

**An auger survey at Warden Abbey, Bedfordshire.**

**NGR: 511930 243854**

**ASE Project No: 6542  
ASE Report No: 2014240**

**Kristina Krawiec**

**October 2014**

**An auger survey at Warden Abbey, Bedfordshire.**

**NGR: 511930 243854**

**ASE Project No: 6542**

**ASE Report No: 2014240**

**Kristina Krawiec**

**October 2014**

**Archaeology South-East  
Units 1 & 2  
2 Chapel Place  
Portslade  
East Sussex  
BN41 1DR**

**Tel: 01273 426830  
Fax: 01273 420866  
Email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)**

## **Abstract**

*In October 2014 Archaeology South-East were commissioned to undertake a hand auger survey at Warden Abbey, Bedfordshire on behalf of the Whitbread Estate in advance of Higher Level Stewardship Scheme. The survey comprised 54 hand auger cores through a variety of water management features, including fishponds, channels, water gardens and the large valley that occupies the southern half of the site. The aim of the survey was to characterise the deposits infilling these features and determine the possible state of preservation that may relate to the different phases of occupation at the site.*

*The depth of sedimentation within the pond features varied. The largest pond, to the north of the main area and considered to be the header tank of the system, was cored to a depth of 2.50m, where accessible. The shallowest pond, which had sediments with greatest potential, was cored to a depth of 0.80m deep. The main component of the deposits in filling the ponds were organic silts with occasional detrital woody fragments. The channel features, which represent feeder channels and water garden features varied in depth and quality of sediment. A consistent feature of the sediments across the site was the presence of molluscan remains which were present in even the driest parts of the system.*

*The large valley, thought to have been dammed with the establishment of the Abbey, was extremely dry and the sediments were compact and oxidised throughout. The channel that passes to the north of the dam did contain a thin organic silt deposit, although it may not be contemporary with the dam.*

*The survey has demonstrated that some of the features have dried out considerably, including the main floodplain of the dammed valley. However pockets of preservation survive across the pond system, with best preservation occurring in the deepest features. The flow of water through the system is clearly not continuous in all areas and the water table was only encountered sporadically. The silt clay content of the sediments may have led to the water table becoming perched with runoff and rainwater sitting on the modern ground surface rather than being able to percolate through the soil profile. It is unclear what effect this has had on the microscopic palaeoenvironmental remains held within the buried sediments and further work is required to establish this.*

## **CONTENTS**

- 1.0 Introduction**
- 2.0 Archaeological Background**
- 3.0 Archaeological Methodology**
- 4.0 Results**
- 5.0 Discussion and Conclusions**

**Bibliography**  
**Acknowledgements**

**HER Summary Sheet**  
**OASIS Form**

**Appendix 1: Borehole logs**  
**Appendix 2: Troels-Smith classification table**  
**Appendix 3: Levels table**

## **TABLES**

Table 1: Quantification of site archive

## **FIGURES**

Figure 1: Location map  
Figure 2: Taylor map of earthworks with core locations central area  
Figure 3: Taylor map of earthworks with core locations southern area  
Figure 4: Taylor earthworks map



## **1.0 INTRODUCTION**

### **1.1 Site Background**

- 1.1.1 Archaeology South-East (ASE), the contracting division of the Centre for Applied Archaeology (CAA), Institute of Archaeology (IoA), University College London (UCL) was commissioned by Whitbread Farms Ltd to undertake a hand auger survey in order to characterise the sediments at the site as part of a Higher Level Stewardship Agreement with Natural England (Figure 1, NGR 511930 243854).

### **1.2 Geology and Topography**

- 1.2.1 The site lies within a dammed valley with the remains of a Cistercian Abbey incorporated into a later Tudor red brick mansion. The grounds comprise a complex of fish-ponds, likely contemporary with the abbey, a water garden and a managed floodplain with channels and ponds terminating at the dam.
- 1.2.2 The underlying solid geology is the Stewartby and Weymouth Mudstone member overlain by Head deposits and Diamicton (Oadby member). The site is currently under pasture and is used for grazing and wild fowl shooting.

### **1.3 Planning Background**

- 1.3.1 Warden Abbey is a Scheduled Monument (BD38-1002936) and the site also designated as a County Wildlife Site for its neutral grassland and grassland on boulder clay interest. Whitbread Farms Ltd have entered into a Higher Level Stewardship Agreement with Natural England (AG00396817). As part of this agreement Historic and Archaeological Feature Protection options have been taken up which aim to understand the water engineering at the site to ensure water flows as appropriate and to ensure anaerobic conditions persist. In consultation with English Heritage a programme of auger survey was suggested to gather baseline data for this scheme.

### **1.4 Scope of Report**

- 1.4.1 This report presents the results of the auger survey that took place between 29<sup>th</sup> September and 3<sup>rd</sup> October 2014. The work was carried out by Kristina Krawiec. The work was project managed by Diccon Hart and Jon Sygrave and the post-excavation work was managed by Jim Stevenson.

## **2.0 ARCHAEOLOGICAL BACKGROUND**

### **2.1 Introduction**

- 2.1.1 The site is a Scheduled Monument and comprises the Abbey precinct with associated water management features including fish ponds, water meadow and a dammed valley. The Abbey was founded in 1135 as a daughter house to Rievaulx Abbey in Yorkshire. The monastery grew and by the early 14<sup>th</sup> century an abbey church was under construction that was cathedral-like in proportion. During the 1960s a large mosaic pavement was excavated and removed to Bedford Museum (Taylor and Rudd). In 1974 a second large pavement was uncovered in what is thought to be the Abbots lodging.
- 2.1.2 The Abbey is referred to in the plays of Shakespeare as it was famed for its Warden Pears which gave rise to Warden pie. The pear was a symbol on the reverse of the abbey seal. The features of the Abbey were mapped and interpreted by CC Taylor in 1976 during rescue excavations prior to the site being restored by the Landmark Trust (Figure 2).
- 2.1.3 The abbey was demolished during the Dissolution of 1537 where records show 400 cartloads of stone were removed from the site. Shortly after this a red-brick mansion was built incorporating parts of the Abbot's Lodging. The property was purchased by the Whitbread family in the late 18<sup>th</sup> century who hold the land today.
- 2.1.4 The main part of the Tudor house was pulled down in 1790 leaving the short wing which stands today. The Landmark Trust took on the lease of the building and restored it for use as a holiday cottage. The grounds are currently grazed by a small herd of cows and are used as part of the wild shooting carried out by the estate. The surrounding land is characterised by well preserved earthworks representing fish ponds, water gardens and other water management features.
- 2.1.5 The introduction of a large railway cutting in the late 19<sup>th</sup> century to the west of the site appears to have truncated parts of the water management system. In the winter the now disused railway acts as a reservoir for runoff and ground water.

### **2.2 Project Aims and Objectives**

- 2.2.1 The project aims to establish the potential for the survival and significance of geoarchaeological and palaeoenvironmental deposits.
- 2.2.2 The main objectives are
- To characterise deposits, and patterns of accumulation of palaeoenvironmental/geoarchaeological deposits across the scheduled area, including depth and lateral extent of units
  - Identify significant variations in deposition in relation to topographic variation and presence of features as palaeochannels
  - Identify the locations and extent of any waterlogged organic deposits

- Clarify the relationship between sediment sequences and other deposit types
- To make the results of the investigation available through a suitable report

### **3.0 ARCHAEOLOGICAL METHODOLOGY**

#### **3.1 Fieldwork Methodology**

- 3.1.1 The cores were carried out under an Eijelkamp gouge auger with an open chamber and Edelman corkscrew head. The locations of the cores were located using a Leica RTK GPS.
- 3.1.2 The lithology of the cores was recorded on site using the Troels-Smith classification system in Appendix 1 (1955). The scheme breaks down a sediment sample into four main components and allows the inclusion of extra components that are also present, but that are not dominant. Key physical properties of the sediment layers are also identified according to darkness (Da), stratification (St), elasticity (El), dryness of the sediment (Dr) and the sharpness of the upper sediment boundary (UB). The core logs are located in Appendix 2 and were supplemented by digital photography.
- 3.1.3 Some locations were too wet to achieve a core in the deepest location and so cores were placed where water levels were reasonably low.

