeological evaluation has not previously been conducted due to land use (woodland).
- 6.4.2. The archaeological monitoring works within the East Gateway Zone will be carried out by the Archaeological Contractor will commence with soil stripping under archaeological control (see Section 6.4.3). The soil strip will be completed after ecological constraints have been addressed and woodland has been cleared by non-archaeological contractors, and in advance of the Construction Phase. The Construction Phase programme will allow sufficient post soil strip time for the Archaeological Contractor to proportionately investigate and record archaeological features, structures, deposits, artefacts and/or ecofacts which may be present (see Sections 6.4.4 – 6.4.5).

- 6.4.3. At the area of archaeological monitoring, soils (which may include modern made ground, topsoil, subsoil, alluvium and colluvium) will be stripped to the first archaeological horizon or the surface of natural deposits using a 360-excavator equipped with a toothless ditching bucket under the control of the Archaeological Contractor.
- 6.4.4. The ACoW, after consultation with Curators, will inform UDX and the Principal Contractor of any discoveries requiring further archaeological work, including a summary of their extent, character and complexity. The programme to complete required archaeological work will be agreed with UDX following discussion between the Principal Contractor, ACoW and the Archaeological Contractor.
- 6.4.5. The extent of sampling of archaeological features and deposits during monitoring within the East Gateway Zone shall be determined at a meeting between the ACoW and Curators, but as a minimum will include the sample excavation of a select number of features, structures, deposits accompanied by industry standard recording, including context records, drawn sections and profiles, mapping with GNSS equipment, with all work designed to recover sufficient information to determine character, function, extent, date and significance of features and finds.
- 6.4.6. Investigation and recording of isolated or poorly preserved discoveries will usually be completed rapidly using method detailed in the monitoring SSWSI, but discovery of extensive or complex archaeological features and deposits may require production of an addendum SSWSI and demarcation of areas for Excavation or SMS excavation in accordance with Section 6.2 or 6.3 of this document.
- 6.4.7. The Archaeological Contractor will supply necessary additional staff to promptly complete rapid investigation and recording of isolated or poorly preserved discoveries.
- 6.4.8. Monitoring within the East Gateway Zone will be reviewed throughout and may be discontinued where it is identified that previous activity has severely truncated or removed archaeological remains. Any changes to scope will be agreed between the ACoW and Curators.
- 6.4.9. In the unlikely event that archaeological features, structures or artefacts of potential national significance are identified no further work will be completed at the relevant area until the ACoW and the Principal Contractor have been informed, a meeting between the ACoW and the Curators completed, and mitigation proposals have been agreed.

6.5 PURPOSEFUL SAMPLING

- 6.5.1. The purposive sampling of known remains with geoarchaeological and palaeoenvironmental potential will comprise completion of boreholes within alluvium infilling a palaeochannel of the Elstow Brook at Excavation area E1 (Lake Zone) to retrieve unbroken cores for assessment and analysis of geoarchaeological and palaeoenvironmental information and to determine chronological frameworks. The full depth of the sedimentary sequence within the palaeochannel will be sampled with boreholes advanced to the underlying superficial or solid geology.

- 6.5.2. The purposive sampling of Head deposits and any underlying deposits with palaeoenvironmental and archaeological potential will usually be completed with machine excavated test pits and window samples. The detailed purposive sampling strategy for Head deposits will be presented in the Area P1 SSWSI. The SSWSI will include a review of available ground investigation information to develop a preliminary deposit model and will focus proportionate purposive sampling at areas of Head affected by deep construction impact. Further archaeological work, including programmes of Excavation or SMS, may be necessary at areas of deep construction impact dependent on the results of the purposive sampling and a strategy for this, should it be necessary, will be set out in an addendum SSWSI.
- 6.5.3. The Archaeological Contractor will collect, examine, label, usually remove from site and store unbroken cores in an off-Site facility where climate, light and other factors adversely affecting preservation can be controlled. Recording of cores removed from site and their sampling for assessment and analysis will be completed under laboratory conditions.
- 6.5.4. Soil and sedimentary sequences will be recorded using a pro forma system compatible with the recommendations of industry standard geoarchaeological guidance (HE 2015). Usually this will involve use of The Troels-Smith system (Troels-Smith 1955), and the Archaeological Contractor will seek approval from the ACoW if they propose to use an alternative system. Detailed geoarchaeological descriptions will be made including information such as: Depth, Texture, Composition, Colour, Inclusions, Structure, Boundaries. Interpretations will include, where possible, probable depositional environments and formation processes of observed deposits.
- 6.5.5. Cores will be sub-sampled for assessment and subsequent analysis, if warranted, of environmental proxies, including microfossils such as pollen, spores, phytoliths or diatoms and macrofossils such as seeds, plant or insect remains.
- 6.5.6. The Site records will include a datum (m AOD) for each borehole or test pit.

6.6 HISTORIC HEDGEROW SAMPLING

- 6.6.1. A long curvilinear field boundary, marked by a mature hedgerow, bisects the Core Zone from southeast to northwest (see Appendix 10.1: Historic Environment Desk-Based Assessment (Volume 3)). This forms the parish boundary between the historic parishes of Kempston and Wootton and is likely an ancient boundary of the medieval period. The hedgerow is historically 'important' under *The Hedgerow Regulations 1997*.
- 6.6.2. Mitigation of the removal of the hedgerow will compromise preservation by record. A photographic record will be undertaken prior to hedgerow removal. The hedgerow will be examined archaeologically to establish whether there are any associated buried earthworks, such as an earlier boundary bank or hedgerow bank and ditch. This would be achieved through digging a slot every 100m (a maximum of five) archaeologically recording any remains and retrieving any dating evidence (e.g. pottery), where this is feasible (considering ecology or other concerns).

6.7 GENERAL PROCEDURES

SURVEY

- 6.7.1. All spatial setting out and recording will be in accordance with The Ordnance Survey National Grid and Ordnance Survey Newlyn Datum (ODN) as defined by the OS Active GNSS network and use of a virtual reference system. Setting out shall be completed and recorded to a minimum horizontal accuracy of $\pm 0.05\text{m}$.
- 6.7.2. The Archaeological Contractor shall ensure that all detail of archaeological features, structures, deposits, artefacts and/or ecofacts are surveyed 'as dug'. Ground level height data to Ordnance Datum (OD) shall be recorded for each mitigation area, levels of key archaeological horizons and features will also be recorded along with the levels of the top of the superficial drift deposits and the top of the solid geology (where present).
- 6.7.3. A digital pre-excavation site-plan of archaeological features and deposits will be prepared by the Archaeological Contractor promptly, with survey occurring on the same or consecutive days as machining and hand cleaning to ensure that the completed plan can be used quickly and effectively to define the strategy for targeted sample investigation.

METAL DETECTING

- 6.7.4. Metal Detector Survey will examine the excavation and strip, map and sample areas before soil is stripped (depth of physical investigation will be limited to ploughsoil, in most cases no more than 0.30m) and will be directed and controlled by the Archaeological Contractor who may contact experienced amateur metal detectorists, with knowledge of working on commercial archaeological sites, to take part in the metal detector survey.
- 6.7.5. During the metal detector survey completed prior to soil stripping no metallic artefacts will be removed from a depth greater than the ploughsoil. Artefacts will be placed into a finds bag labelled with a unique ID number and their individual locations plotted to $\pm 0.1\text{m}$ using RTK GNSS.
- 6.7.6. Metal detectors will also be used by experienced staff to scan for metallic finds after soil has been stripped from mitigation areas and at regular intervals during investigation of key archaeological features or deposits.

MACHINE EXCAVATION

- 6.7.7. Topsoil/ploughsoil and subsoil at mitigation areas will be stripped by tracked excavators using a bladed ditching bucket, under constant supervision by the Archaeological Contractor, to the first archaeological horizon, the surface of natural deposits or features with palaeoenvironmental potential, or to the underlying superficial geology.
- 6.7.8. It may be appropriate following excavation of sondages, investigation by coring/auguring, or a combination of these techniques, to resort to supervised machine excavation of deep archaeological deposits of demonstrably low significance. This will only be carried out where it can be reasonably argued that more detailed attention would not produce information of value and where the removal of such deposits may allow investigation of underlying features or deposits. It is a technique that would only be used after review with the Curators.
- 6.7.9. Stripped topsoil/ploughsoil and subsoil will be stored separately and at designated storage areas situated a safe distance away from mitigation areas.

