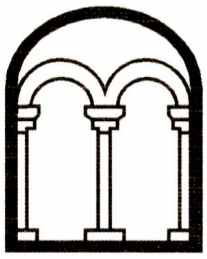
HUNTINGDON ROAD/NIAB
CAMBRIDGE

PROJECT DESIGN FOR
ARCHAEOLOGICAL INVESTIGATION

Albion
archaeology



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PROJECT DESIGN FOR ARCHAEOLOGICAL INVESTIGATION

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Contents

Main document figures

Figure 1: Site location and investigation areas
(The figure is bound at the rear of this document.)

Appendix 3 figures

Figure 1: CAT showing context artefact information
Figure 2: CAT showing registered artefact information
Figure 3: CAT with environmental information
Figure 4: Distribution of pottery with spotdates overlaid on pre-excavation plan
Figure 5: Distribution of ecofact samples overlaid on pre-excavation plan as the excavation/recording team moves from SW to NE

Purpose of this document

This document presents the detailed methodologies to be employed for archaeological investigations to be undertaken in advance of residential development at Huntingdon Road/NIAB, Cambridge. It forms part of the WSI prepared in response to the HET Brief.

Version History

Version	*Issue date*	*Reason for re-issue*
1.3	*20/11/2013*	*Amended number of Cambridge City Council planning condition*
1.2	*30/10/12*	*Referencing of the South Cambridgeshire District Council planning condition*
1.1	*08/06/12*	*Comments from Cambridgeshire Historic Environment Team*
1.0	*09/05/12*	*n/a*

Key terms

Albion	Albion Archaeology
HET	Cambridgeshire Historic Environment Team
Consultant	CgMs Consulting Ltd
HER	Historic Environment Record
IfA	Institute for Archaeologists
LPA	Local Planning Authority
MAP II	Management of Archaeological Projects. (EH 1991a)
MoRPHE	Management of Research Projects in the Historic Environment. (EH 2006)

1. INTRODUCTION

1.1 Project background

Planning permission has been granted by Cambridge City Council for a mixed use development comprising up to 1593 dwellings, primary school, community facilities, retail units and associated infrastructure (Planning application ref 07/003/OUT). Conditions 67 of the planning permission and 14 of the South Cambridgeshire District Council decision notice state that:

> No development shall take place until the applicant, their agent, or successors in title, has secured the implementation of a progamme of archaeological works in accordance with a written scheme of investigation which has been submitted by the applicant and approved by the Local Planning Authority. Development within areas identified for archaeological investigation in the approved written scheme shall not commence until the archaeological fieldwork in those areas has been completed and the Local Planning Authority has confirmed in writing that the archaeological fieldwork has been completed satisfactorily. The archive report and publication shall be submitted to the Local Planning Authority within 6 months following completion of the archaeological investigations REASON: To ensure the implementation of an appropriate archaeological investigation, recording, reporting and publication. (Cambridge Local Plan 2006 policy 4/9) (South Cambridgeshire District Council Policy NE/13 of the adopted Local Development Framework 2007)

This Written Scheme of Investigation has been produced by Mike Luke of Albion Archaeology in conjunction with Paul Gajos BA MIfA of CgMs Consulting on behalf of the developers of the site, Barratt Homes. The Written Scheme is prepared and submitted in compliance with the planning condition and in response to a Design Brief issued by Cambridgeshire County Council's Historic Environment Team.

The programme of works will include the full archaeological excavation of *c*. 16ha of the site in the areas shown in Figure 1. These areas cover the two late Iron Age/Romano-British farmsteads, associated field systems, and the area of Bronze Age activity identified in the trial trench evaluation along with a 2ha area that was not fully evaluated as part of earlier studies.

1.2 Site location, topography and geology

The site is situated on the north-west edge of Cambridge, extending in an arc between Huntingdon Road (modern A1307) and Histon Road (B1049). It is centred on NGR TL 437 607, and covers an area of approximately 55ha; the site currently comprises agricultural land, sports pitches and the premises of NIAB with its supporting buildings.

The site lies at an average height of approximately 17m OD, sloping down gently from a height of just over 20m OD at its southern boundary to a height of

approximately 12.5m OD in the north-east. The soils are calcareous loams of the Milton series, overlying river terrace gravels and Gault Clay.

2. ARCHAEOLOGICAL BACKGROUND

The archaeological potential of the site has been evaluated through desk-based study and a programme of archaeological evaluation undertaken to support decision-making on the planning application:

- Archaeological desk-based assessment (JSAC)
- Aerial Photographic Survey (Air Photo Services)
- Geophysical Survey (GSB)
- Trial trenching (Northamptonshire Archaeology)

The individual reports should be consulted for full details of findings and interpretation.

The archaeological background to the site is further summarised in the CCC Brief.

The desk-based research confirmed that no Scheduled Ancient Monuments were present but indicated that the site has a medium to high potential for the presence of below-ground archaeological remains, particularly of the prehistoric and Roman periods. Although the aerial photographic assessment, fieldwalking and geophysical survey did not provide coherent evidence to substantiate this level of potential, the subsequent trial trenching programme did identify the presence of two areas of late Iron Age and Roman period remains and associated field systems within the central / eastern part of the development site. No evidence was recovered for the presence of significant areas of archaeological remains in the western part of the site, with the exception of a discrete area of Bronze Age activity. All the identified archaeological remains survive solely as below-ground features, truncated by later ploughing, and have been assessed as being of local or district importance.

The most significant element of the site's archaeological background is its location on the north side of Huntingdon Road. The latter is believed to follow the line of the Roman road running north-west from the Roman town, which was sited in the Castle Hill area of the city, through Girton to Godmanchester. This route has acted as a focus for Roman and later activity, as evidenced by the major Roman and Anglo-Saxon cemetery found at Girton College in the late 19th century.

The site is located in the immediate hinterland of Roman Cambridge, which lies *c*. 1.3km to the south-east. Whereas formerly it was thought that Roman settlement was focussed on the Castle Hill area, Taylor (1999, 8) recognised that there were "… more signs of status, comfort, industry and general Romanisation … around the town than within it …" Increasing fieldwork in the last two decades has confirmed that there is a significant spread of Roman sites in the town's immediate hinterland (Evans 2008, viii). There may be late Iron Age / Roman farmstead sites every few hundred metres in the north-western outskirts of the modern city. This has recently been amply demonstrated by evaluation work on the University Farm site on the south side of Huntingdon Road (Evans and Newman 2010). Within the 140ha evaluation area, at least five Roman-British settlements were identified, including one which may be a late Roman villa. By contrast, evidence for prehistoric settlement was much more sparse.

3. AIMS AND OBJECTIVES

3.1 Introduction

The aim of the programme of archaeological works will be to record and advance understanding of the significance of the archaeological remains within the site before this is lost in the site's development.

The programme of works will include the full archaeological excavation of *c*. 16ha of the site in the areas shown in Figure 1. These areas cover the two late Iron Age/Romano-British farmsteads, associated field systems, and the area of Bronze Age activity identified in the trial trench evaluation along with a 2ha area that was not fully evaluated as part of earlier studies.

3.2 Relevant national, regional and county research frameworks

3.2.1 National frameworks

At a national level, English Heritage's criteria for prioritising archaeological "sites" are constantly evolving. It's funding criteria for rescue projects, as set out in *Exploring our Past* in 1991 (English Heritage 1991b), were similar to those it uses to define a "site" as being of schedulable quality. These included period, rarity, group value, survival/condition, fragility/vulnerability and potential. A Research Agenda (English Heritage 1997) builds upon the earlier criteria, with the aim of developing an approach reflecting 'the greater determination to pursue research themes' and 'wider interests (e.g. in landscapes)'. These include goals such as advancing understanding of England's archaeology, supporting the development of national, regional and local research frameworks and promoting public appreciation and enjoyment of archaeology. Although the Research Agenda was intended for projects seeking English Heritage resources, i.e. not those undertaken within the framework of development, its goals and objectives are relevant to these investigations.

3.2.2 County and regional frameworks

The programme of archaeological investigation will be conducted within the general research parameters and themes identified in the recently published revision of the archaeological research framework for the East of England (ed. Medlycott 2011).

3.2.3 Iron Age and Romano-British period frameworks

It is likely that the majority of the known archaeological remains within the development area are related to two late Iron Age / Romano-British farmsteads. The more northerly example is likely to lie entirely within the investigation area. The other was partially investigated during excavations at Brownlow Road (HER 09533A), immediately to the east of the site.

For the Iron Age, Champion et al. (2001) sets out five themes: chronology, settlement patterns, material culture, regionality and socio-economic change. National priorities for the Roman period were formalised over 20 years ago by English Heritage (1991b) in *Exploring our Past*, Hingley (1989) and Millet (1990). More recently an "agenda"

for the Roman period was published by James and Millet (2001). Late prehistoric and Roman rural settlement has also been mapped and characterised by Taylor (2007) in a study that considers rural land use in its broadest sense, taking into account regional diversity.

3.3 Specific objectives

3.3.1 Period-specific objectives

The majority of the evidence within the development area is believed to relate to the late Iron Age / Romano-British period. Specific objectives for this period have been divided into a number of major themes such as chronology, characterisation, form and development of the settlement *etc*.

A less significant research objective relates to the Bronze Age, given the identification of two small pits / postholes in Trench 39, which produced coarse, flint-tempered pottery. Such material is typical of the Bronze Age in this area, although it was too fragmentary to be dated with certainty. Research objectives for this period will be developed and refined once the area around Trench 39 has been stripped and the true significance of the archaeological remains is clear.

3.3.1.1 Objective 1: Origins and development of the farmsteads

The establishment of a chronological framework for the farmsteads (especially their origins and sequence of development) will be a priority for the investigation. This will be achieved through identifying stratigraphic relationships between features, secure closely dated finds assemblages and through scientific dating. The earliest and latest features associated with each farmstead will be of particular interest in terms of their "origins" and "end date". The contemporaneity of the two farmsteads will also be explored.

Once the chronological framework is established, it will provide the basis for all other objectives. Of particular interest will be the question of continuity of settlement from the late Iron Age into the Romano-British period

3.3.1.2 Objective 2: Form and development of the farmsteads

The geophysical survey and trial trenching give an indication of the plan of the farmsteads. However, the establishment of detailed ground plans and sequences of land use development, along with the dating information for the farmsteads, will enable spatial and chronological variation to be identified. This might comprise changes over time, for example in building style, burial practices, agricultural practices *etc*. These are potentially relevant to a number of research issues such as 'Romanisation', agricultural intensification *etc*. It will also be important to determine whether the farmsteads were in continuous use until the late Roman period. The evaluation suggested that there might have been a hiatus in occupation of the northern farmstead following the Roman takeover in the 1st century AD. Any functional differences between the farmsteads will also be explored.

Specific questions include:

A. Is there evidence for either episodic or more wholesale re-organisation of the farmsteads and their field systems?
B. What range of building types are present (roundhouse, rectangular post-built structures *etc*)?
C. If identified, do concentrations of domestic debris represent different domestic foci within the farmsteads? Can different zones of specific activity within the farmsteads and their peripheries be identified? Can other specific activity areas be defined (e.g. yards, crop-processing or craft areas)?
D. How was movement to and through the farmsteads organised and controlled?
E. Can the pattern of artefact/ecofact disposal across the farmsteads be reconstructed? Does this help in our understanding of spatial organisation, for example specific areas of middening activity?
F. Is there evidence for short-term activity in peripheral areas, such as crop processing / storage, industry or burial?
G. Do key assemblages, e.g. from features with critical stratigraphic positions, buildings etc., contain suitable dating evidence? If not, do these features contain suitable material for radiocarbon or archaeomagnetic dating?
H. How do the farmsteads fit into known late Iron Age and Roman settlement patterns in the area? Key elements of this include Arbury Camp to the north, the Roman road that follows present-day Huntingdon Road to the south, and the hinterland of the Roman town of Cambridge.