#### **3.2 Archive**

- 3.2.1 The site archive is currently held at the offices of ASE. The contents of the archive are tabulated below (Table 1).

Number of Contexts	0
No. of files/paper record	Core logs
Plan and sections sheets	survey
Photographs	20 digital photographs
Bulk finds	0
Registered finds	2 small bags
Environmental flots/residue	0

Table 1: Quantification of site archive

## 4.0 RESULTS

### 4.1 Lithology

4.1.1 A total of 53 cores were achieved across the site within defined earthworks representing ponds and water management features (Figure 2 and 3). In addition two transects placed across the floodplain of the valley in order to characterise the deposits where defined features were absent. The full core logs can be found in Appendix 2. The site had been previously recorded by Taylor (1976) as a hachure plan with accompanying interpretations from which the letter codes for groups of features are used in the text below (Figure 4).

#### *Ponds*

4.1.2 The largest pond, located to the north west of the site, is considered to be a header or reservoir tank for the system. This is currently surrounded by a large wooded bank and still holds water. Two cores (51-52) were placed at the south east end of the pond where the water was shallow. This demonstrated organic silt deposits with detrital woody fragments throughout. The lower silts are pale grey and smooth overlain by less well humified brown black organic silts. These represent the infilling deposits of the pond and may provide material of some antiquity, if this represents an original medieval feature. These deposits are overlain by 1.50m of more modern black woody silts.

4.1.3 The largest pond is now isolated from the rest of the system by a road that provides access to the house and barns to the north west of the Abbey. To the south of this header tank, Area V, are two ponds connected by a shallow channel feature. The northern pond is currently holding water and the edges were unable to be cored to any depth due to the presence of coarse material. The shallow channel feature (core 3) was infilled with an oxidised sandy clay, the upper part of this deposit contained medieval tile as well as molluscan remains. The deposits here were not waterlogged although they appeared to contain demolition deposits that derive from the Abbey. The southern pond in this area was almost entirely infilled and was overgrown with willow trees. Despite this the feature was cored to a depth of 1.80m. The sediment in this feature was also extremely dry and oxidised, which suggests that water no longer percolates through the soil column.

4.1.4 The next defined pond complex, Area x, had variable preservation of deposits across the four pond features. The largest pond, (core 5) contained organic silts to depth of 1.90m bgl which was obstructed at the base and was not possible to core deeper, this may be due to coarse material at the base of the feature. The silts contained molluscs and woody fragments as well as more humified organic remains. The water table was encountered at 0.80m bgl at this location which has kept the basal sediments waterlogged.

4.1.5 Of the three smaller ponds in this area only one was holding water at the time of the survey (core 8). The sediments within this and the core 9 location were sufficiently waterlogged to preserve organic remains. The sediments within these two features were again organic silts within molluscan and well humified organic remains. The pond in location 10 was much shallower,

c.0.55m, and was infilled by oxidised silt clay which was stony at the base and unable to be cored further. It may be this shallow or it may have been infilled with coarse material.

- 4.1.6 The ponds within core locations 15 and 16, Area Y, are almost the same depth and contain similar organic silt deposits. The upper deposits in both ponds were highly organic possibly due to a perched water table which currently supports wetland vegetation such as common reed. The lower silts also contained whole and fragmented of molluscs and were up to 1.24m in depth.
- 4.1.7 There are also two isolated pond features which lie along the higher ground of the valley sides which also hold sediment with palaeoenvironmental potential. To the far east of the main pond complex, Area rr, a possible pond feature was found to hold up to 2.44m of organic silts, with the water table encountered at 1.80m bgl. This feature must be fed by a spring as it is located on the high ground of the valley side and a similar feature to the south (core 40) was found to be completely dry. The second valley side pond to contain promising material was located to the south of Area jj and was mollusc-rich throughout with pottery recovered from the base. The water table was not reached but the basal deposit was damp suggesting at least some influence from ground water.

#### *Channel Features*

- 4.1.8 The channel features fall into two categories, feeder channels which seemingly link the ponds together, and water garden features possibly contemporary with the Tudor house. These features were shallow for the most part and only contained organic remains in a small number of locations.
- 4.1.9 The large rectangular feature, Area cc, contained two locations that were infilled by organic silt, cores 20 and 22. In core 22 the sediment was only 0.60m thick but contained visible seeds and plant remains. In core 20 the water table was present at the base of the feature. The large channel, Area z, connecting Area cc to Area d was still damp underfoot and a large pipe was visible in the railway embankment, although this was silted up to the top. This channel (core 29) recorded up to 1.50m of organic black brown silt with woody fragments and visible seeds. The level of preservation within this feature may be due to the depth it was cut to or may suggest it is relatively late in date.
- 4.1.10 The channels that crisscross the area around the dam, to the very south east of the site, are also shallow and contain organic silts, core 35 and 38. These features are of unknown function and unknown date. The silts are black with frequent molluscan remains and well humified organics and may again may be late in date.

#### *Floodplain*

- 4.1.11 In addition to targeting discreet features, two transects were undertaken orientated north east south west across the floodplain in Area hh. These transects demonstrated the desiccated nature of the sediments infilling the valley floor. Although extremely dry and compact the sediment was rich in molluscan remains. The floodplain sediments were typically a dry orange silt

clay which was sandy and gravelly towards the base with no waterlogging evident. The depth of sediment was also very shallow suggesting little in the way of overbank flooding was occurring prior to the damming of the valley. There was also no indication of palaeochannels at the locations cored.

## **5.0 DISCUSSION AND CONCLUSIONS**

### **5.1 Overview of stratigraphic sequence deposit survival**

5.1.1 The auger survey has created a baseline model of the nature of the deposits infilling the pond and channel complex that represents the medieval and post-medieval exploitation of the valley. There are 8 ponds with the potential to preserve palaeoenvironmental remains at present (cores 5,8,9,15,16,3,50, 52). The channels have less potential as they are shallower and preserve less organic sediment. However in a few locations organic sediments do survive. In particular, cores 13,14,20,22,28,29,35,38 have more organic infill deposits that may provide palaeoenvironmental material.

5.1.2 -The often coarse-grained and desiccated nature of the overlying sediments of all features makes recovery of samples using a hand auger problematic and in most cases impossible. The vast majority of the sediments at the site demonstrated extensive oxidation with rust-coloured root channels as well as modern rootlet penetration. At least all of the upper parts of the profiles recorded this with the most oxidised sediment lying within the floodplain. In order to recover intact sequences a mechanical sample recovery method is appropriate.

5.1.3 In the drier sediments the molluscan assemblage is well preserved. As these tend to be within shallow channel features samples could be recovered by hand dug test pits in order to recover small bulk samples (c.5L). The analysis of these assemblages could provide information relating to land management practices, water condition and habitats within the channels. It may also be possible to recover radiocarbon dates from some species of land snail in contexts that do not have other dateable material.

### **5.2 Potential of deposits**

5.2.1 The survey has established that there is differential preservation of sediments within the various feature types across the site. The deeper features such as the larger, ponds have a high potential to preserve palaeoenvironmental remains in their current state. The channels are less likely to preserve organic remains but have a high potential to preserve molluscan assemblages. What is not clear is to what extent the microfossil assemblage held within the organic sediments has been preserved.

### **5.3 Consideration of research aims**

5.3.1 The survey has characterised the deposits at the site as displaying differential preservation across the area. In the large ponds and in some of the channels there is the potential for palaeoenvironmental remains to be preserved. There is certainly the potential for pollen and plant macrofossils sequences within the organic silts and molluscan assemblages within the drier areas. It is not

clear as to the age of these sediments and not all of the sequences recorded contained material that would allow absolute dating methods to be applied. The deposits with visible organic remains including wood fragments should be considered to be of the highest potential to provide a chronological framework for the site.

- 5.3.2 The survey has also identified variation in the depths of the pond features which may relate to different stages within the fish farming process. The ponds closest to the house and abbey complex contained fragments of pottery and medieval tile suggesting that some features have become infilled when the monastery was dissolved. This adds another dimension to the potential of these sediments which is to yield archaeological material as well as environmental evidence.

