EASTERN LEIGHTON LINSLADE
CHAMBERLAINS BARN
BEDFORDSHIRE

ARCHAEOLOGICAL TRIAL TRENCH EVALUATION

Albion archaeology

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ARCHAEOLOGICAL TRIAL TRENCH EVALUATION

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Preface

Every effort has been made in the preparation of this document to provide as complete a summary as possible within the terms of the method statement. All statements and opinions in this document are offered in good faith. Albion Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party, or for any loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in this document.

Albion Archaeology was commissioned to undertake the project by Arnold White Estates. Fieldwork was monitored by the Central Bedfordshire Council Archaeologist.

The project was managed for Albion Archaeology by Christiane Meckseper (Project Officer). Fieldwork was supervised by Wiebke Starke and Marcin Koziminski (Archaeological Supervisors) and undertaken with the assistance of Walter Jo Ahmet (Archaeological Technician). All Albion Archaeology projects are under the overall management of Drew Shotliff (Operations Manager).

This report has been prepared by Christiane Meckseper (Project Officer) and Wiebke Starke (Archaeological Supervisor) with contributions from Joan Lightning (CAD Technician) and Jackie Wells (Artefacts Officer). It was approved by Drew Shotliff.

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Structure of the Report

Section 1 is an introduction to the project, the methodology for which is described in Section 2. The results of the fieldwork are presented in Section 3, with a summary in Section 4. The significance of the identified heritage assets and potential development impacts on that significance are set out in Section 5. Section 6 is a bibliography.

Detailed descriptions of the deposits recorded in the trial trenches can be found in Appendix 1.

Key Terms

The following terms or abbreviations are used throughout this report:

CBCA	Central Bedfordshire Council Archaeologist
HER	Central Bedfordshire Council Historic Environment Record
Client	Arnold Whites Estates
IfA	Institute for Archaeologists
PDA	Potential Development Area
WSI	Written Scheme of Investigation (Albion Archaeology 2011)

Non-Technical Summary

Arnold White Estates have submitted an outline planning application (CB/11/01937) to Central Bedfordshire Council for the development of land at Chamberlains Barn Quarry, Leighton Buzzard. The application is for a mixed development including 950 dwellings, a site for a lower school, a local centre comprising retail and community uses, informal open space and Country Park, allotments, orchards, new tree and shrub planting and play areas, plus a new halt for the Narrow Gauge Railway.

A heritage assessment was undertaken as part of the Environmental Impact Assessment. This divided the application site into a number of archaeological zones (AZ1-3) with low to high archaeological potential and assessed the impact of the proposed development on those zones.

In a consultation response the Central Bedfordshire Council Archaeologist (CBCA) advised that a pre-application programme of archaeological trial trenching was required to provide more detailed information on the significance of potential below-ground heritage assets, thereby enabling the potential archaeological impact of the development to be accurately assessed.

Trial trenching took place between 28 March and 5 April 2012 and demonstrated that, with the exception of a double-ditched enclosure, no significant archaeological remains were present within the Potential Development Area (PDA).

Most of the archaeological features consisted of a series of medieval furrows and modern or post-medieval ditches which are probably associated with the current field boundary between land parcels 54 and 55. Several late 19th-century and modern field drains were also recorded.

The location of the double-ditched enclosure in land parcel 55 was revealed by the geophysical survey and confirmed through the intrusive evaluation. It consisted of one continuous internal ditch, possibly representing two phases, and the terminus of a potential outer ditch that was intermittent in nature. Pottery retrieved from both features was early Iron Age in date.

The borehole evaluation of the soil deposits in land parcel 43 revealed that the depth of the overburden ranges from 0.26–0.32m and overlies undisturbed sand deposits. At the bottom of the slope there is an additional layer of colluvium c. 0.36m thick between the overburden and the sand. Knowledge of the thickness of the overburden will make it easier to determine appropriate archaeological mitigation strategies, should they be required.

The proposed development would have a major negative impact on the medieval and post-medieval heritage assets identified by the trial-trench evaluation. However, the significance of those heritage assets has been classed as low and the impact is therefore assessed as low to negligible.

The double ditched enclosure is a heritage asset of high significance. In the current masterplan the site of the double-ditched enclosure is earmarked as open green space. This will allow it to be preserved in situ *with minimal development impact.*

Potential development to its south, in the form of housing and associated access road will have a minor impact on the setting of the ring ditch as well as on potential external features adjacent to it. However, the evaluation revealed that the potential for any such features is low and that the site probably lay some distance from any settlement or ritual activity. The impact of the development on the immediate setting of the double-ditched enclosure is therefore judged to be low.

1. INTRODUCTION

1.1 Project Background

Arnold White Estates have submitted an outline planning application (CB/11/01937) to Central Bedfordshire Council for the development of land at Chamberlains Barn Quarry, Leighton Buzzard. The application is for a mixed development including 950 dwellings, a site for a lower school, a local centre comprising retail and community uses, informal open space and Country Park, allotments, orchards, new tree and shrub planting and play areas, plus a new halt for the Narrow Gauge Railway.

A heritage assessment was undertaken as part of the Environmental Impact Assessment (Albion Archaeology 2011). This divided the application site into a number of archaeological zones (AZ1-3) with low to high archaeological potential and assessed the impact of the proposed development on those zones (Albion Archaeology 2011b).

In a consultation response the CBCA advised that a pre-application programme of archaeological trial trenching is required in the areas of potential high development impact to provide more detailed information on the significance of potential below-ground heritage assets, thereby enabling the impact of the development on any archaeological assets to be more accurately assessed.

The CBCA also requested an investigation into the depth of overburden on land parcel 43 (the proposed adventure playground) to the west of Chamberlains Barn Quarry to provide information on the depth of burial of potential archaeological remains.

Albion Archaeology produced a Written Scheme of Investigation (WSI) which set out the scope of the evaluation and the methods to be used for the works (Albion Archaeology 2012). The results are presented in this report.

1.2 Site Location and Description

The PDA is located to the north-east of Leighton Buzzard between Heath Road and Vandyke Road and to the south of Shenley Hill Road (Figure 1). It is centred on NGR SP 931268 and covers an area of *c*. 95ha. The trial trenching was focussed on land parcels 54 and 55 in the north-east corner of the PDA. Land parcel 43 (Figure 2) is located at the western margin of the PDA, covering *c*. 4ha. Both areas were under pasture at the time of the fieldwork.

The majority of the PDA comprises the part-restored/part-active sand extraction area of Chamberlains Barn Quarry. The eastern part of the site comprises a mixture of rough grassland or pasture, arable, and some small areas of scrub and woodland.

The summit of Shenley Hill at 126m OD is the highest point on the site. From there the land falls towards Vandyke Road in the east, Heath Road in the west and Clarence Road in the south. The quarry workings to the west and south of Shenley Hill are being progressively restored to gently sloping contours suitable

for development using overburden material and arising from the quarrying operations.

The PDA occupies an area of high ground overlooking Leighton Buzzard to the south. This land forms part of the Greensand Ridge that runs broadly NE-SW across Bedfordshire, creating a distinctive band of high ground which contrasts to the flatter lands to its north and south. The underlying solid geology consists of Gault Formation mudstone; no drift geology is recorded, in the eastern and north-east part of the DA. In the western part of the PDA the underlying geology consists of Woburn Sands. A combination of head-clay, silt, sand and gravel is recorded for the superficial geology.

1.3 Archaeological Background

This section summarises the findings of the heritage assessment (Albion Archaeology 2011b), which divided the application site into three archaeological zones (AZ1-3) which were further subdivided and characterised by land parcels (Figure 2).

The numbering of the land parcels was based on the numbering devised during the geophysical survey of the site which was undertaken in 2008 (Stratascan 2008). The geophysical survey results were incorporated into the assessment of the archaeological potential of each AZ. Historic Environment Record numbers (prefix MBD) are given in brackets after certain heritage assets.

