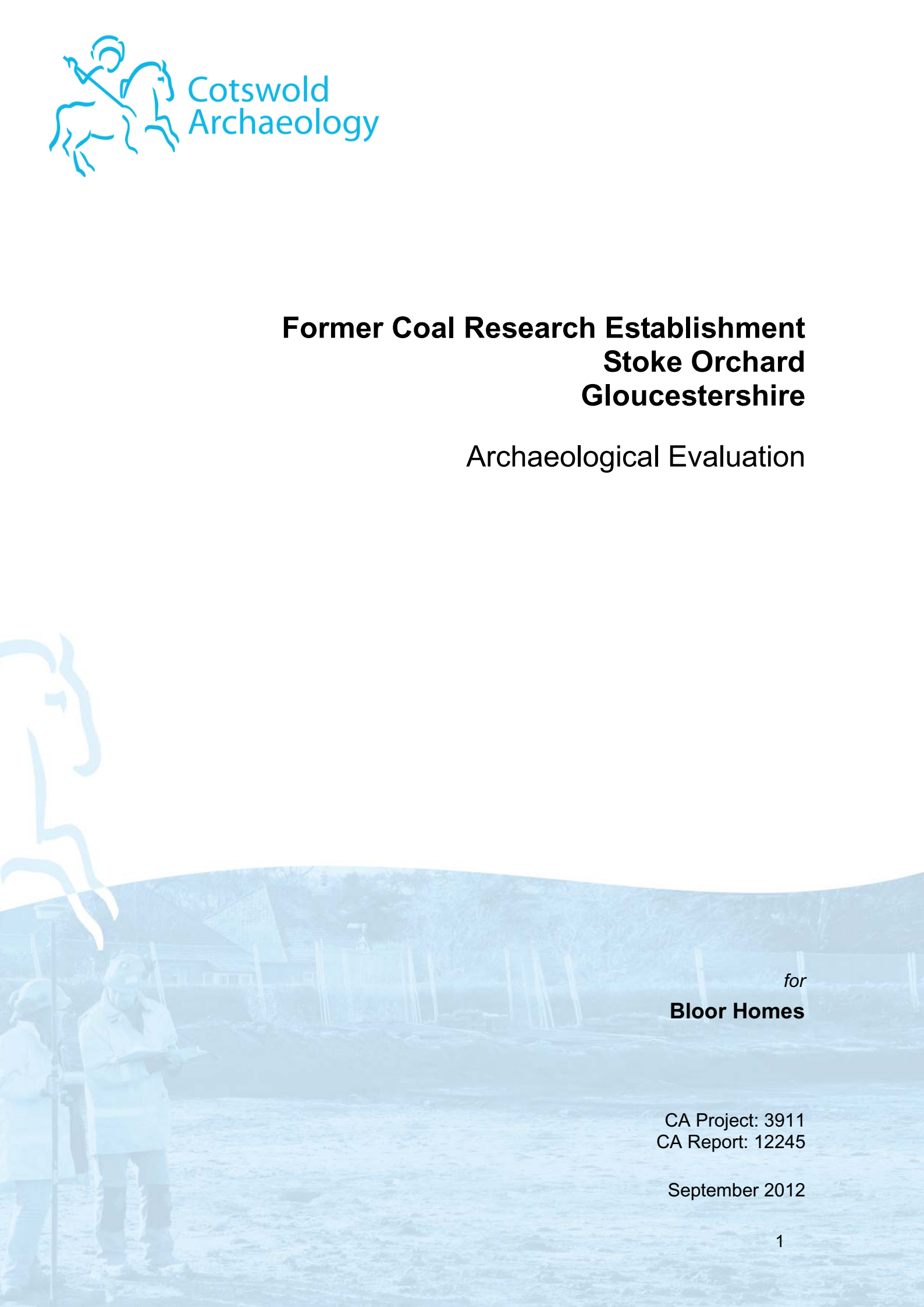


**Former Coal Research Establishment  
Stoke Orchard  
Gloucestershire**

Archaeological Evaluation



*for*  
**Bloor Homes**


CA Project: 3911  
CA Report: 12245

September 2012

# Former Coal Research Establishment Stoke Orchard Gloucestershire

## Archaeological Evaluation

CA Project: 3911  
CA Report: 12245

prepared by	Alistair Barber, Senior Project Officer
date	28 September 2012
checked by	Simon Cox, Head of Fieldwork
date	1 October 2012
approved by	Mark Collard, Head of Contracts
signed	
date	4 October 2012
issue	01

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<b>Cirencester</b> Building 11 Kemble Enterprise Park Kemble, Cirencester Gloucestershire, GL7 6BQ t. 01285 771022 f. 01285 771033	<b>Milton Keynes</b> Unit 4 Cromwell Business Centre Howard Way, Newport Pagnell MK16 9QS t. 01908 218320	<b>Andover</b> Office 49 Basepoint Business Centre Caxton Close, Andover Hampshire, SP10 3FG t. 01264 326549
e. <a href="mailto:enquiries@cotswoldarchaeology.co.uk">enquiries@cotswoldarchaeology.co.uk</a>		

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## SUMMARY

<b>Project Name:</b>	Former Coal Research Establishment
<b>Location:</b>	Stoke Orchard, Gloucestershire
<b>NGR:</b>	SO 39183 22834
<b>Type:</b>	Evaluation
<b>Date:</b>	28 August -12 September 2012
<b>Planning Reference:</b>	04/01366/OUT
<b>Location of Archive:</b>	To be deposited with Cheltenham Museum
<b>Accession Number:</b>	CAGM 2012.27
<b>Site Code:</b>	SOR 12

An archaeological evaluation was undertaken by Cotswold Archaeology in August and September 2012 at the former Coal Research Establishment site, Stoke Orchard, Gloucestershire. Four trenches were excavated.