## **5.4 Conclusions**

- 5.4.1 The auger survey at Warden Abbey has demonstrated that despite interruptions in the hydrological system, sediments are present within some of the features that are likely to contain palaeoenvironmental remains. What has not been established, however, is to what extent this preservation extends to the microfossil (e.g pollen) remains within the sediment archive. In order to establish baseline conditions it is recommended that sediment be recovered using a terrier rig from up to four locations for the assessment of pollen.
- 5.4.2 It is also recommended that four locations are selected for test pitting in order to recover small bulk samples for molluscan assessment. Radiocarbon dating would also help in establishing the significance of the palaeoenvironmental assemblages within a local and regional setting as without this information it is not possible to say whether medieval deposits survive. Acquiring chronological control will allow the significance of any preserved remains to be established and inform on future mitigation.

## BIBLIOGRAPHY

British Geological Survey Map Viewer:  
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

CgMs 2013. A Written Scheme of Investigation for an Archaeological Evaluation at GlaxoSmithKline, Dartford, Kent.

English Heritage 2002. *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation and Geoarchaeology: Using earth sciences to understand the archaeological record.*

Taylor, C. 1976. Measured Survey of Warden Abbey. Unpublished report

Troels-Smith, J. 1955. Karakterisering af løse jordarter (characterisation of unconsolidated sediments). *Denmarks Geologiske Undersøgelse*, Series IV/3, 10, 73

## ACKNOWLEDGEMENTS

ASE would like to thank Whitbread Farms Ltd for commissioning the work and David Kenney (Heritage at Risk Projects Officer) and Will Fletcher of English Heritage (Inspector of Monuments) for their assistance throughout the project. The fieldwork was directed by Kristina Krawiec. The author would like to thank Jon Sygrave and Diccon Hart who project managed the excavations and Jim Stevenson who project managed the post-excavation process.



## HER Summary Form

Site Code						
Identification Name and Address	Warden Abbey, Bedfordshire					
County, District &/or Borough	Bedfordshire					
OS Grid Refs.	511930 243854					
Geology	Head: Weymouth Member Mudstone: Oadby Member Diamicton					
Arch. South-East Project Number	6542					
Type of Fieldwork	Eval.	Excav.	Watching Brief	Standing Structure	Survey	Other
Type of Site	<b>Green Field</b>	Shallow Urban	Deep Urban	Other		
Dates of Fieldwork	Eval.	Excav.	WB.	<b>Other</b> October 2014		
Sponsor/Client	Whitbread Farms Ltd					
Project Manager	Jon Sygrave					
Project Supervisor	Kristina Krawiec					
Period Summary	Palaeo.	Meso.	Neo.	BA	IA	RB
	AS	<b>MED</b>	<b>PM</b>	Other <b>Modern</b>		
<p>Summary</p> <p><i>In October 2014 Archaeology South-East were commissioned to undertake an auger survey at Warden Abbey, Bedfordshire. The site is a Scheduled Monument and consists of Warden Abbey precinct and a later Tudor mansion of which only one wing survives. The grounds have a well preserved complex of fish ponds and water garden features which date from the medieval and later periods. The aim of the survey was to characterise to sediment infilling these features and determine their potential for palaeoenvironmental preservation.</i></p> <p><i>Several of the fish ponds were completely dry with little potential for the recovery of palaeoenvironmental remains. However a few locations demonstrated that sufficient waterlogging has allowed the accumulation of organic silts which have the potential to preserve material for analysis. The channel features at the site also contained a shallow suite of deposits which could also provide information regarding the landscape development of the site.</i></p>						

## Appendix 1 Borehole Logs

### Warden Abbey auger survey, 6542

#### Core 1 Oval pond with water

0-0.30m Gritty black modern silt

0.30-0.40m Brown sand and gravel too hard to core

#### Core 2 2<sup>nd</sup> core in oval pond

0-0.30m Gritty black modern silt

0.30-0.40m Brown sand and gravel too hard to core

#### Core3

0-0.25m Snady brown topsoil

0.25-0.70m	Da	St	El	Sicc	UB
	2	0	0	4	4

As1 Gmin2 Gmaj1

Orange brown sandy gravelly clay, occasional molluscs, charcoal and tile

0.70-0.87m	Da	St	El	Sicc	UB
	2	0	0	3	4

As2 Ag1 Gmin1

Orange grey mottled sandy clay, oxidised

0.87-1.00m	Da	St	El	Sicc	UB
	2	0	0	3	4

As2 As1 Gmin1 Gmaj++

Gravelly orange yellow sandy clay

#### Core 4 possible pond beneath willow trees

0-0.30m sandy topsoil

0.30-0.72m	Da	St	El	Sicc	UB
	2	0	0	4	4

	As2 Ag1 Gmin1 Gmaj+				
	Orange sandy clay, very stiff, gravelly				
0.72-1.48m	Da	St	El	Sicc	UB
	3	0	0	4	3
	As2 Ag1 Gmin1				
	Dark grey orange-mottled sandy clay, oxidised				
1.48-1.60m	Da	St	El	Sicc	UB
	3	0	0	3	4
	As1 Ag1 Gmin2 ptm				
	Grey -orange mottled sandy silt clay, molluscs				
1.60-1.67m	Da	St	El	Sicc	UB
	2	0	0	4	4
	As1 Ag1 Gmin2				
	Orange-grey mottled sandy silt clay				
1.67-1.80m	Da	St	El	Sicc	UB
	3/4	0	0	4	4
	As2 Ag2 Gmin+				
	Dark grey silt clay, occasional orange mottling				
1.80-2.25m	Da	St	El	Sicc	UB
	2	0	0	4	4
	As3Ag1 Gmaj++				
	Light grey -orange mottled silt clay, occ gravel, very stiff				

#### Core 5 large pond

0-0.17m Gritty silt topsoil

0.17-0.37m	Da	St	El	Sicc	UB
	2	0	1	3	4

	As1 Ag3 Sh++				
	Orange-grey silt occ clay, well humified organics				
0.37-0.70m	Da	St	El	Sicc	UB
	3	0	1	3	3
	As3 Ag1 Sh++ ptm				
	Grey silt, occ clay, well humified organics, molluscs				
0.70-0.90m	Da	St	El	Sicc	UB
	4	0	1	2	2
	As1 Ag3 Sh++				
	Mottled black and brown organic silt clay, water table at 0.80m, well humified organics				
0.90-1.00m	Da	St	El	Sicc	UB
	3	0	0	3	4
	Gmin1 Ag2 Sh1 Tl+				
	Gritty brown silt clay, occasional woody fragments				
1.00-1.77m	Da	St	El	Sicc	UB
	3	0	1	3	4
	Ag1 Sh1 Tl Gmin1 ptm				
	Organic brown silt, woody fragments, occ molluscs, grit and stones				
1.77-1.80m	Da	St	El	Sicc	UB
	3	0	0	3	3
	As1 Ag3 Gmin++				
	Gritty grey silt clay, occasional organic flecks				
1.80-1.90m	Da	St	El	Sicc	UB
	2	0	0	2	3
	As3 Ag1 Sh+ ptm Tl				

Grey smooth silt clay, well humified organics, occ twigs and mollusc frags,  
original deposit? Hard at base= gravel?