The archaeological zones are:

1. AZ 1 (Chamberlains Barn Quarry) – area of mineral extraction with **no remaining archaeological potential**.
2. AZ 2 (Woodland areas) – land parcels covered in woodland and therefore inaccessible. One exception is a clearance with ridge and furrow earthworks. The vast majority of the above ground remains of these field systems (within Bedfordshire) have been removed as a result of mechanised 20th- and 21st-century ploughing and even the surviving examples on the application site are damaged by later ploughing. The remaining examples of ridge and furrow earthworks do have some value in terms of our understanding of the medieval/post-medieval rural landscape. This AZ has **low to moderate potential**.
3. AZ 3 (Open fields) – The remaining land parcels within the application site (AS) therefore have a variety of **low to high potential**. This is discussed further below.

This background section concentrates on the archaeological and historical assets of AZ3, the eastern part of which was subject to the trial trench evaluation. Assets located within zones AZ1 and AZ2 are included where they are relevant for the potential of zone AZ3.

A series of cropmarks in land parcel 59 coincides with some of the geophysical anomalies and is catalogued in the HER (MBD14689).

The geophysical survey revealed a possible prehistoric double-ditched enclosure or ring ditch in land parcel 55 of AZ 3. Because of its high archaeological

potential this area has been excluded from any high impact development and is now set aside for informal open space in the parameter plan.

A series of cropmarks has also been identified in land parcel 59 (MBD 14689). They are as yet undated.

No known Roman assets are recorded within the PDA but two find spots of Roman pottery and pottery and quern stone fragments (MBD 6 and MBD 11295 respectively) were found to the north. Geographically the site includes a clay ridge which has always been a preferred settlement site in Roman times in Bedfordshire (Simco 1984). Some of the cropmarks recorded in the geophysical survey may therefore be Roman in date.

The Anglo-Saxon cemeteries (MBD 3) excavated in advance of quarrying activity in Chamberlains Barn (AZ 1) have some relevance to the potential existence of further Anglo-Saxon remains elsewhere and potentially within AZ 3. So far, no further Anglo-Saxon assets are known from within the PDA.

Medieval heritage assets consist of ridge and furrow cultivation earthworks in land parcel 52 (MBD 2589) — part of the same field systems as seen in AZ 2. It is likely that the landscape of the PDA was largely agricultural in the medieval period.

Quarrying within the PDA started in the medieval period and continued until the present day. Its post-medieval history is represented by two 19th-century extraction pits in land parcels 50/52 and 53 (MBD 11085 and MBD 11146). The latter would have removed any archaeological remains within their boundaries.

A further post-medieval asset that runs along the eastern boundary of AZ3 is the narrow-gauge railway (MBD 11090) which was opened in 1919 to transport sand and today serves as a leisure facility.

No archaeological investigations have been undertaken in the vicinity of the proposed evaluation area of AZ 3. A number of archaeological investigations in the form of trial trenching and fieldwalking were carried out to the south of the PDA in Southern Leighton Linslade. These revealed evidence for Bronze Age field systems (Albion Archaeology 2006), finds scatters of prehistoric and Roman artefacts (MBD 16279, 12748 and 12748) and a large number of medieval ploughmarks (Morris 2003).

1.4 Project Objectives

The principal objective of the archaeological works was to determine whether archaeological remains are present at the site and, if so, to determine their date, nature, extent, condition, and significance. This information will be used to inform decisions with regard to the impact of the proposed development on potential archaeological remains, and to help in the formulation of appropriate mitigation measures to protect remains either by preservation or excavation, should the development gain consent.

Research frameworks that have been devised for the region are the *Revised Framework for the East of England* (Medlycott 2011) and specifically for Bedfordshire: *Bedfordshire Archaeology. Research and Archaeology: Resource Assessment, Research Agenda and Strategy* (Oake *et al* 2007).

The site had the potential to reveal evidence relating to rural settlement of prehistoric, Roman or early medieval date. This fits into a number of very broad research aims which are identified in the local and regional agenda. Both state that little detailed work has so far been carried out on the characterisation of rural settlement patterns and the distribution of sites from the prehistoric to the medieval period (Oake 2007, 11-13).

The relationship of ritual sites with any contemporary settlement is also poorly understood and few examples have been excavated (Oake 2007, 10). This research aim can be applied to two areas within the PDA: the potential prehistoric double-ditched enclosure in land parcel 55 which may have a ritual function, and the Anglo-Saxon cemeteries excavated within Chamberlains Barn quarry. No contemporary settlements for either asset have yet been identified.

Previous investigations have shown that medieval plough marks are well preserved within the PDA, either as earthworks or as below-ground archaeological features. The study of the medieval field system has also been highlighted as a research aim in the local agenda. In this context it is the origins and development of field systems that needs to be studied and the position of the county between the midland system and the different systems in the rest of the eastern region (Oake 2007, 14).

Based on the research frameworks a number of specific research aims were formulated for the investigation:

1. What is the nature, date and preservation of the anomalies identified through geophysical survey?
2. Is there any prehistoric settlement evidence associated with the double-ditched enclosure in land parcel 55?
3. Is there any evidence for Anglo-Saxon settlement within the AS that may be related to the contemporary cemeteries (MBD 3) in Chamberlains Barn Quarry?
4. Mapping of the orientation of medieval plough marks to reconstruct early field systems.
5. Establishing the depth of overburden on land parcel 43.

The general research aims of the archaeological investigations were:

1. Establishing the date, nature and extent of any activity or occupation on the DA.
2. Recovering palaeo-environmental remains to determine local environmental conditions.
3. Production of an archive report/publication that fully describes the archaeological works and findings which will define the value of the site and its potential heritage assets and disseminate the findings.

If further archaeological works are required at the site, the results of the trial trenching will direct the preparation of research objectives for the archaeological works. These will be in accordance with national and regional research agendas and set out in a WSI detailing the works.

2. METHODOLOGY

The project adhered throughout to the standards set out in the following documents:

- Albion Archaeology — *Procedures Manual: Volume 1 Fieldwork* (2nd edn, 2001).
- EAA — *Standards for Field Archaeology in the East of England (Gurney 2003)*
- English Heritage — *Management of Research Projects in the Historic Environment (MoRPHE) Project Managers' Guide (2006)*; *Management of Archaeological Projects (MAP2)* (1991); *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation (2002/01)*
- IfA[1] — *By-Laws and Code of Conduct*; *Standard and Guidance for Archaeological Field Evaluation (updated 2008) and finds (updated 2008)*

2.1 Trial Trenches

Trial trenching took place between 28 March and 5 April 2012. An initial layout of seven long trenches measuring 50m x 2m and four short trenches measuring 20m x 2m covering just over 2% of the study area was agreed with the CBCA. Minor alterations were made to the location of Trenches 3, 5, 6 to avoid an overhead power line and a hedgerow.

Trench 12, measuring 35m x 2m, was added after the monitoring meeting on the 2 April in agreement with the Client and CBCA. It was positioned to evaluate the area of the double-ditched enclosure (Figure 1).

Trenches were opened by a mechanical excavator fitted with a toothless bucket, under close archaeological supervision. Overburden was removed down to the top of the archaeological deposits or undisturbed geological deposits, whichever were encountered first, and the spoil heaps were scanned for artefacts.

The bases and sides of all trenches were cleaned as necessary by hand. Any potential archaeological features were investigated by hand and recorded using Albion Archaeology's standard recording forms. Each trench was subsequently drawn and photographed as appropriate. All deposits were recorded using a unique number sequence, commencing at 100 for Trench 1, 200 for Trench 2 *etc*.

A full methodology is provided in the WSI (Albion Archaeology 2012). The trenches were inspected by the CBCA on 2 April prior to their backfilling.

[1] All IfA codes, standards and guidelines are available at: http://www.archaeologists.net/codes/ifa.

2.2 Borehole Survey

The borehole survey in land parcel 43 was conducted on 13 April 2012. In total, three holes were drilled to sample the deposits on site from the top of the slope, midway down the slope and at the bottom of the slope (Figure 2). The groundworks were conducted by Trendrevel Services Ltd with hand-held compressor drilling equipment, under archaeological supervision. The borehole arisings were documented and recorded.