The location and depth of a moated enclosure, previously identified during evaluation trenching in 2001, was recorded through investigations along its eastern and northern arms. The earliest surviving, waterlogged, silt-clay fills were undated. There was no evidence for gradual and prolonged accumulation of decaying vegetative detritus and these basal moat fills may represent rapid and relatively late silting of the ditch, with the strong possibility that many or all of the original medieval deposits had been cleaned out.

Palaeo-environmental and geoarchaeological assessment of the earliest surviving moat fills within Trench 11 revealed few and generally poorly preserved molluscs and plant remains present, and pollen assessment is not considered useful given that the basal deposits are not well dated and not definitely of medieval date. Several moat fills contained post-medieval artefacts, together with residual medieval and Roman pottery. Further residual Roman pottery was recovered from a pit cut into the partially infilled moat, and from a post-medieval soil horizon. Extensive modern dumping was noted within the moat ditch.

## 1. INTRODUCTION

- 1.1 During August and September 2012 Cotswold Archaeology (CA) carried out an archaeological evaluation for Bloor Homes at the former Coal Research Establishment, Stoke Orchard, Gloucestershire (centred on NGR: SO 39183 22834; Fig. 1). The evaluation was undertaken following the granting of planning permission by Tewkesbury Borough Council (ref: 04/01366/OUT) for 1.615 m<sup>2</sup> of B1 accommodation, 15 Live/Work units, a new Community Hall and shop, 110 residential dwellings and a new access, conditional on a programme of archaeological work.
- 1.2 The evaluation formed the first stage of a planned phased programme of archaeological works, and was designed to obtain further information on the levels, depth and archaeological and palaeoenvironmental potential of a moated enclosure previously identified during evaluation work undertaken in 2001 (CAT 2001) as well as providing the project engineers Hydrock with an opportunity to assess ground conditions and levels of ground contamination. The data gathered will inform the formulation of a detailed foundation design, and an assessment of its impact upon the archaeological resource, from which the archaeological mitigation strategy will be devised. That mitigation strategy may involve elements of preservation *in situ*, but may involve further more detailed archaeological excavation and recording (Phase 2) leading to analysis and publication of the results (Phase 3).
- 1.3 The evaluation followed discussions with Jan Wills, County Archaeologist, Gloucestershire County Council (GCC), the archaeological advisors to Tewkesbury Borough Council, and was undertaken in accordance with a detailed *Written Scheme of Investigation* (WSI) produced by CA (2012) and approved by Ms Wills. The fieldwork also followed the *Standard and Guidance for Archaeological Field Evaluation* (IfA 2008), the *Statement of Standards and Practices Appropriate for Archaeological Field Work in Gloucestershire* (GCC 1996), the *Management of Archaeological Projects* (English Heritage 1991) and the *Management of Research Projects in the Historic Environment (MORPHE): Project Manager's Guide* (EH 2006). It was monitored by Charles Parry, Senior Archaeological Officer, GCC, including a site visit on 7 September 2012.

### ***The site***

- 1.4 The proposed development area encloses an area of approximately 7ha which previously comprised the car parks and buildings of the Coal Research Establishment (CRE). The site is bounded to the south by residential properties, Stoke Road and extant CRE buildings, to the north and east by agricultural land and to the west by a former orchard. The site lies at approximately 24m AOD and is relatively level.
- 1.5 The underlying bedrock geology of the area is mapped as Charmouth Mudstone Formation of the Jurassic period with superficial deposits of clay, silt, sand and gravel alluvium formed in the Quaternary period (BGS 2012). The natural geological substrate encountered in Trenches 9 to 11 comprised orange-brown to green-blue clays.

### ***Archaeological background***

- 1.6 The full archaeological background to the site is set out in a desk-top study (Alison Borthwick and Associates 1996). Historical evidence suggests settlement may have existed at Stoke Orchard from the 10th century. The archaeological record includes information concerning the mid 12th-century church of St. James, two former moated Manor Houses, and a series of earthwork enclosures. Taken together these indicate that the proposed development lies close to the core of the early settlement. The desk-top study examined documentary and cartographic evidence which suggested the principal medieval manor house and moated complex stood nearby. A small pond located outside and adjacent to the western site boundary is likely to be the remnant of a former moat surrounding the manor, replaced in the post-medieval period by Elm Farm. The farm was demolished between 1954 and the early 1970s.
- 1.7 The proposed development site has been the subject of previous archaeological evaluation by Cotswold Archaeological Trust within the western car parking area in 2001 (CAT 2001; Fig. 2). This work, comprising the excavation of a series of trenches and trial pits (Trenches 1 to 8), revealed the northern and eastern arms of a moat, which was suggested to be up to 2.4m deep. A cross-ditch, possibly dividing the moat into separate northern and southern enclosures, produced three sherds of

12th to 14th-century AD pottery (Fig. 2). Within the putative northern enclosure a wide, shallow pit produced post-medieval pottery, and an undated linear gully and two undated small pits or gullies were also identified. The evaluation concluded that the manor house lay outside the area evaluated, and was probably beneath housing along the Stoke Road frontage.