#### Core6 area between ponds

0-0.26m organic topsoil

0.26-0.80m	Da	St	El	Sicc	UB
	2	0	1	3	4

As1 Ag3 Sh++

Orange-grey sandy silt clay, organic flecks

0.80-1.10m stiff yellow grey clay, geology

#### Core 7 to east of core 6

0-0.20m organic topsoil

0.20-0.70m	Da	St	El	Sicc	UB
	2	0	1	3	4

As1 Ag3 Sh++

Orange-grey mottled silt clay

#### Core8

0-0.70m Very wet sloppy black grey organic silt

0.70-1.05m	Da	St	El	Sicc	UB
	¾	2	0	2	4

Ag3 Sh1 Dh++ Tl ptm

Very wet light and dark grey organic silt, well humified organic clasts,  
blackier with depth, woody frags, molluscs

1.05-1.60m	Da	St	El	Sicc	UB
	2	0	0	3	4

Ag1 As3

Orange yellow silt clay, drier with depth, occ stones

#### Core 9 dry pond

0-0.12m Peaty topsoil

0.12-0.22m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	3	0	2	3	3
--	---	---	---	---	---

Ag2 Sh2

Brown organic silt, rootlets, organics well humified

0.22-0.60m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	2	0	0	3	3
--	---	---	---	---	---

Ag3 As1 Sh++

Pale grey silt clay, occ rootlets, occ well humified organics, occ stones

0.60-1.20m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	3	0	1	3	4
--	---	---	---	---	---

Ag2Sh2

V well humified organic silt, brown becoming mottled black, small molluscs, whole

1.20-1.46m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	2	0	1	4	2
--	---	---	---	---	---

Ag3 Sh1

Grey brown mottled organic silt, water table at 1.0m, molluscs, black at base

1.46-2.00m grey yellow mottled stiff silt clay, dry

**Core10 pond parallel with core 9**

0-0.25m peaty topsoil

0.25-0.35m grey orange mottled dry silt clay, rootlets

0.35-0.55m silt clay very dry and stiff, stones obstructed auger

**Core 11 to east of core 10, channel?**

0-0.10m peaty topsoil

0.10-1.20m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	2	0	0	4	4
	Ag2 As2 Gmin++ Gmaj				
	Dark grey orange mottled silt clay, gritty occasional stones, very dry				
1.20-1.30m	bright blue yellow silt clay, very dry and stiff				
Core12 in pond like area to se of core 11					
0-0.22m peaty topsoil					
0.22-1.20m	Da	St	El	Sicc	UB
	2	0	0	4	4
	Ag2 As2 ptm				
	Orane grey mottled silt clay, cry, pale rootlets, occ molluscs, slighylt				
organic at base					
1.20-1.40m					
Core 13 channel feature leading to Area Y					
0-1.27m	Da	St	El	Sicc	UB
	¾	0	1	3	0
	Sh2 Ag2 Tl Dh ptm				
	Peaty mottled brown black silt woody frags and mollusc, less humified				
with depth, reedy					
1.27-1.50m	Da	St	El	Sicc	UB
	3	0	0	3	2
	Ag2 Sh1 Tl				
	Sticky organic olive green silt, mollusc frags, reed remains				
1.50m	Da	St	El	Sicc	UB
	3	0	0	3	2
	Ag3 Sh1 Gmaj				
	Black grey smooth organic silt , water table at base, hard obstruction				

**Core 14 east end of same channel as 13, reedy with water**

0-0.70m black wet gritty organic silt, woody frags

0.70-1.30m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

4	0	1	2	0
---	---	---	---	---

Ag2 Sh1 Dh1

Red brown poorly humified silty peat, clasts of grey silt

1.30-1.48m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

2	0	0	2	4
---	---	---	---	---

Ag3 Sh1

Pale grey sticky silt , occasional reeds

1.41-1.42m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

3	0	0	3	4
---	---	---	---	---

Dh4

Lense of compacted reeds and leaves

1.48-1.60m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

2	0	0	4	4
---	---	---	---	---

Ag3 Ag1

Pale blue yellow silt clay very dry, too hard to core further

**Core 15 pond parallel with core 13 and 14, dry**

0-0.55m	Da	St	El	Sicc	UB
---------	----	----	----	------	----

3	0	1	3	0
---	---	---	---	---

Ag2 Sh2

Well humified organic brown black silt, occ molluscs

0.55-0.60m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

2	0	0	2	4
---	---	---	---	---

Ag2 Ag2

Blue yellow sticky silt clay



0.60-0.90m	Da	St	El	Sicc	UB
	3	0	0	3	4
	Ag3 ag1 sh+				
	Brown sticky silt				
0.90-0.96m	Da	St	El	Sicc	UB
	2	0	0	3	4
	Ag2 Ag2				
	Yellow blue silt clay				
0.96-1.20m	Da	St	El	Sicc	UB
	3	0	1	3	4
	Ag1 Sh3 ptm+				
	Organic brown silt molluscs				
1.20-1.24m	Da	St	El	Sicc	UB
	2	0	0	2	2
	Ag3 Ag1 sh+				
	Blue-grey sticky silt occasional organic flecks, water table at 1.20m, reed remains				
1.24-1.70m	Blue yellow stiff silt clay				
Core 16 pond parallel with core 15					
0-0.80m	Da	St	El	Sicc	UB
	3	0	1	3	0
	Ag1 Sh2 Dh1				
	Brown poorly humified occasionally silty peat				
0.80-1.10m	Da	St	El	Sicc	UB
	3/4	0	0	3	4
	Ag3 Sh1 ptm				
	Grey black organic silt, occ shell frags, poss cbm at base				

1.10-1.22m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	3	0	1	3	4
--	---	---	---	---	---

Ag3 Sh1 ptm

Organic olive green brown silt , whole molluscs, pale rootlets

1.22-1.30m	very dry blue yellow silt clay
------------	--------------------------------

**Core 17 in pond to the west of manor house**

0-0.30m black sandy gravelly silt, brick fragments and other hard debris

0.30-0.40m stiff yellow orange clay, very dry

**Core 18 west end of same pond as 17**

0-0.40m black brown gritty silt, very wet

0.40-0.50m very coarse material unable to core further

**Core 19 area to the east of horseshoe shaped mound of material**

0-0.10m dry topsoil

0.10-0.80m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	3	0	0	3	4
--	---	---	---	---	---

Ag2 Ag2 Gmaj++

Brown grey mottled silt clay occasional stones, wtr table 0.80m

0.80-1.80m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

	3	0	1	3	4
--	---	---	---	---	---

Ag1 As3 Gmin+ Gmaj++

Orange grey clay v stiff with depth, rolled chalk fragments and flint

**Core 20 post-med water garden feature, oblong**

0-0.70m	Da	St	El	Sicc	UB
---------	----	----	----	------	----

	3	0	1	4	0
--	---	---	---	---	---

Ag2 Sh1 Dh1

Silty red brown peat, crumbly and dry

0.70-0.87m	Da	St	El	Sicc	UB
	3	0	0	2	2
	Ag3 Sh1 ptm				
	Smooth organic silt, pale rootlets, wtr table 0.80m, molluscs				

0.87-1.16m	Da	St	El	Sicc	UB
	3	0	1	3	4
	Ag2 Ag 2				
	Yellow blue silt clay				

**Core 21 east end of post med channel feature**

0-0.20m peaty topsoil, rooty

0.20-0.23m	Da	St	El	Sicc	UB
	3	0	0	4	2
	Ag3 Sh1				
	Grey brown organic silt pale rootlets				

0.23-0.30m orange stoney clay, core obstructed by stone?

**Core 22 part of water garden feature**

0-0.10m	Da	St	El	Sicc	UB
	3	0	1	3	0
	Ag2 Sh1 Dh1				
	Red brown silty peat, pale rootlets				

0.10-0.20m	Da	St	El	Sicc	UB
	3/4	0	0	3	3
	Ag3 Sh1 ptm+ Gmaj				
	Black brown mottled organic silt, well humified, occ stones and molluscs				

0.20-0.55m	Da	St	El	Sicc	UB
	3	0	1	3	4

Ag3 Sh1 Dh++ ptm

Grey brown compact organic silt, visible seeds, oxidised root channels, mollusc frags, sticky at base

0.55-0.60m yellow blue stiff silt clay

**Core 23 wtr gardens feature southern arm**

0-0.20m	Da	St	El	Sicc	UB
		3/4	0	1	3 0

Ag2 Sh2 Dh++

Black brown silty peat, rooty

0.20-0.65m	Da	St	El	Sicc	UB
		3	0	0	3 3

Ag3 Sh1 ptm

Grey orange mottled organic silt, occ molluscs, modern roots, sticky at base

0.65-0.75m yellow blue clay, rolled chalk fragments

**Core 24 west end of wtr garden feature, buttercups**

0-0.30m	Da	St	El	Sicc	UB
		3	0	0	4 0

Ag3 Sh1 ptm

Orange grey mottled silt clay, occ molluscs

0.30-0.50m orange stoney clay, very mixed, large stone obstruction, poss dump deposit?