3. RESULTS

3.1 Introduction

All the deposits and features of archaeological interest are summarised below. Their location and extent are shown on Figures 1–5, photographic evidence is provided in Figures 6–8. Detailed technical information on all archaeological features and deposits can be found in Appendix 1.

3.2 Overburden and Undisturbed Geological Deposits

Overburden across the evaluation area consisted of a fairly uniform topsoil which was 0.16–0.36m thick and consisted of friable dark grey brown silty clay with occasional small stones. This lay above a mid grey brown silty clay subsoil which varied in thickness from 0.11–0.3m. The subsoil probably represents a mixture of plough soil and colluvium.

Underlying geological deposits consisted of light yellow grey silty clay/gault with occasional small stones in Trenches 1–10 and 12 and mid orange brown sandy clay and gravel in Trench 11. They were revealed at a minimum depth of 0.37m below present ground level in the south-west of the evaluation area and a maximum of 0.52m in the south-east of land parcel 54 and 0.57m in the south/south-east of land parcel 55.

A layer (709) of mid yellow brown sandy clay with frequent stones was investigated in Trench 7; it was interpreted as a geological variation.

3.3 Prehistoric Double-ditched Enclosure

Trench 12 confirmed the existence and location of a double-ditched enclosure in land parcel 55 (Figures 3, 5 and 8) that had previously been located by the geophysical survey. Two features were excavated in segments [1203] and [1205] corresponding with the inner and outer ditch of the enclosure respectively.

Two phases were recorded for the inner ditch. The earlier phase was characterised by remains of a deeper, steep-sided, narrow ditch [1207]; the later phase was characterised by a wider, shallower ditch [1203] (Figure 5 section 2, Figure 8). A fragment of post-medieval ceramic roof tile retrieved from the earlier ditch must be intrusive and was possibly introduced by a land drain or animal action.

The outer ditch [1205] was represented by a terminus, suggesting an entrance way or segmentation of the ditch (Figure 5 section 1, Figure 7).

The outer ditch [1205] and the later phase [1203] of the inner ditch were very similar in their characteristics — including a wide, bowl-shaped profile and dimensions. This suggests that they may have been contemporary. Early Iron Age pottery was recovered from both ditches.

3.4 Medieval Furrows

The geophysical survey indicated an extensive ridge and furrow landscape within the PDA. However, furrows were only recorded in Trench 9, where they confirmed the results of the geophysical survey (Figures 3 and 4).

It is also thought that the furrows in land parcel 55 were medieval in date as they were more widely spaced. Their wider and deeper profile would also account for them being more visible. The furrows in land parcel 54 were more narrowly spaced and possibly more modern.

3.5 Post-medieval Field Boundaries and Drainage

A ditch [503] cutting through the subsoil was recorded at the north end of Trench 5; it corresponds with an anomaly in the geophysical survey results (Figure 3, 4 and 6). It is likely to be associated with the established NW-SE aligned field boundary. The ditch contained fragments of modern pottery and roof tile, an iron nail and a small quantity of animal bone.

Another geophysical anomaly on the same alignment was recorded north of the current hedge row; it was confirmed by ditch [703] that was recorded in the south end of Trench 7.

Two further ditches [705] and [707] on a NW-SE alignment were recorded to the north, *c.* 12.5m from the south end of Trench 7. In contrast to ditches [503] and [507], the ditches were sealed by the subsoil and are likely to represent an earlier version of the current field boundary (Figures 3, 4 and 6).

Modern field drains on a mainly NE-SW alignment were observed in all trenches apart from Trench 8 and 10.

3.6 Boreholes

Three boreholes were excavated to sample the depth and nature of the deposits overlying geological deposits on land parcel 43 (Figure 2).

Throughout the sample area the topsoil consisted of loose dark grey brown silty sand 0.18–0.20m thick, overlying a friable subsoil of mid grey brown silty sand, which ranged in thickness from 0.08–0.12m.

In BH1 and BH2 the overburden lay directly above sand. At the bottom of the slope in BH3 finer sediments were recorded. Below the overburden was a 0.36m thick layer of a mid grey brown deposit of clayey silt with fine grained sand above fine grained clayey undisturbed sand. This could be a mixture of colluvium and/or alluvium from the stream at the bottom of the slope.

3.7 Artefacts

3.7.1 Introduction

The evaluation produced a small finds assemblage comprising pottery, brick and tile, animal bone, vessel glass, and iron nails (Table 1). The material was scanned to ascertain its nature, condition and, where possible, date range. No artefacts were recovered from Trenches 2, 3, 6, and 8–11.

Tr.	Feature	Description	Context	Spot date*	Finds Summary
1	100	Topsoil	100	Post-medieval	Ceramic roof tile (42g)
4	400	Topsoil	400	Modern	Pottery (15g); ceramic roof tile (55g); coal (13g)
5	503	Ditch	504	Modern	Pottery (17g); ceramic brick or tile (11g); iron nail x 1, animal bone (157g)
7	703	Ditch	704	Post-medieval	Pottery (2g); ceramic roof tile (43g); vessel glass (1g); iron nail x 2
12	1203	Ditch	1204	Early Iron Age	Pottery (54g); animal bone (53g)
	1205	Ditch	1206	Early Iron Age	Pottery (24g); animal bone (3g)
	1207	Ditch	1208	Post-medieval	Ceramic roof tile (58g); animal bone (7g)
* - spot date based on date of latest artefact in context					

Table 1: Artefact summary by trench and feature

3.7.2 Pottery

Twenty-six pottery sherds, weighing 112g were recovered. These were examined by context and quantified using minimum sherd count and weight. The pottery is highly fragmented, with an average sherd weight of 4g, and survives in variable condition. Six fabric types were identified using common names and type codes in accordance with the Bedfordshire Ceramic Type Series, currently maintained by Albion Archaeology (Table 2).

Fabric type	Common name	Sherd No.	Context/Sherd No.
Early Iron Age			
F16	Coarse shell	**12**	(1204):12
F29	Coarse quartz	**9**	(1206):9
Post-medieval			
P01	Fine glazed red earthenware	**2**	(400):1, (504):1
P03	Black-glazed earthenware	**1**	(704):1
Modern			
P37	White salt-glazed stoneware	**1**	(400):1
P55	White earthenware	**1**	(504):1

Table 2: Pottery type series

Twenty-one body sherds representing two undiagnostic vessels (total weight 78g) are datable to the early Iron Age period, and derived from Trench 12. They comprise twelve sherds in a coarse shelly fabric (type F16) and nine coarse sand tempered sherds (F29), recovered respectively from ditches [1203] and [1205].

Three abraded sherds of 17th-century glazed earthenware (total weight 13g) were recovered from ditches [503], [703] and topsoil (400). Modern pottery comprises single sherds of salt-glazed stoneware and white earthenware (total weight 21g), collected from ditch [503] and Trench 4 topsoil.

3.7.3 Ceramic building material

Single pieces of post-medieval flat roof tile (total weight 112g) were recovered from ditches [503], [703] and [1207]. All are sand tempered, one in Gault clay, and range in thickness from 12–13mm. Two unstratified roof tile fragments (97g), also of post-medieval date, derived from topsoil in Trenches 1 and 4.

3.7.4 Non-ceramic finds

Iron objects recovered from ditches [503] and [703] comprise two undatable iron timber nails. Both have rectangular sectioned tapering stems and triangular heads of the same thickness as the stem; the complete example measures 64mm

in length. Post-medieval ditch [703] also yielded an incomplete iron shoeing nail of indeterminate form. A poorly preserved fragment of post-medieval vessel glass (1g) derived from the same feature.

3.7.5 Animal bone

The faunal assemblage comprises 22 fragments weighing 220g, all but two pieces deriving from Trench 12 (ditches [1203], [1205], [1207]). Fragments are small, with an average weight of 10g, and generally abraded. The fragmentary condition of the material means, that with the exception of a sheep/goat molar, most are undiagnostic of species. Identifiable bone elements are limb bones and rib fragments. A damaged calcaneus from a large mammal (?cow) was recovered from ditch [503].