### **Archaeological objectives**

- 1.8 The objectives of the Phase 1 programme of works were to provide information on the location, extent, levels, depths and archaeological and palaeoenvironmental potential of the moat, and in particular to examine the nature and archaeological/palaeoenvironmental potential of the basal moat ditch fills (i.e. those which are most likely to have been associated with the period in which the moat was in use). The information gathered will enable the development of an appropriate foundation design and archaeological mitigation strategy in order to avoid or minimise conflict between the heritage asset's conservation and any aspect of the development proposal in line with the *National Planning Policy Framework* (DCLG 2012).

### **Methodology**

- 1.9 The fieldwork comprised the excavation of four trenches, numbered 9 to 12 to continue the numbering system from the previous evaluation, targeting the northern and eastern arms of the moat ditch. Trenches 9 and 12 were approximately 50m in length and 2m in width, whilst Trenches 10 and 11 were approximately 50m in length but varied from 2m to 7m in width due to stepping of the trenches to facilitate safe access and working (Fig. 2). Minor adjustments were made to the positions of Trenches 10 and 11, due to health and safety considerations associated with adjacent overhead power lines, with the approval of Charles Parry. Trenches were set out on OS National Grid (NGR) co-ordinates using a Leica 1200 series SmartRover GPS and surveyed in accordance with CA Technical Manual 4 *Survey Manual* (2009).
- 1.10 All trenches were excavated by a mechanical excavator equipped with a toothless grading bucket. All machine excavation was undertaken under constant



archaeological supervision to the top of the first significant archaeological horizon or the natural substrate, whichever was encountered first.

- 1.11 Trenches 9 and 12 were both excavated to the surface of, or within the upper levels of, the modern fills of the moat ditch in order to establish greater certainty over its location and depth below existing ground level.
- 1.12 In Trenches 10 and 11 the upper ditch fills, where demonstrably filled with post-medieval or modern material, were excavated mechanically and *in situ* deposits related to the construction and use of the moat were then initially examined through hand excavation. Once it was established that these deposits were bulky and repetitious in nature approval was received from Charles Parry to mechanically excavate these deposits to reach the base of the ditch, and to expose its full profile, in Trench 11. Machine and hand excavation was halted within Trench 10 due to water ingress and trench instability, and because a truer profile through the moat could best be obtained by continuing works within Trench 11, with Mr Parry's approval.
- 1.13 Deposits were assessed for their palaeoenvironmental potential in accordance with CA Technical Manual 2: *The Taking and Processing of Environmental and Other Samples from Archaeological Sites* (2003). A programme of palaeoenvironmental sampling and geoarchaeological analysis was initiated on the advice of geoarchaeologist/environmental archaeologist Mike Allen of Allen Archaeology and under the direction of Sarah Cobain, CA Environmental Officer (Archaeobotanist). This included lithological descriptions of the fill sequence on site, and subsequent monolith and bulk sampling of the earliest surviving fills of the moat ditch in Trench 11 in order to gain an understanding of both the chronology and environment of the moat during its period of use. Assessment focussed on establishing the infill sequence and sedimentation environment of the ditch and the presence or absence of environmental indicators, and their potential to inform on the environment of the moated settlement. Analysis also considered the potential for the presence or absence of fish bones and typical well-preserved waterlogged material such as plant and insect remains, wood and leather, which might be expected in such a feature.
- 1.14 Bulk samples and monoliths were taken, processed and assessed for potential in accordance with Technical Manual 2 *The Taking and Processing of Environmental and Other Samples from Archaeological Sites* (CA 2003). The results of the

palaeoenvironmental and geoarchaeological assessments have been incorporated into this report (Appendices C and D).

- 1.15 All artefacts recovered were processed in accordance with Technical Manual 3 *Treatment of Finds Immediately after Excavation* (1995).
- 1.16 The archive and artefacts from the evaluation are currently held by CA at their offices in Kemble. Subject to the agreement of the legal landowner the artefacts will be deposited with Cheltenham Museum, along with the site archive, under accession number CAGM 2012.27. A summary of information from this project, set out within Appendix G, will be entered onto the OASIS online database of archaeological projects in Britain.

## **2. RESULTS (FIGS 2-6)**

- 2.1 This section provides an overview of the evaluation results; detailed summaries of the recorded contexts, finds and environmental samples (palaeoenvironmental evidence) and geoarchaeological and insect remains assessments are to be found in Appendices A to E respectively. Details of the relative heights of the principal deposits and features expressed as metres Above Ordnance Datum (m AOD) appear in Appendix F.
- 2.2 The natural geological substrate, comprising orange-brown and grey-blue clays, was encountered within all four evaluation trenches. In addition, the internal and external edges of the moat ditch were revealed within Trenches 9, 11 and 12 and the internal moat edge within Trench 10.

### ***Trench 9 (Figs 2 & 3)***

- 2.3 Natural clay 904 was encountered throughout the trench at approximately 1.15m below present ground level (bpgl). It was overlain by an alluvial silt-clay 903, typically 0.4m thick, which was in turn sealed by a clay soil horizon 902, approximately 0.25m in thickness, cut through by a NE/SW-aligned moat ditch 905 approximately 13.5m in width and with a maximum known depth of 1.15m bpgl.

Machine excavation, to examine the uppermost, modern, dump deposits within the moat ditch, revealed clay deposits 906 and 907, both of which contained abundant modern bricks. Machine removal of moat fill 906 was halted at 1.2m bpgl due to severe water ingress.