- 6.7.10. No machinery (or vehicles) will cross stripped areas until mitigation has been completed to the satisfaction of the ACoW and Curators.

SURFACE CLEANING

- 6.7.11. The Archaeological Contractor will ensure that, where possible, the stripped surface is machined to a suitably 'clean' state in order to identify, define and investigate any exposed archaeological remains. If the surface is not sufficiently clean, hand cleaning of the surface will be required.

RECORDING

- 6.7.12. A context record will be kept on pro-forma record cards. Each discrete archaeological layer, fill, cut, etc., will be individually numbered and described in terms of soil composition, stratigraphic position, dimensions, artefact content, samples, with professional interpretation as to the likely nature and date of the feature. The context system will be able to be cross-referenced to all records and will be compatible with digitisation.
- 6.7.13. Single context planning (MoLAS 1994) shall only be used where complex stratigraphy is encountered.
- 6.7.14. A complete drawn record of excavated archaeological features and deposits will be made. Plans and section will be drawn at a scale deemed appropriate, i.e., generally 1:20 or 1:50 for plans, 1:10 for sections) and tied to the Ordnance Survey National Grid. All plans and sections will include the Ordnance Datum (OD) height of strata and all principal features (as defined by OSGM15 and OSTN15).
- 6.7.15. All context and hand drawn information shall be digitised (or preferably generated digitally in the first instance).
- 6.7.16. Registers will be kept of all contexts, photographs, levels, plans, sections, finds and samples taken in the field.
- 6.7.17. A 'Harris matrix' stratification diagram shall be employed to record stratigraphic relationships (Harris et al. 1993), where appropriate. This record shall be compiled and checked during the course of the fieldwork with spot dating, where appropriate, incorporated onto this diagram.
- 6.7.18. A full photographic record will be made using Digital Single Lens Reflex (SLR) cameras equipped with an image sensor of not less than 10 megapixels in high resolution TIFF (uncompressed) format. This will record both the detail and the general context of the principal features and the site. Digital images will be subject to managed quality control and curation processes which will embed appropriate metadata within the image and ensure long term accessibility of the image set.
- 6.7.19. Photographs will also be taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the fieldwork.

ENVIRONMENTAL SAMPLING

- 6.7.20. An initial sampling strategy is set out below (Section 6.7.23). This strategy is based on the existing information about mitigation areas, gathered from desk-based study and site investigations. Sampling methods will follow Historic England guidelines (2011), and advice will be sought from the Curators, including Historic England Regional Archaeological Science Advisor as appropriate throughout the project.

- 6.7.21. The initial sampling strategy identifies the key elements that should, where present, be sampled during mitigation. However, the strategy will be reviewed throughout on-Site work, and where unexpected features or deposits are identified, it will be revised accordingly to take these into account.
- 6.7.22. All samples will be taken to address a specific question. The purpose of the sample, and the question it has been taken to address will be recorded on the Archaeological Contractor's sample record sheet.
- 6.7.23. Sampling will examine Iron Age and Romano-British settlement enclosures, field systems and trackways at Core Zone, Lake Zone and West Gateway Zone, along with a medieval moated site and contemporary enclosures situated at the south of Core Zone. In addition, Lake Zone alluvial deposits associated with the Elstow Brook may contain evidence of past environments. Sampling will therefore target the following, where present, as a minimum:
- Archaeological features (ditches, pits, gullies, postholes, buildings, cremation cemetery) associated with settlements of Iron Age and Romano-British date, with potential for earlier phases of activity; from different features and phases spread across concentrated areas of activity;
 - Archaeological features (moat, buildings, ditches, pits, gullies, postholes) associated with a medieval moated site and contemporary enclosures situated slightly north of Broadmead Road. From different features and phases spread across concentrated areas of activity;
 - Floor surfaces where they survive and have not been truncated;
 - Occupation or other extensive deposits representing the main phases of activity (to determine whether there are changes in rates of deposition, or material survival over time); and
 - Alluvial sequences from a palaeochannel of the Elstow Brook.
- 6.7.24. Sampling will not only target obviously charcoal rich or waterlogged deposits, but be undertaken on those features outlined above, taking into account advice from the Archaeological Contractor's environmental specialist. This will ensure that samples are recovered from a representative range of contexts, which adequately characterise past activities, and allow an assessment to be made of the extent to which they help address palaeoenvironmental and palaeoeconomic questions.
- 6.7.25. It is possible that unexpected deposits or features will be identified during the mitigation. As these are not covered in the initial sampling strategy above, the need for sampling will be assessed against applicable regional research objectives throughout mitigation, the sampling strategy will be updated as necessary, and the features sampled accordingly.
- 6.7.26. Bulk 'disturbed' environmental samples will be taken using ten litre plastic buckets (with lids and handles), or strong polythene bags (double bagged) secured at the neck.
- For non-waterlogged deposits bulk sample volume will normally be in the range of 40-60 litres. Where contexts have a volume of less than that stated above then 100% of the context will be sampled. Each bulk sample will only contain sediment derived from a single context;
 - If waterlogged deposits are encountered, bulk samples sizes will usually be in the range of 10-20 litres, which is suitable for the recovery of macrofossils from these contexts; and
 - Samples shall be protected at all times from temperatures below 5°C and above 25°C and from wetting and drying out due to weather exposure.

- 6.7.27. Processing of all bulk soil samples collected for assessment should be completed within two weeks of collection. Processing samples at the time of fieldwork will allow the sampling strategy to be updated and refined as necessary.
- 6.7.28. All samples from areas of settlement will be screened for the presence of hammer-scale and other indicators of industrial processes, particularly at areas of possible burning. Where large assemblages of such evidence are identified, this information should be fed-back to the field team, so that where necessary, further samples can be taken to help to define any areas of metalworking, or other industrial processes.
- 6.7.29. The preservation, density and significance of material retrieved shall be assessed by the Archaeological Contractor's recognised specialists. Special consideration shall be given to any evidence for recent changes in preservation conditions that may have been caused by alterations in the environment.
- 6.7.30. Where house floors or buried land-surfaces are encountered and are sampled, appropriately sized monolith or kubiena boxes may be used for the recovery of 'undisturbed' monolith samples for soil micromorphology and to sub-sample for microfossils (e.g. pollen and spores, diatoms, ostracods). Where longer sequences are sampled, contiguous column samples may be collected for the retrieval of macrofossils (e.g. molluscs, plant remains and insects).
- 6.7.31. The Archaeological Contractor shall be responsible for the protection of all samples and finds and for their transport (including loading and unloading) to the processing facilities or other location as agreed with the ACoW.

ARCHAEOLOGICAL FINDS

- 6.7.32. Identified archaeological finds and artefacts will be carefully recovered by hand and bagged or boxed according to the type of artefact (i.e. pottery, ceramic building material/CBM, bone, worked flint, metal) archaeological context from which they came, with a label indicating the site code, find type and context reference number). Particularly notable artefacts will be recorded as a 'registered' find and recorded three dimensionally with Ordnance Datum levels, this will include in situ prehistoric worked flint.
- 6.7.33. Excavation and recovery of securely stratified finds will be undertaken recognising that the finds may be suitable for the application of organic residue analysis. If organic residue is visible, or where non-visible absorbed organic residue could contribute to understanding of the use of artefacts or the function of features, the excavation, handling, processing, conservation and storage of select finds will follow the advice summarised in guidance (HE 2017).
- 6.7.34. Pottery, bone and worked flint not selected for organic residue analysis will be washed and then marked in accordance with the Project Archive Repository guidelines.
- 6.7.35. The finds identification and specialist work will be undertaken by suitably qualified finds specialists to assess the date range of the assemblage using relevant county or region-specific type series for identification and dating, including the Bedfordshire Pottery Type series held by Albion Archaeology, where available. This evidence will characterise the site and establish the potential for all categories of archaeological finds should further archaeological work be necessary. Records of artefact assemblages will clearly state how they were recovered, sub-sampled and processed. Consideration will be given for donation of appropriate artefacts to type series reference collections.