**Core 25 pond feature in sw corner of watr garden**

0-0.05m peaty rooty topsoil

0.05-0.20m	Da	St	El	Sicc	UB
		3	1	0	4 4

Ag3 Sh1 Ag++

Grey ornage mottled silt, occasionally clayey

0.20-0.53m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

2	0	0	3	2
---	---	---	---	---

Ag2 As2 ptm

Orange grey mottled silt clay, occassional molluscs

0.53-0.63m	yellow grey silt clay
------------	-----------------------

**Core 26 western arm of water garden , very overgrown**

0-0.10m peaty topsoil

0.10-0.90m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

2	0	0	4	4
---	---	---	---	---

Ag2 As2 ptm

Orange grey brown silt clay, sticky at base, occ mollusc frags

0.90-1.00m	yellow clue clay
------------	------------------

**Core 27 Area aa, u shaped ditch, water Garden feature?**

0-0.55m	Da	St	El	Sicc	UB
---------	----	----	----	------	----

3	0	1	2/3	0
---	---	---	-----	---

Ag32 Sh2 Dh++

Dark brown silty peat, well humified

0.55-0.57m	Da	St	El	Sicc	UB
------------	----	----	----	------	----

2/3	0	0	3	4
-----	---	---	---	---

Ag2 As2 Gmin+

Orange grey mottled silt clay

0.57-0.60m	yellow red sandy gravel
------------	-------------------------

**Core 28 Area aa**

0-0.45m	Da	St	El	Sicc	UB
---------	----	----	----	------	----

3/4	0	1	3	0
-----	---	---	---	---

	Ag1 Sh2 Dh1				
	Black brown silty peat, modern topsoil				
0.45-0.65m	Da	St	El	Sicc	UB
	3	0	1	3	3
	Ag2 Sh2 Dh				
	Red brown silty peat, well humified, pale rootlets				
0.65-0.80m	Da	St	El	Sicc	UB
	2	0	0	2	4
	Ag2 As2				
	Grey orange mottled silt clay, root channels				
0.80-0.85m	orange yellow sandy clay, chalk fragments				
Core 29 deep channel with outflow pipe under railway, pipe silted up to the top					
0-0.40m	very wet grey brown organic modern silt				
0.40-1.50m	Da	St	El	Sicc	UB
	3	0	1	3	4
	Ag2 Sh2 ptm+ Dh++ Tl				
	Grey black brown mottled organic silt, occ woody frags and seeds, molluscs wtr table at 1.00m				
1.50-1.80m	yellow grey clay				
Core 30 Area z channel feature					
0-0.05m	peaty topsoil				
0.05-0.30m	Da	St	El	Sicc	UB
	2	0	0	4	4
	Ag2 As2				
	Grey orange mottled silt clay				
0.30-0.65m	Da	St	El	Sicc	UB
	2	0	0	4	4

Ag2 As2

Orange brown silt clay, v dry and oxidised

0.65-0.80m yellow grey silt clay

**Core 31 end of channel which peters out as a visible earthwork**

0-0.10m crumbly organic topsoil

0.10-0.70m	Da	St	El	Sicc	UB
	2	0	0	4	4

Ag2 As2 Gmaj

Orange brown mottled silt clay, occ stones

0.70-0.87m	Da	St	El	Sicc	UB
	2	0	0	3	2

Ag2 As2 Gmaj+

Grey orange mottled silt clay, occ stones

0.87-1.00m yellow grey silt clay

**Core 32 Area dd linear channel**

0-0.20m peaty topsoil, dry

0.20-0.55m orange yellow mottled silt clay, very dry, obstructed by stone?

**Core 33 pond to the east of 32**

0-0.10m organic topsoil, reedy

0.10-0.48m orange yellow mottled sit clay, very dry

0.48-0.50m sandy yellow clay

**Core 34 channel linking water garden with floodplain channels and ponds**

o-o.10m rooty organic topsoil

0.10-0.60m	Da	St	El	Sicc	UB
	3	0	0	4	4

Ag3 As1 Sh+ ptm

Dark grey orange mottled silt clay, molluscs, oxidised root channels  
0.60-0.70m yellow blue silt clay

**Core 35 to the north of medieval dam earthwork**

0-0.45m	Da	St	El	Sicc	UB
	3	0	0	3	0

Ag3 Sh1

Orange brown well humified organic silt

0.45-0.53m	Da	St	El	Sicc	UB
	3	0	0	3	3

Ag3 Sh1 ptm TI

Blue-grey organic silt with black flecks, pale rootlets, occ mollusc frags  
and woody frags

0.53-0-0.85m	Da	St	El	Sicc	UB
	2	0	0	3	4

Gmin1 Ag1 As2

Orange sandy clay

0.85m Orange gravelly sand

**Core 36 on higher ground to north of 35**

0-0.10m dry topsoil

0.10-0.83m	Da	St	El	Sicc	UB
	2	0	0	3	4

Ag2 As2 ptm+

Orange grey mottled silt clay, occ molluscs, rootlets, very dry

0.83m sandy gravelly clay

**Core 37 channel like depression**

0-0.20m grey brown mottled topsoil

0.20-1.10m	Da	St	El	Sicc	UB
------------	----	----	----	------	----



	2	0	0	3	4
	Ag3 As1 ptm++				
	Grey orange mottled silt clay, mollusc rich with depth, wetter at base				
1.10m	Gravelly sandy clay, wet				
Core 38 ditch/channel same feature as core 35					
0-0.53m	Da	St	El	Sicc	UB
	3/4	0	0	3	0
	Ag3 As1 Sh+ ptm++				
	Black grey soft silt clay, organic well humified, freq molluscs and rootlets				
0.53m	gravelly sandy blue yellow clay				
Core 39 large depression on valley side, feeds into channel 38					
0-0.20m	very dry topsoil				
0.20-1.50m	Da	St	El	Sicc	UB
	2	0	0	4	4
	Ag2 As2 ptm++ Gmaj				
	Grey orange mottled stiff silt clay, freq molluscs occasional stones				
1.50-1.67m	Da	St	El	Sicc	UB
	3	0	0	3	2
	Ag3 Sh1 Ag+ ptm+ Tl				
	Smooth grey silt occasional clay, well humified organic, occ woody frags				
and molluscs					
1.67-2.30m	Da	St	El	Sicc	UB
	3	0	0	3/4	4
	Ag3 Sh1 Gmin+				
	Organic grey brown silt, sandier with depth wtr table between 1.80-				
2.00m					
2.30-2.44m	Da	St	El	Sicc	UB

2 0 0 2 2

Ag3 Sh1

Smooth grey brown silt organic, occ rootlets

2.44-2.50m blue yellow clay, band of yellow sand 2cm thick

**Core 40 second depression to the south of core 39**

0-0.20m very dry topsoil

0.20-0.50m sandy orange silt clay, gravelly at base unable to core further, very dry

**Core 41 channel feeding off valley side into main floodplain**

0-0.20m very dry topsoil

0.20-0.63m very dry orange sandy gravelly silt clay, occ crushed bi-valve shells too dry to core further

**Core 42 channel in centre of floodplain swanery?**

0-0.20m very dry topsoil

0.20-1.00m very dry orange mottled silt clay molluscs

1.00-1.10m sandy gravelly clay, wet

**Core 43 water meadow transect 1**

0-0.20m dry topsoil

0.20-0.90m orange grey mottled silt clay occ molluscs

0.90-1.00m yellow grey clay, very dry

**Core 44 part of transect with core 43**

0-0.20m very dry topsoil

0.20-0.45m very dry orange sandy gravelly clay, sandstone obstruction at base

**Core 45 as above**

0-0.20m dry topsoil

0.20-0.65m very dry orange brown mottled silt clay, occ molluscs, occ stones, obstruction at base

