KDK Archaeology Ltd

Written Scheme of Investigation for Archaeological Evaluation; Stage 1

Land to the Rear of 64 High Street

Markyate

Hertfordshire

Derek Watson PhD

September 2023

Site Data

KDK project code:	795MHS		
OASIS ref:	kdkarcha1-519210	Event/Accession no:	TBC
County:	Hertfordshire		
Village/Town:	Markyate		
Civil Parish:	Markyate		
NGR (to 8 figs):	TL 0611 1641		
Present use:	Residential/Garden		
Planning proposal:	Construction of two new semi-detached cottages and new boundary wall.		
Local Planning Authority:	Dacorum Borough Council		
Planning application ref/date:	21/01335/FUL & 21/01336/LBC		
Commissioned by:	William Homan Grain High Street Ltd Willow Barn Nomansland Farm Drovers Lane Wheathampstead, AL4 8EY		
Client:	William Homan		

Quality Check

Author	Derek Watson PhD	Version	795/MHS/1.1	Date	04.09.2023

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1 Introduction

1.1 This Written Scheme of Investigation has been prepared on behalf of William Homan as a specification for an Archaeological Evaluation of Land to the Rear of 64 High Street, Markyate, Hertfordshire. The work, which is part of a requirement of the National Planning Policy Framework (NPPF) and Conditions 4-5 of the Planning Consent, has been defined by the Hertfordshire Historic Environment Team (HHET), on behalf of the Local Planning Authority (LPA), Dacorum Borough Council. The relevant planning application references are 21/01335/FUL & 21/01336/LBC.

This evaluation forms the first stage of an archaeological assessment of the site, and further stages may be required should significant remains be encountered.

1.2 This Written Scheme of Investigation incorporates the requirements set out by Historic England in *Management of Research Projects in the Historic Environment* (2015) and covers:

- The scope of the project
- The objectives and methodologies
- The archaeological and historical context
- Dissemination of the results
- Archive deposition
- Details of permanent and specialist staff
- The proposed programme of work
- Relevant additional information, e.g. insurance, copyright etc.
- Bibliography of professional and academic resources

1.3 ***The Site***

Location

The proposed development site is located within the village and civil parish of Markyate and in the administrative district of Dacorum Borough Council at National Grid Reference (NGR) TL 0611 1641 (Fig. 1).

Description

The site is situated in the rear garden of No. 64 High Street, a Grade II (NHLE: 1101214) Listed Building. The garden is sub-rectangular in plan (*c.*835m^2) and is accessed via a carriage entrance from the High Street. The site is bounded to the east by the rear of Nos. 60 & 62 High Street and the rear of 64 High Street, to the north by the garden of No. 58, to the west by the gardens of private residences and a Telephone Exchange, and to the south by residential properties on Buckwood Road (Fig. 2).

Geology and Topography

The sedimentary bedrock geology is chalk of the Holywell Nodular Chalk and New Pit Chalk Formations, formed between 100.5 and 89.8 million years ago during the Cretaceous period; this is overlain by superficial Head deposits of clay, silt, sand and gravel, deposited between 2.588 million years ago and the present during the Quaternary period (https://geologyviewer.bgs.ac.uk/). The site is situated at an approximate elevation of 127m AOD.

Proposed Development

The proposal calls for the construction of two new semi-detached cottages and a new boundary wall (Fig. 3).
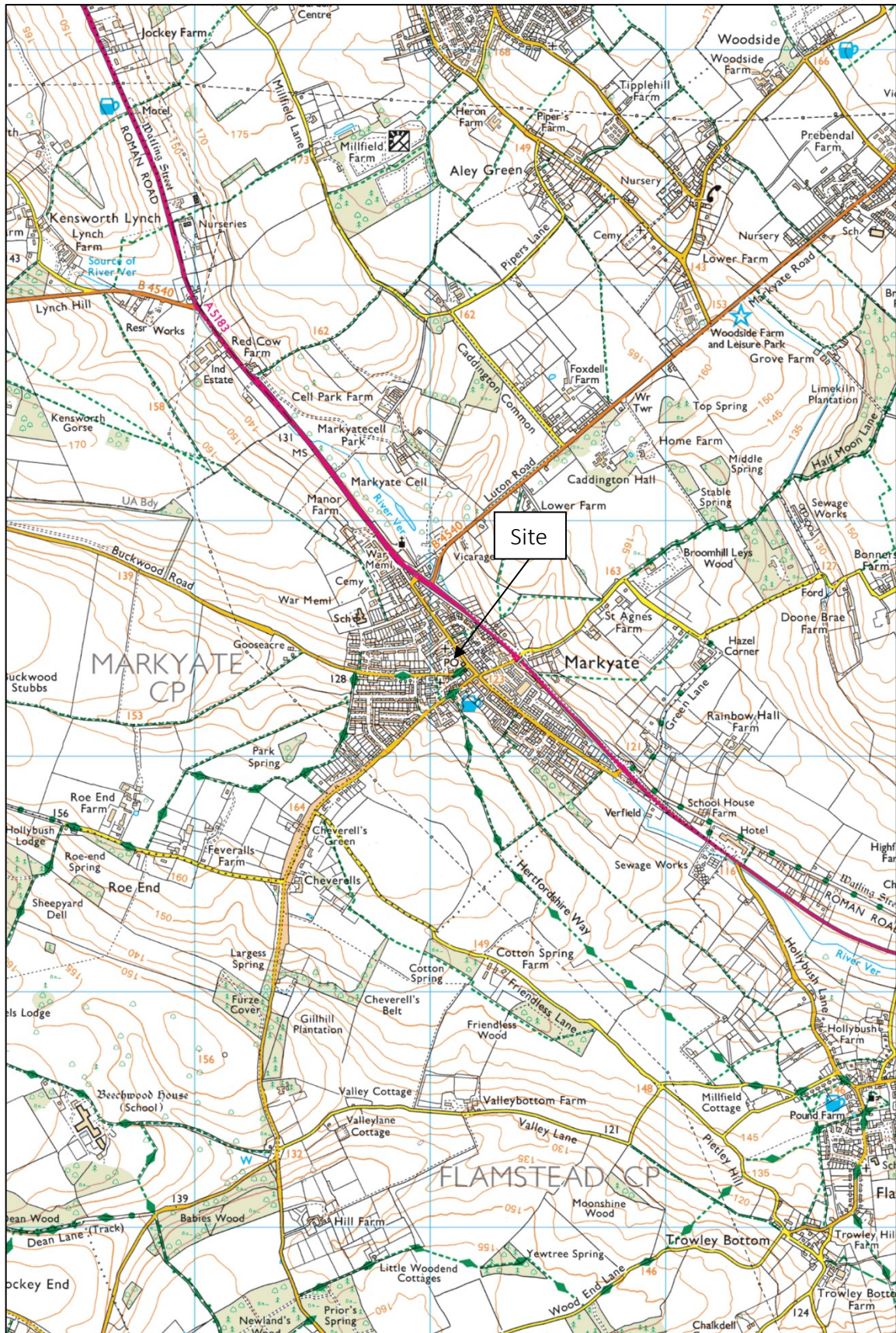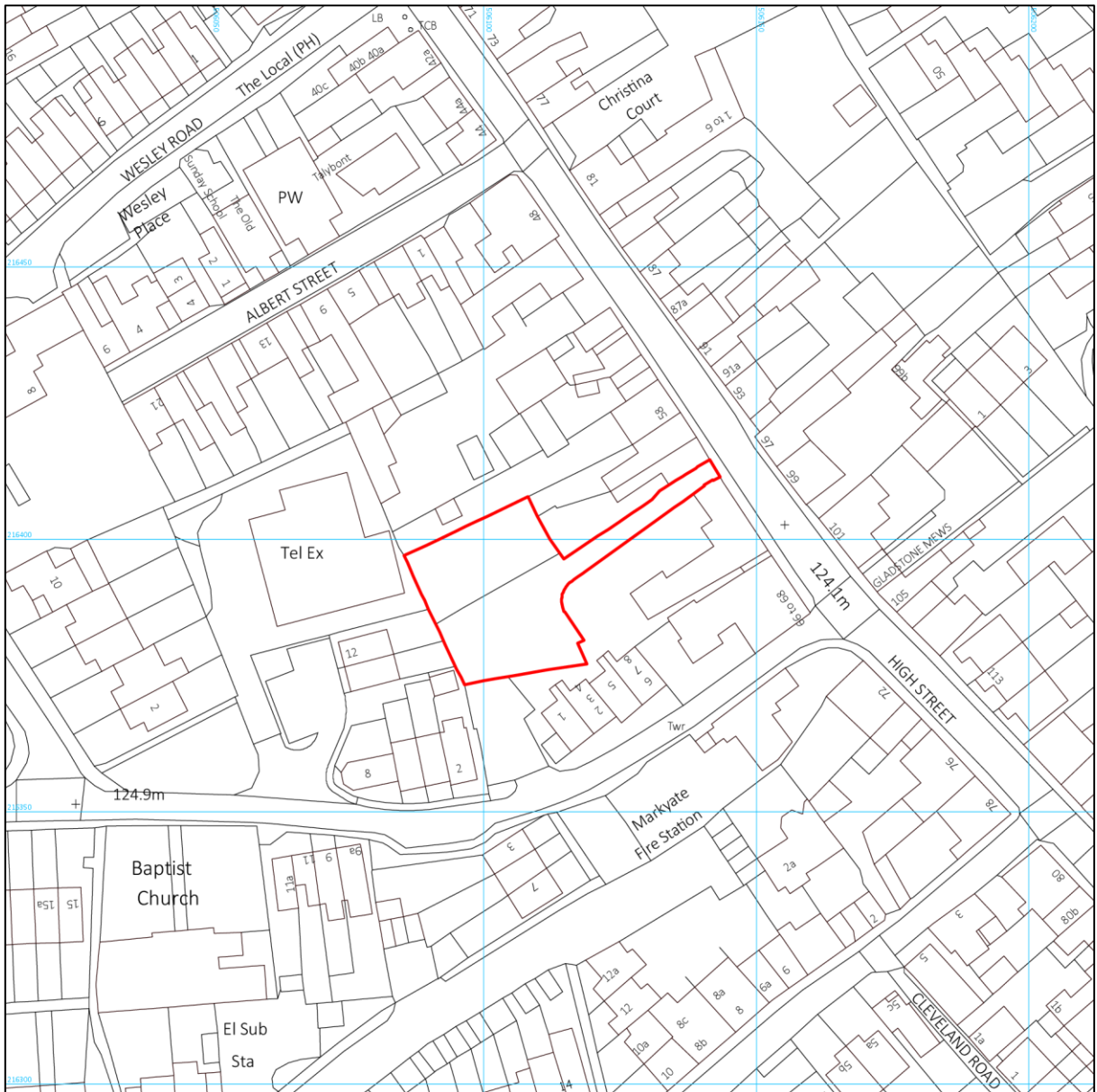
Figure 1: General location (scale 1:25,000)