- 2.4 Uppermost moat fill 907 was sealed by modern foundation deposits 901 and 900 for the extant car park surface 910, cut through by a 2001 CAT evaluation trench.

### **Trench 10 (Figs 2 & 4)**

- 2.5 Natural clay 1015 was encountered throughout the south-western half of the trench at approximately 0.65m below present ground level (bpgl). It was cut by a NW/SE-aligned moat ditch 1016 at least 22m in width (the external, north-eastern, moat edge was not encountered due to machine access restrictions resulting from the presence of adjacent overhead power lines) and with a maximum known depth of 2.4m bpgl. At the limit of excavation the moat ditch contained undated silt-clay fills 1005/1011, 1004 and 1009 which were not hand excavated due to water ingress and trench instability. A shallow pit 1013, only partially exposed, cut moat fill 1004 and contained a clay fill 1012 from which a residual sherd of mid 1st to 4th-century AD Roman pottery and an animal bone fragment were recovered.
- 2.6 Moat fills 1005/1011 and 1004 were overlain by a clay layer 1003, typically 0.2m in thickness, which geoarchaeological assessment identified as a stable soil horizon which had developed within the moat. At the north-eastern end of the trench, moat fill 1009 had been cut through by steeply-angled ditch recut 1021, only partially exposed but at least 0.9m deep, which appeared to identify a former episode of moat cleaning. It contained a series of backfill deposits (many of which contained abundant post-medieval/modern brick fragments) 1002, 1008, 1001 (which extended across the southwest part of the trench, sealing natural clay 1015), 1017, containing one 18th-century pottery sherd and two animal bone fragments, 1020, 1019, 1007 and 1006. The uppermost moat backfill deposit 1006, and extensive dump deposit 1001, were sealed by modern car park layer 1000.

### **Trench 11 (Figs 2 & 5)**

- 2.7 The natural clay substrate 1136/1141 was cut by NW/SE-aligned moat ditch 1137, approximately 15.5m in width and with a maximum depth of 2.8m bpgl. The moat contained a basal silt-clay deposit 1135 and subsequent clay-sand and clay-silt deposits 1134 to 1124, which were subjected to a programme of palaeoenvironmental sampling. The earliest moat fills were undated. An absence of decayed vegetative matter within them, as might be anticipated to accumulate within a long open moat ditch, suggested however that the moat had been regularly cleaned out and that these surviving, basal, fills represented rapid silting after such an episode of moat cleaning. Moat fill 1128 contained one sherd of 17th to 18th-century pottery together with seven residual sherds of medieval pottery, three residual Roman pot sherds, three undated fragments of ceramic building material and 24 animal bone fragments.
- 2.8 A NW/SE-aligned shallow, narrow, gully 1139 cut the natural clay substrate on the eastern side of the moat. Although its clay-silt fill 1138 was undated, the gully appeared to drain into and be contemporaneous with the moat.
- 2.9 A clay-silt soil horizon 1124/1125 overlay moat fill 1127 and yielded three sherds of 17th to 18th-century pottery, four fragments of post-medieval brick, one residual medieval pottery sherd and one residual Roman pottery sherd. It was cut through by a series of land drains 1110, 1113, 1115, 1119, 1121 and 1123 on the north-eastern edge of the moat. These were sealed by a former soil horizon 1107, from which one fragment of 18th to 19th-century brick and one residual Roman *imbrex* tile fragment were recovered, which was in turn covered by a silt layer 1106. Overlying modern dump deposits 1105 and 1104 comprising clay with abundant brick, wood and plastic were sealed by modern foundation deposits 1103, 1102 and 1101 for the former car park 1100.

### **Trench 12 (Figs 2 & 6)**

- 2.10 Natural clay 1205 was encountered throughout the trench at approximately 1m below present ground level (bpgl). It was cut through by moat ditch 1203, 18.5m in width, which at the limit of excavation contained a clay fill 1204 with abundant post-medieval/modern brick fragments. The natural clay 1205 was overlain by a dump

deposit of alluvial clay 1202, also containing brick fragments, and by a clay soil 1201, which sealed the infilled moat ditch, covered by modern car park deposit 1200.

### ***The Finds and Palaeoenvironmental Evidence***

#### *The Finds*

- 2.11 The earliest dateable material consists of five sherds of Roman pottery from deposits 1012, 1124 and 1128. In addition a fragment of curved roofing tile of Roman type (*imbrex*) was identified from deposit 1107. The Roman pottery largely consists of abraded sherds of Severn Valley ware, a type known to be produced throughout the Roman period. A shell-tempered sherd from deposit 1128 probably dates to the later Roman period (3rd to 4th centuries AD) and is probably a regional import. A small sherd of Severn Valley ware from deposit 1012 was the only dateable material from this context. The Roman material can all be seen to be residual, occurring with medieval and later deposits.
- 2.12 Five sherds of medieval pottery were identified from deposits 1124 and 1128. As with the Roman material the medieval pottery is demonstrably residual and occurs with post-medieval and modern finds. All of the recovered material comprises bodysherds in unglazed cooking pot type fabrics, which include Malvern Chase type sherds from deposit 1128. Broad dating spanning the 12th to 14th centuries AD is probable.
- 2.13 Post-medieval and modern ceramics and glass make up the remainder of the finds. Sherds of internally-glazed earthenwares typical of the 17th and 18th centuries were identified from deposits 1124 and 1128. Pottery from deposits 1017 and 1104 consists of transfer-print decorated refined whitewares dateable after c. 1770. The 'Asiatic Pheasant' design exhibited by one sherd from 1104 suggests dating after c. 1830.