**Core 46 as above**

0-0.20m dry topsoil

0.20-0.60m bone dry orange brown silt clay, occ molluscs, stoney at base

**Core 47 north transect 2 across water meadow**

0-0.20M dry top soil

0.20-1.00m	Da	St	El	Sicc	UB
	2	0	0	4	4

Ag2 As2 ptm

Grey mottled orange silt clay occ molluscs very dry

1.00-1.10m yellow grey silt clay, very dry

**Core 48 as above**

0-0.20m dry topsoil

0.20-0.45m very dry orange grey silt clay, too dry to core

**Core 49 in transect 2 but within a ditch feature**

0-0.20m dry top soil

0.20-0.46m	Da	St	El	Sicc	UB
	2	0	0	4	4

Ag2 As2 ptm++ Gmaj

Grey orange mottled stiff silt clay, very dry occ molluscs, stones

**Core 50 pond feature**

0-0.20m dry topsoil

0.20-0.80m	Da	St	El	Sicc	UB
	3	0	0	3	4

Ag2 As2 ptm Gmin+ Gmaj

Gritty grey orange mottled silt clay, occ stones, damp at base, occ molluscs, pot from base

0.80m sandy clay at base, wet

**Core 51 header tank pond**

0-1.50m	Da	St	El	Sicc	UB
		4	0	0	1 0
	Ag2 Dh2 Sh++ Tl++				
	Black woody silt poorly humified organics, modern pond infill				

1.50-2.0m	Da	St	El	Sicc	UB
		3	0	0	2 4
	Ag2 Dh1 Sh1				
	Grey brown organic silt, poorly humified				

2.00-2.40m	Da	St	El	Sicc	UB
		2	0	0	2 3
	Ag3 Sh1Tl++ Gmaj				
	Pale grey silt, well humified organics, woody frags, sticky, stone obstruction				

**Core 52 2m to the north of 51, under water**

0-1.50m black orgaic silt, mixed oragnics, woody, modern pond silts

1.50-2.0m	Da	St	El	Sicc	UB
		3	0	0	2 4
	Ag2 Dh2 TL++				
	Grey brown black organic slit, very woody				

2.00-2.50m	Da	St	El	Sicc	UB
		2	0	0	2 3
	Ag3 Sh1				
	Pale grey smooth sticky silt occasional chalk frags, water too deep to core further				

**Core 53 corner of channel area Y**

0-0.60m	Da	St	El	Sicc	UB
		3	0	0	3 0

Ag2 Ag2 Sh++ ptm Tl+

grey orange mottled silt clay, occ molluscs, oxidised root channels, well humified organics, reedy/woody fragments

0.60-0.98m	Da	St	El	Sicc	UB
	2	0	0	3	4

Ag2 As2 gmin++ Gmaj

Gritty orange mottled silt clay, very stiff stone at base

## Appendix 2

Darkness	Degree of Stratification	Degree of Elasticity	Degree of Dryness
nig.4      black	strf.4   well stratified	elas.4   very elastic	sicc.4    very dry
nig.3	strf.3	elas.3	sicc.3
nig.2	strf.2	elas.2	sicc.2
nig.1	strf.1	elas.1	sicc.1
nig.0      white	strf.0   no stratification	elas.0   no elasticity	sicc.0    water

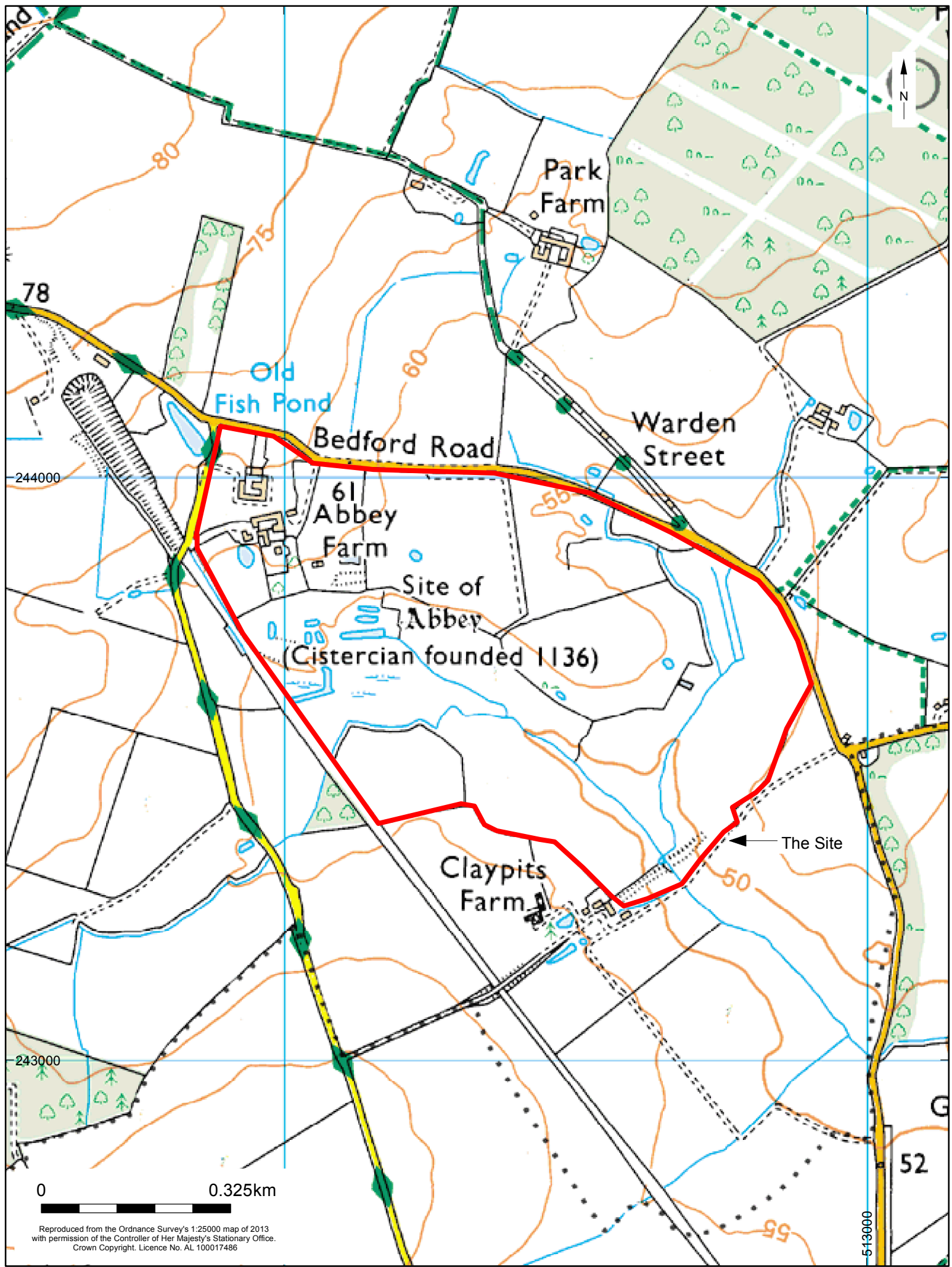
	Sharpness of Upper Boundary
lim.4	< 0.5mm
lim.3	< 1.0 & > 0.5mm
lim.2	< 2.0 & > 1.0mm
lim.1	< 10.0 & > 2.0mm
lim.0	> 10.0mm

	<i>Sh</i>	<i>Substantia humosa</i>	Humous substance, homogeneous microscopic structure
<i>I Turfa</i>	<i>Tb</i>	<i>T. bryophytica</i>	Mosses +/- humous substance
	<i>Tl</i>	<i>T. lignosa</i>	Stumps, roots, intertwined rootlets, of ligneous plants
	<i>Th</i>	<i>T. herbacea</i>	Roots, intertwined rootlets, rhizomes of herbaceous plants
<i>II Detritus</i>	<i>DI</i>	<i>D. lignosus</i>	Fragments of ligneous plants >2mm
	<i>Dh</i>	<i>D. herbosus</i>	Fragments of herbaceous plants >2mm
	<i>Dg</i>	<i>D. granosus</i>	Fragments of ligneous and herbaceous plants <2mm >0.1mm
<i>III Limus</i>	<i>Lf</i>	<i>L. ferrugineus</i>	Rust, non-hardened. Particles <0.1mm
<i>IV Argilla</i>	<i>As</i>	<i>A. steatodes</i>	Particles of clay
	<i>Ag</i>	<i>A. granosa</i>	Particles of silt
<i>V Grana</i>	<i>Ga</i>	<i>G. arenosa</i>	Mineral particles 0.6 to 0.2mm
	<i>Gs</i>	<i>G. saburralia</i>	Mineral particles 2.0 to 0.6mm
	<i>Gg(min)</i>	<i>G. glareosa minora</i>	Mineral particles 6.0 to 2.0mm
	<i>Gg(maj)</i>	<i>G. glareosa majora</i>	Mineral particles 20.0 to 6.0mm
	<i>Ptm</i>	<i>Particulae testae molloscorum</i>	Fragments of calcareous shells