Figure 2: Site location (scale 1:1250)

Figure 3: Proposed development (scale 1:400)

2 Aims and Methods

2.1 *Aims*

The aims of the project are:

- To establish the date, nature and extent of activity or occupation within the development area
- To establish the relationship of any remains found to the surrounding contemporary landscape
- To recover palaeo-environmental remains to determine local environmental conditions.

The site is situated within the medieval to post-medieval village of Markyate, the Markyate Conservation Area and an Area of Archaeological Significance (447). The development comprises the rear garden of No. 64 High Street, a late 16th century Grade II (NHLE: 1101214) Listed Building. The site is bounded on most sites by other Grade II post-medieval private properties. Additional research aims would, therefore, be as follows (ALGAO East of England, 2021):

- MSax-Lsax 02: How can we better characterise Middle and Late Anglo-Saxon settlement types and forms?
- Med (Rural) 09: How can we characterise medieval rural settlement morphology and relationships?
- P-Med 13: What can archaeology add to our understanding of well-documented periods?

2.2 *Standards*

The work will conform to the following requirements:

- The relevant sections of the Chartered Institute for Archaeologists' *Standard & Guidance for Archaeological Field Evaluation* (CIfA 2020a)
- The Chartered Institute for Archaeologists' *Code of Conduct* (CIfA 2022)
- Current Historic England guidelines (EH 2008, HE 2015)
- The Association of Local Government Archaeological Officers East of England Region *Standards for Field Archaeology in the East of England* (ALGAO 2003)
- Data Protection Act 2018

2.3 *Methods*

The methods used will be as follows:

- Machine excavation of two trenches of 20m x 1.8m and 15m x 1.8m, plus an appropriate contingency (Fig. 4).

If heritage assets of archaeological interest are identified by the evaluation the implementation of a programme of archaeological investigation shall be secured in accordance with a WSI which will have been submitted and approved by the LPA.

Excavation

The trenches will be machine excavated under close archaeological supervision to the archaeological horizon or the natural geology, whichever is reached sooner. Due regard will be given to current Health and safety guidelines on the maximum depth of excavation. The machine, which will be of a suitable size, will be fitted with a toothless ditching bucket unless a toothed bucket or breaker is required to remove more solid material. The spoil will be scanned for artefacts.

The trenches will be hand cleaned to produce a base plan, which will be available for the first monitoring visit.

Archaeological features and deposits will be excavated by hand. All discrete features will be half sectioned, where safe to do so. At least 50% of each feature should be investigated. At least 10% of each linear feature will be sampled with slots at least 1m wide. Deeply stratified deposits will be investigated according to site conditions, location of deposits etc. and according to a site specific strategy agreed with HHET.

Bulk sampling in order to retrieve organic and environmental material will be undertaken as appropriate and following Historic England guidance (Campbell *et al.* 2011).

The trenches will not be backfilled before they have been inspected by HHET or agreement has otherwise been reached.

Surveying

Surveying will be undertaken using Global Positioning System technology (GPS) and the results presented in CAD format and converted to TIFF or PDF as required. All plans and section drawings will be annotated with relative heights and all plans will be related to the OS National Grid. Digital survey data will be presented in an appropriate CAD format and converted to TIFF or PDF as required.

Planning

Site plans will normally be drawn to a scale of 1:100 or 1:50. Where greater detail is required specific areas or features may be drawn to 1:20 or 1:10. Burials will be drawn at 1:10. Sections will generally be drawn at 1:10, unless the size of the section is more appropriately illustrated at 1:20. Where greater detail is required; for example for complex and/or intercutting features, hachures will be included. Plastic film will be used for manual site drawings.

Recording

Each context will be recorded in either electronic format or on KDK's Context Record Sheet, which details dimensions, shape, fill type and inclusions, artefact content, samples and interpretation. A register of contexts will be maintained, and context records will be cross-referenced to all other records.

Photography

The primary photographic record will be complied using a high specification digital SLR camera (minimum 20 mgp). Metric scales, a photo board and a north arrow will be used in all photographs where appropriate. A cross-referenced photographic register will be maintained on KDK's Photographic Record Sheet.

Finds

All stratified finds will be collected by context and, if of particular significance, individually recorded in 3 dimensions on KDK's Object Record Sheet. Un-stratified finds will only be collected where they contribute significantly to the project objectives or are of particular intrinsic interest. Finds will be processed in accordance with approved industry practices (e.g. CIfA 2020b)

Finds processing, which can take place during or after fieldwork, involves cleaning, marking, packaging, quantification and initial classification. In most cases the conservation of artefacts will take place after processing, but primary conservation of delicate artefacts may be required on site. Radiography may be required to identify some objects. *First Aid for Finds* by Watkinson and Neal (1998) is considered the standard reference for finds recovery, processing and packaging. Provision has been made for finds analysis and conservation in the project estimates.

Environmental

Environmental sampling strategies will be applied as appropriate and according to Historic England guidance (Campbell *et al.* 2011). See Appendix 1 for further details.

If appropriate, environmental samples will be taken from features to enable their date, nature, and condition to be described and analysed. Samples will be taken from the fills of features where organic materials may be preserved, such as pits, ditches and other deposits, especially if waterlogged.

Where there is evidence for industrial activity, macroscopic technological residues (or a sample of them) will be collected by hand. Separate samples (c. 10ml) will be collected for micro-slags (hammer-scale and spherical droplets).

Samples will be taken for scientific dating (such as radiocarbon dating) where, for example, dating by artefacts is insecure or absent and where dating is necessary for the specification for subsequent mitigation strategies (see section on scientific dating below for more information).