4. SUMMARY

The trial trench evaluation has demonstrated that no significant archaeological remains are present throughout the majority of the evaluation area. Where archaeological features were present they were revealed at an average depth of 0.4–0.5m below ground level. Most of the archaeological features consisted of a series of medieval furrows and modern or post-medieval ditches which are probably associated with the current field boundary between land parcels 54 and 55. Several late 19th-century and modern field drains were also recorded.

The exception to this is the double-ditched enclosure in land parcel 55 whose location was revealed by the geophysical survey and confirmed through the intrusive evaluation. It consisted of one continuous internal ditch, possibly representing two phases, and the terminus of a potential outer ditch that was intermittent in nature. Pottery retrieved from both features was early Iron Age in date.

The number of Iron Age pottery fragments was not substantial but the nature of the sherds and the fact that the majority of one assemblage came from a single vessel suggest that they are a fairly reliable dating tool.

The date of the pottery within the two ditches is curious. Ring ditches are the result of material being excavated to form either an internal mound, often a burial mound, or banks around the outside to leave a space in the centre. They are usually interpreted as ritual monuments, typical of the Neolithic and Bronze Age periods. The presence of Iron Age pottery in this example could suggest that the monument defined by the ring ditches was in use for a very long time, or that parts of the ditch were being re-used or re-defined in the Iron Age period.

Circular, or ‘ring ditch’ enclosures are also usually found in river valleys. However, this is probably due more to the higher visibility of archaeological features on river gravel soils than a true representation of their location and distribution.

The borehole samples from land parcel 43 indicate that the depth of overburden measures a maximum of 0.32m in thickness throughout the site. This directly overlies geology at the top and centre of the slope. At the bottom of the slope there is an additional layer of 0.36m-thick colluvium / alluvium below the overburden and above the undisturbed geology.

5. HERITAGE ASSETS AND IMPACT ASSESSMENT

The trial trench evaluation has revealed a number of heritage assets — largely medieval and post-medieval in date. A small number of these are the below-ground remains of medieval furrows, while the majority represent post-medieval and modern field boundaries which are closely related to boundaries still in existence today.

Due to their poor survival and association with modern field boundaries these assets are judged to be of low significance.

The evaluation has also confirmed the presence of a double-ditched circular enclosure, which represents a heritage asset of high significance. It is located on higher lying clayey ground away from the river valleys of Bedfordshire, where the majority of assets of a similar type and date have so far been recorded. It is also part of a class of monuments that is as yet little understood and has a high potential for further research (Oake 2007, 9).

The proposed development would have a major negative impact on the medieval and post-medieval heritage assets identified by the trial-trench evaluation. However, as the significance of those heritage assets has been classed as low, the impact would also be low to negligible.

In the current masterplan the site of the double-ditched enclosure is earmarked as open green space. This will allow it to be preserved *in situ* with minimal development impact.

To the north, the site of the double-ditched enclosure will be surrounded by allotments and open pasture. To the south, housing and an associated access road will have a minor impact on its setting as well as on potential external features adjacent to it. However, the evaluation did not reveal any such features and the likelihood of the survival of any further assets contemporary with the double-ditched enclosure is low. The low level of artefacts retrieved from the features and ploughsoil/subsoil also suggests that the site was located some distance from any potential settlement or ritual activity. The impact of the development on the immediate setting of the double-ditched enclosure is therefore judged to be low.

Impact of the development on land parcel 43, the proposed site of an adventure playground, is still classed as minor-moderate negative (Albion 2011b, 26). However, knowledge of the thickness of the overburden will make it easier to determine appropriate archaeological mitigation strategies, should they be required.

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7. APPENDIX 1: CONTEXT SUMMARY

Trench: 1

Max Dimensions: Length: 25.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.5 m. Max: 0.3 m.

Co-ordinates: OS Grid Ref.: NW *(Easting: 49363: Northing: 22687)*

OS Grid Ref.: SE *(Easting: 49364: Northing: 22685)*

Reason: To assess geophysical anomalies.

Context:	Type:	Description:	Excavated:	Finds Present:
100	Topsoil	Loose dark grey brown clay silt occasional flecks chalk, occasional small stones Thickness: 0.18m	☐	☑
101	Subsoil	Friable mid grey brown clay silt occasional flecks chalk, occasional small stones Thickness: 0.3m	☑	☐
102	Natural	Compact light yellow grey silty clay occasional small stones	☐	☐

Trench: 2

Max Dimensions: Length: 25.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.5 m. Max: 0.5 m.

Co-ordinates: OS Grid Ref.: NW *(Easting: 49362: Northing: 22685)*

OS Grid Ref.: SE *(Easting: 49364: Northing: 22685)*

Reason: To assess geophysical anomalies.

Context:	Type:	Description:	Excavated:	Finds Present:
200	Topsoil	Loose dark grey brown clay silt occasional small stones Thickness:0.27m	☑	☐
201	Subsoil	Friable mid grey brown clay silt occasional small stones Thickness: 0.25m	☑	☐
202	Natural	Compact light yellow grey silty clay occasional small stones	☐	☐

Trench: 3

Max Dimensions: Length: 50.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.34 m. Max: 0.37 m.

Co-ordinates: OS Grid Ref.: NE *(Easting: 49357: Northing: 22687)*

OS Grid Ref.: SW *(Easting: 49355: Northing: 22683)*

Reason: To assess geophysical anomalies.

Context:	Type:	Description:	Excavated:	Finds Present:
300	Topsoil	Loose dark grey brown clay silt occasional small stones Thickness: 0.16m	☑	☐
301	Subsoil	Friable mid grey brown clay silt occasional flecks chalk, occasional small stones Thickness: 0.21m	☑	☐
302	Natural	Compact light yellow grey silty clay occasional small stones	☐	☐

Trench: 4

Max Dimensions: **Length: 50.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.36 m. Max: 0.52 m.**

Co-ordinates: **OS Grid Ref.: E** *(Easting: 49355: Northing: 22690)*

OS Grid Ref.: W *(Easting: 49350: Northing: 22689)*

Reason: **To check blank area on geophysical survey**

Context:	Type:	Description:	Excavated:	Finds Present:
400	Topsoil	Loose dark grey brown clay silt occasional small stones Thickness: 0.17m	☑	☑
401	Subsoil	Friable mid grey brown clay silt occasional small stones Thickness: 0.23m	☑	☐
402	Natural	Compact light yellow grey silty clay occasional small stones	☐	☐

Trench: 5

Max Dimensions: **Length: 50.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.45 m. Max: 0.83 m.**

Co-ordinates: **OS Grid Ref.: N** *(Easting: 49360: Northing: 22696)*

OS Grid Ref.: S *(Easting: 49361: Northing: 22691)*

Reason: **To assess geophysical anomalies.**

Context:	Type:	Description:	Excavated:	Finds Present:
500	**Topsoil**	**Loose dark grey brown clay silt occasional small stones Thickness: 0.24m**	☑	☐
501	**Subsoil**	**Friable mid grey brown clay silt occasional small stones Thickness: 0.19m**	☑	☐
502	**Natural**	**Compact light yellow grey silty clay occasional small stones**	☐	☐
503	**Ditch**	**Linear NW-SE sides: concave base: concave dimensions: max breadth 1.74m, max depth 0.46m Cutting subsoil, correspolds with geophysical anomaly**	☑	☐
504	Fill	Compact mid grey brown silty clay occasional flecks chalk, occasional small stones Thickness: 0.38m	☑	☑
505	Fill	Friable mid brown grey clay silt occasional small stones Thickness: 0.12m	☑	☐

Trench: 6

Max Dimensions: Length: 50.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.31 m. Max: 0.41 m.

Co-ordinates: OS Grid Ref.: NE *(Easting: 49357: Northing: 22697)*

OS Grid Ref.: SW *(Easting: 49353: Northing: 22694)*

Reason: To assess geophysical anomalies.