**Physical and sedimentary properties of deposits according to Troels-Smith (1955)**

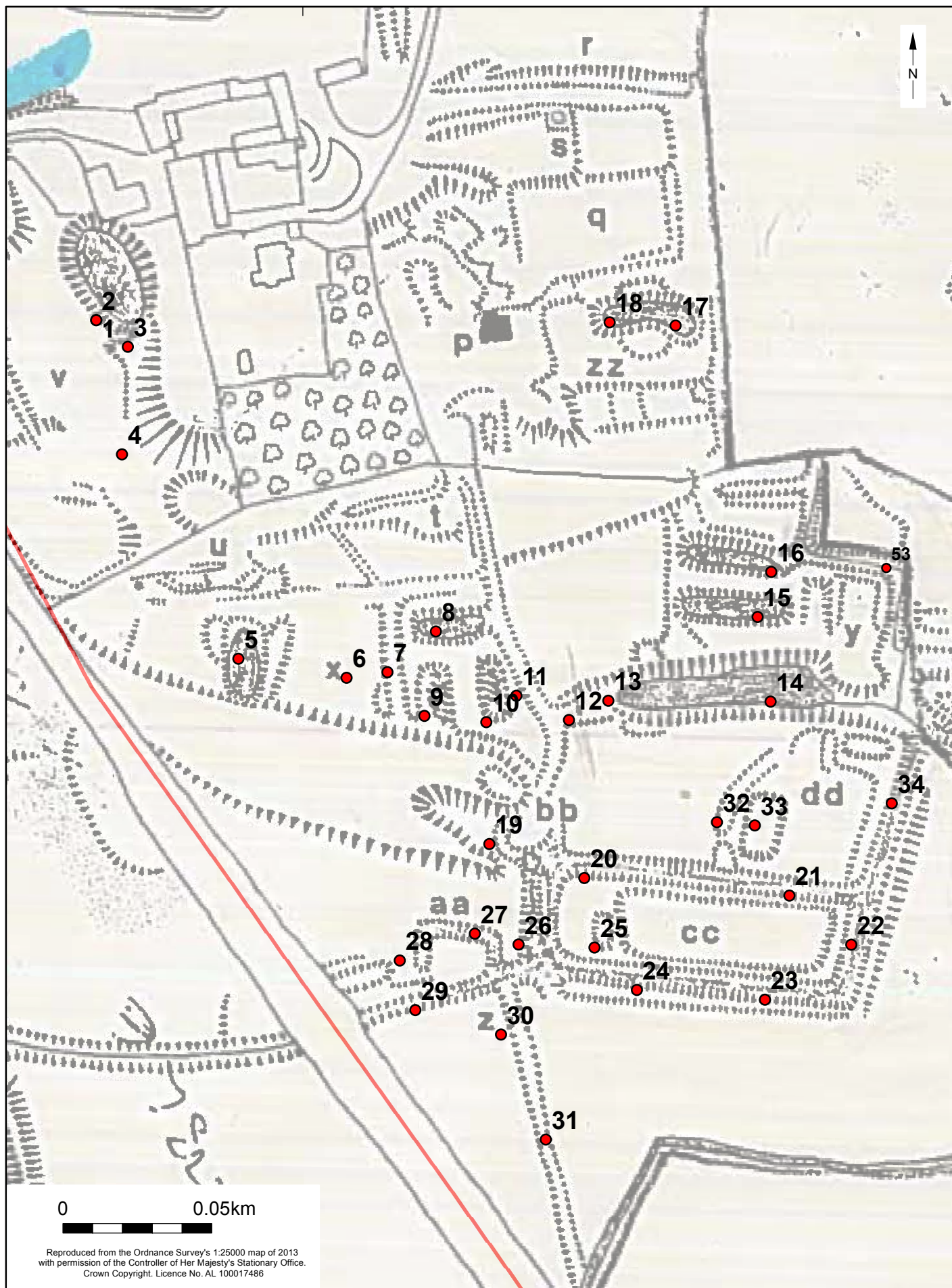
### Appendix3

Number	Easting	Northing	z	Depth of Feature m OD	Type of feature
CORE1	511930.693	243854.83	58.316	57.32	Pond
CORE3	511941.289	243845.885	58.66	57.79	channel
CORE4	511939.36	243809.774	57.993	56.19	pond
CORE5	511978.434	243741.264	55.044	53.144	pond
CORE6	512014.745	243734.861	54.996	54.196	Open area
CORE7	512028.458	243736.784	54.622	53.922	Open area
CORE8	512044.672	243750.411	54.029	52.979	Pond
CORE9	512040.833	243722.119	54.036	52.576	Pond
CORE10	512061.644	243719.97	53.775	53.225	Pond
CORE11	512071.692	243728.829	54.021	52.821	Channel
CORE12	512089.33	243720.732	53.187	51.987	Pond?
CORE13	512102.585	243727.137	52.819	51.319	Channel
CORE14	512156.98	243726.851	52.734	51.254	Channel
CORE15	512152.622	243755.28	53.476	52.236	Pond
CORE16	512157.241	243770.383	53.646	52.426	Pond
CORE17	512125.136	243852.998	57.795	57.492	Pond
CORE18	512103	243854.083	57.88	57.38	Pond
CORE19	512062.637	243679.124	53.385	52.585	Pond?
CORE20	512094.507	243667.685	52.337	51.467	Channel
CORE21	512163.296	243661.812	51.944	51.714	Channel
CORE22	512184.098	243645.33	51.661	51.111	Channel
CORE23	512155.132	243626.876	51.89	51.24	Channel
CORE24	512112.108	243630.194	52.207	51.907	Channel
CORE25	512097.897	243644.401	52.376	51.846	Channel
CORE26	512072.427	243645.428	52.766	51.86	Channel
CORE27	512057.772	243649.06	52.871	52.301	Channel
CORE28	512032.604	243640.066	53.137	52.337	Channel
CORE29	512037.792	243623.405	52.677	51.177	Channel
CORE30	512066.578	243615.213	52.582	51.932	Channel
CORE31	512081.549	243580.004	52.673	51.803	Channel
CORE32	512139.026	243686.427	52.322	51.772	Channel
CORE33	512151.733	243685.371	52.102	51.622	Pond
CORE34	512197.703	243692.79	51.54	50.94	Channel