Geoarchaeological assessment of buried soils and sediment sequences may also be undertaken if appropriate. This will be done by field inspection by a specialist geo-archaeologist who, following discussion with the Planning Archaeologist, may take samples for laboratory assessment where appropriate.

Deposits will be sampled for the retrieval and assessment of the preservation conditions and potential for analysis of biological remains. The sampling strategy will be developed in collaboration with KDK's consultant specialist. Flotation samples and samples taken for coarse-mesh sieving from dry deposits will be processed at the time of the fieldwork if possible, in order to allow a variation of sampling strategies if necessary.

Sampling strategies for wooden structures will follow the methodologies presented in English Heritage's Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood (EH 2010).

All samples will be recorded on KDK's Sample Record Sheet, and a register of samples will be maintained. Provision has been made for sampling, analysis and reporting in the project estimates.

Collection and Selection Strategy

A collection and selection strategy, relating to all aspects of the projects created data and found material, will be agreed between the KDK, HHET and the Depositing Museum. This strategy is outlined in Appendix 2.

Scientific Dating

A number of scientific dating techniques are available for scientific dating. Radio-carbon or C14 dating is commonly used to date organic remains including human remains where no other means of dating is available. Archaeomagnetic or thermoluminescence dating may be applied to pottery or ceramic building materials, kiln linings etc. Dendrochronological dating may be possible on certain species of timber where sufficient growth rings have survived. Provision has been made for scientific dating in the project estimates. A site specific strategy will be formulated with specialist guidance from the appropriate HE Regional Science Advisor

Human Remains

An exhumation license from the Ministry of Justice is necessary if human remains are encountered (Section 8.6, below). Under the Human Tissues Act 2004, the Environmental Health Officer must also be notified if the remains are less than 100 years old. Although human remains are generally left *in situ*, if possible, during Archaeological Evaluation, any investigation or removal of remains will be agreed between KDK, the client, HHET and other appropriate authorities and will be undertaken in accordance with current guidelines (McKinley & Roberts 1993, Brickley & McKinley 2004). Any and all human remains will be treated with care and respect.

Security

The security of the archaeological remains, the archive and the site as a whole will be safeguarded as much as possible. The security of individuals on site, whether KDK staff or not, will perforce take precedence.

2.4   ***Requirements for the Building Contractor*** (Add or subtract as appropriate)
- Trenches to be pulled with a toothless ditching bucket
- Trenches to be taken down in spits under archaeological supervision
- Trenches to be excavated to archaeology or natural geology whichever comes first
- Trenches not to be tracked or driven over
- Spoil to be stockpiled at least 1m from the trench edge
- Trenches to be backfilled only when released by KDK

2.5   ***Post-excavation work***

The archaeological fieldwork will be followed by a period of post-excavation processing and analysis, which will include the cataloguing and analysis of any finds and samples, and the preparation of the archive for the site report and its subsequent deposition.

Artefacts, biological samples and soils will be assessed for evidence of site and deposit formation processes and taphonomy, and especially for evidence of recent changes that may have been caused by alterations in the site environment. Assessment may include x-radiography of all iron objects, (after initial screening to exclude obviously recent debris), and a selection of non-ferrous artefacts (including all coins). Where necessary, active stabilisation

or consolidation will be carried out, to ensure long-term survival of the material, but with due consideration to possible future investigations.

Assessment of any technological residues may be undertaken and where appropriate, samples will be submitted for scientific dating.

All soil samples collected for biological assessment, or sub-samples of them, will be processed in-house before being sent to the specialist(s) to assess the preservation state, density and significance of material retrieved.

Samples collected for geoarchaeological assessment will be processed as deemed necessary by a recognised specialist and appropriate assessment will be undertaken. Where preservation in situ is a viable option, consideration should be given to the possible effects of compression on the physical integrity of the site and to any hydrological impacts of development.

Animal bone assemblages, or sub-samples of them, will be assessed by our in-house or consultant specialist as appropriate.

Assessment of human remains will be based on in situ observation by our in-house specialists.

Artefacts such as pottery, glass, small finds etc, will be assessed by the relevant specialist (see Section 6.2).
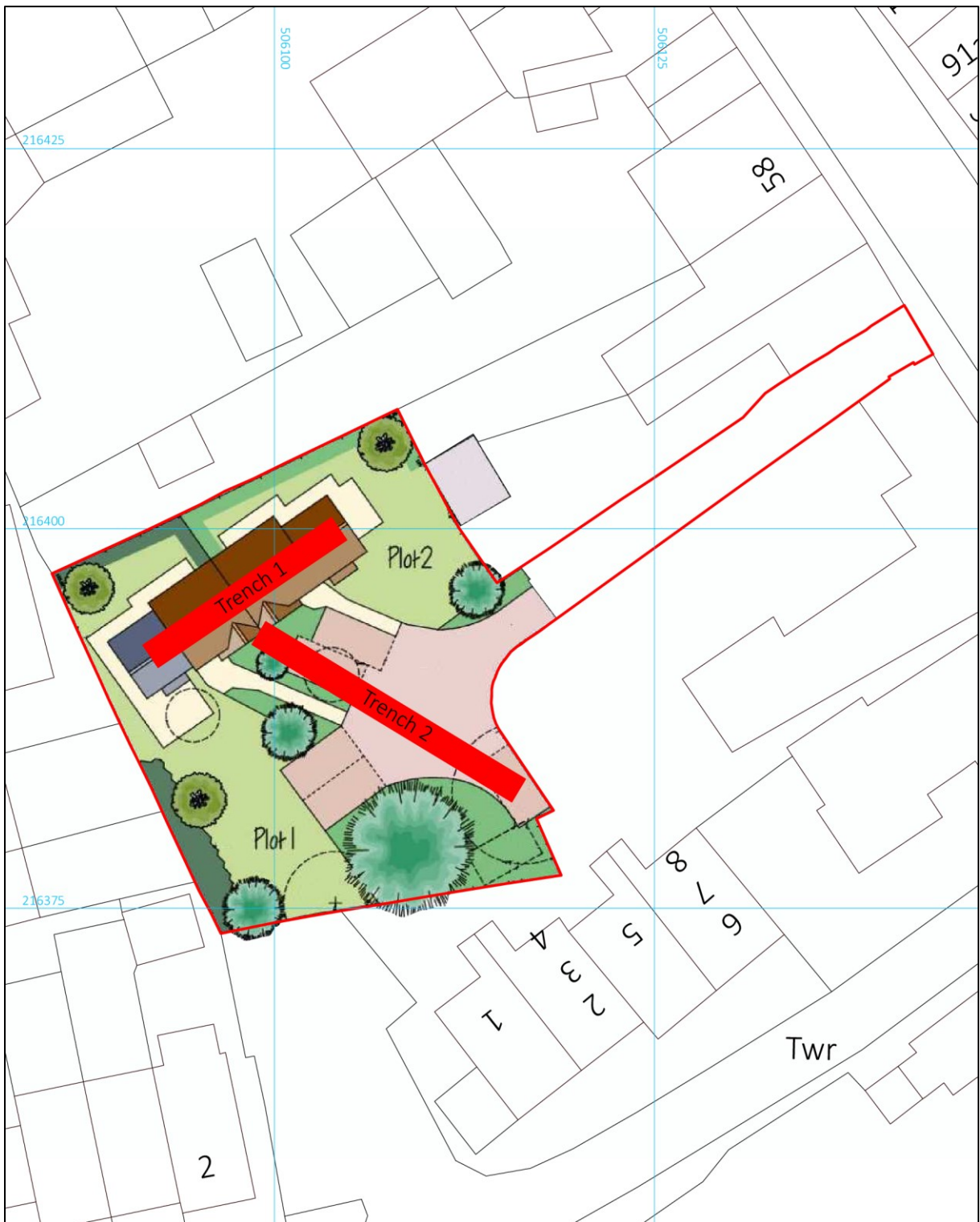
Figure 4: Trench location plan (scale 1:400)

3 Archaeological and Historical Background

3.1 The village of Markyate is located on the border of Hertfordshire and Bedfordshire in the valley of the River Ver. The High Street follows the line of Roman Watling Street, which linked London with Chester, so early activity flowed through the Markyate area. However, the origin of the modern settlement is in the Saxon period. The toponym means 'Gate at the boundary', and derives from compounding the Old English elements *mearc* + *geat* (SEPN 2023). The site is situated within the Markyate Conservation Area and an Area of Archaeological Significance (447).