Context:	Type:	Description:	Excavated:	Finds Present:
600	Topsoil	Loose dark grey brown clay silt occasional flecks chalk, occasional small stones Thickness: 0.24m	☑	☐
601	Subsoil	Friable mid grey brown clay silt occasional flecks chalk, occasional small stones Thickness: 0.2m	☑	☐
602	Natural	Compact light yellow grey silty clay occasional small stones	☐	☐

Trench: 7

Max Dimensions: **Length: 50.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.5 m. Max: 0.55 m.**

Co-ordinates: **OS Grid Ref.: N** *(Easting: 49361: Northing: 22702)*

OS Grid Ref.: S *(Easting: 49361: Northing: 22697)*

Reason: **To assess geophysical anomalies.**

Context:	Type:	Description:	Excavated:	Finds Present:
700	**Topsoil**	**Loose dark grey brown clay silt occasional small stones Thickness: 0.25m**	☑	☐
701	**Subsoil**	**Friable mid grey brown clay silt occasional small stones Thickness: 0.15m**	☑	☐
702	**Natural**	**Compact light brown grey silty clay occasional small stones**	☐	☐
703	**Ditch**	**Linear NW-SE sides: concave base: concave dimensions: max breadth 1.7m, max depth 0.45m Corresponding with geophysical anomaly**	☑	☐
704	Fill	Plastic mid grey brown clay silt occasional small-medium stones Thickness: 0.45m	☑	☑
705	**Ditch**	**Linear NW-SE sides: concave base: concave dimensions: max breadth 1.47m, max depth 0.34m**	☑	☐
706	Fill	Friable mid grey brown clay silt occasional small stones Thickness: 0.34m	☑	☐
707	**Ditch**	**Linear NW-SE sides: 45 degrees base: concave dimensions: max breadth 1.35m, max depth 0.27m**	☑	☐
708	Fill	Friable mid grey brown clay silt occasional small stones Thickness: 0.27m	☑	☐
709	**Natural interface**	**Friable mid yellow brown sandy clay moderate small-medium stones Thickness 0.1m**	☑	☐

Trench: 8

Max Dimensions: Length: 50.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.37 m. Max: 0.43 m.

Co-ordinates: OS Grid Ref.: E *(Easting: 49364: Northing: 22704)*

OS Grid Ref.: W *(Easting: 49359: Northing: 22704)*

Reason: To assess geophysical anomalies.

Context:	Type:	Description:	Excavated:	Finds Present:
800	Topsoil	Loose dark grey brown clay silt occasional small stones Thickness: 0.31	☑	☐
801	Subsoil	Friable mid grey brown clay silt occasional small stones Thickness: 0.12m	☑	☐
802	Natural	Compact light brown grey silty clay occasional small stones	☐	☐

Trench: 9

Max Dimensions: **Length: 50.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.47 m. Max: 0.53 m.**

Co-ordinates: **OS Grid Ref.: E** *(Easting: 49369: Northing: 22697)*

OS Grid Ref.: W *(Easting: 49364: Northing: 22697)*

Reason: **To assess geophysical anomalies.**

Context:	Type:	Description:	Excavated:	Finds Present:
900	**Topsoil**	**Loose dark grey brown clay silt occasional small stones Thickness: 0.32-0.36m**	☑	☐
901	**Subsoil**	**Friable mid grey brown clay silt occasional small stones Thickness: 0.11-0.21m**	☑	☐
902	**Natural**	**Compact light yellow brown silty clay moderate small-medium stones**	☐	☐
903	**Furrow**	**Linear NE-SW sides: concave base: concave dimensions: max breadth 1.5m, max diameter 0.15m**	☑	☐
904	Fill	Friable mid grey brown clay silt occasional small stones Thickness: 0.15m	☑	☐

Trench: 10

Max Dimensions: Length: 25.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.6 m. Max: 0.6 m.

Co-ordinates: OS Grid Ref.: NE *(Easting: 49372: Northing: 22704)*

OS Grid Ref.: SW *(Easting: 49371: Northing: 22702)*

Reason: To assess geophysical anomalies.

Context:	Type:	Description:	Excavated:	Finds Present:
1000	Topsoil	Loose dark grey brown clay silt occasional small stones Thickness: 0.2m	☑	☐
1001	Subsoil	Friable mid grey brown clay silt occasional small stones Thickness: 0.3m	☑	☐
1002	Natural	Cemented light yellow grey silty clay occasional small stones	☐	☐

Trench: 11

Max Dimensions: Length: 25.00 m. Width: 2.00 m. Depth to Archaeology Min: 0.51 m. Max: 0.56 m.

Co-ordinates: OS Grid Ref.: NE *(Easting: 49378: Northing: 22711)*

OS Grid Ref.: SW *(Easting: 49377: Northing: 22709)*

Reason: To assess geophysical anomalies.

Context:	Type:	Description:	Excavated:	Finds Present:
1100	Topsoil	Loose dark grey brown clay silt occasional small stones Thickness: 0.32m	☑	☐
1101	**Subsoil**	**Friable mid grey brown clay silt moderate small stones Thickness: 0.15m**	☑	☐
1102	**Natural**	**Firm mid orange brown sandy clay frequent small-medium stones**	☐	☐

Trench: 12

Max Dimensions: Length: 35.00 m. Width: 2.50 m. Depth to Archaeology Min: 0.56 m. Max: 0.6 m.

Co-ordinates: OS Grid Ref.: N *(Easting: 49366: Northing: 22701)*

OS Grid Ref.: S *(Easting: 49366: Northing: 22698)*

Reason: Assess anomalies from geophysical survey, especially possible double-ditched enclosure.

Context:	Type:	Description:	Excavated:	Finds Present:
1200	**Topsoil**	**Loose dark grey brown clay silt occasional small-medium stones Thickness: 0.2m**	☑	☐
1201	**Subsoil**	**Friable mid grey brown clay silt occasional small-medium stones Thickness: 0.3m**	☑	☐
1202	**Natural**	**Compact light yellow grey silty clay occasional small stones**	☐	☐
1203	**Ditch**	**Linear E-W sides: concave base: concave dimensions: max breadth 1.78m, max diameter 0.37m Probable inner ring ditch, similar in character to [1205], recutting earlier ditch [1207]**	☑	☐
1204	Fill	Friable mid grey brown clay silt occasional small stones Thickness: 0.37m	☑	☑
1205	**Ditch**	**Sub-oval E-W sides: concave base: concave dimensions: max breadth 1.3m, max depth 0.32m, max length 0.9m Probable terminus of outer ring ditch. Similar in character to [1203]**	☑	☐
1206	Fill	Friable mid grey brown clay silt occasional small stones Thickness: 0.32m	☑	☑
1207	**Ditch**	**Linear E-W sides: steep base: concave dimensions: max breadth 0.43m, max depth 0.28m Earlier phase of proposed inner ring ditch, truncated by [1203]**	☑	☐
1208	Fill	Plastic dark grey brown clay silt occasional flecks charcoal, occasional small-medium stones Thickness: 0.28m	☑	☑

Trench: 100

Max Dimensions: Length: 0.10 m. Width: 0.10 m. Depth to Archaeology Min: 0.3 m. Max: m.

Co-ordinates:

Reason: Borehole 1: to assess the thickness of the deposits at the top of the slope in land parcel 43.

Context:	Type:	Description:	Excavated:	Finds Present:
1500	Topsoil	Loose dark grey brown silty sand Borehole 1, thickness of deposit 0.2m	☑	☐
1501	Subsoil	Friable mid grey brown silty sand Borehole 1 thickness of deposit 0.1m	☑	☐
1502	Natural	Loose light orange brown sand Borehole 1, medium coarse sand	☑	☐

Trench: 200

Max Dimensions: Length: 0.10 m. Width: 0.10 m. Depth to Archaeology Min: 0.28 m. Max: m.

Co-ordinates:

Reason: Borehole 2: to assess the thickness of the deposits roughly half way down the slope in land parcel 43.

Context:	Type:	Description:	Excavated:	Finds Present:
2000	Topsoil	Loose dark grey brown silty sand Borehole 2, thickness of deposit 0.18m	☑	☐
2001	Subsoil	Friable mid grey brown silty sand Borehole 2, thickness of deposit 0.08m	☑	☐
2002	Natural	Loose light orange brown silty sand Borehole 2, medium coarse sand	☑	☐

Trench: 300

Max Dimensions: Length: 0.10 m. Width: 0.10 m. Depth to Archaeology Min: 0.6 m. Max: m.