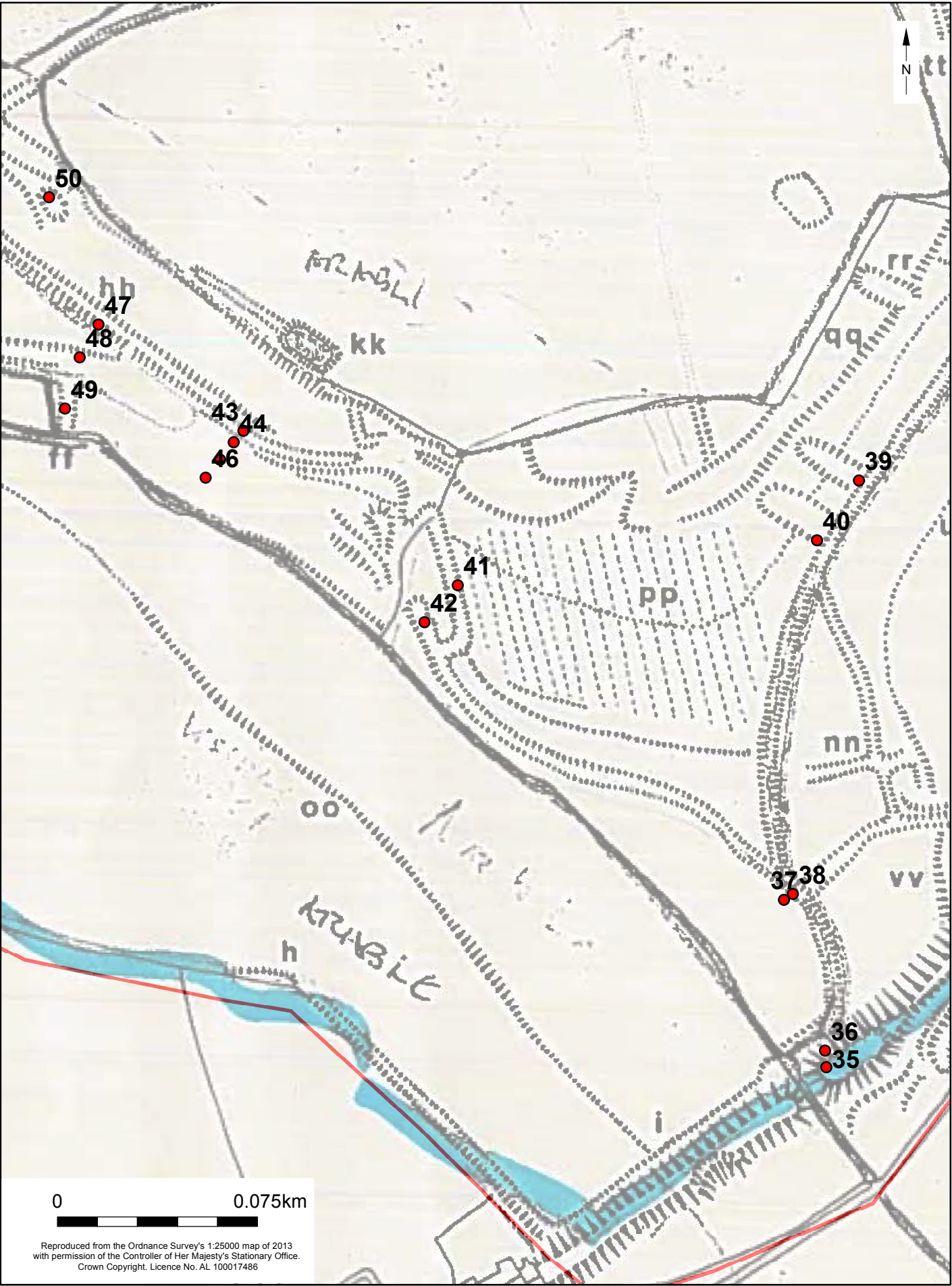
© Archaeology South-East		Warden Abbey, Bedfordshire	Fig. 1
Project Ref: 6542	2013	Site location	
Report Ref: 2014333	Drawn by:		





© Archaeology South-East		Warden Abbey, Bedfordshire	Fig. 2
Project Ref: 6542	2013	core locations	
Report Ref: 2014333	Drawn by:		





Reproduced from the Ordnance Survey's 1:25000 map of 2013  
with permission of the Controller of Her Majesty's Stationary Office.  
Crown Copyright. Licence No. AL 100017486

© Archaeology South-East

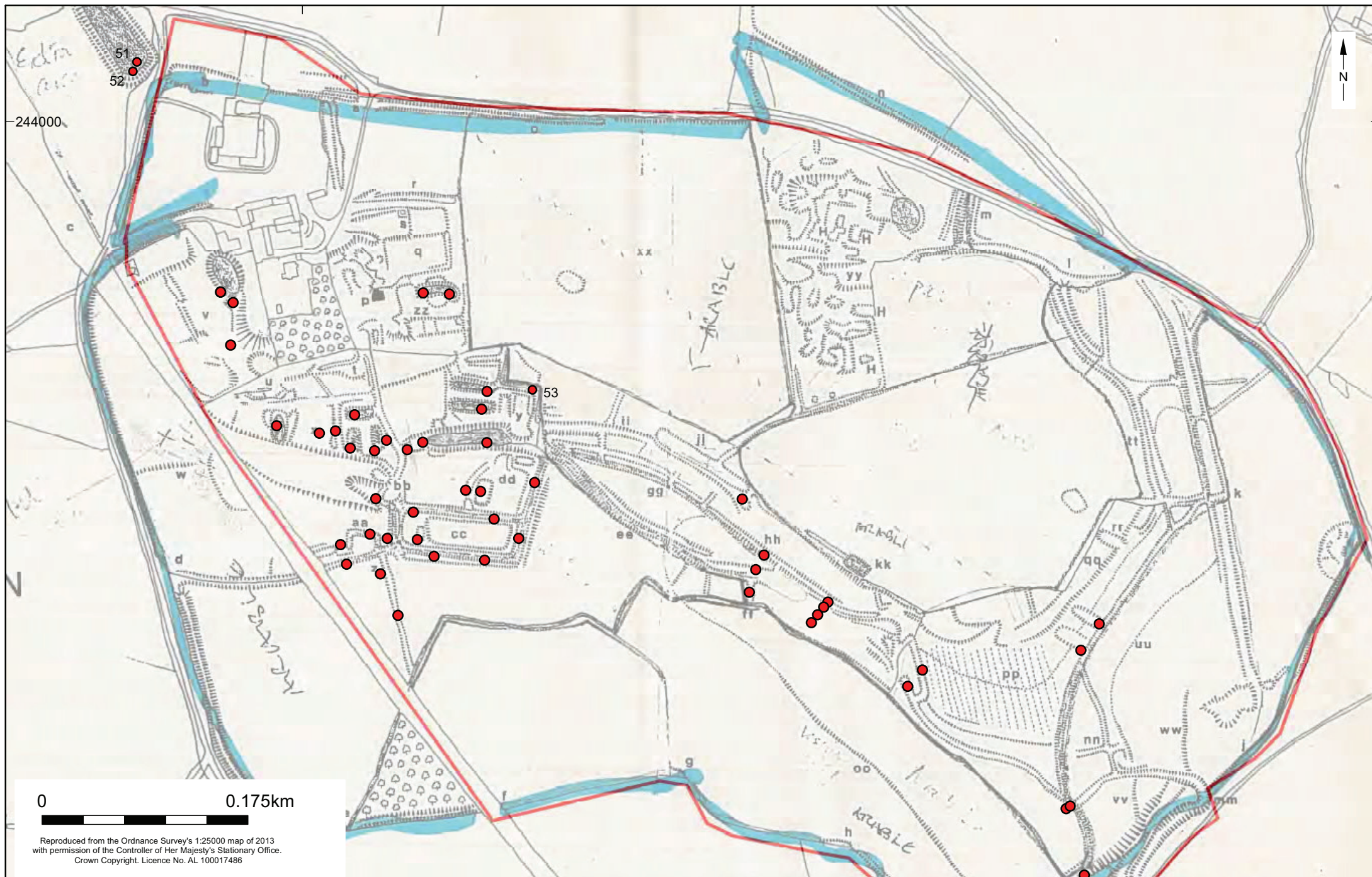
Warden Abbey, Bedfordshire

Fig. 3

Project Ref: 6542 2013  
Report Ref: 2014333 Drawn by:

core locations





© Archaeology South-East		Warden Abbey, Bedfordshire	Fig. 4
Project Ref: 6542	2013	core locations	
Report Ref: 2014333	Drawn by:		

**Sussex Office**

Units 1 & 2  
2 Chapel Place  
Portslade  
East Sussex BN41 1DR  
tel: +44(0)1273 426830  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
web: [www.archaeologyse.co.uk](http://www.archaeologyse.co.uk)

**Essex Office**

The Old Magistrates Court  
79 South Street  
Braintree  
Essex CM7 3QD  
tel: +44(0)1376 331470  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
web: [www.archaeologyse.co.uk](http://www.archaeologyse.co.uk)

**London Office**

Centre for Applied Archaeology  
UCL Institute of Archaeology  
31-34 Gordon Square  
London WC1H 0PY  
tel: +44(0)20 7679 4778  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
web: [www.ucl.ac.uk/caa](http://www.ucl.ac.uk/caa)