3.3.1.3 Objective 3: Economic basis of the farmsteads

Again, the opportunities to compare and contrast the economies of the two farmsteads will be a key research theme:

A. Do ecofacts survive to reconstruct the economies of the farmsteads? If so, what was the mix between arable and livestock? Did this change over time? Are other economic activities represented? Is it possible to identify activities representative of subsistence or market-driven production? Is there evidence for the expansion and intensification of agricultural practices perhaps associated with "Romanisation"?
B. What cereal crops were grown and what other wild plants are present? Do the assemblages represent domestic food waste or crop-processing waste? Can the charcoal evidence from different hearths or ovens indicate the type of fuel used and whether it varied between structures or over time?
C. Can animal bone species provide an indicator of the pastoral economy and possibly the utilisation of wild animals? Did butchery practices change over time and do they display any evidence of "Romanisation"?
D. The material culture from the trial trenching was typical of rural farmstead sites; will this be corroborated by the evidence from the open area excavation or will more specialist or higher status finds be recovered?

3.3.1.4 Objective 4: People

A. What can their material culture tell us about the occupants of the farmsteads?
B. Do artefacts indicate economic or social contacts with groups at a local, regional, national or international level? In particular, how long-lasting were native Iron

Age (British) traditions into the Roman period and can Romanising influence be identified?

C. Is their evidence for the structured deposition of artefacts or ecofacts?
D. What evidence is there for the ritual or religious beliefs of the occupants?
E. Although no human remains were found during the evaluation, is there any evidence for burial and, if so, did burial practice change over time?

3.3.1.5 Objective 5: Environment

A. Do deposits and/or ecofacts survive to indicate what the local environment was like?
B. What impact did the farmsteads have on the local environment?
C. Waterlogged deposits were identified within the evaluation. If further waterlogged features are identified, do they contain information on the local environment and possibly the economy of the settlement?

4. METHODOLOGIES FOR IMPLEMENTATION OF THE FIELDWORK

4.1 Introduction

This section of the Project Design describes how the aims and objectives outlined above in the Written Scheme of Investigation will be addressed. The key archaeological approaches to the project are described, along with other factors that will impact on the implementation of the strategy.

4.2 Provisional project programme

The anticipated timetable for the project is set out below.

Task		**Time required**
1	Machining	12-14 weeks
2	Hand-excavation and recording	15-17 weeks
3	Record checking and consolidation	4 weeks
4	Assessment report	6 months
5	Analysis and publication	TBC following assessment

4.3 Overview of the fieldwork methodology

This section briefly describes the methodologies that will be used during fieldwork. For more detailed information see Appendix 1.

4.3.1 Overburden machining methods and programme

Machining under archaeological supervision will proceed to the top of the archaeological deposits or the natural subsoil/geology, whichever is encountered first. All machining will be undertaken by a 360° tracked excavator working under archaeological supervision.

The identification of archaeological features will be made during machine stripping. These will be marked on the ground to prevent features 'disappearing' (this is a common phenomenon on archaeological sites) and will ensure their location is known. Where possible, some hand excavation will be undertaken during earthmoving to characterise any archaeological features.

During earthmoving, metal detecting will be undertaken over archaeological features to counter the danger of illicit metal detectorists.

4.3.2 Pre-excavation planning strategy

After machining is complete, pre-excavation planning will be undertaken. The plans will be captured digitally and used as the framework for formulation of a detailed hand excavation strategy. As part of this process survey stations and/or a grid will be established on the site.

The hand excavation strategy will be based on the methodology outlined in Appendix 1. However, it will be reviewed with CgMs and the HET at monitoring meetings.

4.3.3 Hand excavation sampling strategy

Deployment of methodologies will be appropriate to the nature of the archaeological remains. The hand excavation methodology outlined in Appendix 1 will be adhered to unless agreed otherwise with CgMs and the HET. Any changes to the sampling strategy thought necessary in light of continual reviews (including feedback of artefactual and ecofactual information) will be made in conjunction with CgMs and the HET (see below).

4.3.4 Unexpected or unusual discoveries

CgMs will be informed immediately of any discoveries that are of an unexpected or unusual nature. CgMs will inform the HET of any such discoveries. Once an instruction to proceed from CgMs has been received sufficient resources will be made available to deal with such discoveries as soon as possible.

4.4 Overview of finds processing

4.4.1 Ceramic artefacts (pottery and ceramic building material)

Where practicable, processing will be carried out concurrently with fieldwork in accordance with Albion Archaeology's Procedures Manual, the IfA standards for finds work (IfA 2008), and the relevant guidelines and standards for the archiving of prehistoric, Roman (Darling 1994) and post-Roman (Slowikowski *et al*. 2001) pottery. During fieldwork, material will be quantified by fabric, sherd and weight; relative assemblage size and spotdate will also be recorded. This information will be fed back into the excavation strategy by means of the Context Assemblage Table (see Appendix 3).

As appropriate, fabrics will be identified and referenced to the National Roman Fabric Reference Collection (Tomber and Dore 1998).

4.4.2 Non-ceramic artefacts

All registered and non-ceramic bulk artefacts will be allocated a broad term and functional category. Each registered artefact receives a separate entry. Bulk artefacts, entered by context and artefact type/broad term, are quantified by weight or number as appropriate. This is entered into the Non-ceramics Table, which is linked to the Context Assemblage Table. This information will be fed back into the excavation strategy by means of the Context Assemblage Table.

All ironwork will be submitted for x-ray, according to the IFA standards for finds work. Non-ferrous metals will be submitted for x-ray where clarification of the identity of an object is required.

4.5 Overview of environmental studies

A site-specific sampling strategy, based on guidelines in *Environmental Archaeology* (English Heritage 2010) and Albion's *Procedures Manual* (Albion 2002), will be

prepared in conjunction with the appropriate specialists once the pre-excavation plan is complete and the nature of the archaeological features/deposits known. The results of the evaluation suggest that the site has relatively modest palaeoenvironmental potential:

- "Charred barley (*Hordeum* sp.) and wheat (*Triticum* sp.) grains were recorded at an extremely low density within four assemblages … preservation was generally poor;
- Seeds of wetland and aquatic plants were recorded within four assemblages.
- Charcoal/charred wood fragments were present throughout, although rarely at a high density. Other plant macrofossils were generally very scarce …
- Although only a relatively modest amount of bone was recovered, this material has highlighted the potential if the site goes to open area excavation: the recovery of further bone samples would potentially significantly add to our growing knowledge of the extent to which the Roman conquest affected the regional dietary and livestock husbandry practices …"

Nonetheless, it may be anticipated that there will be deposits within the excavation area which will shed light on the agricultural economy of the farmsteads and, potentially, the wider palaeoenvironment.

The strategy and processing methodologies will be compatible with the guidelines issued by English Heritage (2010). Specialist advice will be sought during fieldwork where appropriate, specifically with regard matters like pollen, soils, waterlogged deposits etc.

A pilot sample of ecofact samples will be processed concurrently with fieldwork. The resultant material will be scanned in order to feedback into the excavation process.

4.6 Constraints on archaeological investigation

4.6.1 Weather

Major earthmoving may not be possible during periods of sustained heavy rain because of the increased likelihood of damage caused by plant movement to the underlying archaeological remains. However, some earthmoving may be possible by a hymac which stores the removed spoil adjacent to the working area. Archaeological investigation can be undertaken in periods of light rain, but for a variety of reasons it is unwise to persist in periods of sustained moderate rain.

4.6.2 Programme of works

The programme of works at this stage is only partially known. The archaeological works will be carried out in such a way that there will be no impact upon the development programme. However, any phasing of archaeological areas will be undertaken in such a way as to ensure no loss of cohesion on individual archaeological assets. If necessary, CgMs will seek the agreement of the HET to the possibility of starting construction in areas where archaeological works have been

completed. This will be discussed in advance of the implementation of the programme.

4.7 Feedback into and adjustment of excavation strategies

Albion has an established system to ensure that, during fieldwork, there is rapid feedback of information on recovered artefact and environmental material (see Appendix 3). This utilises Computer Aided Drawing (CAD), databases and a GIS (Gsys). It involves:

- digital pre-excavation plan;
- the processing, where practical, of artefact and environmental data concurrently with fieldwork;
- the entering of the results of processing into the database's Context Assemblage Table;
- the entering of basic context information into the database's Context Assemblage Table;
- the interrogation via the GIS of all input data using the pre-excavation plan as a backdrop.

The Context Assemblage Table is an integral part of Albion's standardised database for archaeological fieldwork and analysis. It will be used across the project. All this information is used as a basis for ensuring that that project objectives are met and as a means of reviewing the excavation strategy. The Context Assemblage Table not only enables an integrated study of all material residues to run in parallel with the fieldwork, it also forms the basis for the post-fieldwork assessment of the excavated data-sets.

In summary, the database records basic information about the excavated deposits (context type, feature type, formation process, location *etc*.), along with a basic identification/quantification of the artefactual and environmental material that they contain. Spotdates are assigned to both the pottery assemblage (in its own right) from a deposit, and to the context itself (taking into account other dated artefactual evidence).

4.8 Monitoring and area "sign offs"

The overall project programme is currently uncertain. When it is more finalised:

- CgMs will inform the HET in advance of the likely timetable and programme of works.
- CgMs will inform the HET in advance of monitoring arrangements.
- CgMs will inform the HET of the commencement and completion of each stage of fieldwork, including earthmoving.
- Any variation to the Project Design will be agreed with CgMs and HET in advance.
- No areas can be handed to the developer until CgMs and HET have conducted their final monitoring and confirmed that all investigation has been carried out satisfactorily. Written confirmation of this will be forwarded to Albion.

4.9 Landowner issues

In line with English Heritage guidelines, CgMs (acting on behalf of the landowners) have agreed 'in principle' to donate the recovered artefacts to the local Museum (subject to statutory laws concerning human remains and treasure trove). This will ensure the recovered artefacts are ultimately stored in an appropriate, publicly accessible location.

4.10 Preliminary dissemination of results

4.10.1 Academic

It is anticipated that the academic publication will ultimately take the form of an article within the county journal, *PCAS* or a monograph. However, interim summaries of the work will appear, as appropriate, in period-based journals (e.g. *Britannia*, the journal of the Roman Society etc).

4.10.2 Public

Albion Archaeology has a track record in the provision of dissemination of results to the public. Expert staff are available for public lectures and to provide input into web sites, display boards, popular booklets, exhibitions etc. Visits to local schools are often undertaken by Albion Archaeology. Along with informing children (and through them their parents) of archaeological discoveries, these visits could also be used to reinforce messages about the dangers of construction sites and the benefits to the community of the development.

For this investigation the site presentation strategy proposed by the client will comprise:

- Press releases at key points in the project.
- Provision of web-based information, based on the press releases.
- Taking the results of the investigation into one or more of the local primary schools: Mayfield, Arbury and St Luke's. This will be designed to mesh with the schools' teaching of the Romans as part of Key Stage 2. It will also offer the children an opportunity to handle and work with archaeological artefacts.
- A parish-based public lecture to present the results of the fieldwork to local people.

4.10.3 Press

Any enquiries from the local and national press will be forwarded to CgMs.

4.11 Record checking and archive consolidation

Fieldwork is only the "data gathering" stage of an archaeological investigation. All the subsequent stages are office-based.

Following the completion of fieldwork, the processing and checking of the record produced, the establishment of the stratigraphic sequence and the processing, recording, description and preliminary identification of all artefacts and ecofacts will be completed. The site archives will be consolidated and their internal consistency established.

The next stage after fieldwork comprises the production of an Assessment and Updated Project Design (UPD).

4.12 Assessment and Updated Project Design

The Assessment report will be prepared in line with Appendix 4 and the Updated Project Design will be prepared in line with the principles in Appendix 5 of MAP2 (English Heritage 1991a) and MoRPHE (English Heritage 2006).

The early creation of the Context Assemblage Table (Appendix 3) allows a smooth transition into the assessment process, which in effect is already underway in the field. A provisional chronological framework and development sequence will be established. This may require the application of scientific dating. It will provide a summary of the results of the excavation, an assessment of each category of data and a "statement of potential" for each of these judged against defined regional and national research agendas.

It will set out detailed methodologies for any recommended further analysis and reporting. It will also outline the mechanism through which the best means of dissemination to the wider public and archaeological community can be achieved. Although the various specialists will propose specific methods unique to their data, these will be unified within Albion's Project Management System (PMS) as identifiable task codes. If appropriate, a strategy for additional scientific dating (specifically radiocarbon dating) will be developed in conjunction with specialists, CgMs and the HET. The UPD will identify a number of key stages, with realistic timescales that could be used by CgMs as monitoring/invoice points.