- 6.7.36. In order to protect any waterlogged remains during the works, the Archaeological Contractor may identify a requirement for excavations to be allowed to refill with water overnight. In such cases, the Archaeological Contractor shall ensure that any hazards to staff or 3rd parties are minimised.
- 6.7.37. Initial conservation and storage will be to standards set out follow First Aid for Finds (Leigh et al 1998) and the Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (ClfA 2020b). If necessary, an appropriately qualified and experienced archaeological specialist will advise and assist in the excavation, recording and lifting of fragile finds, including waterlogged wood (EH 2010) and organic artefacts (HE 2018b), of significance and or value. The specialist will provide advice on the temporary storage and the long-term curation of fragile finds and will also provide input to the investigative assessment and analysis of such finds.
- 6.7.38. The Archaeological Contractor may propose a selection and retention policy if large assemblages of certain categories of find, such as ceramic building material and post medieval bottle glass, are unexpectedly recovered. Proposals for selection and retention will be agreed with WSP Cultural Heritage and Archaeology Team and the Planning Archaeological Advisor before the Archaeological Contractor enacts them. The selection and retention policy will follow the ClfA Archive Selection Toolkit (<http://cifa.heritech.net/selection-toolkit>).

HUMAN REMAINS

- 6.7.39. If the Archaeological Contractor encounters human remains, they will inform the local Coroner and the ACoW immediately. The ACoW will be responsible for informing the Curators and UDX.
- 6.7.40. Excavation of human remains, once recognised, will only be undertaken following the provision of a 'Licence to excavate human remains from an archaeological site' issued by the Ministry of Justice (and in accordance with applicable clauses of relevant legislation such as the *Burial Act 1857*). The Archaeological Contractor will obtain the Licence to excavate human remains in advance of commencement of the mitigation.
- 6.7.41. Confirmed human remains, will be metal detected immediately to determine whether any metallic grave goods are present. During excavation, grave goods and other obvious artefacts shall be recorded and lifted on the day of discovery, if possible, to avoid the risk of vandalism and theft. This is a particular issue for rural sites and isolated burials.
- 6.7.42. The Archaeological Contractor will complete exhumation of human remains in accordance with recognised professional guidelines (Historic England 2018a) and the requirements of their recognised osteoarchaeologist. In some circumstances WSP Cultural Heritage and Archaeology Team may consult the Curators for input to exhumation and sampling strategy.
- 6.7.43. Human remains will be accorded due dignity, care and respect. The Archaeological Contractor may need to screen the remains, dependent on their location and, once excavated, human remains must not be exposed to public view.
- 6.7.44. It is essential that the post-excavation assessment of human remains contains an analysis of the material and a statement for the final deposition of the assemblage. The qualified statement must address future research potential, where applicable, and the options for reburial.

SCIENTIFIC DATING

- 6.7.45. Historic England Science Advisor will be consulted in advance of excavation of any in situ thermoremanent features such as hearths, ovens or kilns to aid identification of appropriate scientific dating techniques such as archaeomagnetism, optically stimulated luminescence, or radiocarbon where associated organic material may be available, and to review the likely precision of results.
- 6.7.46. If other features or finds appear suitable for scientific dating the advice of the Historic England Science Advisor will be sought, and relevant procedure will be observed prior to and during sampling.
- 6.7.47. Robust research questions and rigour in sample selection are key considerations for scientific dating. Radiocarbon dating is the most frequently used archaeological scientific dating method: review of other sources of dating evidence and the probable error on radiocarbon results are some of the factors to be taken into account for use of this technique. The early Iron Age and the mid to late Roman period, for example, have relatively flat radiocarbon calibration curves which research questions and sampling strategy must consider. Taphonomic factors, a particular issue for organic sediments, must also be considered to ensure that the fraction or material selected for dating will most accurately reflect the age of deposition of a feature fill or sediment. The use of Bayesian methods and statistics (HE 2022) to combine different strands of information and provide robust chronologies will be integral to the scientific dating strategy employed at the Site.

TREASURE

- 6.7.48. All finds of gold and silver, or other objects definable as 'treasure' under the *Treasure Act 1996*, will be removed to a safe place and reported to the local Coroner according to the procedures of the *Treasure Act 1996* and *The Treasure (Designation) (Amendment) Order 2023*.
- 6.7.49. Where removal cannot be affected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft.

UNEXPECTED DISCOVERIES/CHANCE FINDS

- 6.7.50. The ACoW will inform Curators if unexpected archaeological remains of sufficient archaeological significance to warrant further investigation, including those protected by legislation, are discovered during Construction Phase groundwork at parts of the Site outside mitigation areas E1 - E6 and S1 – S4.
- 6.7.51. The construction contractors will cease work and demarcate affected areas if unexpected archaeological remains are discovered and will notify the Principal Contractor and the ACoW immediately. The ACoW will determine if the discovered archaeological remains warrant further investigation and will consult with the Curators to discuss their significance and to agree a proportionate scope of investigation and recording. Investigation and recording will be completed prior to any construction groundwork recommencing at the affected area.

- 6.7.52. The Unexpected Discoveries (Chance Finds) procedure will not apply to archaeological remains outside the AMS mitigation areas which are known and have been investigated during prior phases of archaeological work and have been excluded from the AMS on the basis of their archaeological character and significance, for example infilled field boundary ditches which are poorly dated or are of probable post medieval or later date. Examples of the type of archaeological remains to which it will apply are human burials, finds subject to the Treasure Act, industrial evidence such as kilns, and other finds or features of a character or complexity which will offer clear contribution to the research frameworks, themes and agenda highlighted in Section 4 of the AMS.

PRESERVATION IN SITU

- 6.7.53. In the unlikely event of identification of remains of very high significance which warrant consideration of preservation in situ, the Archaeological Contractor will inform the ACoW immediately, who will then consult with Curators to aid decision making and inform measures taken to protect such remains from any damage or deterioration (Historic England 2016). This might involve for instance protective boxing, sealing with sand or other suitable inert materials, or other means as deemed suitable/appropriate.

SECURITY

- 6.7.54. Archaeological remains subject to protection by legislation or of particular value (either financial or archaeological) will be protected and not left open to the weather or exposed to vandalism overnight.
- 6.7.55. Particular care will be taken to protect any artefacts subject to the *Treasure Act 1996*, from theft or damage if it is not feasible to excavate, record and remove such artefacts on the day of discovery. Any enhanced security measures will be maintained until excavation, recording and removal of such artefacts is complete.
- 6.7.56. All reasonable measures will be taken to protect and securely store any archaeological materials (such as artefacts and records), both on and off-Site. Artefacts of particular value will be taken off-Site and stored at a secure location.

EXTERNAL COMMUNICATION

- 6.7.57. No photographs or other site information will be shared without permission granted by UDX.
- 6.7.58. Any public outreach activities, including open days, will be undertaken in consultation with UDX.

7 MONITORING

7.1 SITE MONITORING

- 7.1.1. The ACoW will liaise with the Archaeological Contractor and the Principal Contractor to monitor progress and compliance with the requirements of the AMS and the SSWSIs. This will include (but not be limited to) monitoring of all aspects of archaeological fieldwork.
- 7.1.2. The ACoW and Curators will have unrestricted access to the mitigation works, site records and any other information that they require. The mitigation work will be inspected to ensure methods and standards comply with requirements of the AMS and SSWSIs, and that work is consistent with project aims and objectives.
- 7.1.3. The ACoW will act as coordinator for monitoring arrangements with the Curators. This will include oversight of engagement between the Archaeological Contractor and the Curators, including the Historic England Regional Science Advisor (East of England).
- 7.1.4. The ACoW will arrange regular site monitoring meetings with the Curators to ensure adherence to approved SSWSIs, allow effective decision making and to support timely 'sign-off' of mitigation areas.
- 7.1.5. A draft programme of site monitoring meetings will be agreed prior to the commencement of fieldwork. If appropriate, the Historic England Regional Science Advisor, shall be invited to attend the site meetings.
- 7.1.6. Weekly summary results and progress reporting will be issued (Section 8.2).

7.2 SIGN OFF PROCEDURES

- 7.2.1. Once the Archaeological Contractor determines an element of fieldwork to be complete, a site monitoring visit will be undertaken, or results may be reviewed remotely (e.g. via online meetings), with the Curators. All parties will have been provided notice of the monitoring visit or review via the weekly progress reports.
- 7.2.2. Where it is agreed by all parties that work is complete a written notice of completion will be provided to the Curators for confirmation of sign off.