#### *The Palaeoenvironmental Evidence*

- 2.14 A palaeoenvironmental sampling strategy was put in place on the earliest fills of the moat upon advice from Mike Allen of Allen Archaeology. The profile of the moat was

first fully exposed in Trench 11 and three 0.5m long monolith samples then taken through deposits 1124, 1126, 1128, 1129, 1130 and 1135. Five 40L column samples, at 0.2m contiguous intervals, were also taken through this sequence of earliest surviving moat fills. The column samples were processed to assess the potential for plant remains, insects, artefacts and fish bone analysis.

## Methodology

### *Monoliths - Geoarchaeology*

- 2.15 The deposits in the moat are well-sorted minerogenic silts largely derived from the weathering of the sides and bottom of the moat. There is no highly organic mud or peat present to indicate the build up and accretion of decaying vegetative detritus in the moat. It was therefore considered that the moat, like medieval fish-ponds, had been regularly cleaned out and that the lack of such deposits during the demise of the moat might suggest relatively rapid silting in its later stages of disuse. The upper part of the moat infill, comprising more than half its depth, comprised modern dump deposits.

### *Plant remains*

- 2.16 The waterlogged and carbonised plant remains recovered from Samples 4 (context 1126), 5 (1126/1128), 6 (1129), 7 (1130) and 8 (1135) were present in small numbers and generally poorly preserved. The carbonised free threshing wheat (*Triticum aestivum/turgidum/durum*) grain and indeterminate grain fragments in Sample 5 and indeterminate grain fragments in Sample 7 were highly abraded and most likely intrusive. The waterlogged plant remains recovered consisted of plants indicative of a wet environment such as rigid hornwort (*Ceratophyllum demersum*), sedge (*Carex* spp), rushes (*Juncus* spp) and elder (*Sambucus nigra*) and plants indicative of a disturbed and/or grassland environment such as bramble (*Rubus* spp), cinquefoil (*Potentilla* spp), thistle (*Cirsium* spp/*Carduus* spp) and chickweed spp (*Stellaria* spp). These may represent vegetation establishing within and around the moat, although since the moat has been backfilled the origin of these remains is not certain and some may be intrusive. Sample 5 (context 1126/1128) contained a higher proportion of organic material, and in particular a small number of seeds from plants indicative of a wet environment. This deposit contained 17th to 18th-century AD pottery and thus does not represent original moat fill. The poor quality and low

quantity of plant remains within these moat fills means no further work is recommended.

- 2.17 Two fish bones and a small amount of animal bone were recovered from Samples 4, 5, 7 and 8. The paucity of these remains means no further work is recommended.
- 2.18 Although the small number of molluscs recovered from the flots and dried residues are insufficient to make any significant or detailed palaeo-environmental interpretation, both land and fresh-water shells were present. The terrestrial shells are species typical of humanly disturbed environments and gardens, whilst the freshwater snails may include species living in the moat as well as on its sides and margins. All species present can tolerate drying out, and tend to indicate shallow pools and swampy ditch environments. The molluscs suggest formerly shallow water, muddy, environments rather than deeper clean moat water and appear to represent the final infill environments rather being contemporary with the original moat waters.

#### *Insect remains*

- 2.19 The small insect fauna assemblage from basal ditch fill 1135 contained several taxa which suggest that the ditch contained still water and was kept relatively clear of waterside vegetation. There are indications from dung beetle remains that open pasture and grassland occurred in the vicinity of the ditch and that limited dumping of settlement waste occurred. There are also indications that settlement waste may have entered this deposit to a limited extent. This is suggested by the recovery of *Cryptophagus*, *Lathridius minutus* and *Ptinus fur*; all of which are common around settlement. The recovery of *Leperisinus villosus*, *Hylastes* spp. and *Rhyncolus* spp, which are associated either with pine or rotting wood in general (Lucht 1992), indicate that pine trees and timber may have been present in the area.

### **3. DISCUSSION**

- 3.1 The evaluation has successfully identified and further clarified the position, orientation, width and depth below present ground level (bpgl) of the northern and eastern arms of the moated enclosure identified during the preceding evaluation

trenching (CAT 2001; Fig. 2). The infilled moat survives between 15.5 and 18.5m wide in Trenches 9, 11 and 12 and is at least 22m wide in Trench 10, where the north-eastern moat corner was examined. The uppermost fills of the moat were encountered at depths of approximately 1m bpgl and, where the full moat ditch profile was encountered in Trench 11, the base of the moat ditch has been noted at approximately 2.75m bpgl.