The report is likely to comprise the following sections:

- **Non-technical summary**
- **Introduction**- planning and project background, site location, results of adjacent archaeological investigations, results of the non-intrusive surveys etc;
- **Original aims and objectives of the investigation**;
- **Brief description of the methodology**;
- **Provisional summary of results**- probably an integrated text (combining structural, artefactual and ecofactual) divided by chronological period;
- **Data summary**- divided by data type (structural, artefactual and ecofactual);
- **Potential of the data to address the original and new research objectives**- realistic discussion linked to the information presented in preceding sections;
- **Updated Project Design**- revised research objectives appropriate to the recovered data, timetable, description of analysis, publication and archiving methodologies;
- **Detailed method statements in the form of appendices**.
- **Figures**- a series of phase and detailed plans as appropriate.

The roles of the Client and CgMs will be clearly acknowledged.

4.13 Analysis, publication and archiving

4.13.1 Introduction

Only when the Assessment and Updated Project Design has been approved by CgMs and HET, will the analysis stage of the project commence. To ensure there is no loss of momentum/programming of the project, it is hoped that this can be secured as soon as possible after the submission of the UPD.

It is only when the Assessment/UPD has been completed that detailed methodologies can be produced for the Analysis, Publication and Archiving stage of this project. Therefore, the following is only a general summary of the likely process.

4.13.2 Detailed quantification, analysis and publication

4.13.2.1 Computer-based system of analysis

Albion operates a fully integrated computer-based system of analysis. All structural, artefactual and ecofactual information is entered onto an Access database even if it has been produced by external specialists. Feature/deposit plans are digitised using AutoCAD and all section drawings will be scanned using a HP Scanjet. The databases and digital drawings are interfaced via a GIS system (Gsys) allowing all chronological, spatial and material groupings (and any combination thereof) to be viewed and manipulated. In addition, all the site photographs are held in a digital format, allowing them to be viewed on screen with database and digital drawings.

The system enables rapid and flexible analysis of the project data sets. It also facilitates the output of a series of text reports, supported by plan and other graphic forms. These will form the basis for the final publication report.

4.13.2.2 Contextual hierarchy

The basis for analysis will be the establishment of a contextual hierarchy and the assignment of contexts to the relevant level.

The hierarchy is likely to comprise:

- G numbers- interpretative entities, e.g. buildings, ditch lengths, concentration of pits etc.;
- L numbers- a collection of broadly contemporary and spatially coherent G numbers, e.g. domestic foci, a settlement enclosure, field, ring ditch etc.;
- Farmstead (where applicable)- a collection of broadly contemporary and spatially coherent L numbers
- Phases- broad, chronological divisions, e.g., late Iron Age/early Romano-British, Later Romano-British etc.

Further details of the proposed contextual hierarchy will be presented in the Updated Project Design.

4.13.2.3 Artefact and ecofact analysis

All artefactual and ecofactual data-set suitable for analysis will be subject to detailed quantification, analysis and reporting by Albion staff and external specialists (typically based in British universities and museums).

4.13.2.4 Publication

The end product of the investigations will be an academic publication within the county journal, *PCAS*, or as a monograph. The precise format and content of the publication will be dependent on the results of the archaeological investigations.

4.13.3 Archiving

The archive of finds and records generated during the Project will be kept secure at all stages of the operation at St Mary's Church, Bedford. Appropriate security copies of the records will be made.

All records and materials produced will be archived by Albion's in-house Archive Officer to the standards outlined in Appendix 3 of MAP 2 (English Heritage 1991a) and in *Standards in the Museum Care of Archaeological Collections* (Museums and Galleries Commission 1992) and to Albion Archaeology's own internal archive standards

In addition, the archival material will meet the relevant standards for deposition at the County Archaeology Store. An accession number will be obtained prior to start of works.

5. PROJECT COMMUNICATION, DELIVERY AND QUALITY

5.1 Communication

5.1.1 The project team

To ensure that the project team is well informed and motivated, regular and on-going communication will be maintained. This will keep the team aware of all significant discoveries and keep them abreast of developments in strategy or deadlines. It will also provide an opportunity for any questions or concerns to be raised.

At the commencement of any piece of substantive fieldwork, a project briefing will take place to introduce all staff to the project, the provisional interpretation based on the pre-excavation plan and the hand excavation sampling strategy. A summary of this briefing will be circulated to all staff involved in the project. On-site briefings will take place regularly during fieldwork. It is likely that these will take place after each monitoring meeting.

5.1.2 Appropriate communication of results to all stakeholders

Albion is committed to the clear communication of results to all project stakeholders in an appropriate and clear manner. Straightforward lines of communication will be established with CgMs, and if required the Client. All liaison with the HET will be through CgMs. The main point of contact for the Albion Archaeology team will be Mike Luke

The following means of communicating with CgMs will be implemented:

- Regular but brief e-mailed progress updates
- On-site monitoring meetings with CgMs
- Summary report at the end of the investigation

Liaison with the following bodies may be required, but will only be undertaken with the agreement of CgMs:

- English Heritage's scientific advisors
- Environmental Health and Ministry of Justice (with regard burials)

5.1.3 The public

Albion has worked on a number of sensitive developments for high profile clients and is well versed in the need for confidentiality and appropriate communication through the correct channels. Albion will forward to CgMs all public enquiries about the results of the investigation. The sensitivity surrounding a large development of this kind means that public dissemination of results may not appropriate at this stage. However, if required, Albion does have a good track record in organising public outreach events.

5.1.4 Wider dissemination of results

- Publication of short summaries in regional and period-based journals.

- If required, the provision of an education service for local schools.
- If required, maintenance of public display area at St Mary's Church.

5.2 Delivery

5.2.1 Organisational goals

Albion has three principal organisational goals:

i. delivery of a first class service to clients;
ii. development of the highest professional standards;
iii. rapid dissemination of the results of archaeological projects.

To meet these goals the following elements of Total Quality Management are under continuing development.

5.2.2 Service delivery

- A networked Projects Database and client contact *pro formae* which underpin our service delivery.
- A networked time and cost recording system which underpins project budget management.
- Use of IT software for scheduling.
- Specific standards reviews at the completion of each project stage.

5.3 Quality

5.3.1 Professional standards

- Adherence to professional standards set out by the IFA.
- Commitment to utilisation and development of regional and national research frameworks.
- Commitment to staff development to maintain professional expertise.
- Comprehensive Fieldwork Procedures Manual (Albion 2002).
- Consistent approach to assessment, analysis and archiving by means of standardised database templates and procedures.
- Continual review of service standards provided by sub-contractors.
- Support for Albion staff involved in national archaeological organisations.

5.3.2 Customer care

Customer care underpins Albion's commitment to service delivery. A complete record of expenditure on the project will be maintained using Albion's Access-based Project Management System and Central Bedfordshire Council's integrated financial management and procurement software (SAP).

- Customer care skills and communication are integral to Central Bedfordshire Council's corporate values, to which Albion adheres. These are enshrined within the Personal Development Review process and staff training delivered through the Council's Bedrock programme.

5.3.3 Organisational standards

The principles of quality management figure strongly in Albion's Strategic and Business Plan, which states that the organisation should work to systems that monitor, document and measure organisational performance and ensure maintenance of appropriate quality control.

The Institute for Archaeologists' Registered Organisation Scheme requires organisations to undertake all work to the appropriate IfA standards. Registered Organisations are monitored annually and inspected every five years to ensure they meet stringent standards that include all aspects of their archaeological work, qualities as employers and overall professional standing. As a registered organisation Albion abides by IfA standards and guidelines and all other national standards and guidelines appropriate to the work being carried out.

All work undertaken by Albion is subject to written design briefs, project designs and/or specifications. Compliance with the specification and/or project design is monitored internally and, in most cases, externally by the project commissioner (e.g., English Heritage, client's archaeological advisor) or, for development-led work, the archaeological advisor to the local planning authority.

Albion has a full set of procedures manuals (inspected as part of the RAO scheme registration) and adheres to all nationally accepted guidelines and standards.

Albion aims to deliver a first class service to all its clients and stakeholders. This is achieved by a commitment to effective communication, timely and efficient service delivery, the maintenance of high professional standards and the ethos of continuous improvement. None of these aims can be achieved without an on-going programme of development and training. Albion is committed to ensuring that the training and development needs of both individual team members, and the organisation as a whole, are met through the provision of opportunities and resources.

All staff at Albion take part in development reviews at which an annual development and training plan is agreed. Continual Professional Development in line with the Institute for Archaeologists' Scheme is encouraged and many staff are involved and engaged with the wider profession through special interest groups or national committees. New staff are assessed against skills and knowledge criteria as part of the probationary process in order to establish any specific training needs and to assist with organisational skills auditing.

6. THE PROJECT TEAM

6.1 Introduction to Albion Archaeology

Albion Archaeology, formerly called Bedfordshire County Archaeology Service, was established in 1974. In keeping with a commitment to the maintenance of the highest standards of professional practice, Albion has been a Registered Organisation with the Institute of Field Archaeologists since August 1997. Albion is one of the region's leading archaeological organisations and for more than 25 years has undertaken major fieldwork and evaluation projects, largely in Bedfordshire and the surrounding counties. Each year Albion Archaeology undertakes in excess of 100 projects for a range of clients from the public and the private sectors (for more information see Appendix 4).

6.2 Project structure and responsibilities

Paul Gajos MIfA, of CgMs Consulting will be in overall charge of the archaeological project on behalf of the developer, Barratt Homes.

Albion has assigned Mike Luke (Project Manager) to these investigations. He will lead, monitor and manage the project. In conjunction with Drew Shotliff, Operations Manager, they will oversee the project to ensure its delivery to the agreed timetable, quality and finances.

On-site management and co-ordination will be provided by the assigned Project Officer, Christiane Meckseper. Hand excavation and recording will be undertaken by experienced Albion staff.

Albion has a number of office-based staff who will work on this project as required. These will be involved with artefact processing/identification, ecofact processing, CAD work, illustrations and computer issues. Their work will enable the rapid feedback of results and other information to the field team. Other specialists will be appointed as necessary.

6.3 Relevant experience

Albion Archaeology staff, including the Project Manager, can draw on decades of experience of working on archaeological sites in the eastern region. They have undertaken numerous excavations of prehistoric and Romano-British farmsteads in Bedfordshire, Buckinghamshire, Cambridgeshire, Hertfordshire and Leicestershire. These have provided Albion staff with an intimate knowledge of the archaeological remains and artefacts that can be expected within the proposed investigations.

All these projects involved time-critical deadlines and the need to work within a complex construction programme. A significant number of Albion's staff at all levels of the organisation have worked for the organisation for many years giving them a particular in-depth knowledge of and commitment to the archaeology of the area.

6.4 Members of the project team

Albion has a professional archaeological staff of around 35. Apart from those listed below other staff will be assigned as necessary. Some of the management and specialist staff shown may not work full time on the project.

6.4.1 Albion Archaeology (managers and support/specialist staff)

Staff who may be involved in this project are listed below. Those highlighted with an asterix will definitely be assigned to the project. Technical support will be provided by in-house specialist staff in the areas of artefacts, surveying, illustration, archiving and computing.

*Mike Luke BSc MIfA, Project Manager: *day-to-day operational management, client contact, logistics management*
*Christiane Meckseper BA MA MSc AIfA, Project Officer: *co-ordination of fieldwork*
*Holly Duncan M Litt MIfA, Artefacts Manager: *non-ceramic finds management, member of senior management team, flint and metal artefacts*
*Jackie Wells, MA, Finds Officer: *supervision of finds processing and reporting*
*Joan Lightning, BA, AIfA, CAD/GIS supervisor:
Hester Cooper-Reade BA, MIfA: *overall responsibility for Albion Archaeology, quality, service delivery*
*Drew Shotliff MA MIfA, Operations Manager: *overall management of all projects, resourcing, project delivery, client liaison, member of senior management team*
David Coombes, MSc, IT Advisor: *provides general IT and network support and software development*

Detailed CVs for all staff are included in Appendix 2.