8 REPORTING AND PUBLICATION

8.1 INTRODUCTION

- 8.1.1. Following the completion of the fieldwork, a concordance will be produced and each category of find, or environmental/industrial material will be examined by a suitably qualified specialist so that the results can be included in the Post-Excavation Assessment Report (PEAR) to be produced at the end of the investigations.

8.2 WEEKLY REPORTS

- 8.2.1. Weekly written progress reports will be provided by the Archaeological Contractor to the ACoW, to be issued by the ACoW to UDX, Principal Contractor and Curators via e-mail each Friday. Weekly reports will include details of each area where archaeological work has taken place in the previous week, along with a summary of results which highlights significant discoveries and progress against the programme.
- 8.2.2. The ACoW will subsequently schedule regular monitoring meetings, which will include progress reporting, with the Curators during the post-excavation phase of the project.

8.3 INTERIM REPORTING

- 8.3.1. Interim reporting of mitigation results will be completed by the Archaeological Contractor and will be submitted to the ACoW. The ACoW will review the draft interim reports and, after completion of any required amendment, will submit the interim reports to the Curators.
- 8.3.2. The purpose of interim reporting is to provide a summary of the results of investigations and the exact time frame for production and submission will be agreed by the ACoW with Curators. However, it is anticipated that interim reporting will be concluded for each mitigation area within three months of its completion.
- 8.3.3. The interim reporting will:
- Confirm the completion of fieldwork;
 - Be brief, with information contained commensurate with the timescale for production;
 - Provide key information gathered during the initial assessment of fieldwork results, including brief summaries and interpretations of identified archaeology, recovered finds and preliminary results of environmental sampling;
 - Indicate whether the fieldwork findings require an update to the research framework and questions;
 - Provide brief information necessary to inform decisions relating to the post-excavation assessment and an indicative timescale for completion of relevant post excavation assessment content;
 - Identify any issues that could affect ongoing fieldwork or post-excavation assessment;
 - Include a concordance; and
 - Include only sufficient site plans and figures necessary to support key sections of the text.

8.4 POST-EXCAVATION ASSESSMENT

- 8.4.1. The ACoW will submit a draft programme for post excavation assessment to Curators no more than three months after completion of all fieldwork. The post excavation assessment will be submitted to Curators no more than twelve months after submission and acceptance of the post excavation programme, unless an extension is agreed with the Curators.
- 8.4.2. It is currently anticipated that one overarching post excavation assessment report will be produced, but this will be reviewed following results of fieldwork. The post excavation assessment will incorporate results from evaluation where this contributes to an understanding of the site and addresses research questions.
- 8.4.3. The post-excavation assessment will include a review of project aims and objectives and contribution of results to identified research questions to determine the scope of any analysis and publication.
- 8.4.4. The preparation of the project archive, post-excavation assessment and subsequent analysis and publication will be undertaken in accordance with Historic England guidelines (HE 2015c), and other relevant archaeological standards and national guidelines (e.g., ClfA 2020a, 2020b). The different phases will be completed within a set programme agreed between the Archaeological Contractor, ACoW and UDX in consultation with the Curators.
- 8.4.5. The precise format is dependent upon the findings of the mitigation, but the post excavation assessment will usually contain the following:
- A non-technical summary;
 - Site location;
 - Brief archaeological, historical and project background;
 - Methodology;
 - Aims and objective;
 - Results – factual data statements (stratigraphic, artefactual, environmental, initial scientific dating results);
 - Statements of potential (stratigraphic, artefactual, environmental, scientific dating);
 - Statements regarding immediate and long-term storage and curation requirements;
 - Review of original aims and objectives;
 - Statement of the significance of the results in their local, regional, national and international context;
 - Updated Project Design that sets out how the research aims and objectives of the AMS and SSWSIs can be addressed at analysis;
 - A report detailing the public engagement methods (planning, delivery and logical approach to evaluation), outputs and evaluation (see Section 10).
 - Recommendations for analysis, reporting and publication (including a synopsis of the proposed contents);
 - Proposed resources and programming (task list linked to key personnel, cost and key research questions that the task will answer and programme cascade chart);
 - General and detailed plans showing the location of the investigation areas accurately positioned on an OS base with grid co-ordinates and a plan of the identified archaeological remains (to a known scale);
 - Detailed plans and sections/profiles, deposit models etc., to support the narrative;

- Detailed stratigraphic matrix for each area excavated and how the areas interlink;
- Photographs and illustrations, including any 3D models;
- Bibliography;
- A cross-referenced index to the project archive and summary of contexts; and
- Appendices containing specialist reports.

- 8.4.6. The post excavation assessment will be submitted to the ACoW and UDX for review and comment. Following completion of required revisions, the ACoW will issue the draft report to the Curators for comment. The final post excavation assessment will take account of the comments of the Curators.
- 8.4.7. The analysis will be undertaken in accordance with the agreed post excavation assessment scope and will lead to the compilation of a research archive and the production of integrated report texts and illustrations for publication.

8.5 PUBLICATION AND DISSEMINATION PROPOSALS

- 8.5.1. The results of archaeological work will be published and disseminated at a level that is appropriate to the significance of the remains recorded. Publication and dissemination will be finalised within two years of acceptance of the post excavation assessment unless an extension is agreed with the Curators.
- 8.5.2. It is anticipated that reporting will be published on the Archaeological Data Service archive and copies of the reports will be deposited with Bedford Borough Historic Environment Record, in accordance with their requirements, on the understanding that the reports will be made available as a public document after expiry of an agreed embargo period (not exceeding twelve months from the completion of fieldwork).
- 8.5.3. Fieldwork updates would be published annually in fieldwork roundups in appropriate local and period journals. Fieldwork data will be supplied to the Bedford Borough Historic Environment Record.
- 8.5.4. A summary account of the work will be submitted to the editor of the local archaeological journal and any relevant period journals (e.g. Medieval Archaeology, Proceedings of the Prehistoric Society) ideally no later than March 31st of the year following completion of fieldwork.
- 8.5.5. The format and structure of popular and academic publication (headings, word counts, figures and photographs) will be informed by the post-excavation assessment and will be decided in consultation with the ACoW and the Curators.
- 8.5.6. The final scope and outlet/format for the popular and academic publications have not yet been decided. However, it is anticipated that these would be a combination of print publications and accessible online open-access publications.
- 8.5.7. Digital publication, dissemination and stable online archiving via the Archaeology Data Service archive would be arranged by the Archaeological Contractor.
- 8.5.8. In all cases a short summary of the results of the work will be submitted to the HER, and National Record for the Historic Environment (NRHE), as maintained by Historic England, via a standard OASIS archaeological report form.

9 ARCHIVING

9.1 ARCHIVE SECURITY AND STORAGE

- 9.1.1. The project archive, (i.e. 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 throughout the project lifecycle. The Archaeological Contractor will be responsible for the cataloguing and care of the project archive, for providing necessary resources from the start of the fieldwork and throughout the project lifecycle, including the materials for long-term storage, and input of an archaeological conservator.
- 9.1.2. Specialist reports will clearly state the research potential of assemblages so that the accessioning museum can promote the potential of the archive to researchers following deposition.

9.2 ARCHIVE CONSOLIDATION

- 9.2.1. The records and assemblages of the project archive comprise the primary raw data from which all subsequent assessment, analysis and interpretation will be derived. The archive must not be altered or compromised, and the Archaeological Contractor will show due diligence and care when digitising data.
- 9.2.2. The project archive will contain all the data collected during the fieldwork, including records, finds and all reports. The Archaeological Contractor will ensure that the archive is quantified, ordered, indexed and internally consistent, and adequate resources will be provided to ensure that all records are checked. Archive consolidation will be undertaken immediately following the conclusion of fieldwork.
- 9.2.3. A unique 'accession number' for the project will be designated to this project by the Higgins and will be used as the site identifier for all records produced.
- 9.2.4. The Archaeological Contractor will, prior to the start of fieldwork, liaise with the Higgins Art Gallery and Museum to obtain agreement in principle to accept the physical and documentary archive for long-term storage. A retention and discard policy will also be agreed that is consistent and compliant with the archive requirements. The Archaeological Contractor will adhere to all specific requirements, archiving costs or policies of the recipient repository.
- 9.2.5. The deposition of the archive will comprise the final stage of this project. The Archaeological Contractor shall provide the ACoW with written confirmation of the deposition of the archive including copies of communication with the accredited archive repositories.