- 3.2 Where the earliest surviving moat fills could be safely investigated, within Trench 11, the basal silt-clay fill was undated artefactually and only post-medieval pottery and brick, together with residual Roman and medieval pottery, was recovered from later fills. Geoarchaeological and palaeoenvironmental assessment of bulk and monolith samples from the sequence of successive moat fills within Trench 11 has noted an absence of abundant vegetative detritus, suggesting that many or all of the original medieval moat deposits had been removed during periodic episodes of moat cleaning. It appears likely that the relatively-clean silt-clay moat fills encountered in Trench 11 represent relatively late, and rapid, episodes of silting of the moat.
- 3.3 Geoarchaeological and palaeoenvironmental assessments have identified only small numbers of waterlogged and carbonised plant remains within sampled moat fills 1135, 1130, 1129, 1128 and 1126 within Trench 11. These remains were generally poorly preserved, and the wheat grain and indeterminate grain remains recovered from within 1126/1128 and 1130 may be intrusive. The waterlogged plant remains recovered consisted of plants indicative of a wet environment and of disturbed and/or grassland environments, typical of vegetation within and around a moated enclosure. The few mollusc remains recovered include both land and fresh water snails, able to occupy the margins, sides and well-vegetated water of the infilled moat ditch. The poor quality of the plant remains, the paucity of animal and fish bone remains and molluscs within the moat fills, and an absence of waterlogged artefacts, means however that no further work is recommended. Assessment of insect remains from ditch fill 1135 suggests that the moat ditch contained still water and was kept relatively clear of waterside vegetation. No further work on the insect remains has been recommended.
- 3.4 No internal features were encountered within the moated enclosure during the 2012 evaluation. Extensive and, within the moat itself, locally deep modern dump deposits have been encountered across the site. The presence of such material suggests



that the moat ditch remained at least partly open until immediately prior to construction of the former CRE car park.

#### 4. CA PROJECT TEAM

Fieldwork was undertaken by Alistair Barber and Jon Hart, assisted by Matt Brooks, Sarah Cobain, Dan Sausins and Jerry Stone. The report was written by Alistair Barber. The illustrations were prepared by Ian Atkins. The archive has been compiled by Alistair Barber, and prepared for deposition by James Johnson. The project was managed for CA by Simon Cox.

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**APPENDIX A: CONTEXT DESCRIPTIONS**

## Trench 9

No.	Type	Description	Length (m)	Width (m)	Depth (m)	Spot-date
900	Layer	Foundation deposit for car park surface			0.15	
901	Layer	Foundation deposit for car park surface			0.15	
902	Layer	Soil horizon: grey-brown clay			0.25	
903	Layer	Alluvium: blue-grey silt-clay			0.4	
904	Layer	Natural geological substrate: yellow-brown sand-clay				
905	Cut	Moat edge: recorded in plan.		18	>1.3	
906	Fill	Modern backfill deposit: brown clay containing modern bricks			>1.3	
907	Fill	Modern backfill deposit: grey-brown clay containing modern bricks			0.45	
908	Cut	2001 CAT evaluation trench		1.6	0.9	
909	Fill	Modern backfill of 908		1.6	0.9	
910	Layer	Modern car park surface: concrete			0.15	

## Trench 10

No.	Type	Description	Length (m)	Width (m)	Depth (m)	Spot-date
1000	Layer	Modern car park surface: concrete			0.55	
1001	Layer	Modern dump deposit: alluvial clay with brick fragments			1.1	
1002	Layer	Modern backfill deposit: grey-brown clay containing modern bricks		6.2	0.4	
1003	Layer	Soil horizon: grey-brown clay		14	0.2	
1004	Layer	Fill of moat 1013: green-grey silt-clay		>6	0.55	
1005	Layer	Fill of moat 1013: yellow-brown silt-clay		>6	0.4	
1006	Layer	Fill of moat 1013: grey-brown silt-clay with modern bricks		>6	1.15	
1007	Layer	Fill of moat 1013: yellow-grey sand with modern bricks			0.2	
1008	Layer	Fill of moat 1013: grey-brown clay with modern bricks			0.95	
1009	Layer	Fill of moat 1013: grey-brown clay		>4	>0.9	
1010	N/A	VOID CONTEXT				
1011	Fill	Fill of moat 1013: grey-brown clay			>0.4	
1012	Fill	Fill of pit 1013: grey clay				
1013	Cut	Pit; only partially exposed	1.1	>0.4	0.5	
1014	N/A	VOID				
1015	Layer	Alluvium: blue-grey silt-clay				
1016	Cut	Moat edge, as 1013; only partially exposed				
1017	Layer	Fill of moat 1013: grey-brown clay			0.08	
1018	Layer	Fill of moat 1013: grey silt-clay			>0.14	
1019	Layer	Fill of moat 1013: grey-brown silt-clay			>0.38	
1020	Layer	Fill of moat 1013: grey-brown silt-clay			>0.34	
1021	Cut	Moat recut; only partially exposed				