This section has been compiled with information from the Hertfordshire Historic Environment Record (HER Ref: 92.23) and reliable internet sources. The HER data, with a 500m search radius, is sshownin Fig. 5. The HER search area includes 38 Listed Buildings (Grade II=37; DL=1) and as most will not be impacted by this project these have been excluded from the following summary.

3.2 *Prehistoric (before 600BC), Iron Age (600BC - AD43) & Roman (AD43 - c.450)*

There is little archaeological evidence for human activity in Markyate prior to the construction of the Roman road and there are no entries in the HER search area. Watling Street runs north-west from the Roman town of Verulamium towards Dunstable, and ultimately Wroxeter and Chester (Viatores' route 1E; HER 9525). The name dates from the later 9th century and the road as a whole has never gone out of use, except within Verulamium itself. The High Street in Markyate follows the line of the Roman Road. Settlement evidence dating from the Roman period is lacking, but a cemetery site is known to have been located to the north of Markyate (Simco 1984: 96, 99).

3.5 *Saxon (c.450 - 1066) to Medieval (1066 - 1500)*

There is a similar dearth of archaeological evidence for the Saxon period, although an 8th century belt mount, described in the HER as 'Hiberno-Saxon', was found in the vicarage garden (HER 1306), *c.*500m north of the development. The settlement is also not listed in the Domesday Survey 1086. Cropmarks situated west of Markyate Village School reveal the presence of a substantial bank and ditch (field boundary) that once surrounded a spur of high ground known as Humbershoe. The name is recorded in 1251 as *Humbrittesho*, and is thought to derive from '*Hunbheort's* spur of land', suggesting that the earthwork is at least of Saxon date (HER 17817).

The earliest documentary evidence for the medieval to post-medieval village of Markyate (HER 2050) dates from 1119, but it is subsequently known for its connection with the medieval mystic Christina of Markyate founded to the northwest of the village. In the early 12th century, Roger, a monk from nearby St Albans Abbey, became a hermit in the woods near Watling Street. He attracted followers, including a woman who became known as Christina of Markyate. Markyate Priory was established by Christina with the support of Abbot Geoffrey of Saint Albans in 1145, in a wood belonging to the Dean and Chapter of St Pauls, London; it was dissolved in 1537 (MPC 2020; VCH 1904). Trial trenching in pastureland at Markyate Cell Park (HER 7333), the estate associated with the medieval nunnery, revealed a deposit of medieval and post-medieval ceramic building material (HER 11868).

3.7 *Post-medieval (1500 - 1900) to Modern (1900 - present)*

The economic mainstay of 18th century Markyate was the coaching trade; it is said that there were 40 inns and public houses in the village as well as ancillary services such as wheelwrights and blacksmiths. The Grade II Old Brewery, 25-27 Pickford Road (HER 7026) operated as a small brewery from the 18th century and the various public houses on the High Street include the *c.*16th century The Sun Inn (Grade II, NHLE: 1101208; HER 12090) and the 19th century Red

Lion (HER 12097). Known historically as Markyate Street or Market Street, the county border between Bedfordshire and Hertfordshire used to run down the centre of the High Street. It was not until 1877 that Markyate (HER 2050) became a separate ecclesiastical parish. Twenty years later it became a civil parish, incorporating parts of the Hertfordshire and Bedfordshire parishes of Caddington, the Hertfordshire parish of Flamstead, and detached portions of the Bedfordshire parishes of Studham and Houghton Regis.

The parish church of St John the Baptist (HER 11201) was originally an 18th century chapel of ease, built in 1734 on the grounds of the medieval priory. The Sunday School for the newly formed parish was constructed in the village itself and comprised a tin tabernacle, which was in use until the 1990s (HER 30496). The Wesleyan church (HER 12086) was built in 1859 to replace an early 19th century chapel (HER 18743). A breakaway movement of the Baptist Church gave rise to the construction of the Particular Baptist Chapel in the 1850s (HER 12089).

The development site is situated to the rear of the late 16th century No. 64 High Street (Grade II, NHLE: 1101214) which was, according to English Heritage, an inn originally known as 'The Swan'. However, the HER lists No. 64 (HER 12101) as the 'original Sun Inn' with the name transferred to the 16th century Grade II public house (NHLE: 1101208; HER 12090) across the street in the 1840s. The development site is surrounded by Garde II Listed Buildings on the High Street such as the 17th century The Grange, No. 8 (HER 12091), the late 16th century Nos 58, 60 and 62 (NHLE: 1174106; 30918), the 17th century Nos 48, 48A, 48B and 48C (List Entry Number: 1101213) and Nos 87 & 89 The Cottage (NHLE: 1101206), and the 17th century Nos 97 and 99 (NHLE: 1101207).

The large 16th century Cell House, previously known as Markyate Cell (HMSO 1910; Garde II*, NHLE: 1173939), stands on the site of the priory in Markyate Cell Park, an 18th century park and 20th century garden (HER 7333) at the northern edge of HER search area. Between *c.*1734 and 1742 landscaping was carried out for John Coppin.

The Markyate War Memorial, High Street (HER 12085) was dedicated in 1921 to the dead of the First World War. In 1951, a memorial to the Second World War was erected in the playing fields off Cavendish Road. This was later relocated to the back wall of the WWI memorial.

An archaeological investigation (EHT4549) behind No. 75 High Street revealed several pits of late 19th to 20th century date, overlying fluvioglacial deposits which indicated that the Ver valley was 'perhaps more dynamic in the Pleistocene' than is generally believed; otherwise, the site was unoccupied until the late post-medieval period. Various other archaeological investigations were undertaken adjacent to the High Street at Nos 31-45 (EHT5423), No. 38 (EHT4416, EHT4419), Nos 45-49 (EHT1503), No. 55 (EHT5196) No. 75 (EHT4549), The Swan Inn (EHT8461), and The Sun Inn (EHT8112, EHT8114) mostly revealed either no archaeological remains or late post-medieval/modern remains. A Strip, map and record evaluation of the plot northwest of the Red Lion PH (EHT6852), facing the High Street (*c.*350m northwest) found that this part of the village was heavily terraced in the post-medieval period to make level platforms for building on. No activity earlier than the post-medieval period was recorded.
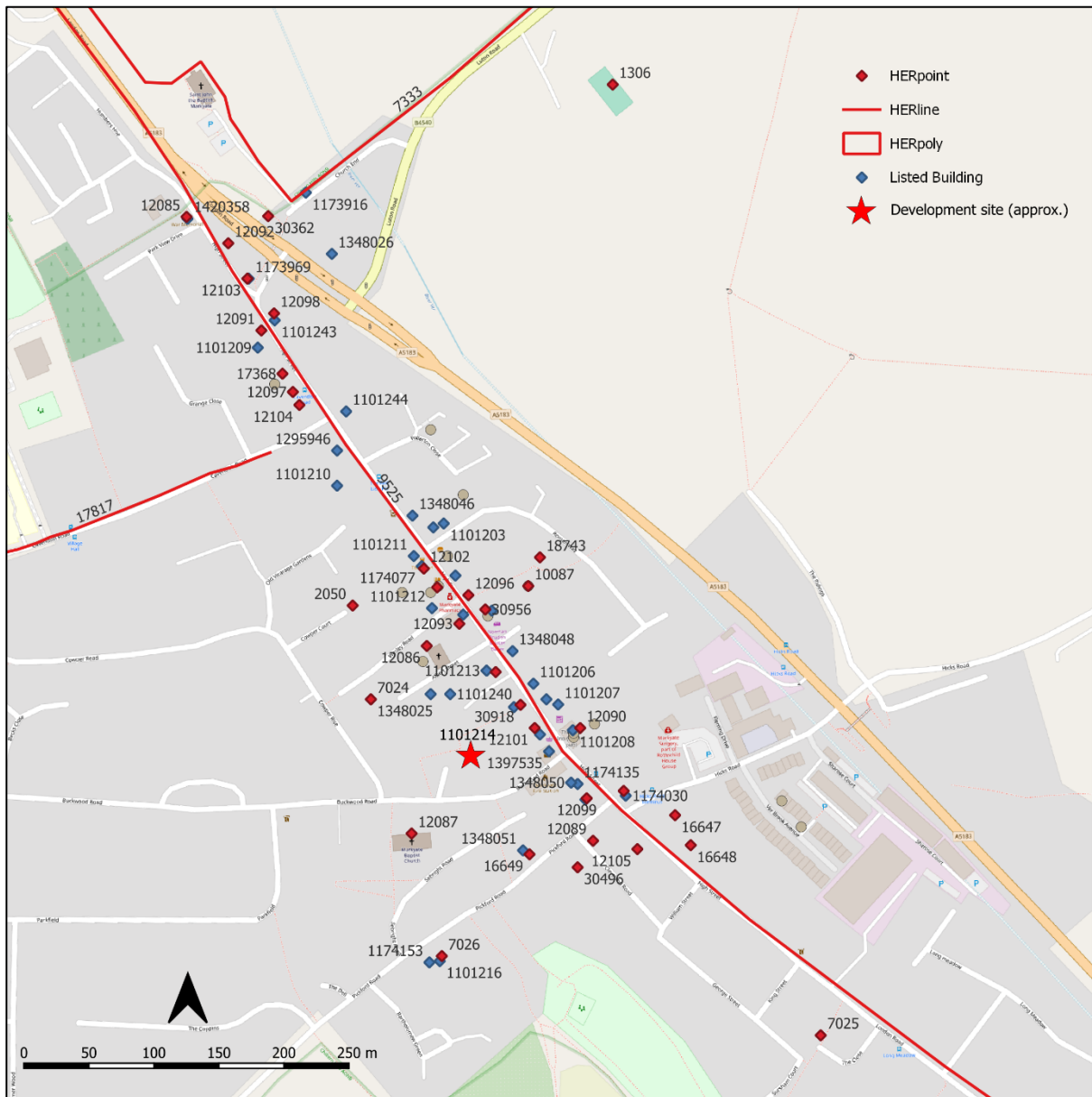
Figure 5: HER data plan (scale as shown)