9.3 DIGITAL ARCHIVE AND DATA MANAGEMENT

- 9.3.1. It is anticipated that the digital archive will be deposited with the ADS and the Archaeological Contractor will seek agreement for this from the Curators and the Higgins.
- 9.3.2. The digital archive will be compiled in accordance with the ADS Guidelines for Depositors.
- 9.3.3. A project-specific Digital Data Management Plan will be prepared by the Archaeological Contractor. The plan will be initiated by the project manager during project planning stages and updated throughout the life of the project. All born-digital and digitised project data created during fieldwork and post-excavation (other than duplicated files) will be stored by the Archaeological Contractor. Data will be selected for inclusion in the final digital archive following completion of post-excavation work.

- 9.3.4. Selected digital files will be transferred to the ADS and, if required, The Higgins Art Gallery and Museum. It is proposed that selected files will be final versions only and digital photographs will be selected for inclusion in the archive in line with Digital Data Guidance and Digital Image Capture and File Storage: Guidelines for Best Practice (Historic England 2015). Data produced by external specialists or sub-contractors will be granted under license to the Archaeological Contractor to allow inclusion in the digital archive as required.

9.4 OWNERSHIP OF FINDS

- 9.4.1. Whereas ownership of finds on the site usually lies with the landowner, it is necessary that the landowner gives the necessary approvals, licences and permissions to donate any finds recovered from the Site to the project archive repository, to enable that body to carry out its obligations to curate the finds, in perpetuity, as part of the archaeological archive.
- 9.4.2. These approvals, licences and permissions shall be either confirmed in the Agreement and Contract regulating the archaeological works and/or confirmed by the completion of the relevant Deed of Transfer form (see **Annex 1** for draft form).
- 9.4.3. UDX (or their agent) will make arrangements for the signing of a Deed of Transfer Form by UDX or, if the landowner is different to UDX, by the landowner.
- 9.4.4. Notwithstanding the above, subsequent arrangements may be made if required between the landowner, UDX and the Project Archive Repository for the conservation, display, provision of access to or loan of selected finds in or near their original location.

10 PUBLIC ENGAGEMENT

10.1 INTRODUCTION

- 10.1.1. All archaeological work should aim to provide benefit to the public not only through the increased understanding and knowledge gain generated by the project, but where appropriate, through improving individual or communal wellbeing and community cohesion. Archaeological projects can provide opportunities to improve educational, environmental, or economic conditions in the areas where they occur. Maximum benefit to the public will be delivered through this public engagement strategy that encompasses participation in community-led 'open days' (off-site), educational workshops in schools and web presence in line with the CIFA Professional Practice Paper: Delivering public benefit (CIFA, 2021).
- 10.1.2. Public engagement focusing on archaeology and cultural heritage aims to create a positive, sustainable project legacy. Public engagement will be planned during the fieldwork phase and delivered and evaluated in the post-excavation phase. Three main activities for each stage are set out in this section of the AMS, and the three tasks per activity (summarised in **Table 10-1**). Flexibility should be allowed in the design of activities as audience mapping has not yet been undertaken. Audience requisites and the type of archaeological remains and level of significance are not yet fully known and will shape the public engagement offer.

10.2 FIELDWORK MITIGATION PHASE: PLANNING, AUDIENCE MAPPING AND COLLECTION OF MATERIAL FOR PUBLIC ENGAGEMENT

- 10.2.1. The collection and preparation of materials, audience mapping and planning activities for public engagement will take place during the fieldwork mitigation phase. Archaeological engagement specialists will work alongside the archaeologists and the client's communications and marketing team to plan a programme of public engagement that is proportionate to the heritage significance of discoveries:
- Sites of high heritage significance to be disseminated through a programme of public engagement at a national level;
 - Sites of medium heritage significance to be disseminated at a regional level; and
 - Sites of lower heritage significance to be disseminated at a local level.

AUDIENCE MAPPING

- 10.2.2. Audience mapping is to be undertaken during the fieldwork phase to identify and understand the needs of the different local and regional groups affected by the scheme and interested in local history. The aim should be to cultivate diverse audiences and include people in education, heritage groups, and laypeople. Direct contact would be made with local schools. Discussions with teachers will inform the creation of new educational resources and/or activities based on the excavation and its results. Workshops and lesson plans may focus on archaeological fieldwork methods, principles of stratigraphy or how the remains discovered on site contribute to the wider picture of local history. Partnerships and collaboration with relevant museums and educational institutions (schools, colleges and universities) should be explored to expand reach and deliver a positive project legacy.
- 10.2.3. Audience mapping will include:
- Mapping groups affected by the scheme and interested in heritage in the broadest sense;

- Establishing an appropriate host platform(s) for web content; and
- A communications and marketing plan to promote the heritage public engagement, aligned with relevant client campaigns.

10.2.4. Public engagement activities should be planned in conjunction with the client's stakeholder, communications and marketing teams and with the Archaeological Consultant. The type of archaeological remains uncovered and level of significance will inform and guide the communication plan; audience mapping; collection of footage, photographic and digital imagery; and activity and evaluation planning. This will allow effective engagement in the post-excavation phase (post construction). Site presence for information collection will be Risk Assessed, and appropriate health and safety procedures followed.

COLLECTION AND PREPARATION OF MATERIALS

- 10.2.5. Shaped by the discoveries on site and audience mapping, multimedia data gathering will be undertaken, to include the collection images of artefacts, working shots of archaeologists, unmanned aerial vehicle (UAV) or aerial footage, photogrammetry and/or laser scanning. Material should include digital photography and video footage of the site, for example to enable 360° virtual tours of the site, StoryMaps for curated online exhibits or virtual reality. Imagery will be supported by sound recordings, such as interviews, dig diaries, personal stories related to heritage and archaeology (talking heads or spoken word) and oral histories to maximise human interest.
- 10.2.6. Where available, unstratified archaeological finds (for example from the spoil heap), will be collected to create a handling collection for schools. If unstratified archaeological artefacts are not available, finds that are representative of the site from other handling collections might be used, if available.
- 10.2.7. Special finds collected will be considered for digital or innovative recording and display. This could include 3D printing objects for handling or display or 3D visualisations for curated online content and remote object handling. Short video pieces will be considered on artefacts, ecofacts or conservation.
- 10.2.8. Data processing and curation of online content in preparation for the public engagement delivery phase will take place during the fieldwork stage. This will include editing of video content, image processing for photogrammetry and the creation of 3D models and illustration. Design and printing of exhibition panels, posters and/or newsletters, and any other processes required to create digital or physical content will be carried out.
- 10.2.9. Initial planning of events, activities and curation of online content will take place in mitigation fieldwork phase. A draft activity and evaluation plan will be prepared to be finalised in the delivery phase (post excavation). Planning for web content platform(s) and communications and marketing plan will be drafted.
- 10.2.10. Monitoring and assurance of the sub-contractor's public engagement design will be provided by WSP team.

10.3 POST EXCAVATION (POST CONSTRUCTION) PHASE: DELIVERY

- 10.3.1. The delivery of public engagement is to take place post construction during the post excavation phase. Working closely with the client's communications and marketing team, the archaeological team will ensure the program is aligned with the client's public engagement agenda.
- 10.3.2. Public engagement activities and online content is categorised as follows, described below with examples to illustrate the types of activities within each category:

- Outreach and community engagement;
- Community involvement; and
- Publicity and promotion.

OUTREACH AND COMMUNITY ENGAGEMENT

10.3.3. Outreach will comprise face-to-face community engagement in schools and an online digital element. School activities will comprise history workshops and the provision of educational resources. Online public engagement will be hosted on a web platform and may include promotion via social media:

- Schools' workshops - face-to-face (Key Stage 2) 3No.; and
- Web pages - to include online teaching and educational resources - web page 1No.