## Trench 11

No.	Type	Description	Length (m)	Width (m)	Depth (m)	Spot-date
1100	Layer	Modern car park surface: concrete			0.08	
1101	Layer	Foundation deposit for car park surface			0.13	
1102	Layer	Foundation deposit for car park surface			0.06	
1103	Layer	Foundation deposit for car park surface			0.45	
1104	Layer	Modern dump deposit: blue-grey and orange-brown clay with brick and plastic			1-2	
1105	Layer	Orange-yellow clay			0.5	
1106	Layer	Soil horizon: black silt			0.3	
1107	Layer	Soil horizon: brown gritty silt			0.4	
1108	Fill	Land drain fill: grey silt-clay	>2.1	0.3	0.7	
1109	Structure	Post-medieval/early modern land drain clay pipe		0.25		
1110	Cut	Land drain		0.3	0.7	
1111	Fill	Land drain fill: grey silt-clay		0.25-0.6	0.7	
1112	Structure	Post-medieval/early modern land drain clay pipe		0.25		
1113	Cut	Land drain		0.6	0.7	
1114	Fill	Land drain fill: grey silt-clay			0.2	
1115	Cut	Land drain		0.3	0.2	
1116	Fill	Land drain fill: grey silt-clay			0.2	
1117	Cut	Land drain		0.4	0.2	
1118	Fill	Land drain fill: grey silt-clay		0.15	0.07	
1119	Cut	Land drain		0.15	0.07	
1120	Fill	Land drain fill: grey silt-clay		0.3	0.09	
1121	Cut	Land drain		0.3	0.09	
1122	Fill	Land drain fill: orange-brown clay-sand		0.3	0.15	
1123	Cut	Land drain		0.3	0.15	
1124	Layer	Soil horizon: grey clay-silt			0.3	
1125	Layer	As 1124			0.1	
1126	Fill	Fill of moat 1137: blue-grey silt-clay			0.3	
1127	Fill	Fill of moat 1137: orange-brown clay-sand			0.12	
1128	Fill	Fill of moat 1137: grey to orange-brown clay-silt			0.2	
1129	Fill	Fill of moat 1137: grey-brown clay			0.22	
1130	Fill	Fill of moat 1137: orange-brown clay-sand			0.22	
1131	Fill	Fill of moat 1137: grey clay-silt			0.1	
1132	Fill	Fill of moat 1137: orange-brown clay			0.13	
1133	Fill	Fill of moat 1137: black clay-silt			0.05	
1134	Fill	Fill of moat 1137: orange-brown clay			0.2	
1135	Fill	Fill of moat 1137: grey-green sand			0.06	
1136	Fill	Grey-brown gritty-silt			0.1	
1137	Cut	Moat edge.		15.5		
1138	Fill	Fill of 1139: grey clay-silt	>2	0.4		
1139	Cut	Curvilinear ditch	>2	0.4		
1140	Layer	Natural geological substrate: blue-grey clay				
1141	Layer	Natural geological substrate: orange clay				

## Trench 12

No.	Type	Description	Length (m)	Width (m)	Depth (m)	Spot-date
1200	Layer	Modern car park surface and associated foundation			0.3	
1201	Layer	Former soil horizon: grey-brown clay			0.3	
1202	Layer	Alluvium: blue-grey silt-clay. ?modern dump deposit			0.15	
1203	Cut	Moat edge: not fully exposed but tested and recorded in plan.			>0.9	
1204	Fill	Modern backfill within 1203: grey-brown clay with occasional modern brick fragments.			>0.9	
1205	Layer	Natural geological substrate; orange-brown sand-clay				
1206	Layer	Alluvium: blue-grey silt-clay.			0.2	

## APPENDIX B: THE FINDS

Context	Description	Ct.	Wt.(g)	Date
1012	Roman pottery: oxidised Severn Valley ware	1	8	MC1-C4
	Bone: animal	1	144	
1017	Modern pottery: refined whiteware	1	36	C19
	Bone: animal	2	238	
1104	Modern pottery: refined whitewares	3	120	MLC19
	Glass: vessel	3	55	
1107	Ceramic building material: Roman <i>imbrex</i> ; post medieval brick	2	94	C18-C19
1124	Post-medieval pottery: glazed earthenwares	3	87	C17-C18
	Medieval pottery: miscellaneous reduced sandy ware	1	5	
	Roman pottery: oxidised Severn Valley ware	1	5	
	Ceramic building material: post-medieval brick fragments	4	231	
1128	Post-medieval pottery: glazed earthenware	1	11	LC17-C18
	Medieval pottery: Malvernian unglazed ware	4	331	
	Roman pottery: oxidised Severn Valley ware; shell-tempered ware	3	7	
	Ceramic building material	3	28	
	Bone: animal	24	407	
	Sample <5>Medieval pottery:	3	5	
1135	Sample <8> Bone: animal	1	4	

## APPENDIX C: THE PALAEOENVIRONMENTAL EVIDENCE

Two processing methodologies were put in place to assess plant remains, artefacts, molluscs and fish bone. In order to assess the plant remains, a 1L sub-sample was taken from each of the five column samples and processed by wet sieving to 0.25mm, keeping the wet sieved material damp (CA Technical Manual 2). The seeds were identified using a low power stereo-microscope (Brunel MX1) at magnifications of x10 to x40. Identifications were carried out with reference to images and descriptions by Cappers *et al.* (2006), Berggren (1981) and Anderberg (1994). Nomenclature follows Stace (1997).

In order to retrieve finds, fish bone and molluscs a 20L sub sample was taken from samples 7 (1130) and 8 (1135) and 10L from sample 5 (1126 and 1128) and processed by standard flotation procedures using a 250 micron sieve to collect the flot and 1mm mesh to retain the residue (CA Technical Manual 2). The residue was dried and sorted by eye and the floated material (kept damp), was scanned and seeds identified (as above).