4   Reporting

4.1   A report will be prepared, as required in the Brief, which will generally include:

- A concise non-technical summary of the results
- The objectives of the project
- The methodologies used
- The circumstances and date at which it was undertaken
- The identity of the organisation and individuals carrying out the work (in particular the names of the project director, site supervisor and any specialists), in line with GDPR requirements.
- A summary of the history and archaeology of the site and its context
- A written account of the results of the project with appropriate supporting illustrations
- A conclusion, summarising the results and examining their significance
- Statement of confidence rating
- References
- An index to and the proposed location of the archive
- Appendices as appropriate
- An HER Summary Sheet

4.2   Electronic and/or paper copies of the report will be provided for the client, HHET and the HER as required.

4.3   Interim reports on the project will be submitted to any relevant regional and county journals (e.g. *Hertfordshire Archaeology and History*), and to any relevant specialist journals (e.g. *Industrial Archaeology Review, Journal of the Historic Farm Buildings Group*), within one year of the project's completion.

4.4   The project has been registered with the Archaeology Data Service, which will allow an OASIS summary form and the report to be submitted once it has been approved.

4.5   Where the archaeological remains revealed require sufficient further analysis for a detailed academic report, a post-excavation strategy will be agreed between KDK and HCCHET. This additional programme of work will follow guidelines established by Historic England (2015), consisting of successive stages of archive assessment, analysis, research, report preparation and publication.

5   Archive

5.1   The project archive consists of the electronic and paper records, photographs, artefacts and environmental samples. On occasion associated records, photographs or finds are also acquired. It is essential that this primary information is stored in a suitable environment to allow it to be studied by anyone with an interest to do so.

5.2   During the course of the project the client will be asked to sign a Transfer of Title form to allow any artefacts found during the excavation to be deposited as part of the full archive with the local museum

5.3   The Dacorum Museum has been contacted to make preliminary deposition arrangements. On completion of the project, the archive will be prepared for long term storage in accordance with guidelines prepared by the CIfA (CIfA 2020c), the UK Institute of Conservation (Walker 1990), the Museums and Galleries Commission (Paine 1992) and the Hertfordshire Archaeological Archive Standards (Paul 2021). If they are unable to accept the physical archive, KDK will make alternative arrangements to hold the archive until deposition can be arranged.

5.4   The digital archive for this project will be uploaded to the Archaeological Data Service in line with the Hertfordshire Archaeological Archive Standards 2017.

6 Staffing

6.1 *KDK Staff*

Karin Kaye MA MCIfA

Karin graduated from the Institute of Archaeology, UCL with an MA and first-class honours degree in medieval archaeology. Her archaeological career began at the Heritage Network, in Hertfordshire, where she was given a solid grounding in commercial archaeology. In subsequent posts she gained considerable experience in managing all types of archaeological projects as well as specialising in historic buildings and church archaeology. She co-founded KDK Archaeology Ltd with David Kaye, which began trading in early 2013.

David Kaye BA ACIfA

David graduated with an honours degree from the Institute of Archaeology, UCL in 2004 following a long career in photography, graphic design, and exhibitions. He joined Heritage Network, in Hertfordshire, whilst still a student and gained considerable experience in his seven years there. Since then he has led many excavations, including a large Roman field system at a quarry site, an Anglo Saxon cemetery at a school, and an ongoing Roman roadside settlement at an industrial complex. Apart from the day-to-day project management, David is responsible for all elements of Health and Safety.

Laura Dodd MSc MCIfA

Laura graduated from the University of Reading in 2013 with a BA in archaeology and continued her studies at Durham University where she achieved an MSc in Palaeopathology. She has a particular interest in the isotopic analysis of human remains and during her time at Durham assisted in a project to identify potential childhood origins of several individuals found in a mass grave. Laura has taken part several large-scale excavations such as the Roman field school at Silchester and the Amheida project in Egypt's Dakhla oasis. Since joining KDK in 2015 Laura has gained experience of running all types of fieldwork and is now the post-ex and archives manager. She is also the company osteo-archaeologist and is a member of BABAO.

Ellen Shlasko PHD

Ellen has been working as a reports officer for KDK since 2015. Previously, she was based in the US, where she specialised in the historical archaeology of the southeast. A graduate of Brandeis University, she holds a MA in historical archaeology from the College of William and Mary in Virginia and a PhD from Yale University. Ellen is also active in the Welwyn Archaeological Society and the Community Archaeology Geophysics Group, which has been mapping the Roman city of Verulamium since 2013.

Barney King PCIfA

Barney King began working in archaeology after a varied career as a projectionist, theatre technician and plumber's assistant, among other occupations. He started working on large scale Romano-British sites in Hertfordshire and Buckinghamshire, after enjoying a stint of archaeological volunteer work. He joined KDK as field technician and company quartermaster in 2017, and is now responsible for maintaining IT systems, surveying and processing environmental samples.

Chris Martin-Taylor BSc

Chris Martin-Taylor graduated from Bournemouth University in 2015 with a BSc in Archaeology. Prior to that, he studied for a foundation degree in Applied Architectural Stonework and Conservation in Dorchester and Weymouth, which included practical training in stonemasonry and historic building conservation. He has worked on numerous sites in the midlands and southeast England, as well as taking part in the experimental archaeology project at Guédelon Castle in France. Chris joined KDK in 2017 and has enjoyed developing his skills in many aspects of archaeological fieldwork. He has a keen interest in the history and archaeology of the post-Roman and medieval periods, particularly the study of the early medieval built environment.

Derek Watson PHD

Derek Watson graduated from the Institute of Archaeology, UCL in 2004 with a PhD in Archaeology. He also has a first-class honours degree in Environmental Archaeology from the Institute of Archaeology and an MSc from the University of Sheffield in archaeological environmental science and palaeoeconomics. He has worked on both commercial and academic archaeological projects in North America, Europe, North and West Africa, and has directed his own research projects in Ghana. Derek has been working as a zooarchaeologist and a reports officer for KDK since 2018.

Florian Weber MA ACIfA

Florian graduated from the University of Zurich in August 2017 with an MA in Medieval Archaeology. After graduating he moved to the UK where he started his career in archaeology, having worked as a Business Travel Agent for several years. He has worked on numerous sites in Milton Keynes and the south-east of England and has been responsible for all types of archaeological projects from watching briefs to open area excavations. He is interested in medieval archaeology, art and architecture, the archaeology of the Roman Provinces and the classical archaeology of Greece. Florian joined KDK in May 2021.