SCHOOLS' WORKSHOPS

10.3.4. Schools' visits offer the opportunity to engage local Key Stage 2 pupils and link the site to the schools' learning objectives and the National Curriculum. Workshops will be undertaken by a community archaeologist and include hands-on activities to engage younger children. This could include sand-pit or dig box excavation, artefact identification and storytelling. Resources for teachers will be created to include lesson plans, presentation slide pack, student worksheets and other relevant digital content. The resources will be hosted online.

WEB PAGES - DIGITAL PUBLIC ENGAGEMENT OUTPUT

10.3.5. Dedicated web pages for the heritage public engagement will be created. This can host:

- Curated digital material - timeline of exhibits, imagery, sound, digital reconstructions (scenes, landscapes, artefacts, change through time, people);
- Online teaching and educational resources - lesson plans, presentation slide pack, student worksheets;
- Dig diaries, blogs and vlogs (careers, methods and principles, skills, history and knowledge);
- Promotion and advertising of events activities;
- Links to partner organisations or educational institutions; and
- Links to social media content.

10.3.6. Web content allows a wider range and geographical reach of audiences to explore the archaeological landscape. It also provides a positive, sustainable project legacy of the archaeological investigation. It enables people to learn about archaeological finds, features, recording methods and principles. Digital reconstructions that combine specialist analysis with traditional illustration methods and 3D modelling give audiences an exciting way to interact with digitally reconstructed artefacts or sites.

COMMUNITY INVOLVEMENT

10.3.7. Community involvement activities will include:

- Public 'open day' participation 1No. - off-site activity; and
- Archaeologist Presence at Client events 3No. - off-site activity.

10.3.8. These activities will allow people to engage with the archaeological investigations and promote client best practice. Activities will contextualise the investigation within the project location and Bedfordshire's archaeology and history.

PUBLIC OPEN DAY PARTICIPATION

- 10.3.9. Participation in a relevant community-led event or celebration of history and culture such as the National Trust Heritage Open Days or Council for British Archaeology Festival of Archaeology will allow the archaeological findings to be presented to a range of audiences. Participation in an open day may involve showcasing a selection of archaeological finds, information boards, posters or digital content and having an archaeologist on hand for a 'meet the expert' session. Attendees will be encouraged to ask questions, share comments and fill in feedback forms.

CLIENT EVENTS

- 10.3.10. An archaeologist will attend client events (3No.) with imagery and artefactual material. Events could be hosted in conjunction with one or more partner organisations and can be flexible in form or delivery depending on client requirements and discoveries from site.
- 10.3.11. A key aim is to contextualise the results of the project work within the planning framework and the archaeology and history of the region. The identification and involvement of partner organisations may allow additional resources to enhance the event.

PUBLICITY AND PROMOTION

- 10.3.12. It is important that as many people as possible, particularly local communities, are aware of the public engagement initiatives on offer through the project and the benefits of community archaeology. Publicity and promotion will encourage key target audiences to engage with the discoveries. Publicity will be tailored based on audience mapping and may take the form of advertising and promotion of the heritage-related events via:

- Webpages;
- Social media; and
- Client campaigns.

10.4 EVALUATION

- 10.4.1. Public engagement is a core element of the project archaeological mitigation and requires evaluation to demonstrate objectives have been met, as well as document the effectiveness, efficiency and the sustainable nature of the outcomes.
- 10.4.2. An evaluation plan will be set out during the fieldwork phase. The plan may include a logic model that sets out the links between inputs, expected outputs (activities) and outcomes for each element of the project. Feedback methods on activities will be methodical and aligned with client evaluation to provide evidence of impact (outcomes). Methods of measurement may include:
- Feedback forms (digital and paper) from participants to evaluate experience;
 - Schools feedback on sessions including prompts on how to improve;
 - Testimony from pupils; and
 - Document demographic data including on training and engagement activities through anonymised forms.

REPORTING

- 10.4.3. A report detailing the methods (planning, delivery and logical approach to evaluation), outputs and evaluation will form part of the Post Excavation Assessment.

Table 10-1 – Public Engagement Activities and Tasks

Stage	Activity	Task
Fieldwork phase – Planning Stage	Audience Mapping	People in education (schools), heritage groups, and laypeople
	Audience Mapping	Partnerships and collaboration with museums and educational institutions
	Audience Mapping	Establish host platform for web content
	Collection and preparation of material	Collect imagery, footage and photogrammetry and/or laser scans.
	Collection and preparation of material	Collect sound recordings
	Collection and preparation of material	Process and curate material and data
	Collection and preparation of material	Draft activity and evaluation plan for Stage 4 delivery
	Collection and preparation of material	Plan web content platform(s) align with client
	Collection and preparation of material	Draft communications and marketing plan aligned with relevant client plans and liaison with LPA
	Collection and preparation of material	
Post excavation phase – Delivery Stage	Outreach and community engagement	Schools' workshops - face-to-face (Key Stage 2) 3No.
	Outreach and community engagement	Teaching educational resource pack 1No. to be hosted online
	Community involvement activities	Public open day (local to the site) 1No.
	Community involvement activities	Archaeologist Presence at Client events 3No
	Publicity, promotion and outreach	Advertising events and activities through the webpages
	Publicity, promotion and outreach	Leaflet drops
	Publicity, promotion and outreach	Publicity via news media

11 PROGRAMME AND STAFFING

11.1 INITIAL TIMETABLE AND STAFFING

- 11.1.1. The archaeological mitigation fieldwork is anticipated to start in late 2025, with a duration of approximately 12 months.
- 11.1.2. The Archaeological Contractor will provide a programme for the archaeological fieldwork to the ACoW, which will include detail of staffing requirements.
- 11.1.3. The exact details of time, areas and numbers of staff involved would be agreed in discussions between the ACoW, the Principal Contractor, UDX, and the Curators.
- 11.1.4. The ACoW will attend the site daily throughout the fieldwork programme to manage and assure the work.
- 11.1.5. In the unlikely event that regionally or nationally significant archaeological remains are revealed (as assessed by ACoW professional opinion and in discussion with the Curator) at mitigation areas which cannot be satisfactorily sampled in the period initially defined, the Principal Contractor will allow sufficient flexibility within the programme and allocated resource to enable the remains in question to be investigated and recorded to the satisfaction of the ACoW and the Curators. The scope and extension to programme necessary to complete this work will be agreed between the ACoW, the Curators, UDX and the Principal Contractor.

11.2 PROJECT TEAM

- 11.2.1. The Archaeological Contractor will be a Registered Organisation with the Chartered Institute for Archaeologists (CIfA).
- 11.2.2. The ACoW will be a Registered Organisation with the Chartered Institute for Archaeologists (CIfA).
- 11.2.3. CVs of the key members of staff will be made available upon request.

12 HEALTH AND SAFETY

12.1 INTRODUCTION

- 12.1.1. The temporary works necessary to facilitate the archaeological mitigation will be of a scale and duration subject to *Construction (Design and Management) Regulations (CDM Regulations 2015)*. A Principal Contractor will be appointed by UDX in advance of site work for archaeological mitigation to ensure compliance with the *CDM Regulations 2015* and Health and Safety legislation.
- 12.1.2. Health and Safety will take priority over all other requirements. A conditional aspect of all archaeological work is both safe access to the area of work and a safe working environment. The project will be carried out in accordance with safe working practices.
- 12.1.3. The following sections outline the health and safety aspects of the site work along with known constraints and maybe subject to change following consultation with UDX, the Principal Contractor and the Archaeological Contractor.

12.2 RISK ASSESSMENT AND METHOD STATEMENT (RAMS)

- 12.2.1. The Archaeological Contractor will produce a site and activity specific RAMS to cover all significant hazards associated with the fieldwork and will supply a copy of the company's Health and Safety Policy. These will be reviewed by the ACoW, Principal Contractor and UDX to ensure that the policy and measures are appropriate.
- 12.2.2. The RAMS will have been read, understood, and signed by all Archaeological Contractor staff attending the site before any fieldwork commences.
- 12.2.3. Health and Safety is a priority, and Archaeological Contractor RAMS will follow cross-disciplinary industry standards. The RAMS as a minimum will:
 - Be clear, concise, activity and site-specific. Bespoke to the site, and without generic text for hazards that do not apply or control that is not applicable;
 - Tabulate site-specific hazards, risk grading and control measures;
 - Provide site manager contact details, along with a deputy;
 - Include an emergency action plan, with an address and route map to the closest Accident and Emergency; and
 - Be reviewed by an appropriately qualified and experienced member of staff (e.g. Project Manager), ideally with final approval by the H&S Manager/Senior Manager, prior to issue for review by the ACoW, PC and UDX.