6.4.2 Albion Archaeology (field team)

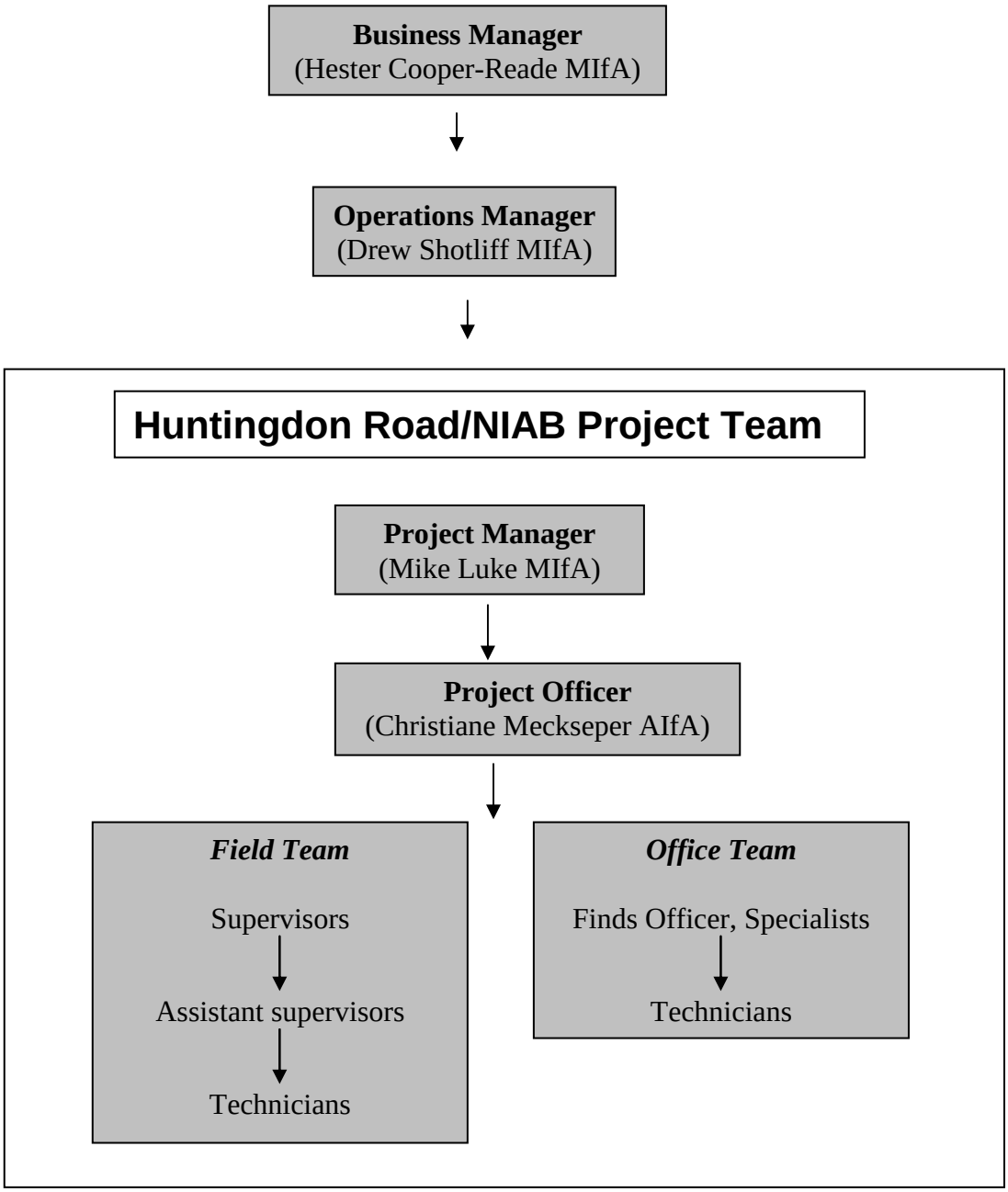
In addition to the Project Team's dedicated Project Officer, Christiane Meckseper, Albion Archaeology retains a field team of Project Officers, Supervisors and Assistant Supervisors and Technicians. These staff will be assigned to the project as its exact staffing requirements become clear. Staffing levels will be up to 15 archaeologists but will be varied depending on which areas of the site are open and the density of the archaeological remains. Albion Archaeology also co-operates closely with other regional units. In recent years it has seconded site staff to and from other organisations in Buckinghamshire, Northamptonshire, Cambridgeshire, London, Suffolk and Hertfordshire. This process allows us to respond quickly and effectively to short-term fluctuations in staffing requirements.

6.4.3 Specialist sub-contractors

All sub-contracted specialists used by Albion Archaeology are established and well respected in their respective fields of expertise. Each has a proven track record of providing quality services within set deadlines. *Pro forma* contracts are used to ensure work is correctly specified and delivered to time and budget. Albion continually reviews the quality of work received from sub-contractors and continually

seeks competitive quotes in order to avoid over-reliance on a single sub-contractor.

6.4.4 Project organogram



7. APPENDIX 1: ARCHAEOLOGICAL INVESTIGATION METHODOLOGY

7.1 Methodological standards

Throughout the project the standards, principles and procedures set out in the following documents will be adhered to:

* IfA's *Codes of Conduct* and *Standards and Guidance for Archaeological Excavation*
* *Health and Safety in Field Archaeology* (SCAUM)
* *MAP II (English Heritage)*
* *MoRPHE* (*English Heritage*)
* Treasure Act (1996)
* Albion's *Procedures Manual* (2002)
* *Standards for Field Archaeology in the East of England* (2003)

7.2 Machine stripping and observation

Machining under archaeological supervision will proceed to the top of the archaeological deposits, or the natural subsoil/natural whichever is encountered first.

Machine stripping will be supervised by an archaeologist(s) who will have experience of working in the vicinity of heavy plant. They will at all times adhere to site health and safety rules with regards to machine monitoring, including wearing a high visibility safety vest, hardhat and safety boots.

Where machine stripping is conducted by a 360° tracked excavator it will be fitted with a toothless ditching bucket. The machining of subsoil will be undertaken by an experienced driver under close archaeological supervision.

7.3 Preliminary surveying

- After machine stripping and initial characterisation the appropriately sized stripped areas will be surveyed and planned using GPS and/or a Total Station.
- The surveys will be tied into the OS Grid. As the plans will be produced digitally they can be printed out at whatever scale is deemed appropriate.
- Survey stations will be established at suitable locations to form the basis for planning control.
- Digitally compiled drawings from survey will form a base plan for use during hand excavation and recording.

7.4 Hand excavation

7.4.1 General recording principles

- All archaeological recording will be undertaken in line with Albion's *Procedures Manual*.
- Every archaeological entity encountered will be allotted an individual and unique number (context) based on recognising individual events of construction, use and disuse.
- Unstratified context numbers will be allotted, as appropriate, to cater for finds from machining or initial cleaning. Every effort will be made to ensure that where finds are collected, their provenance is established and ascribed to processually coherent and demonstrable stratigraphic events.
- A drawn record in plan and section/profile will be compiled for all archaeological features. Composite plans will be at a scale of 1:20/1:50 and single feature/context plans at a scale of 1:10/1:20. The latter will be undertaken for "special" features such as graves, hearths/ovens etc along with features that are dispersed across a large area.
- Where appropriate, records will be checked on site.
- The photographic record will comprise shots of excavation areas, groups of features (e.g. buildings, structures, pit clusters etc), features with complexity (e.g. intercutting, multiple filled etc), unusual feature types (e.g. kilns, burials etc), significant artefacts and ecofacts, and other major features. A

representative sample of features that fall outside this range will also be photographed. Monochrome 35mm film will be used, supplemented by digital photography and colour 35mm slide. All photographic records will be indexed and fully cross-referenced with the context records.

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

7.4.2 General hand excavation principles

- All archaeological features and deposits will be investigated and recorded.
- Hand excavation will be initially targeted to characterise features/deposits e.g. to provide information on the form, function and date of the feature.
- Stratigraphic relationships between features will be excavated, except where they are obvious at the surface.
- Additional hand excavation will take place to meet the criteria listed below under specific feature types.
- All features demonstrated as being the earliest or latest in a stratigraphic sequence will be considered for full (100%) hand excavation. Selection will largely be based on whether they may belong to a transitional period.
- Strategies for specific feature types are described below.

7.4.3 Ditches

- Excavation segments through boundary ditches will normally be 1.5m long.
- Initial segments will be located in positions to provide an even spatial coverage.
- Where possible, segments will be located away from intersections with other features to obtain unmixed material.
- Irrespective of this, segments will be located at all terminals and corners, along with significant changes in alignment
- With the exception of modern ditches, a minimum sample of 5% of the ditch lengths will be excavated. Segments will be located away from intersections with other features to increase the chances of obtaining an unmixed artefactual assemblage.
- A minimum sample of 25% of linears directly associated with the domestic core, industrial structures or areas of specific activity will be located away from intersections with other features or deposits to obtain unmixed samples of material.
- Further ditch lengths will be considered based on the following situations:
  - Adjacent to contemporary buildings and structures.
  - Where good quality and quantity of artefact/ecofact material is visible on the surface.
  - Where specialists consider, based on the results of an initial segment, that a larger assemblage of material has the potential to enhance their data.
- Following sample hand excavation and in consultation with the HET, entire ditch lengths may be machine excavated under archaeological supervision:
  - Where data may be present to provide firm dating evidence but its location is impossible to determine e.g. burials
  - Where special deposits are expected but whose location is impossible to determine

7.4.4 Pits

- With the exception of post-medieval and modern pits, all will be at half-sectioned (i.e. 50% excavated).
- Where possible, the half-section will be located away from intersections with other features to increase the changes of obtaining an unmixed artefactual assemblage.
- Additional excavation may take place:
  - If pits are adjacent to contemporary buildings and structures.
  - Where good quality and quantity of artefact/ecofact material were recovered from the initial excavation and when specialists consider that a larger assemblage has the potential to enhance their data.
  - When the understanding of the form and function may be enhanced by full excavation (this may be the case for the pits in the pit alignment)

- A pit is proved to be the earliest or latest stratigraphical feature on the site, but had produced insufficient dating evidence.
- Any pits of Neolithic or early Bronze Age date which have produced pottery will be subject to 100% excavation.

7.4.5 Postholes

With the exception of post-medieval and modern postholes all will be half-excavated. Additional excavation may take place where they:

- Are interpreted as door posts or as part of a building
- Are adjacent to contemporary internal activity
- Contain post-packing
- Contain evidence for *in situ* burning

7.4.6 Tree-throw holes

- A selection of tree-throw holes will be subject to hand excavation if on the surface they appear to contain artefacts or charred plant remains.
- Hand excavation will initially concentrate on a sample of the dark loam fill (not the redeposited gravel fill).
- Where the initial hand excavation demonstrates that the fill contains artefacts, specifically worked flint and Neolithic and early Bronze Age pottery, additional hand excavation will take place.
- Where the initial hand excavation demonstrates that the fill contains charred plant remains, additional hand excavation and ecofact sampling will be considered.

7.4.7 "Special" features

The identification of stone structures, hearths/ovens, burials etc at the pre-excavation planning stage is a critical part of the excavation strategy.

The excavation of hearths/ovens will be undertaken in plan with cumulative sections recorded. No excavation of *in situ* burning will take place until the possibility of scientific dating has been considered.

Prior to any excavation of human remains advise from the environmental health officers and if appropriate the Ministry of Justice will be sought. Features suspected of being burials will be excavated in plan with either cumulative sections and/or profiles drawn. Rectifiable overhead photographs may be taken, as necessary, to augment or supplant the drawn record. Ultimately they will be subject to full (100%) hand excavation to assist in their understanding.

7.4.8 "Unusual" or "special" deposits

The occurrence of artefacts and ecofacts which are "unusual" in nature or which occur in large quantities will be closely monitored during excavation. While it is relatively easy to alert field staff to the potential significance of articulated human/animal bones and complete/semi-complete pottery vessels, the supervisors will be briefed to look for other potential "unusual" deposits. Any "unusual" deposits will be fully excavated.