Co-ordinates:

Reason: Borehole 3: to assess the thickness of the deposits at the bottom of the slope in land parcel 43.

Context:	Type:	Description:	Excavated:	Finds Present:
3000	Topsoil	Loose dark grey brown silty sand Borehole 3, thickness of deposit 0.2m	☑	☐
3001	Subsoil	Friable mid grey brown silty sand Borehole 3, thickness of deposit 0.12m	☑	☐
3002	Colluvium	Friable mid grey brown clay silt frequent small sand Borehole 3, colluvium at the bottom of the slope, thickness of deposit 0.36m	☑	☐
3003	Natural	Friable mid orange brown clay sand Borehole 3, finegrained clayey sand	☑	☐

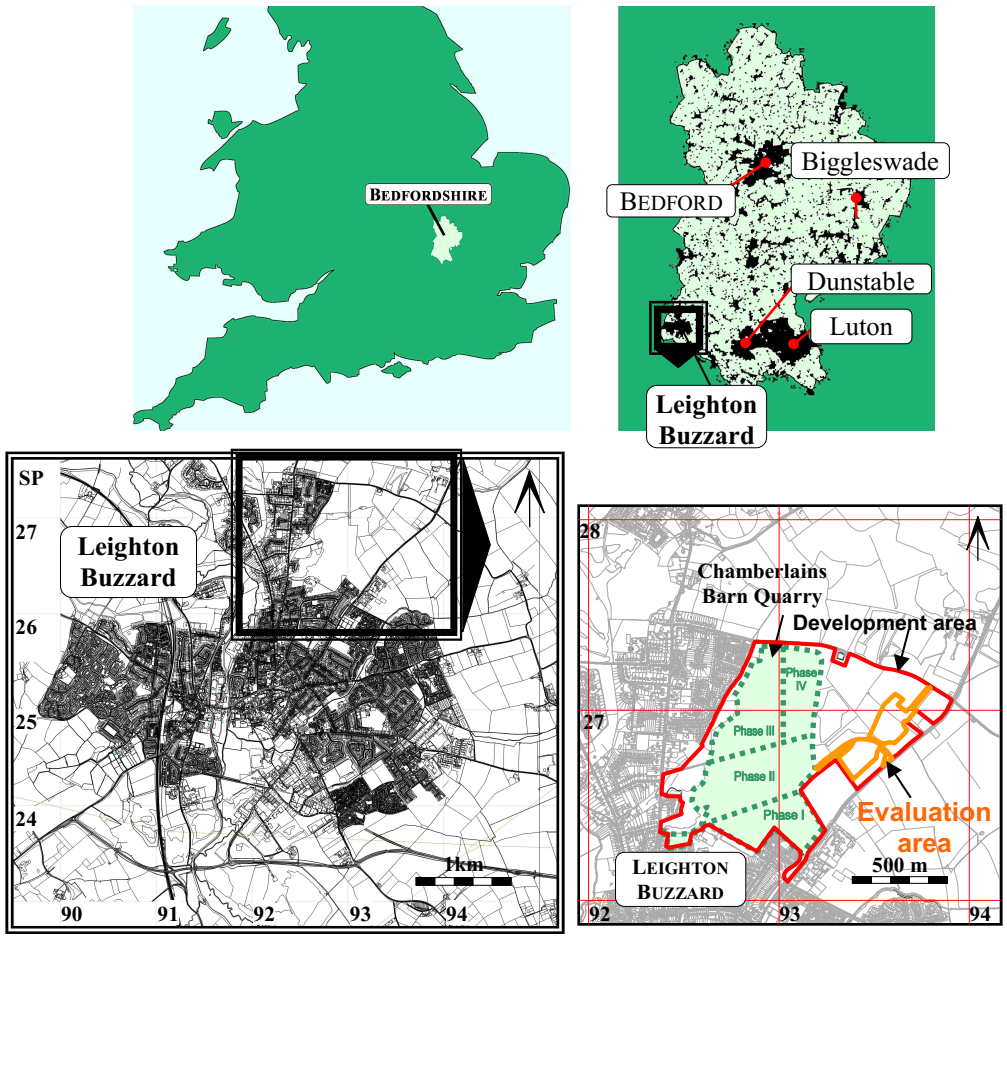


Figure 1: Site and trench location

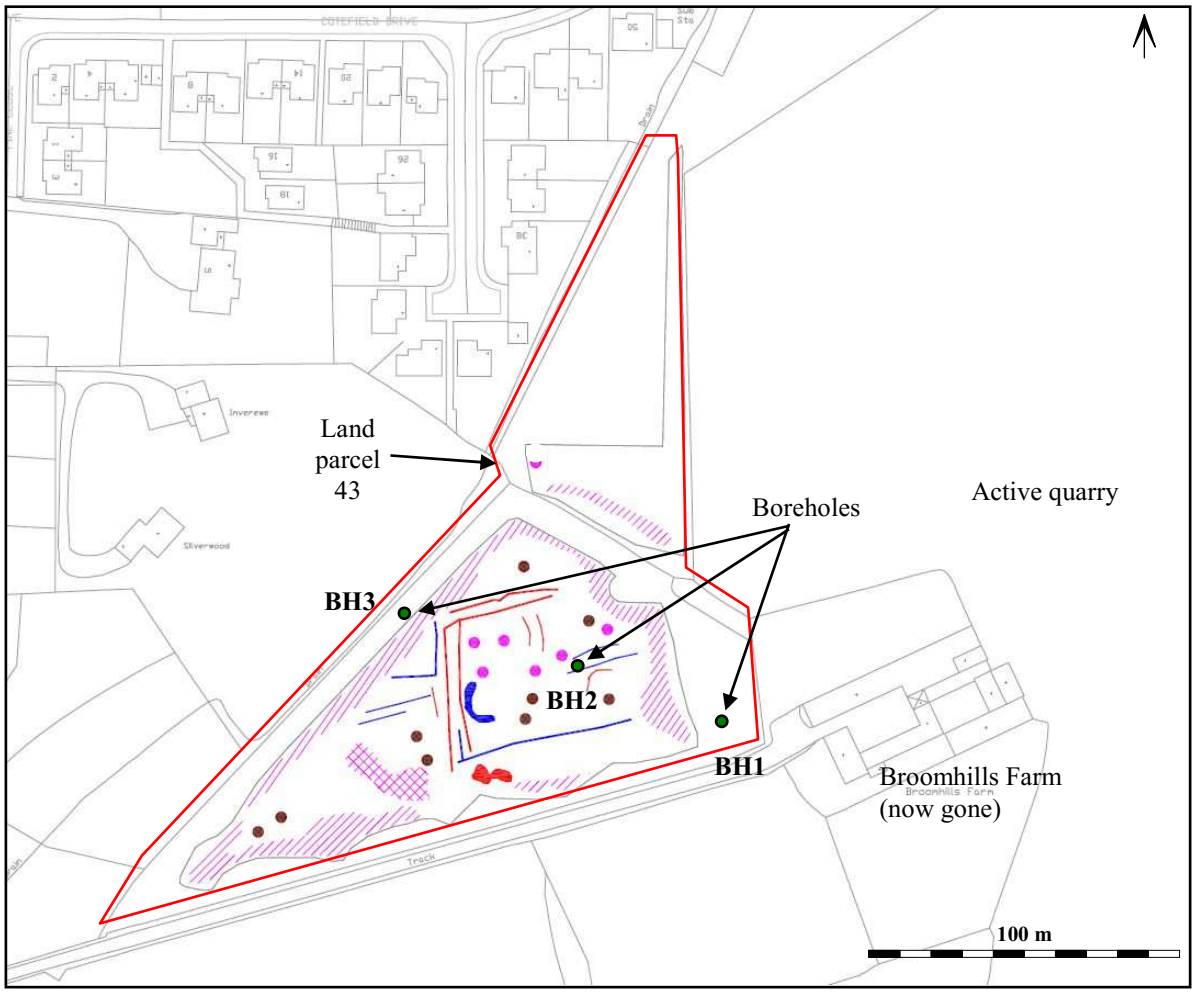


Figure 2: Position of boreholes in land parcel 43

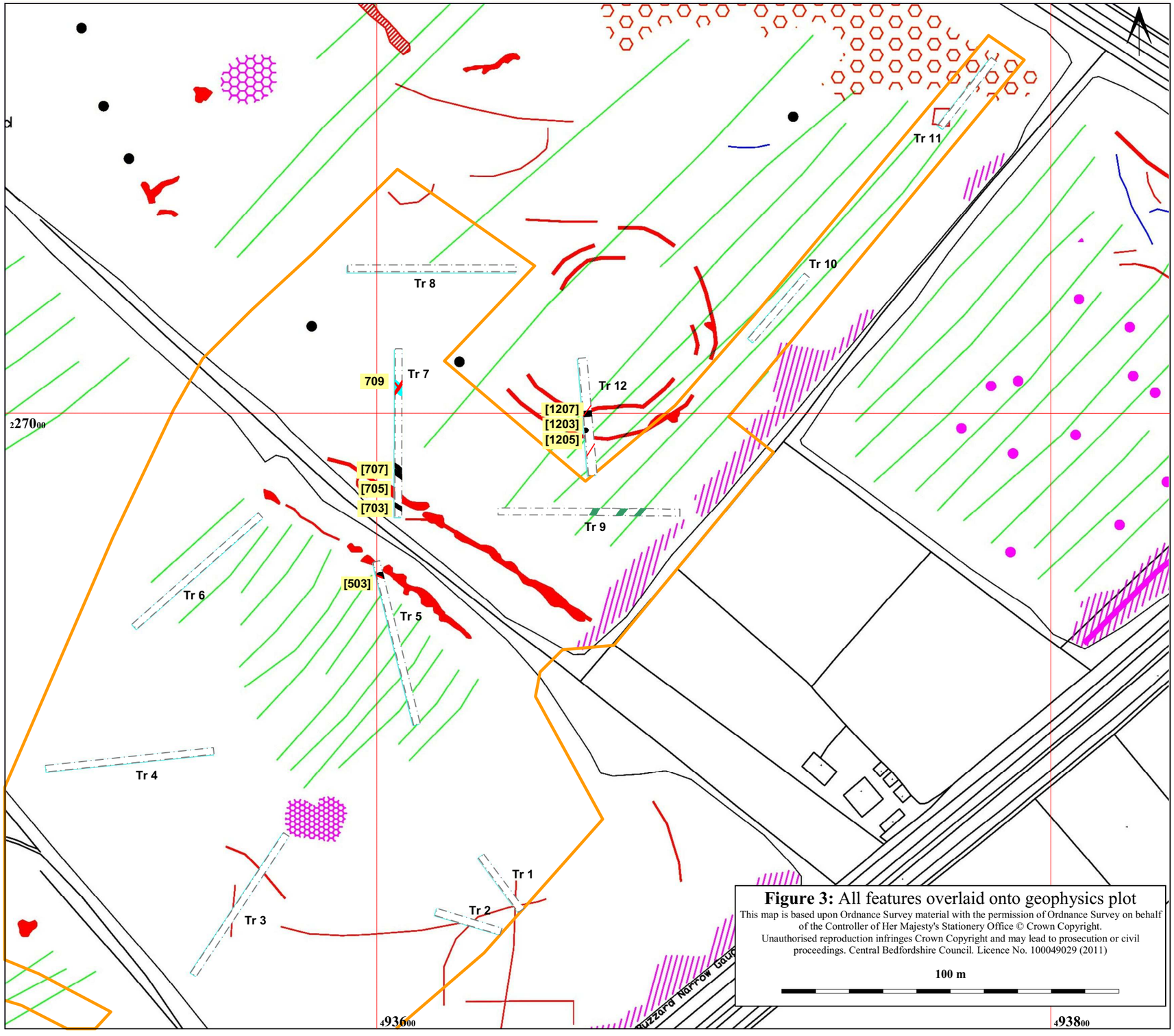
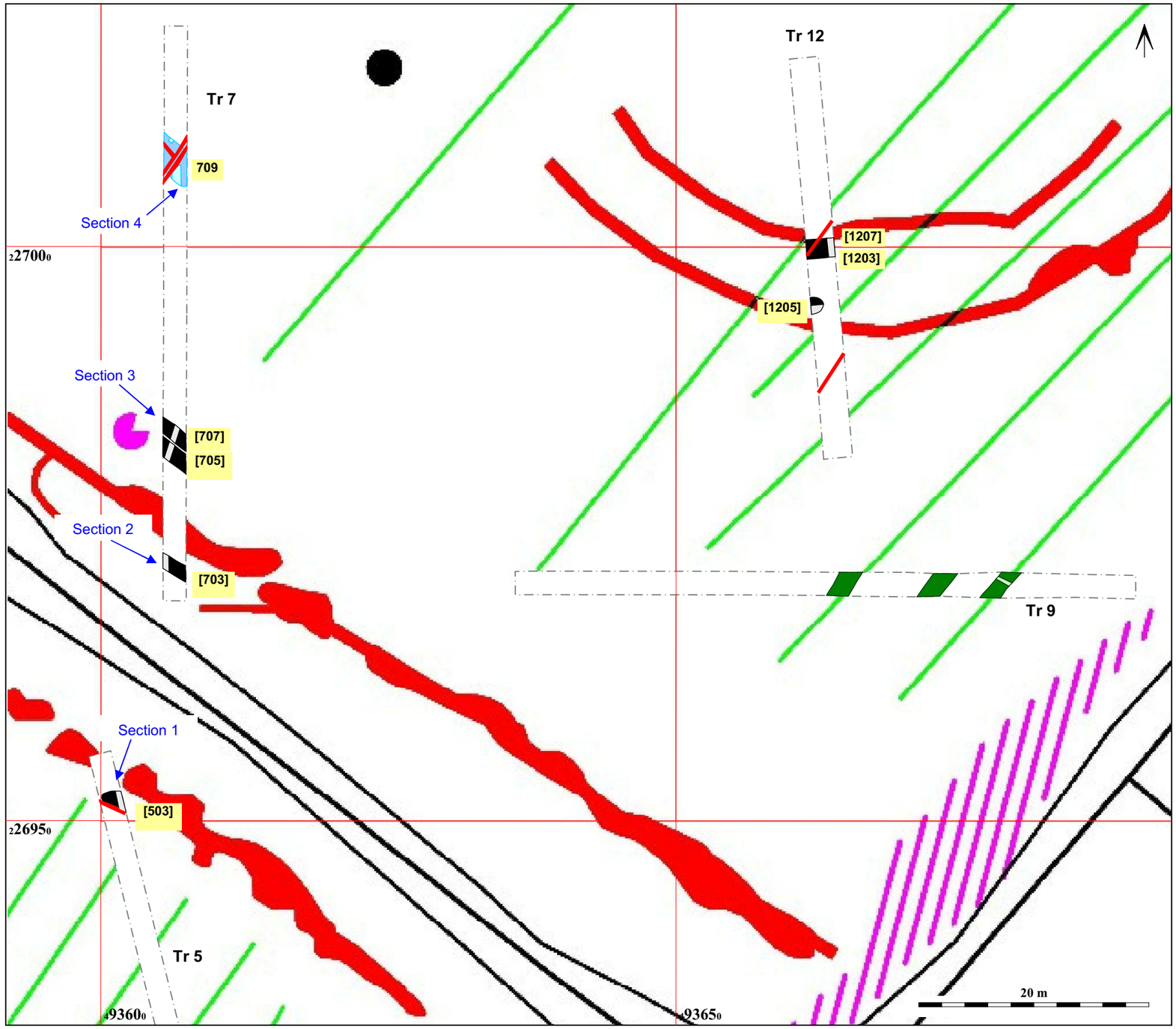
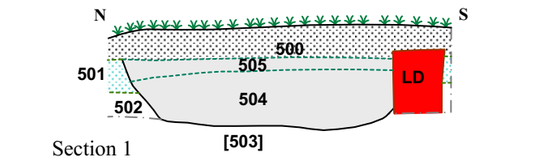
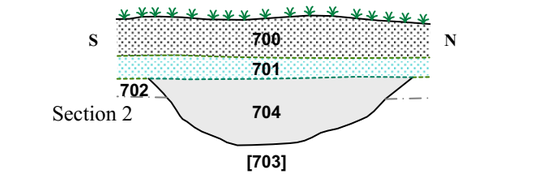