Pat Reeves

Pat joined KDK as an administrative assistant in 2017 bringing with her a wealth of experience from a long and varied career. Apart from her administrative and financial skills, Pat also provides specialist knowledge in post-medieval porcelain and small finds. She has been the office manager since 2021.

6.2   *Specialists*

The following are KDK's preferred specialists:

Subject	Specialist	Organisation
Building materials: Roman	Rob Perrin	Freelance
Building materials: post-Roman	Karin Kaye	KDK Ltd
Ceramics: prehistoric	Sarah Percival	Freelance
Ceramics: Roman	Rob Perrin	Freelance
Ceramics: Post-Roman	Paul Blinkhorn	Freelance
Coins: Roman	Peter Guest	Vianova Archaeology
Coins: Saxon	Anna Gannon	Freelance
Coins: Post-Saxon	Murray Andrews	Freelance
Environmental: seeds	Lisa Gray	Freelance
Environmental: archaeobotanical	Lisa Gray	Freelance
Environmental: mollusca	Mike Allen	Freelance
Environmental: soils	Mike Allen	Freelance
Environmental: animal bone	Derek Watson	KDK Ltd
Environmental: animal bone	Matilda Holmes	Freelance
Environmental: human bone	Laura Dodd	KDK Ltd
Environmental: human teeth	Patrick Mahoney	KORA
Environmental: pollen	Rob Scaife	Freelance
Bone antler & ivory small finds	Ian Riddler	Freelance
Glass	Hilary Cool	Freelance
Lithics	Sarah Bates	Freelance
Lithics	Lyndon Cooper	Pre-Construct Archaeology
Metalwork	Quita Mould	Freelance
Quernstones	Chris Green	Freelance
Industrial waste	Lynne Keys	Freelance
Saxon & medieval small finds	Rosie Weetch	Freelance
Timber	Damian Goodburn	Freelance

7 Programme

7.1   A programme of works will be agreed with HHET, the client and KDK. KDK will keep HHET and the client informed of progress throughout the project.

7.2   Once the Written Scheme of Investigation has been approved by HHET, a start date will be agreed with the client allowing HHET at least one week's notice in order to schedule monitoring visits. All monitoring visits by HHET will be agreed with the client.

7.3   The client will allow site access by HHET and archaeological specialists as required and provide detailed information regarding access requirements to ensure site protocols are not breached.

7.4   *Proposed Programme*

A provisional outline of the timetable and staffing of the different phases of the projects are as follows:

Stage	Person-Days	Staff
Trial trenching	1-2	Site Director/Site Assistant
Report preparation	2	Site Director
Specialist reports	As required	Appropriate specialist
Archive	1	Archivist

8 Other Requirements

8.1 *Health and Safety*

All work by KDK staff will be carried out according to the relevant Health and Safety legislation. This includes*, inter alia*, the following:

- Health and Safety at Work Act 1974
- Construction (Design and Management) Regulations 2015
- The Management of Health and Safety at Work Regulations 1999
- Personal Protective Equipment at Work Regulations 1992
- Work Equipment Regulations 1998
- Manual Handling Operations Regulations 1992
- Workplace (Health, Safety and Welfare) Regulations 1992

A copy of KDK's *Health and Safety Policy* will be supplied if requested by client or HHET. An Initial Risk Assessment (Appendix 3) has been completed prior to the commencement of the project, and will be checked and updated on site.

8.2 *Insurance*

KDK holds the following insurance cover (further details can be provided if required):

Employer's Liability	£10,000,000
Public Liability	£5,000,000
Professional Indemnity	£1,000,000

8.3 *Copyright*

Unless otherwise agreed, full copyright of any written, graphic, electronic or photographic records and reports rests with KDK, which will licence their use in relation to the specific project by the client or sponsoring body in all matters relating to the project, as described in this Written Scheme of Investigation.

KDK will assign joint copyright to the museum or repository undertaking curation of the archive, but retains the right to be identified as author of all project documentation and reports, as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV, sec.79).

8.4 *Curatorial Requirements*

Monitoring is carried out by HHET to ensure that project is being carried out in accordance with the Brief and approved Written Scheme of Investigation, to enable the need for modifications to the project to be independently considered and validated and to control and validate the use of available contingencies. HHET will be advised of the start date and the anticipated duration of the project at least one week before the commencement of the fieldwork. HHET will be allowed access to the site as required, as will other professionals as required to ensure compliance with project health and safety requirements and access controls.

8.5 *'Treasure'*

The 1996 *Treasure Act* and its 2003 amendment specifies that the finders of specific types of artefacts it defines as treasure must report them to the Coroner within fourteen days of discovery. Failure to do so could lead to a maximum penalty of three months in prison and a fine of £5000. Further details are available on the Portable Antiquities Scheme website at

www.finds.org.uk. The Portable Antiquities Scheme will be notified of any finds that could be considered treasure within 48 hours of discovery.

8.6 *Human Remains*

Under recent changes in legislation to Section 25 of the Burials Act 1857, an application for a licence should be made whether buried human remains are to be removed from the ground or intended to be left *in situ* (since excavation is likely to disturb them). A site-specific license will be procured from the Ministry of Justice in advance of the project if human remains are thought to be encountered during the fieldwork.

Human remains in a Church of England site and municipal and private cemeteries that have been consecrated are protected by ecclesiastical as well as secular laws. The requirements for dealing with human remains on such a site should be detailed in a Faculty that must be procured from the Diocesan Registrar before works begin.

8.7 *General Data Protection Regulations*

As data controllers for personal information collected during the project, KDK will comply with the principles and letter of the GDPR regulations in the processing, management and archiving, where appropriate, of that data.

9 References

Standards and Specifications

Association of Local Government Archaeological Officers (ALGAO) 2003 *Standards for Field Archaeology in the East of England.* East Anglian Archaeology Occasional Paper 14

Brickley M. & McKinley J. I. 2004 *Guidelines to the Standards for Recording Human Remains*. Chartered Institute for Archaeologists Technical Paper.

Campbell G, Moffett L & Straker V 2011 *Environmental Archaeology: a guide to the theory and practice of methods from sampling and recovery to post-excavation.* Portsmouth: English Heritage

CIfA 2019 *Archaeological Archive Selection Toolkit.* Reading: Chartered Institute for Archaeologists

CIfA 2020a *Standard and Guidance for Archaeological Field Evaluation.* Reading: Chartered Institute for Archaeologists

CIfA 2020b *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials.* Reading: Chartered Institute for Archaeologists

CIfA 2020c *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives.* Reading: Chartered Institute for Archaeologists

CIfA 2022 *Code of Conduct.* Reading: Chartered Institute for Archaeologists

EH 2008 *The Management of Research Projects in the Historic Environment. PPN3: Archaeological Excavation.* London: English Heritage

EH 2010 *Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood* London: English Heritage

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Walker K. 1990 Guidelines for the Preparation of Excavation Archives for Long-Term Storage. London: United Kingdom Institute for Conservation, Archaeology Section

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Secondary Sources

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Medlycott M. (*ed*) 2011 *Research and Archaeology Re-visited: A Revised Framework for the East of England.* East Anglian Archaeology Occasional Paper 24

MPC 2020 Markyate: Village History. Markyate Parish Council https://www.markyateparishcouncil.gov.uk/village-history/

SEPN 2023 Survey of English Place-Names: Markyate. University of Nottingham. English Place-name Society. http://epns.nottingham.ac.uk/browse/Hertfordshire/Markyate/53285ba0b47fc40ace0007aa-Markyate

Simco A. 1984 *Survey of Bedfordshire: The Roman period.* Bedfordshire County Council

Appendix 1: Environmental Sampling Strategy

Stage I: Pre-excavation

KDK's general environmental sampling strategy is outlined in Section 2.3. Where appropriate a more detailed site specific strategy will be formulated at the start of a project based on the advice of KDK's Environmental Specialist and/or Historic England's Regional Science Advisor. The sampling strategy will:

- Take into account the research aims and objective of each individual project
- Identify the different categories of environmental remained expected to be encountered
- Outline the environmental analysis to be completed

The sampling strategy will be regularly reviewed throughout the excavation to ensure that it remains appropriate to the specific research aims.