7.4.9 Deep features

All hand excavation will cease at 1.2m and before if dictated by Health and Safety concerns. Excavation below this depth will only proceed if agreed in advance with CgMs. It is likely to take the form of stepping and machine excavation. Any subsequent hand excavation below 1.2m will require a "permit to dig" signed by the Project Officer. Deep excavations will be adequately fenced off from the general site with the appropriate warning signs in place.

7.4.10 Furrows

Furrows will be subject to limited hand excavation if their interpretation is uncertain. More extensive excavation will be undertaken if they have the potential to obscure significant archaeological features.

7.4.11 "Positive" features/layers

Although unlikely, it is possible small areas of "positive" features/layers e.g. gravel surfaces may occur. These will be recorded in plan with a number of suitable hand excavated segments undertaken. If there is potential for features to be present below them, they will be machined out, but only once fully recorded and sample excavated, and with the agreement of the HET.

7.5 Recovery and treatment of finds/ecofacts

All finds will be exposed, lifted, cleaned, conserved, bagged and boxed in accordance with:

- United Kingdom Institute for Conservation's *Conservation Guidelines N°2*.
- *First Aid for Finds* (CBA 1987).
- Albion's *Procedures Manual* (2002)

More specifically:

- Artefacts and ecofacts will be collected by hand and retained.
- All finds will be collected, retained and allocated with the context number accorded to the deposit from which they came. Labels and bags will be waterproof and will be marked with the appropriate number in an indelible, lightproof and waterproof marker.
- All artefacts will be processed in a manner that is suitable to their material type by or under the supervision of a specialist recognised in their field.
- Unstratified animal bones and modern material will not be collected
- No human remains were found during the evaluation but if they are found the relevant authorities will be notified and a burial licence obtained.
- The Finds Officer will be available to advise and assist (e.g., complex lifting, fragile or unusual finds)
- A metal detector will be used to scan spoil and the surfaces of features.
- Arrangements will be made for the appropriate conservation of artefacts and x-ray of metal finds.
- Fragile or unstable finds will be stabilised as appropriate.
- Conservation specialists assigned to the project are Lincoln Museum.

7.6 Environmental sampling

A site-specific sampling strategy, based on guidelines in *Environmental Archaeology* (English Heritage 2010) and Albion's *Procedures Manual* (Albion 2002), will be prepared in conjunction with the appropriate specialists once the pre-excavation plan is complete and the nature of the archaeological features/deposits known. Sampling will focus on retrieval of evidence for economy, diet, environment and dating.

Analysis of samples can only proceed if ecofactual material survives in the deposit and is representative. Therefore, the initial strategy will sample deposits that visually contain ecofactual material (such as charred seeds, snails, bone etc), or where conditions, such as waterlogging, suggest preservation may be good. Samples will usually be taken for specific reasons, usually based on the potential of a sample to contain certain types of ecofactual or artefactual information. These types comprise:

Charred plant	Charred wood is usually fairly common within deposits.
Charred seeds	If it is possible, deposits with charred seeds (as opposed to the more common charred wood) will be targeted.
Waterlogged	Usually distinctively black and organic in nature not simply below the current water level.
Animal bone	Either where large quantities of large bone are preserved or where small bones are visible.

Human bone	It is sometimes necessary to take samples in the vicinity of burials for example to assist collection of the loose, small bones of a hand or within a foetus.
Molluscs	If snails are visible in moderate numbers a sample should be considered, although a column may be more appropriate.
Control	See below

The second stage of the strategy will comprise taking control samples from deposits that have no obvious ecofactual potential. These will not be taken at "random", but will be targeted from a range of features/deposits to ensure that there are samples from the following criteria:

1. From a range of feature types e.g. pits, ditches, postholes etc and fills (primary, secondary and tertiary)
2. In the vicinity of buildings/structures, ditch terminals, corners of enclosures etc
3. From a range of dated contexts (and stratigraphic locations) e.g. from the earliest contexts etc
4. From a range of spatial locations

- All samples will be collected, labelled and recorded, according to their stratigraphic context.
- All samples will be subject to appropriate assessment and, where appropriate analysis by an appointed specialist

7.7 Scientific dating

Samples will be taken in anticipation of being used for dating, but the decision to proceed will only take place during the Assessment of the major data-sets. In all cases, the advice of specialist advisors will be sought to determine the most suitable technique, e.g. with radiocarbon dating there are issues with the calibration curve (e.g. the *c*. 150-300 cal AD plateau in the Roman period).

Radiocarbon dating is likely to be the most used technique, although other forms of scientific dating will be considered where appropriate. The establishment of reliable dating frameworks depends on the selection of appropriate samples from reliable contexts. In general, single-entity dates will be sought through AMS dating of individual pieces of wood, bone or seeds. This will avoid the danger of residual charcoal from bulk samples producing dates that are too early. Material which is likely to be at its original point of deposition (e.g. articulated burials (animal or human), timber structures, discrete dumps of cereal processing waste etc.) will be particularly targeted. Bayesian modelling techniques will be applied to stratigraphically sequenced dates.

Consideration will also be given to the use of other scientific dating techniques, such as: archaeomagnetic dating of kilns, hearths etc.; dendrochronology; optically-stimulated luminescence (OSL) dating of buried sediments; and thermoluminescence (TL) dating of pottery and daub. Although these techniques may avoid some of the problems associated with radiocarbon dating (particularly plateaux in the calibration curve), they are not without their own limitations. For example, archaeomagnetic dating often produces a number of alternative, and often quite widely varying, dates for individual structures.

8. APPENDIX 2: PROJECT TEAM CVS

8.1 Project management team

Project Manager: Mike Luke

Technical qualifications
BSc (Hons) Archaeology, University of Wales (Cardiff), 1986
Member of the Institute for Archaeologists

Core skills/experience
Management of multiple projects ranging from evaluations to major excavations. Post-fieldwork analysis, including the preparation of MAP2 style assessments/UPDs and publication.

Mike has managed and published a wide variety of sites in the eastern region (see below) and has written the prehistoric chapter for the English Heritage sponsored Archaeological Resource Assessment and Research Agenda for Bedfordshire (Oake et al 2007).

He has published a number of Iron Age and Roman sites in *Bedfordshire Archaeology, e.g.* Hinksley Road, Flitwick; Yarl's Wood; Toplers Hill, Haynes Park, Luton Road Wilstead and Shefford. Further articles on a multi-period site at the former Bridgman Factory, Harrold, and an early-middle Iron Age settlement at Butterfield Green, Luton, have been submitted to *Bedfordshire Archaeology*. He has published the results of the more extensive investigations at Biddenham Loop (2008) and Marsh Leys (2011) as East Anglian Archaeology monographs. The latter comprised two late Iron Age / Romano-British farmsteads, very similar in nature to those within the present site.

Independent of Albion he has produced an article on the Roman roadside settlement at Alfoldean, West Sussex which was published in *Sussex Archaeological Collections*. This site was the subject of a Channel 4 Time Team programme and he was involved in the fieldwork element of this in October 2005. He has also worked as a vice-director on excavations in Bulgaria (University of Nottingham), Herefordshire (University of Wales) and Caerleon (joint Institute of Archaeology and University of Wales). He has a particular interest in applying IT to the development of systems which will improve the efficiency and quality of archaeological fieldwork and analysis.

Employment History

1999- present	Albion Archaeology, Project Manager
1996-1999	Bedfordshire County Archaeology Service, Project Officer
1991-1995	Bedfordshire County Archaeology Service, Senior Supervisor
1989-1991	Bedfordshire County Archaeology Service, Supervisor
1988-1989	Cleveland County Archaeology Service, Supervisor
1986-1991	CADW (Historic Wales), Seasonal Supervisor
1986-1988	various archaeological work including Essex County Council, Trent and Peak, Leicester Museums Service, Northamptonshire County Council, English Heritage
1979-1983	various voluntary archaeological work including work in Surrey, West Sussex, Wroxeter and Caerwent.

Project Officer: Christiane Meckseper

Technical qualifications
MSc Information Systems, University of Sheffield, 2000
MA Archaeological Practice, University of Birmingham, 1995
BA (Hons) Archaeology, University of York 1992
Associate of the Institute for Archaeologists

Core Skills
Supervision and co-ordination of a wide range of archaeological projects ranging from surveys, watching briefs and evaluations to open area excavations in a rural and urban context. Post-excavation skills include structural analysis and report writing and preparation of CAD illustrations. She has worked on a variety of sites in Bedfordshire, Norfolk, Germany and further afield. Other skills include the design and technical preparation of online learning and research resources. She has a special interest in the electronic publication and dissemination of archaeological data and information and the preparation of 3d computer models.

Recent employment history
2006-present, Project Officer, Albion Archaeology
2001-2005 Technical Officer, Humanities Research Institute, University of Sheffield
1999-2000 Research Assistant, Norfolk Archaeological Unit
1998-1999 Archaeological Supervisor, Bedfordshire County Archaeological Service

8.2 Albion specialist advisors

Finds Officer: Jackie Wells

Technical qualifications
MA Post-Excavation Studies, University of Leicester, 1990
BA (Hons) Archaeology and History, University of Nottingham, 1988

Core skills
Processing and analysis of ceramic and non-ceramic artefact types. Computer-based artefacts analysis. Preparation of interim, assessment and client reports. Establishment and maintenance of the Bedfordshire Ceramic Type Series. Particular interest in Roman and Saxon archaeology. Jackie has produced pottery and non-ceramic artefact sections of numerous articles published in *Bedfordshire Archaeology* (Volumes 22–26) and various EAA monographs.

Employment History
Over 20 years postgraduate experience in processing and analysing artefactual assemblages, gained mainly through work in the Peak District, South Wales and eastern England.

Non-Ceramic Artefacts: Holly Duncan

Technical qualifications
M Litt, Department of Archaeology, University of Glasgow, 1982
BA (Hons) Anthropology, University of Pennsylvania, Philadelphia, 1976
Member of the Institute for Archaeologists

Core skills
Project management and analysis of non-ceramic artefacts for Albion Archaeology, with specialist knowledge of the post-Roman and medieval periods and substantial experience in the prehistoric and Roman periods. Also undertakes consultancy work for other archaeological units (CCAFU; WYAS; MoLAS ; RPS Clouston). An artefact specialist since

1981, her work has been published in both Scottish and English archaeological journals. She is a member of both the Roman Finds Group and the Finds Research Group (AD700 - AD1700); former committee member of the IfA Finds Group, having sat on their Standards and Guidance for Finds Work Working Party, and a past member of the MDA Archaeological Objects Thesaurus Working Party.

Employment History
1985 - present Artefacts Manager, BCAS/Albion Archaeology
1983 - 1985 Find Supervisor, Kirkstall Abbey, West Yorkshire Archaeology Service
1981 - 1983 Finds Specialist, Scottish Development Department, Edinburgh
1975 - 1979 Research Analyst, Gellman Research Associates, Jenkintown, PA; Research Assistant, Department of Anthropology, University of Pennsylvania.

8.3 External specialist advisors

Animal Bone: Mark Maltby

Current Post: Reader, School of Conservation Sciences, Bournemouth University
Joined Bournemouth University 1990 as Senior Lecturer. Reader since 1999.

Qualifications and Memberships
BA Prehistory and Archaeology, University of Sheffield 1974.
MA Prehistory and Archaeology, University of Sheffield 1977.
Member of the Institute for Archaeologists (MIFA)
Member of the Association of Environmental Archaeologists.
Member of the Prehistoric Society.

Previous Posts
Research Fellow in the Faunal Remains Unit, Department of Archaeology, University of Southampton 1977-1990. Director of Unit 1989-1990.

Current Teaching Responsibilities include
Course Leader, MSc Osteoarchaeology
Teaching animal bone options at Undergraduate and Postgraduate levels

Recent and Current Research and Consultancy Activities include:

- Research on the exploitation of animals in Britain, particularly in the prehistoric and Romano-British periods;
- Analysis of butchery with special reference to the Roman period;
- Analysis of animal bones from a large range of British sites, including work with Albion Archaeology (he has produced numerous publication reports), CADW, Cotswold Archaeological Trust, National Museum of Wales and Wessex Archaeology.