12.3 PERSONAL PROTECTIVE EQUIPMENT (PPE)

- 12.3.1. Archaeological Contractor staff will be required to wear the Personal Protective Equipment (PPE) identified in the RAMS. As a minimum this will be protective footwear, high-visibility vest, gloves, protective glasses and safety helmet. The requirement for any additional PPE will be identified in the RAMS.
- 12.3.2. Visitors will follow PPE requirements while on-Site.

12.4 WELFARE

- 12.4.1. The Principal Contractor will be responsible for providing and positioning suitable welfare facilities on-Site, including toilets and water for washing.

12.5 SITE SECURITY

- 12.5.1. The Principal Contractor will be responsible for site security during the mitigation including securing plant and any compounds.

12.6 ACCESS

- 12.6.1. Site access from the relevant landowners will be arranged by UDX or their representative before site works commence.
- 12.6.2. The ACoW and the Archaeological Contractor shall be notified if access arrangements change prior to or during the mitigation programme.

12.7 NON-ARCHAEOLOGICAL CONSTRAINTS

SERVICES ABOVE GROUND AND BURIED

- 12.7.1. Detailed services and utilities search data will be obtained prior to any intrusive groundwork. The mitigation areas are subject to revision upon review of services and utilities data and suitable buffer zones and crossing points will be established for those services and utilities present.
- 12.7.2. All mitigation areas will be scanned with a CAT and Genny before any intrusive works to locate identifiable sub-surface utilities.

UNEXPLODED ORDNANCE (UXO)

- 12.7.3. An unexploded ordnance (UXO) desk-based study (Zetica 2024) concluded that the Site has a low UXO hazard level. However, a UXO awareness briefing will be completed with all site staff in advance of intrusive work.

GROUND CONTAMINATION/ASBESTOS

- 12.7.4. Geo-environmental ground investigation has not identified ground contamination at the mitigation areas. However, the Archaeological Contractor will specify procedures in RAMS that they will follow in the case of encountering unexpected ground contamination.

RAILWAY LINE

- 12.7.5. No mitigation activity will take place within 10m of the boundary of the Marston Vale Railway Line and the Midland Main Line.

HISTORIC HEDGEROW

- 12.7.6. A number of probable historic hedgerows are present at the northeast of Core Zone. One demarcates a former parish boundary between Kempston and Wootton Broadmead and others are likely to predate the mid-19th century. All potentially meet requirements to be deemed as historically important under the *Hedgerow Regulations of 1997*.

- 12.7.7. A historic hedgerow runs across the west of excavation area E2 and would have to be removed to complete the entirety of mitigation proposed at this area. The hedgerow removal at excavation area E2 will only be undertaken after notice has been served to the LPA as per the *Hedgerow Regulations of 1997*, in accordance with procedures and management plans agreed for the Site and under necessary ecological supervision. No hedgerow removal is anticipated at other parts of the Site during the archaeological mitigation.

WATERCOURSE

- 12.7.8. The Elstow Brook and an unnamed water course traverse the Site. No mitigation activity will take place within 15m of water courses. Mitigation areas and soil storage will be monitored during periods of adverse weather and mitigation employed where run-off of sediment may affect watercourses.

PUBLIC RIGHT OF WAY (PROW)

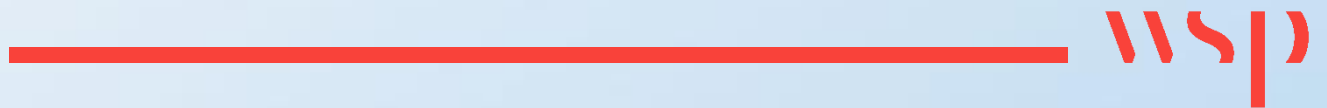
- 12.7.9. Public rights of way (PRoW) pass through Core Zone and the Lake Zone.
- 12.7.1. PRoW in the Lake Zone PRoW A1 and 8 will be temporarily closed prior to the start of the programme of archaeological mitigation.
- 12.7.2. Following construction, there will be a new Public Road A together with an active travel network as shown on the **Parameter Plan - Active Travel Routes (Document Reference 1.12.0)**, which denotes which routes will be adopted as public rights of way and which will remain within the control of UDX. Following construction, PRoW A1 and 8 will revert to existing conditions.

ECOLOGY

- 12.7.3. Legal requirements and project standards for ecology will be followed at all times during the archaeological mitigation. Ecological Clerk of Works will be appointed by UDX to monitor compliance with the requirements and standards.

Annex 1

DRAFT TRANSFER OF FINDS OWNERSHIP FORM





Annex 1: TRANSFER OF TITLE FORM

This form should be printed and will be used in conjunction with RAMM's standard entry form. The entry form is a paper form that will be signed by owner of the objects or the depositing archaeological contractor at the time of deposition.

Museum accession number: BEDFM 2023.270

Site name and site code:

Name of Archaeological Contractor:

Name and address of owner:

Telephone Number:

I hereby confirm my donation of the archaeological discoveries (any objects, materials or remains of archaeological interest, other than those articles declared by Coroner's Inquest to be Treasure) recovered from the site named as an absolute and perpetual gift. I wish all material to be unconditionally transferred to the _____, a service of _____.

Signed -----Date -----

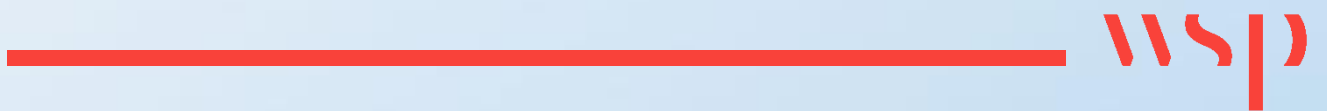
Print name -----

Data Protection

The Museum retains the names and addresses of persons donating, bequeathing, selling or loaning objects because this information forms part of the object's history. This information is for the Museum's records and is not made available to any other organisation.

Annex 2

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Annex 3

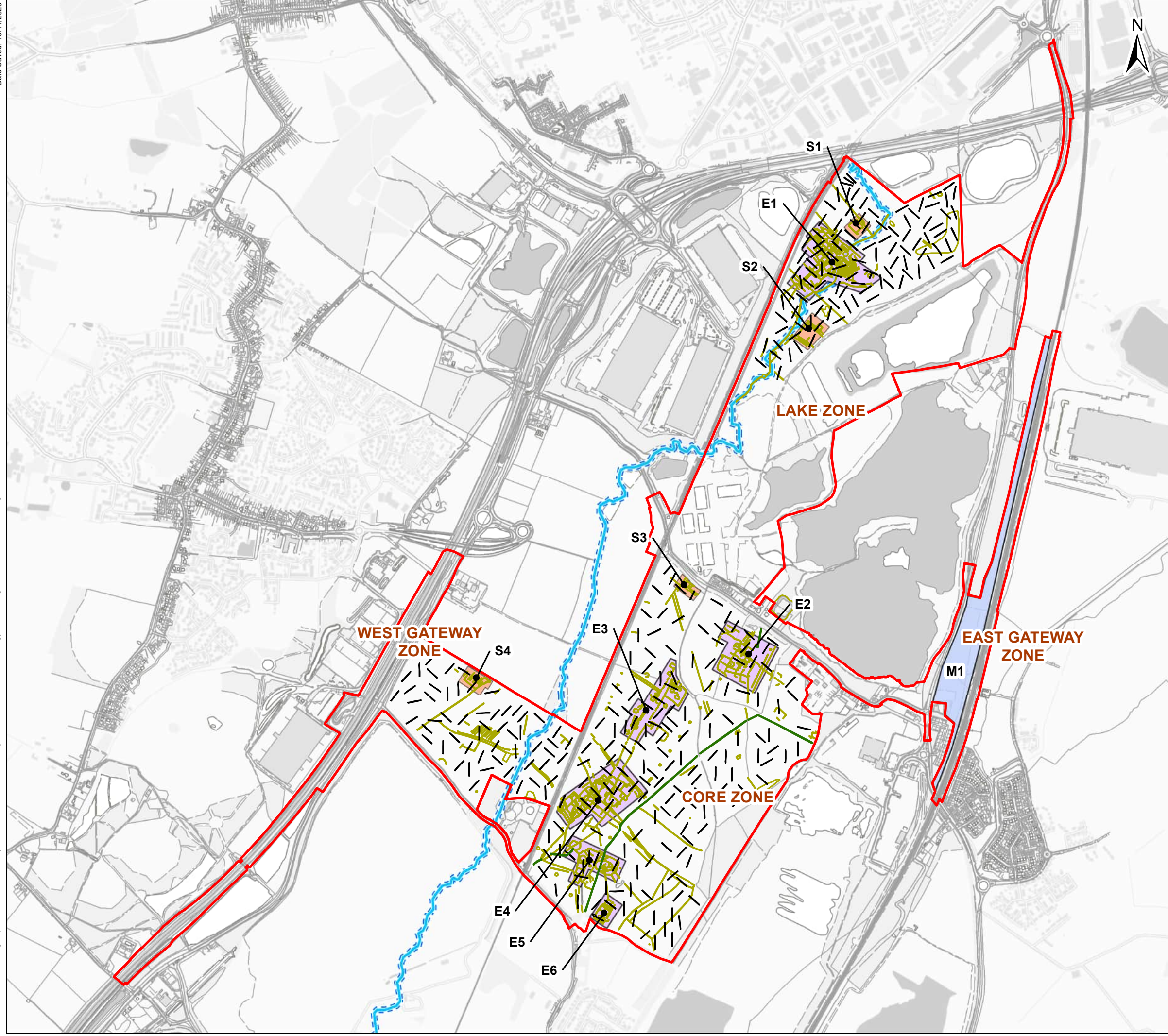
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Bedfordshire