Stage 2: Excavation

The sampling strategy outlined during Stage I will be readdressed after the site has been stripped. The updated strategy will be discussed with all on site personnel as well as HHET, the ES and HE where appropriate. The on-site collection and treatment of samples will be as follows:

- Sample sizes will normally comprise 40 litres of material; however, more or less than 40 Litres can be taken if deemed appropriate. <100% of smaller features such as postholes will be collected.
- Samples from wet or waterlogged contexts will be prioritized as these conditions are better suited for the preservation of organic material.
- When excavating human remains, multiple samples will be taken separately and clearly labelled with the areas they represent (e.g. head, pelvis)
- Samples will be placed into clean buckets which will then be labelled inside and out with the site code, context number, sample number and bucket number
- A register of all samples will be maintained and all samples will be recorded individually on KDK's Sample Records Sheet
- All samples will be removed from site and stored within a designated area at the KDK offices
- All unlabelled, duplicated or potentially contaminated samples will be discarded on site
- Modern and post-medieval samples, or those deemed unsuitable for sampling, will not be taken unless these features address specific research aims.

When dealing with waterlogged, insect and pollen, and deeply stratified sediments (e.g. peat) it may be necessary to seek advice from ES, HE and other environmental specialists (e.g. palynologists (pollen specialists) do discuss additional sampling methods.

Stage 3: Post-Excavation

Once excavation is complete, a final sampling strategy will be produced. This will highlight the samples most appropriate for processing and those which are to be deselected. This strategy will be discussed with and approved by HHET and the ES. Some of the samples may be selected for a preliminary assessment where a single bucket of material will be processed to analyse the potential value of the

sample. At this time if the sample is deemed unsuitable for further processing, no further action will be taken.

All bulk samples will either be subjected to dry sieving, or be processed using a flotation tank. The remaining material from this process will be fully dried, sorted and bagged before being sent to the relevant specialists for analysis (i.e. archaeobotonist, zooarchaeologist etc.) All other aspects of the processing, along with unsuitable samples, are discarded after the report has been approved by the planning archaeologist.

 If a second phase of work is required after the Archaeological Investigation, (i.e. Strip, Map and Sample Excavation) collected samples may be processed when this is complete.

Appendix 2: Archive Collection and Selection Strategy

This strategy, which concerns the data that is created and the archaeological material recovered during the course of the project, will be agreed between the KDK, HHET and the Depositing Museum. It is consistent with the projects aims and objectives and local research framework and covers:

Digital Data

Data Collection *(what will be collected and how?)*:   Data will be collected in line with the Project Brief and WSI standards and requirements. Data acquisition standards are in line with the ADS guide to Good Practice. Specific data will be: Excel Spreadsheets will be used on site to collect fieldwork data and registers   Word documents will be used to produce draft reports which will be finalised in pdf format   Digital images will be taken and saved as JPGs   Digital survey data will be presented in an appropriate CAD format and converted to TIFF or PDF as required.   A working project folder will be maintained of all project related data on the company server. Tablets will be used on site and downloaded to the folder on the company server on a daily basis.
Documentation and Metadata: A summary of all data sources and contributors will be provided as part of the final archive alongside a meta data summary. This will be prepared in line with ADS deposition guidelines.
Ethics and Legal Compliance *(how are any ethical, copyright and IPR issues being managed?)*:   KDK have a GDPR compliant privacy policy which underpins the management of personal data. Personal data is not stored in the project related folders but separately on the company server. Any personal data will be removed from the project archive and permission to use individuals' names in any reporting is gained prior to use.   Copyright of all data created by the team is owned by KDK and permission to include data from external sources is secured on the engagement of that source.   Where formal permission or licence agreements are required for data sharing these will be included in the project documentation.
Storage and Back up *(how will data be stored, accessed and backed up during the project?)*:   Organisational IT is managed by an internal IT and data manager who is responsible for the management and verification of daily back-ups and who supports access to security copies as needed. The onsite company server is automatically backed up 5 times a day to a secure off site server through an encryption process.   Sufficient data storage is available on the onsite company server, which includes single factor authentication and permissions-based access. The server is accessible by staff on and off site through a secure log-in.   Off site access to the project files on the server is provided to support back up of raw data while fieldwork is ongoing. Where internet access is not possible, the raw data is backed up to a separate hard drive until direct access to the server can be established.   Only KDK staff can access the server. External specialists and contractors are sent whatever documentation they need via email or WeTransfer, none of which contain sensitive information.

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Selection and Preservation *(what will be retained, shared and/or preserved, what's the long-term plan for data preservation, are ADS informed and have costs been considered?)*:

The collection and selection strategy, including the data management plan will be reviewed throughout the project and specifically at the end of fieldwork and/or before post excavation work starts and following full analysis. The updated plans will be included in all reporting stages.
Prior to deposition the plans will be updated and finalised in agreement with the planning archaeologist, museum, client and ADS if appropriate.
All versions of data will be retained until report approval. Final versions of digitally born data will be archived on ADS. Paper records will be archived at the museum in line with museum guidance. Duplicate documents will be deleted and the remaining data will be retained in the file structure on the company server.
The full costs of archiving in line with museum guidelines have been included in the project costs.

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Data Sharing and Accessibility (how will data be shared and made accessible and are there any restrictions):

The project has been added to the OASIS Index of Archaeological Investigations **(kdkarcha1-519210)** and will be updated as the project progresses. A final version of the approved report will be added to OASIS along with details of the project archive location.
The final version of the report will be supplied to the Historic Environment Record when approved by the planning archaeologists. Any further data which they request will be provided directly.
No restrictions to data or data sharing are envisaged at this stage.

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Responsibilities (who is responsible for data management):

The project manager is responsible for implementing the data management plan and ensuring it is reviewed at each stage of the project. The data capture, metadata production and data quality is the responsibility of the project team, quality assured by the project manager.
Storage and back up of data in the field is the responsibility of the field team and once data is on the organisational server it is the responsibility of the IT and data manager.
Data archiving is undertaken by the project team in conjunction with the archive officer and the archive officer is responsible for the transfer of the archive to the final repository.

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Paper data

All project related paper documentation, for example fieldwork sheets, drawings, black and white photographs, maps, as opposed to administration paperwork, will be archived as part of the document archive with the museum. Duplicate documentation will be recycled and any administrative paperwork will be scanned and retained digitally by KDK.

Small and Blank Projects

Where archaeological work results in no finds or features of archaeological significance a single all in one report will be prepared and, if agreed with the CAO and museum, will be uploaded as the digital archive to OASIS. Also, if agreed, there will be no paper archive deposited with the museum.

For small projects where the digital archive comprises of only digitally born photographs the data will be stored on OASIS using OASIS images.

Materials and Artefacts

The key finds groups and how these will be selected for retention or discard are outlined below:

Find Type	On site selection	Post Excavation selection
Pottery	All pottery sherds will be collected **other than** obviously post medieval sherds from unstratified contexts unless they appear archaeologically significant	The majority of pottery collected will be retained for archiving. Exceptions may be made for sherds recovered from unstratified contexts or repetitive and undiagnostic sherds. All pottery will be quantified and subject to specialist input. Deselection will be undertaken in discussion with the specialist, HHET and the museum
CBM	All CBM will be collected **other than** obviously post medieval CBM from unstratified contexts unless they appear archaeologically significant. However, where large quantities are found a further discussion between KDK, HHET and the museum may result in an amended approach ie sampling	All collected CBM will be retained, although unidentifiable fragments from poor or unstratified contexts may be discarded subsequent to full quantification, specialist advice and discussion with HHET and the museum
Worked Stone	All worked stone found will be collected	All worked stone will be retained for archiving, in discussion with the museum. All unworked stone will be discarded following quantification
Animal Bone (including worked bone, antler, horn and ivory)	All animal bone found will be collected	All animal bone will be retained. Disposal may be considered for very fragmented and poorly preserved objects or those which have been recovered from unstratified contexts and that have no further intrinsic interest
Ferrous and non-ferrous metals	All metal will be collected	All precious metals will be retained. Other ferrous or non-ferrous metals will be retained with the exception of unidentifiable fragments and those beyond conservation. Also common bulk finds such as nails may be subject to retention of a sample following discussion with the specialist and museum
Glass	All glass objects will be collected **other than** obviously post medieval glass from unstratified contexts unless they appear archaeologically significant	All items will be retained although post medieval and modern items may be sampled following discussion with HHET and the museum
Clay Pipes	All clay pipes will be collected	All items will be retained unless fragments are plain or from poor or unstratified contexts
Worked Wood and other plant derived objects	All worked wood or other plant derived objects will be collected	All items will be retained unless items are deemed unsuitable for long term preservation. All items will be checked by a specialist for selection and any discard agreed with HHET and the museum
Leather and Textiles	All leather and textiles will be collected	All items will be retained unless items are deemed unsuitable for long term preservation. All items will be checked by a