Human Bone: Natasha Powers

Technical qualifications
University of Bradford, MSc (Distinction) *Osteology, Palaeopathology and Funerary Archaeology*. 1998
University of Bradford, BSc (Hons.) *Archaeological Sciences* 1996

Employment history:
May 2007- present Head of Osteology, MOL Archaeology

Jan 2003-April 2007	Human Osteologist, MoLAS
2002-2003	Senior site assistant, Cambridge University Archaeology Unit
2001-2002	Archaeologist, MoLAS
1999-2001	Human Osteologist, MoLAS
1998	Contract Osteologist, MoLAS

Core skills
Since 1996, Natasha has been employed as an archaeologist by a number of commercial and research units. She currently manages a team of specialists in the fields of human and faunal analysis for MOL Archaeology and provides specialist contributions for tenders and method statements, and reports on inhumation and cremation assemblages, both in-house and for external clients. The latter include the assessment reports for several major Albion projects including Caxton-Hardwick, Bedford Western Bypass and Land west of Bedford. She is a peer reviewer for the *International Journal of Osteoarchaeology* and the *Journal of Archaeological Sciences* and from 2004-2007 served on the executive committee of the British Association for Biological Anthropology and Osteoarchaeology (BABAO). Osteological work has also lead to involvement in a number of television programmes, including a documentary for the Discovery Channel and 'Time Team' and Natasha has also acted as an advisor to the BBC '*Silent Witness*' art department.

A registered forensic archaeologist, Natasha has worked on a number of confidential cases for the Metropolitan and City police. She has acted as a guest tutor at the Metropolitan Police Crime Academy and is a sessional lecturer on the London Metropolitan University '*Forensic Inferences from Biological Remains*' undergraduate course.

Charred plant remains: John Giorgi

Qualifications:
Leeds University, BA, Archaeology and History 1980
Oxford University Dept of external studies, Certificate of Field Archaeology 1984
Sheffield University, MSc, Environmental Archaeology and Palaeoeconomy 1989

Employment history:

2009 – present	Independent Archaeobotanist
1990-2008	Archaeobotanist, Museum of London Specialist Services (MoLSS)
1984-1990	Archaeobotanist on various excavations in Italy and Albania

Core skills
Highly experienced archaeobotanist who worked for MoLSS for nearly twenty years before going independent. Has an extensive publication record for charred plant remains especially for sites in London (mainly published as MoLAS Monographs, the *London Archaeologist* or *Trans LAMAS*). Has also published the results from sites in Cambridgeshire, Lincolnshire, Surrey, Yorkshire and Italy. He has produced assessment and publication reports for several major Albion projects including Caxton-Hardwick, Bedford Western Bypass and Land west of Bedford. For nearly twenty years he acted as an environmental archaeology consultant on behalf of English Heritage for excavations in the City and Greater London. He has presented papers at over twenty conferences.

Environmental Archaeology: James Rackham

Qualifications:
London University BSc (extn) Zoology 1972
Birmingham University, MSc (extn) Thesis Geological Sciences 1981. Topic - Mid-Devensian Mammals in Britain

Employment history:
1993 – present Independent Environmental Archaeology Consultant.
1991-93 Environmental Manager, Museum of London Archaeology Service
1986-93 Head of the Greater London Environmental Archaeology Service. Museum of London
1975-86 Environmental Archaeology Fellow. Department of Archaeology, University of Durham
1973-75 Head of the Environmental Archaeology Laboratory. York Archaeological Trust
1972-73 Research technician. Dept Geological Sciences, University of Birmingham. Sub-Department of Quaternary Entomology.

Core skills
Consultation and analysis of environmental data from Britain and further afield. Currently conducting analysis of geotechnical and environmental data from numerous sites in Britain including Bedfordshire, Milton Keynes, Derbyshire and Lincolnshire. Organised and was responsible for the environmental archaeology of a number of Thames alluvial sites in Greater London including the excavation of Bronze Age trackways at Beckton, Rainham, Bermondsey, and Southwark. Developed a research design and environmental archaeology sampling strategy for the alluvial deposits exposed during construction of the Jubilee Line Extension by London Underground (now published).

Soils: Richard I Macphail

Qualifications:
PhD. 1974-78 "Soil variation on selected Surrey Heaths", University of Kingston.
MSc. 1973-74 "Pedology and Soil Survey", University of Reading.
BSc. 1970-73 Geography and Geology, University of Swansea.

Employment history:
1998-present Senior Research Fellow, Institute of Archaeology, UCL (Honorary Research Associate, Boston University 2003-2007, USA; *Professor Invité*, University of Tours, France 2004)
1978-1998 Research Fellow (soil scientist for archaeology) at Institute of Archaeology, UCL. English Heritage funded.

Core skills
Field and laboratory (eg. soil micromorphology) analysis of archaeological soils and sediments. Consultation and analysis of soils from Britain and further afield. Current client list includes Albion Archaeology, Cadw, Canterbury Archaeological Trust, Leicester AU, MoLAS, Norfolk AU, Oxford Archaeology, Suffolk AU, Wessex Archaeology; North American companies and the US Navy; University collaborations (Beijing, Boston, Cardiff, Frankfurt, La Trobe, Tours, Umeå). His work has been published in numerous monographs and national and regional journals.
http://www.ucl.ac.uk/archaeology/staff/profiles/macphail.htm

Artefact X-ray and Conservation: Lincoln Conservation Department

Lincolnshire County Council's Heritage Service, Conservation Department was formed in 1998 as a part of an internal local authority restructure. This process combined the former archaeology and archive specific laboratories, and expanded staffing provision to more accurately reflect the stewardship needs of the large and diverse local authority collections. In addition to its local authority responsibilities the current department has a significant national

external contracting remit. By far the greatest part of this external contracting work is taken up by the processing of archaeological material in accordance with specific client requirements and, most significantly, within local planning and development control mechanisms (in order to facilitate the deposition of archaeological assemblages with receiving organisations).

The department currently has eight full-time permanent staff, five of which are qualified conservators. The other three staff comprise of two conservation technicians and one department administrator. The department manager has 25 years of post qualification experience and is accredited through the national Professional Accreditation of Conservator – Restorer (PACR) scheme. The remaining qualified staff (one of which is also PACR accredited) have a combined total of 21 years post qualification experience, with specialist backgrounds in archaeology, ceramics and ethnographic material.

The department is listed on the UKIC Conservation Register (professional body managed national database of Practices meeting minimum operational standards) and regularly deals with contractors on the same Register, where internal staff specialist provision is not available. Precise details of staff qualifications/experience can be accessed from the UKIC Conservation register (www.conservationregister.com).

8.4 Albion senior management

Business Manager: Hester Cooper-Reade

Technical qualifications
BA (Joint Hons) Medieval History/ Prehistory and Archaeology, Univ. of Sheffield 1984
Member of the Institute for Archaeologists

Core skills
Strategic and business planning, personnel management and administration skills.
Responsibility for management of medium-sized archaeological unit.
Management of large project teams, management of health and safety.
Archaeological project management through design and fieldwork to publication.
Excavation and evaluation of wide variety of sites, including urban (Saxon and medieval monastic), survey and building recording.
Academic interests centre on the Saxon and medieval periods, study of post-medieval historic buildings, in particular 20th-century buildings, maltings and farms.
Member of executive committee (secretary) of Institute for Archaeologists.
Served on council of British Archaeological Trust, Rescue (formerly Hon. Secretary).

Employment History

2003-present	Business Manager, Albion Archaeology,
2000-2003	Business Manager, Field Archaeology Unit, Essex County Council
1993-2000	Field Projects Co-ordinator / deputy to Principal Archaeologist
1989-1993	Project Officer, Hertfordshire Archaeological Trust,
1985-1989	Supervisor, Suffolk County Council Archaeological Unit, Ipswich
1982-1984	various archaeological work including work in Derbyshire, Italy, Suffolk

Operations Manager: Drew Shotliff

Technical qualifications
MA Archaeological Practice, University of Birmingham, 1985
BA (Hons) Modern History, Mansfield College, Oxford, 1980
Member of the Institute for Archaeologists

Core skills

Archaeological project management through design and fieldwork to publication. Post-excavation analysis of large urban and rural sites. Development of fieldwork and post-fieldwork analysis methodologies using database, AutoCAD and GIS applications. Research interests centre on Saxon and medieval rural settlement. Member of the Service Management Team, with specific responsibility for project programming and finance.

Employment History

2003-present	Operations Manager, Albion Archaeology
1991-2003	Project Manager, Albion Archaeology
1991,	Consultant to ODA/British Council, Samanalawewa Project, Sri Lanka
1990-1991	Project Officer, Cambridge County Council
1987-1990	Senior Archaeologist, Museum of London
1982-1987	various archaeological employment including, English Heritage, University of Birmingham (Sutton Hoo), and Ecuador, Cyprus and France

9. APPENDIX 3: CONTEXT ASSEMBLAGE TABLE

Albion uses a template database for its projects to ensure that all fieldwork recording and post-fieldwork analysis is done to the same consistent standard. This includes a Context Assemblage Table (CAT). As the fieldwork is underway, basic data about the excavated deposits and the material that they contain is entered into the table. The CAT then has two functions:

* it allows data from artefact and environmental sample processing to be fed back into the on-site excavation strategy;
* it forms the basis for the post-excavation assessment of analytical potential.

Data Entry

Data is only input into the CAT once all excavation of a particular deposit or "context" is complete. This prevents only partial, and therefore potentially misleading, information being fed back to the excavation. The artefacts and environmental samples from all finished contexts are processed rapidly (the aim is within two days of excavation). Whilst these are drying a visual inspection is made and the following categories of data are recorded

Bulk artefacts (Figure 1)

- Quantity by fragment count, weight and relative quantity of animal bone, burnt stone, tile, nails, fired clay, flint, human bone, pottery, shell and slag.
- Because pottery is a particularly sensitive chronological indicator, more detailed information about fabric types and date is recorded.

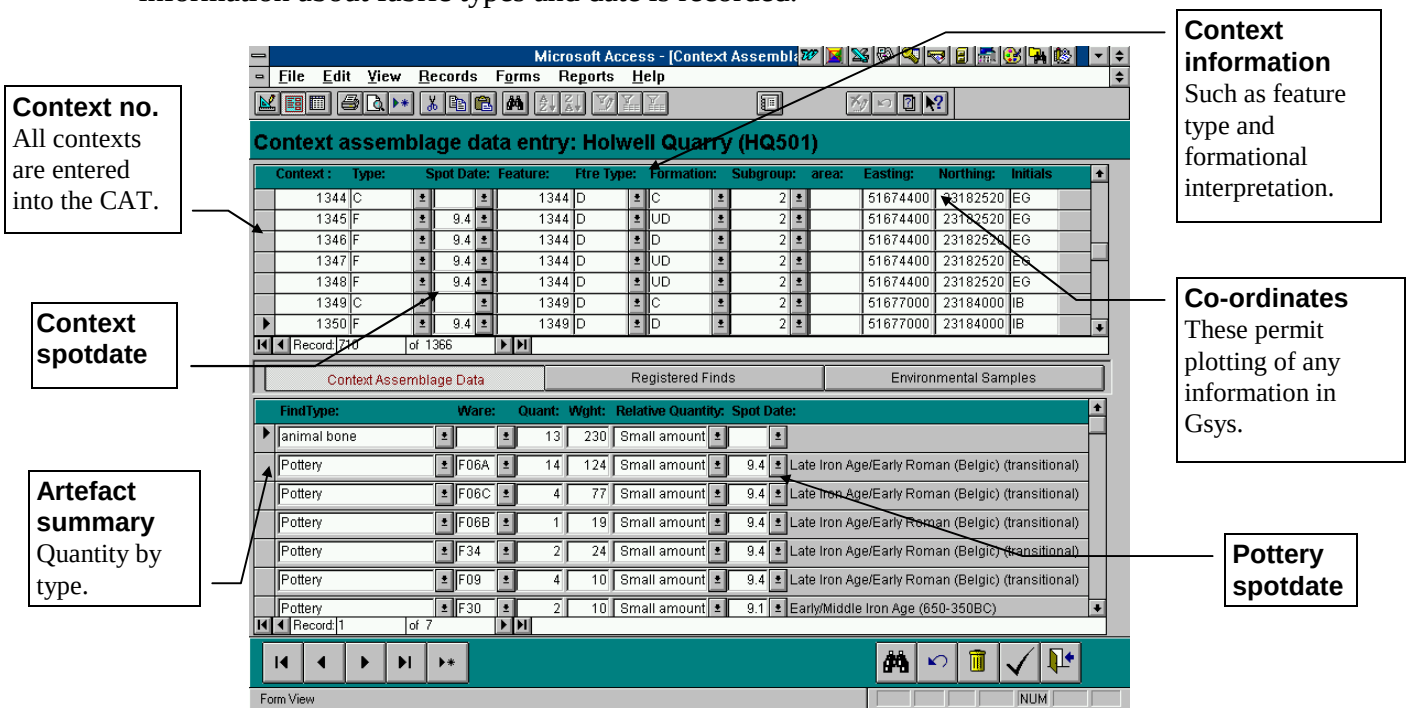


Figure 1: CAT showing context artefact information

Registered finds (Figure 2)

Individual artefacts of particular significance, *e.g.* a bronze brooch or a bone dress pin, are "registered" and recorded in much more detail.