Key

- Field boundary
- Archaeological Trial Trenches (AOC 2024)
- Geophysics Interpretation (MOLA 2019)
- Proposed archaeological Excavation areas
- Proposed archaeological Strip, Map and Sample area
- Proposed archaeological Monitoring and potential Strip, Map and Sample area
- Elstow Brook
- 10m buffer Elstow Brook
- Site boundary

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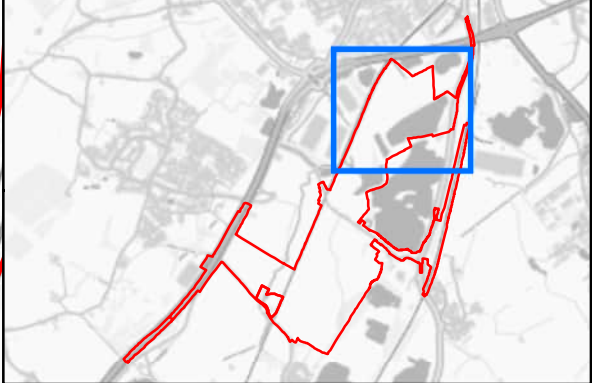
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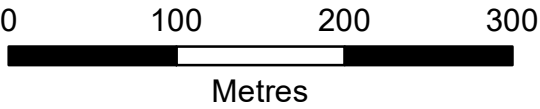
Figure 1A
Proposed Mitigation Plan

Date: 19/05/2025 Scale: 14,000 @ A3

Drawn: AB Checked: AH Approved: JC



- Key**
- Field boundary
 - Archaeological Trial Trenches (AOC 2024)
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 - Proposed archaeological Strip, Map and Sample area
 - Elstow Brook
 - 10m buffer Elstow Brook
 - Site boundary

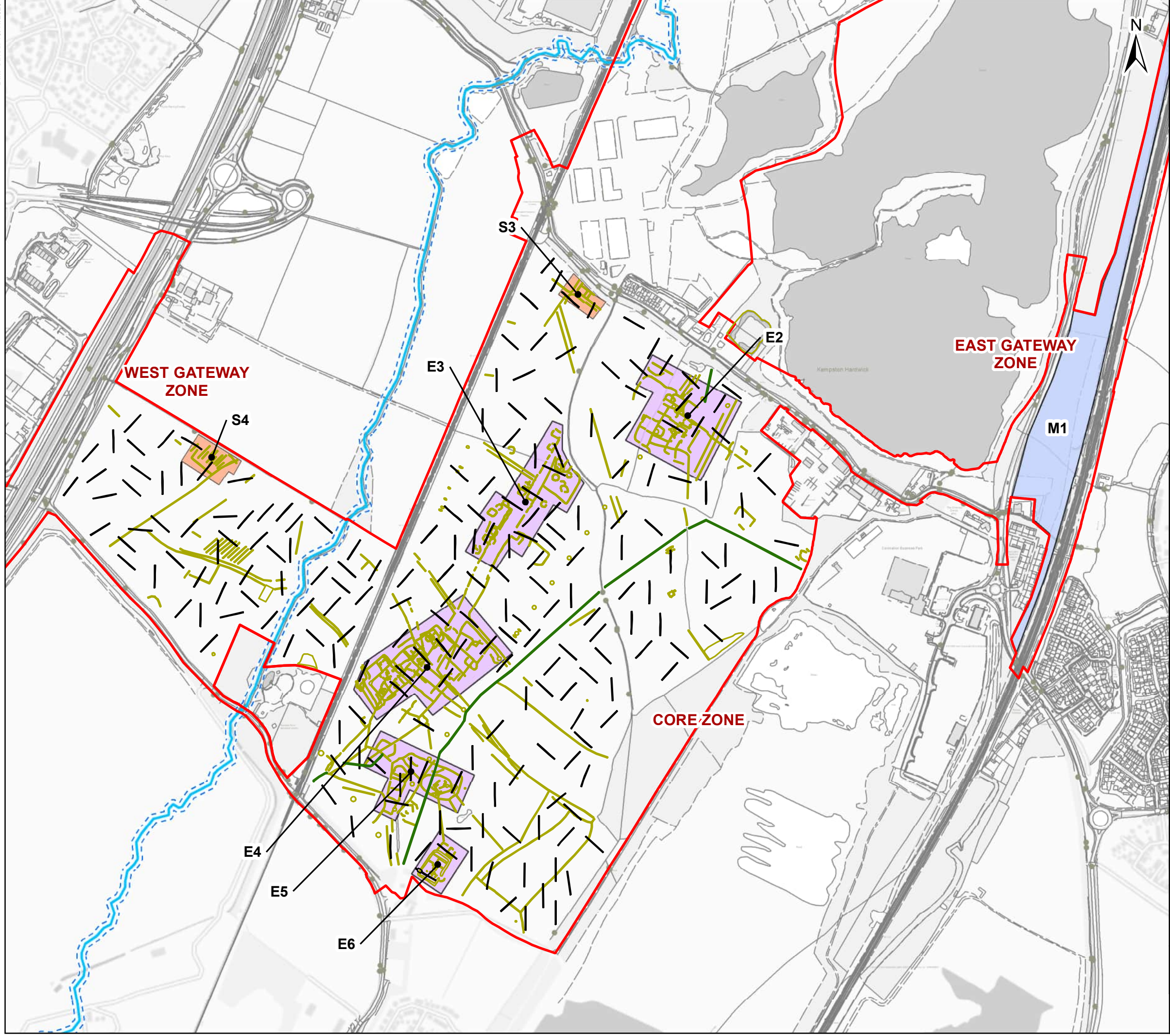


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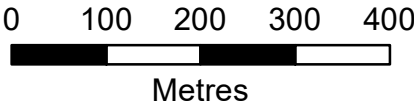
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Title
Figure 1B - Proposed Mitigation Plan showing Lake Zone

Date:	19/05/2025	Scale:	4,500 @ A3
Drawn:	AB	Checked:	AH
		Approved:	JC



- Key**
- Field boundary
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 - Geophysics Interpretation (MOLA 2019)
 - Proposed archaeological Excavation areas
 - Proposed archaeological Strip, Map and Sample area
 - Proposed archaeological Monitoring and potential Strip, Map and Sample area
 - Elstow Brook
 - 10m buffer Elstow Brook
 - Site boundary



Client:
Universal Destinations and Experiences

Project:
Universal Destinations and Experiences UK Project

Title
Figure 1C - Proposed Mitigation Plan for Core, West and East Gateway Zone

Date: 19/05/2025 Scale: 8,000 @ A3
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