Find Type	On site selection	Post Excavation selection
		specialist for selection and any discard agreed with HHET and the museum
Other	All other items found will be collected	All medieval or older items will be retained. Post medieval items will be discussed with HHET and the museum to agree retention strategy
Environmental samples	40l samples will be taken from archaeologically significant features in line with the agreed sampling strategy, see Appendix 3 for details. This means that environmental samples will not be taken routinely from backfilled contexts unless there are archaeologically significant reasons to do so. Environmental sampling will focus on areas of naturally silted fills and where organic matter, charcoal and carbon are more likely to be found The Environmental Specialist will be engaged to discuss more detailed strategies in areas of specific interest if they arise Securely stratified deposits that contain dating evidence will be targeted, particularly corn driers, hearths, kilns, pits and cesspits, of all periods across the site Different parts or layers in kilns /ovens will be sampled to examine function 10 litre samples for insect analysis from waterlogged deposits if present, and additional samples for plant macrofossils may also be taken. Pollen samples will be taken from a representative selection of contexts of different potential time spans 20% of the pre-medieval quarry pits, if present, will be sampled to determine the presence of mineralised material	Tangible artefacts found through the environmental processing will be retained for archiving, this includes the flots from archaeobotanical analysis All other retention from the processing will be discarded

Appendix 3: Initial Health and Safety Risk Assessment

In accordance with current legislation and KDK's Health and Safety Policy, an Initial Health and Safety Risk Assessment has been prepared.

The Accident and Emergency Unit closest to the site is:	**Luton and Dunstable Hospital** Lewsey Road Luton Bedfordshire, LU4 0DZ

A risk assessment for tasks and hazards typical to this type of project appears on the following pages. An assessment of site-specific hazards appears below.

Site-Specific Hazards:	Risks:	Mitigation:
Excavating close to public	Injury/death	• Fence site off securely • Ensure safe access & egress for all vehicles
Close proximity to machinery	Danger of individuals being hit	• Clearly signal instructions / intentions to plant operators. • Maintain safe distance from plant. • Use appropriate PPE
Live services	Injury/death	• Check trench locations carefully with CAT & genny
Deep features	Collapse of sides; falling into features	• Maintain awareness of surroundings • Wear appropriate PPE • Shore sides if needed
Human remains	Health risks	• Wash hands before eating • Wear gloves during excavation • Wear a face mask if it is dusty • Do not handle material with soft tissue until authorised by the EHO
NB: Asbestos, contaminants etc	Serious health risks	The developer is to ensure that the site is free of hazardous materials. Where such material is discovered during fieldwork, the developer will remove it or make it safe before KDK continues with onsite work. KDK to be informed of the use of pesticides, insecticides, herbicides or similar substances on the site prior to the start of any fieldwork.
Project:	Land to the Rear of 64 High Street, Markyate, Hertfordshire	
Project Code:	795MHS	

Date of Assessment:	22.09.2023
Assessed By:	Derek Watson PhD
Site staff to sign:	

Archaeological Fieldwork: General Hazards								
Task	Hazard	Adverse Effect	People at Risk	Likelihood × Consequence = Risk Score			Actions to minimise risk	Residual Risk
Travel to and from workplace	Traffic accident	Major	Field staff, visitors, public	2	4	8	• Ensure suitable insurance is in place. • Maintain vehicles in good condition. • Staff to observe traffic regulations.	4
Access/egress workplace	Moving vehicles and plant	Catastrophic	Field staff, visitors	2	5	10	• Observe site speed limits. • Park in designated area. • Transport by vehicle to excavation area if required.	5
Access/egress workplace	Reversing vehicles and plant	Catastrophic	Field staff, visitors	2	5	10	• Observe site speed limits. • Park in designated area. • No reversing without assistance/supervision.	5
General site work	Trips/slips	Minor	Field staff, visitors	3	2	6	• Ensure good housekeeping. • Cease work if site conditions are extremely poor. • Use appropriate footwear. • Be mindful of environment	4
General site work	Manual handling	Moderate	Field staff	3	4	12	• Instruct staff in correct lifting techniques. • Use suitable equipment to transport heavy loads. • Train staff to use equipment.	4
General site work	Adverse weather	Minor	Field staff, visitors	2	2	4	• Wear appropriate clothing. • Provide welfare facilities • Cease work in very adverse weather.	2
General site work	Presence of contaminants, pathogens and other hazardous substances	Major	Field staff	2	4	8	• Review results of available geotechnical assessments. • Conduct COSSH assessment if hazard identified. • Inform staff of identified hazards. • Restrict working areas if necessary. • Provide welfare/hygiene	4

Archaeological Fieldwork: General Hazards							
Task	Hazard	Adverse Effect	People at Risk	Likelihood × Consequence = Risk Score			Residual Risk
						facilities. • Monitor staff health. • Use appropriate PPE.	
General site work	Environmental pollution	Moderate	Field staff, visitors, public	2	4	**8**	• Dampen down dry surfaces. • Restrict hours of plant operation as necessary • Seek to minimise landfill.	2
General site work	Fire	Catastrophic	Field staff, visitors, public	2	5	**10**	• Compile fire risk assessment if required. • Maintain good housekeeping • Provide suitable firefighting equipment	5
Soil stripping	Excavating plant	Catastrophic	Field staff, visitors	3	5	**15**	• Induct plant operators • Identify designated routes for plant movement. • Clearly signal instructions / intentions to plant operators. • Maintain safe distance from plant. • Use appropriate PPE.	
Soil stripping	Live services	Catastrophic	Field staff	3	5	**15**	• Obtain service maps • Use CAT scanner to locate services.	5
Soil stripping	Power lines	Catastrophic	Field staff	3	5	**15**	• Observe HSE guidelines for plant operation in vicinity of power lines. • Establish goal posts to constrain plant movement.	5
Soil stripping	Undermining structures	Catastrophic	Field staff, visitors, public	3	5	**15**	• Leave a suitable gap between excavation and adjacent structures (e.g. at least 5m). • Locate trenches outside tree canopy.	5
Soil storage	Subsidence	Catastrophic	Field staff, visitors, public	3	5	**15**	• Induct plant operators • Identify designated routes for plant movement. • Identify suitable storage areas away from the edges of excavation. • Compact spoil and grade slopes of soil stores.	5
Hand excavation	Human remains	Major	Field staff	2	4	**8**	• Instruct staff in appropriate protocols and hygiene • Provision of	5

Archaeological Fieldwork: General Hazards							
Task	Hazard	Adverse Effect	People at Risk	Likelihood × Consequence = Risk Score			Actions to minimise risk	Residual Risk

Task	Hazard	Adverse Effect	People at Risk	L	C	RS	Actions to minimise risk	Residual Risk
							welfare/hygiene facilities. • Use appropriate PPE.	
Hand excavation	Deep features	Catastrophic	Field staff	4	5	20	• Fence or suitably demarcate areas of deep excavation. • Step or batter edges of excavated area • Assess stability of strata • Shore all vertical faces deeper than 1.2m • Use secured ladder for access/egress. • Monitor regularly for signs of subsidence. • Cease work if heavy rain causes strata to become unstable. • Consider use of auger to record the depth and sample the base of feature. • Machine excavate if permitted. • Use appropriate PPE.	4
Hand excavation	Hand tools	Minor	Field staff	3	2	6	• Train field staff in correct use of tools. • Instruct and closely supervise staff until competent. • Monitor staff compliance. • Use appropriate PPE.	5
Hand excavation	Power tools	Major	Field staff	3	4	12	• Employ suitably qualified contractors if appropriate. • Use correct tools for job. • Train field staff in correct use of tools. • Instruct and supervise staff until competent. • Monitor staff compliance. • Use appropriate PPE.	4
Hand Excavation	Tool/equipment failure	Major	Field staff	3	4	12	• Maintain equipment. • Replace worn or broken equipment.	4
Recording Excavation	Working at height (photography)	Catastrophic	Field staff	3	5	15	• Subcontract a remotely operated elevated camera or cherry picker.	4