Registered Finds detailed information

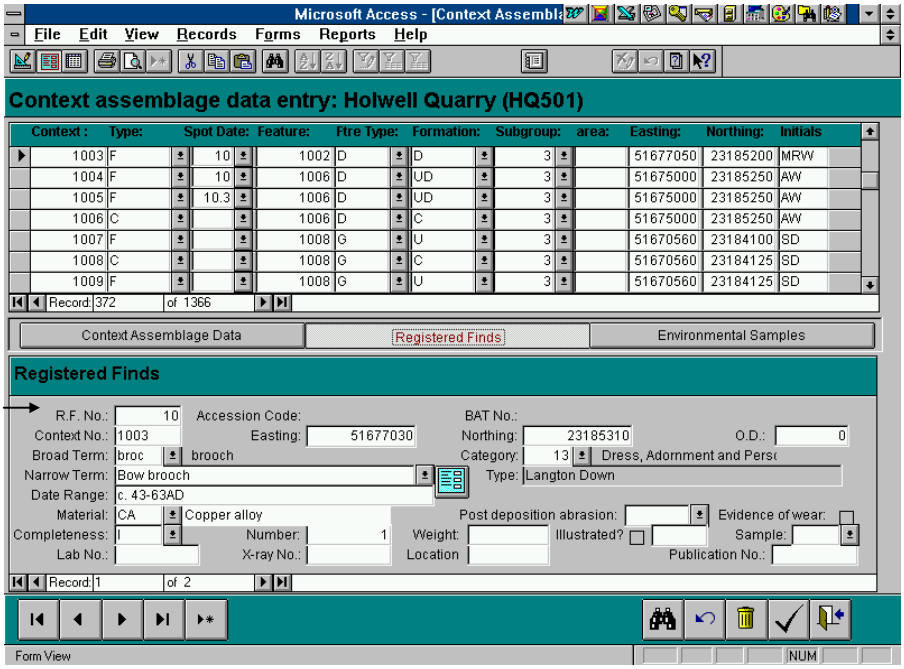


Figure 2: CAT showing registered artefact information

Environmental samples (Figure 3)

Details about the types of environmental samples taken from a context and an initial approximation of the quantity of charcoal, charred seeds, bone, snail, waterlogged material *etc.* are entered.

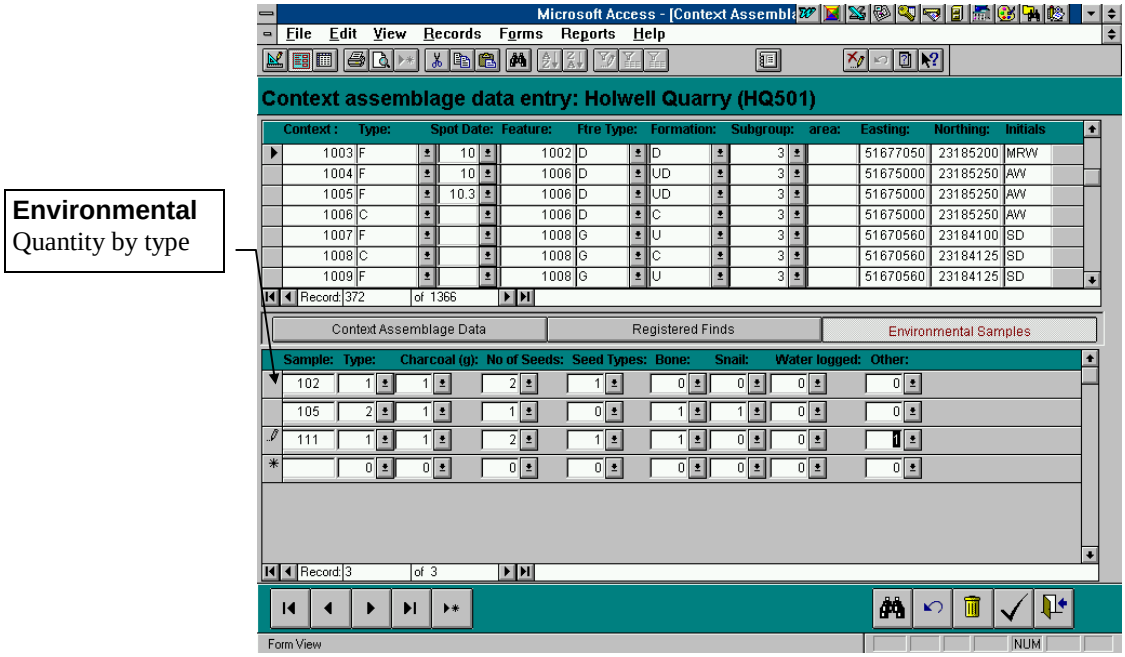


Figure 3: CAT with environmental information

Feedback of Data to the Excavation (Figure 4 and Figure 5)

The information in the CAT is fed back to site on a regular basis either as hard copy or *via* a laptop computer. It allows the excavator to determine the quantities of pottery or animal bone recovered from a particular pit, the spotdate of the pottery (Figure 4), where ecofact samples have been taken (Figure 5) or even an initial assessment of the quantity of charred grain that has been recovered. Such feedback is invaluable because it enables the excavator to determine whether enough of a feature, a linear ditch for example, has been excavated to provide the data required to meet the project's research objectives.

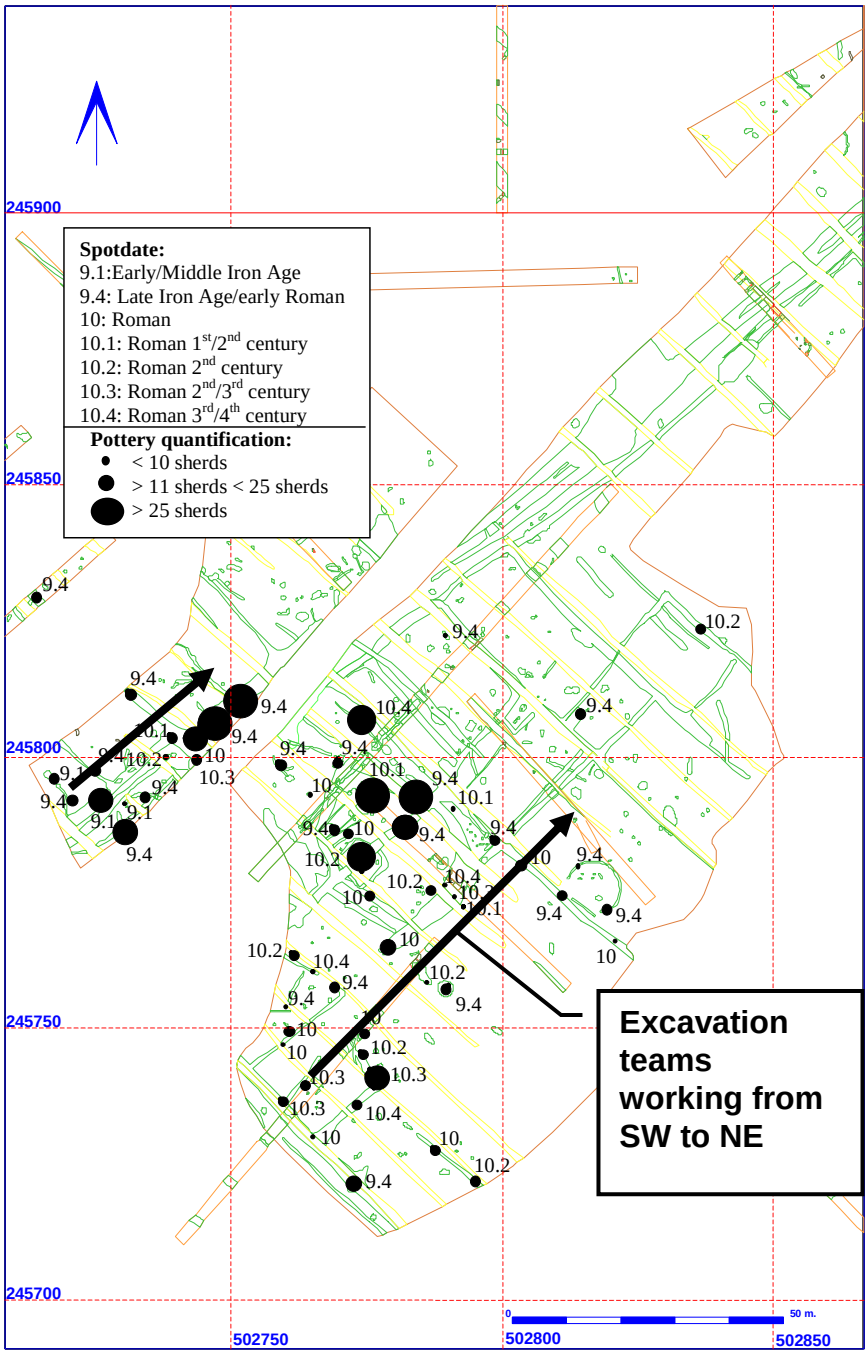


Figure 4: Distribution of pottery with spotdates overlaid on pre-excavation plan

Any of the data in the CAT can be displayed spatially, overlying a base map of the excavation. This may identify spatially significant distributions of material. For example, features containing pottery of Roman may be concentrated in a particular part of the site. A particular building may contain an unusually high concentration of slag, suggesting it may be the site of a forge.