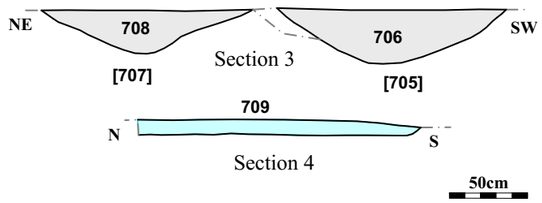
Figure 3: All features overlaid onto geophysics plot

100 m









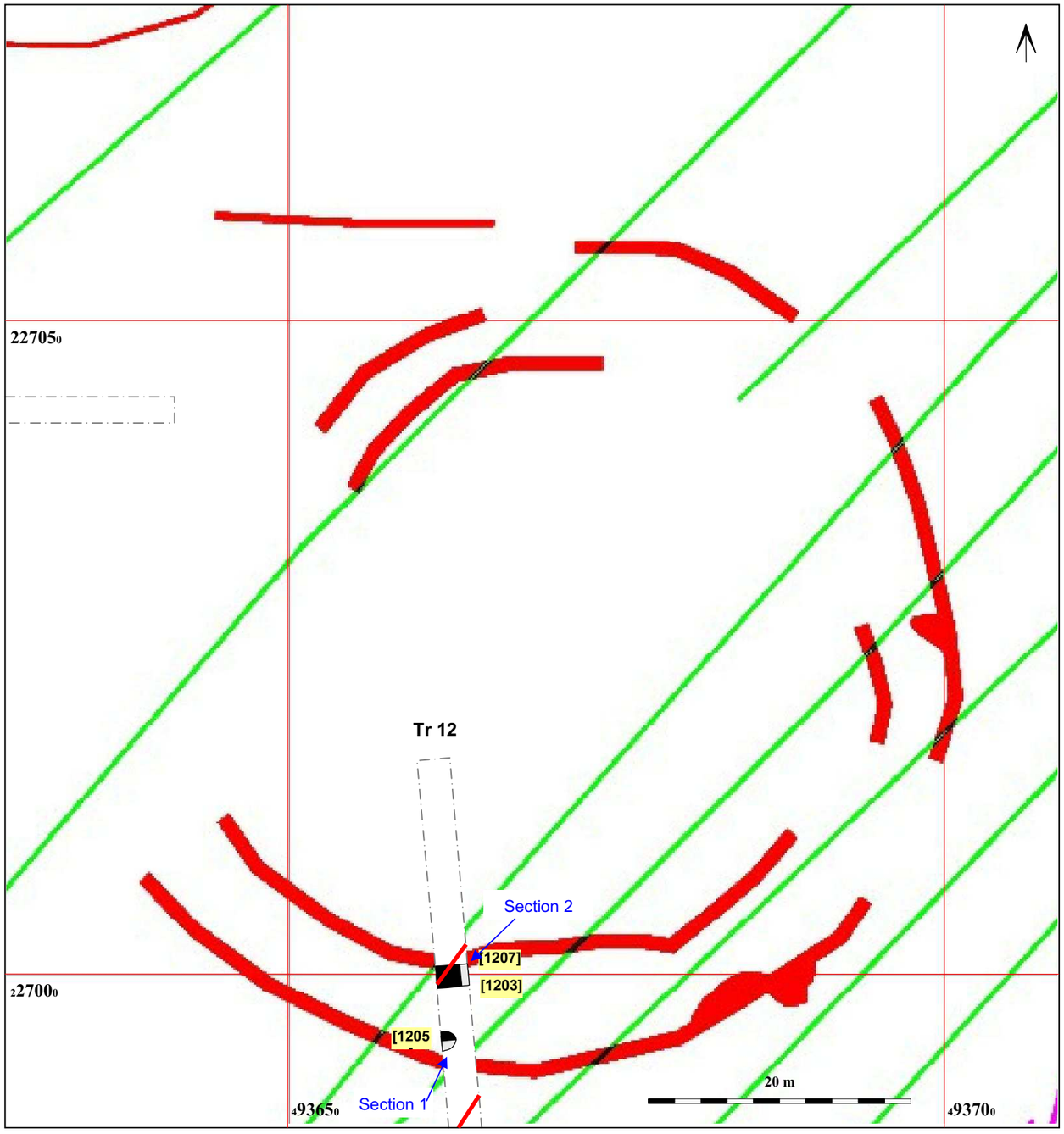
Key to Geophysics plot

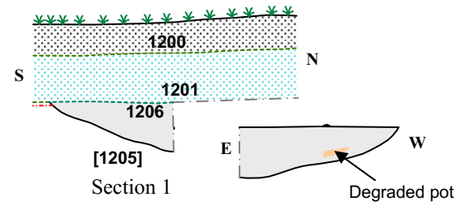
	Discrete positive anomaly- possible pit
	Bipolar anomaly- buried ferrous object
	Positive linear anomaly- cut feature of possible archaeological origin
	Negative linear anomaly- possible former earthwork/bank
	Agricultural mark
	Possible pipe or cable
	Positive area anomaly- cut feature of possible archaeological origin
	Negative area anomaly- possible former earthwork/bank
	Positive trend- weak evidence of cut feature of possible archaeological origin
	Negative trend- weak evidence of former earthwork/bank
	Area of magnetic variation- possible geological / pedological origin
	Large, high magnitude bipolar anomaly- possibly related to meteor shower
	Area of discrete positive anomalies- possibly related to landscaping
	Magnetic disturbance- related to telegraph pole
	Magnetic variation- spread of magnetic debris
	Magnetic disturbance related to fenceline
	Magnetic disturbance related ground disturbance

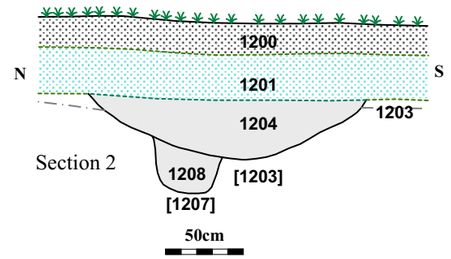
Key to trenches and sections

Archaeological feature; unexcavated section	Land drain
Archaeological feature; excavated/machined segment	Topsoil
Layer	Subsoil
Furrow	

Figure 4: Trenches 5, 7, and 9 overlaid onto geophysics plot







Key to Geophysics plot

	Discrete positive anomaly- possible pit
	Bipolar anomaly- buried ferrous object
	Positive linear anomaly- cut feature of possible archaeological origin
	Negative linear anomaly- possible former earthwork/bank
	Agricultural mark
	Possible pipe or cable
	Positive area anomaly- cut feature of possible archaeological origin
	Negative area anomaly- possible former earthwork/bank
	Positive trend- weak evidence of cut feature of possible archaeological origin
	Negative trend- weak evidence of former earthwork/bank
	Area of magnetic variation- possible geological / pedological origin
	Large, high magnitude bipolar anomaly- possibly related to meteor shower
	Area of discrete positive anomalies- possibly related to landscaping
	Magnetic disturbance- related to telegraph pole
	Magnetic variation- spread of magnetic debris
	Magnetic disturbance related to fenceline
	Magnetic disturbance related ground disturbance

Key to trenches and sections

- Archaeological feature; unexcavated section
- Archaeological feature; excavated/machined segment
- Topsoil
- Subsoil

Figure 5: Trench 12 overlaid onto geophysics plot

Figure 6: NW-facing section of post-medieval ditches [705] and [707]

Figure 7: East-facing section of prehistoric ditch [1205]

Figure 8: West-facing section of prehistoric ditches [1203] and [1207]

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