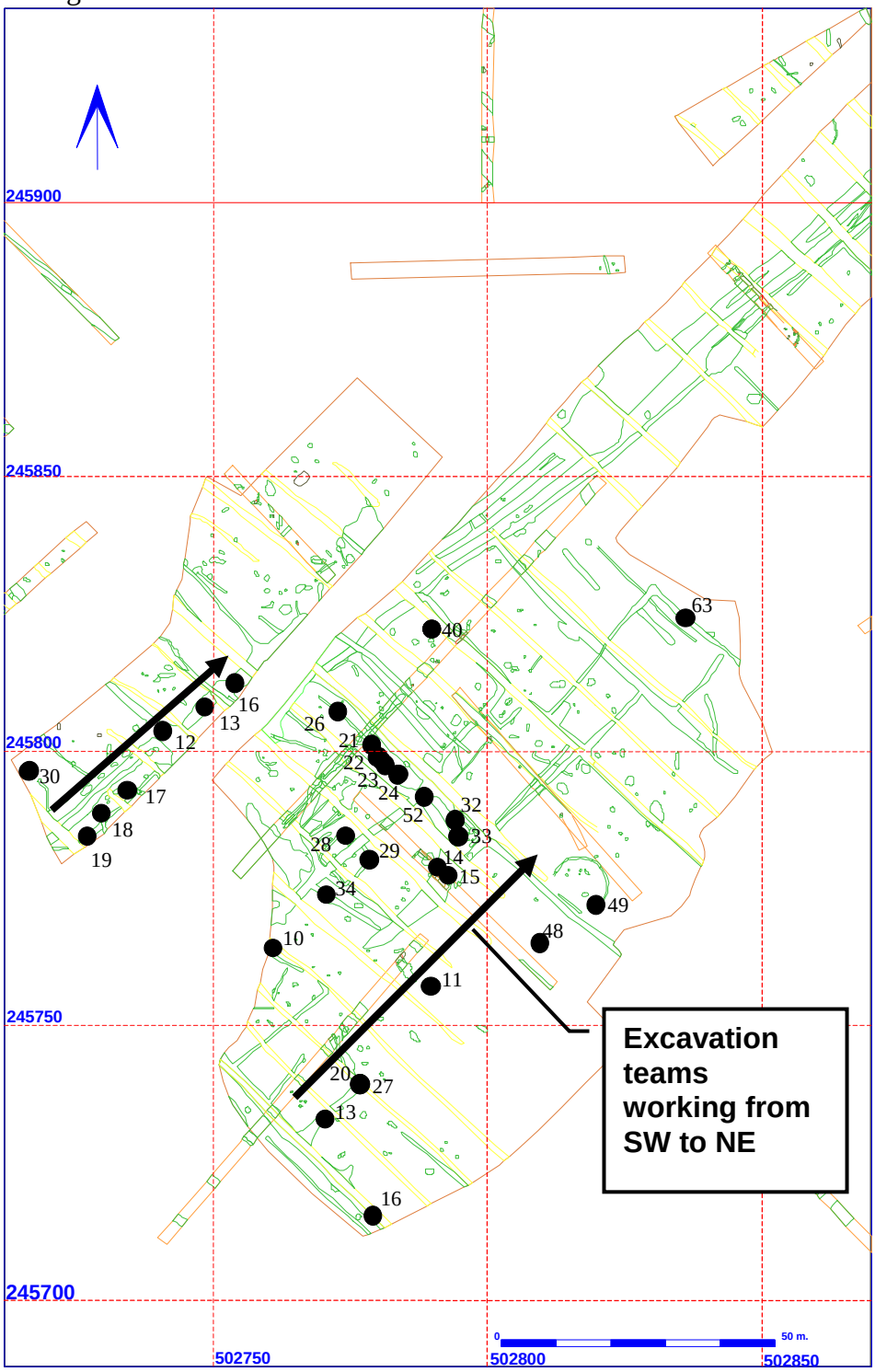


Figure 5: Distribution of ecofact samples overlaid on pre-excavation plan as the excavation/recording team moves from SW to NE

Post-excavation Assessment

The CAT plays a major role in ensuring that the assessment of the results of the fieldwork is carried out as efficiently and cost-effectively as possible. The purpose of the assessment is to determine to what extent the recovered data will address the project's research objectives and on that basis to determine which data should undergo further analysis and publication. It is, therefore, a crucial stage in the project.

Because a comprehensive quantification of all data has been completed during fieldwork, through the CAT, there is no need to undertake a time consuming re-examination of the material. In addition, the use of a computer-based system not only permits much more efficient data handling but also allows smooth integration with digitally captured mapping information.

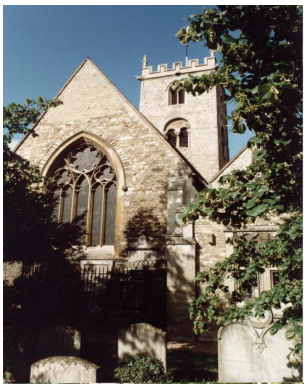
10. APPENDIX 4: ALBION ARCHAEOLOGY: PROFILE

Albion Archaeology (originally established in 1972 as Bedfordshire County Archaeology Service) is an 'arms-length', professional, archaeological organisation within Central Bedfordshire Council. One of the region's leading archaeological organisations, we have undertaken major fieldwork and evaluation projects both throughout the eastern region and further afield.

Albion's team of expert and experienced staff provide a full range of archaeological and historic environment-based services to the private, public and voluntary sectors. Many of our staff have a national-standing within the archaeological sector, undertaking research-based work or representing the profession on national bodies. We work with developers at all stages in the project cycle from pre-application desk-based assessments and consultancy to large scale archaeological fieldwork and reporting. We have a proven track record working on a wide range of projects with clients large and small and our team of in-house specialists and support staff ensure that projects can be undertaken effectively to programme and budget. At present, Albion has over 50 on-going client commissions with a combined value of *c*.£1,500,000.

Our key business aim is to deliver high quality archaeological work combined with high quality customer service, offering both value for money and a commitment to work for the client to ensure minimum delay and disruption. The work we do contributes to a wider understanding of the past and Albion is committed to ensuring that the results of that work are reported through academic publication, community and educational projects, public talks and displays.

The continuing professional development of staff is a high priority, and, in keeping with a commitment to maintenance of the highest professional practice, Albion was among the first members of the Institute of Field Archaeologists' Registered Archaeological Organisation Scheme, launched in 1996. Furthermore, our internal quality systems mean that each stage of a project is properly monitored and reviewed in order to ensure standards are met and improved upon.



The main office is based in the Grade 1-listed, St Mary's Church in the heart of Bedford. It also houses all post-fieldwork, support and administrative staff, who have access to a networked computer system. The standard operating software is Windows XP Professional and MS Office Professional 2002. We make full use of GIS, CAD, DtP and integrated Access databases in order to track and monitor projects, analyse data and present our results. Our financial and administrative systems make use of SAP. The church has a small laboratory for finds and soil sample processing, a well-stocked archaeological library and extensive storage facilities for both records and finds. The west end of the building forms a display area, which is open to the public. Nearby leased premises provide a secure tool store and further archive storage facilities.

11. APPENDIX 5: INSURANCE AND HEALTH AND SAFETY STATEMENTS

11.1 Insurance

As part of Central Bedfordshire Council, Albion Archaeology maintains the following insurance cover.

* **Professional indemnity**

  £5,000,000 cover with Royal & Sun Alliance Insurance plc.

* **Employers liability**

  £50,000,000 cover for any one occurrence with Travelers Insurance Company Limited .

* **Third party (persons or property)**

  £50,000,000 cover for any one occurrence with Travelers Insurance Company Limited.

* **Hired plant and equipment**

  £320,000 cover with Royal & Sun Alliance Insurance plc for hired equipment hire, including temporary accommodation, tools and plant.

11.2 Summary Health and Safety Statement

- Standards of safety at work and working practices commensurate with the 1974 *Health and Safety at Work Act* and *The Management of Health and Safety Regulations* (1992) will be rigorously observed.
- Albion uses its own internal health and safety manual, Central Bedfordshire Council's Health and Safety Manual and *Health and Safety in Field Archaeology* (SCAUM 1997).
- Any sub-contractors working for Albion Archaeology will be required to provide copies of their health and safety policy, health and safety manuals and a full risk assessment for the work in which they are involved for inclusion in the Safety Plan
- Safety instructions issued by the Principal Contractor or Consultant will be followed at all times. Staff will attend any necessary health and safety induction organised by the Principal Contractor.
- A comprehensive risk assessment will be carried out before the start of fieldwork in accordance with current Health & Safety legislation. As part of an initial project briefing all staff will be made aware of their responsibilities and the specific site hazards (identified under the risk assessment). The risk assessment will be reviewed on a regular basis as the project progresses.

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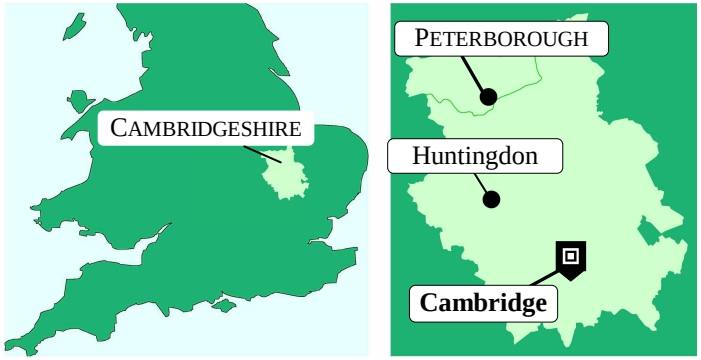

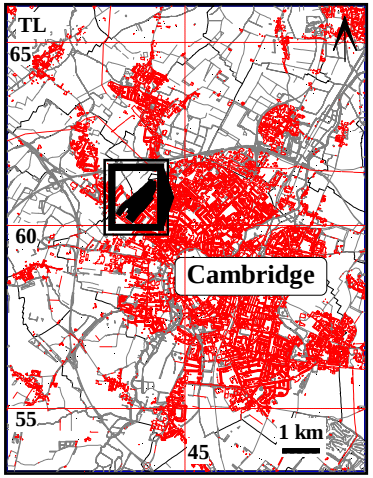

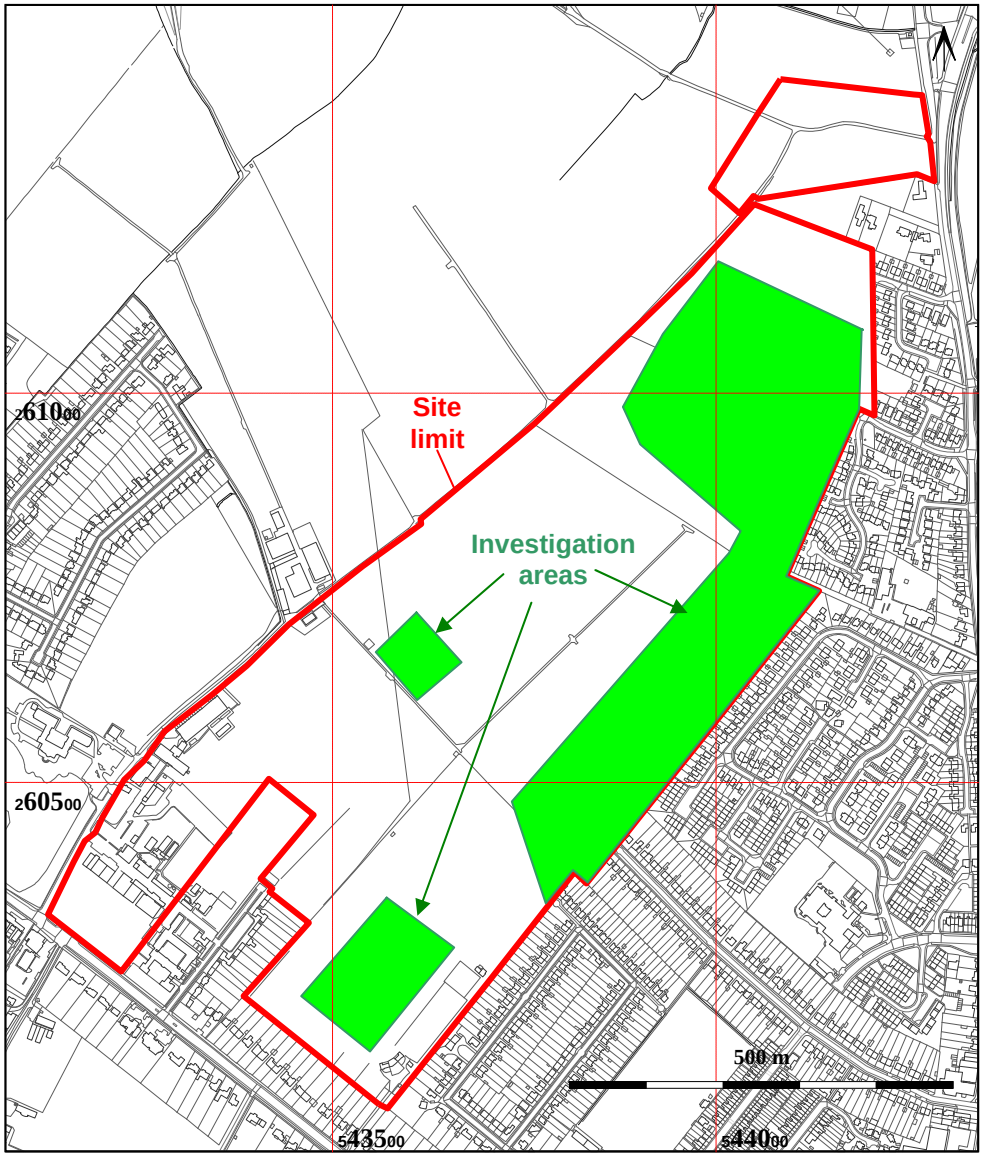

Figure 1: Site location and investigation areas