Plant macrofossil identifications and flot/residue inclusions

Context number				1126	1126/1128	1129	1130	1135
Feature number				1137	1137	1137	1137	1137
Sample number				4	5	6	7	8
Flot volume (ml)				N/A	14	N/A	50.5	68.5
Volume of wet sieved material (ml)				16	9.5	8.5	10.5	33.5
Sample volume (l) (floated sample)				N/A	9	N/A	18	14
Sample volume (l) (wet sieved sample)				1	1	1	1	1
Soil remaining (l)				39	29	39	19	9
Plant macrofossil preservation				Poor	Poor	N/A	Poor	Poor
Habitat Code	Family	Species	Common Name					
HSW/WF	Adoxaceae	<i>Sambucus nigra</i>	Elder				+	
D/P	Asteraceae	<i>Cirsium/Carduus</i> spp	Thistle spp					+
A/D	Caryophyllaceae	<i>Stellaria</i> spp	Chickweed spp					++
	Ceratophyllaceae	<i>Ceratophyllum demersum</i>	Rigid hornwort					+
WL/D	Cyperaceae	<i>Carex</i> spp	Sedge				+	
WL		<i>Eleocharis</i> spp	Spikerushes					cf +
WL	Juncaceae	<i>Juncus</i> spp	Rushes	++++			++++	
WL	Menyanthaceae	<i>Menyanthes trifoliata</i>	Bogbean					+
E	Poaceae	<i>Triticum aestivum/turgidum/durum</i>	Free threshing wheat (carbonised)		+			
E		<i>Poaceae</i>	Indeterminate cereal grain fragment (carbonised)	+	++++		+	
A/D/HSW	Polygonaceae	<i>Rumex</i> spp	Dock spp				+	+
D/P	Rosaceae	<i>Potentilla</i> spp	Cinquefoil spp				+	+
HSW/D		<i>Rubus</i> spp	Bramble spp				+	
Flot/residue Inclusions								
Small mammal bone					+		+	
Bone								+
Burnt bone				+				
Fish bone					+			+
Insects								
Molluscs				+	+	+	+++	+++
Pottery					+			

All species waterlogged unless specified

Key:

+ = 1-5 items; ++ = 6-20 items; +++ = 21-40 items; ++++ = >40 items

HSW = hedgerow/scrub/woodland species;

D = species indicative of a disturbed environment;

P = species indicative of pasture/grassland;

A = weed species indicative of an arable environment;  
WL = species indicative of a wet environment;  
E = economic species



APPENDIX D: GEOARCHAEOLOGICAL ASSESSMENT

**GEOARCHAEOLOGICAL SUMMARY AND ASSESSMENT OF THE  
MOAT DEPOSITS, STOKE ORCHARD (SOR 12),  
GLOUCESTERSHIRE**

***CA Project 3911***

by ***Michael J. Allen, PhD, MIFA, FLS, FSA***

version 189.1.1  
24th September 2012

for:-

*Sarah Cobain/Simon Cox, Cotswold Archaeology*

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Archaeology

Redroof, Green Road, Codford St. Peter, WARMINSTER, Wiltshire, BA12 0NW (Tel: 07828 103454)



AEA 189

## GEOARCHAEOLOGICAL SUMMARY AND ASSESSMENT OF THE MOAT DEPOSITS, STOKE ORCHARD (SOR 12), GLOUCESTERSHIRE - CA Project 3911

Excavation of the moated enclosure were visited to examine the sediments, with a view to in particular examining “the nature and archaeological/ palaeo-environmental potential of the basal moat ditch fills (i.e. those which are most likely to be associated with the period in which the moat was in use)” (Cotswold Archaeology 2012).

The site was visited on 4<sup>th</sup> September 2012 to examine the profile of the medieval moat, describe deposits to provide an infill history and to advise on a sampling strategy (AEA 2012). The main excavation (Trench 10) required extensive pumping to be accessible, and although some descriptions were made here, the main moat sequence was excavated and sampled by Cotswold Archaeology in Trench 11. The sequence was sampled as undisturbed sediment in three monolith samples, and a series of five, context-specific, contiguous bulk samples were taken for both charred plant and charcoal remains and waterlogged plant remains. The samples were examined for molluscs (see below).

The key project aims were to focus on

- A) recording the full infill sequence of the moat and its sedimentation environment
- B) indicating the presence/absence of environmental indicators (and the potential for the environment (and economy) of medieval settlement)
- C) indicating the presence/absence of fish bones  
and
- D) indicating the presence of waterlogged remains; insects, wood, leather etc

### Geology

The geology is mapped as Charmouth Mudstone Formation (dark grey laminated shales, and dark, pale and bluish grey mudstones; locally concretionary and tabular limestone beds) with local superficial deposits of Cheltenham Sand and Gravels with alluvium relating to the Dean Brook to the north. These support typical calcareous brown earths of the Badsey 2 Association and typical calcareous pelosols of the Evesham 2 Association (Findlay *et al.* 1984).

## GEOARCHAEOLOGY

### Fieldwork, geoarchaeology and reporting

The geoarchaeological assessment and reporting comprises a combination of descriptions of the *in situ* deposits in Trench 10 (AEA 2012), detailed geoarchaeological examination and recording from undisturbed samples (monoliths) taken by Cotswold Archaeology from Trench 11), and assessment of mollusc from samples of the same sequences in Trench 11.

### Basic Field Observations (4th September 2012)

#### Trench 11

- A small sondage on the eastern edge of the moat was being excavated under c. 1.2m of overburden
- This sondage being on the edge of the moat, although defining the extent of the moat, had not exposed or sampled the older deposits which lie towards the centre of the essentially broad (c. 22m) flat bottomed moat.
- Fine-grained minerogenic deposits were observed towards the centre of the moat, but excavation to the base was not completed.
- Augering at this point indicated at least another 0.4m to 0.6m of fine-grained sediments below the excavated point

#### Trench 10

- The overburden revealed a buried soil over the moat and sealed by 'alluvium'. This was examined and described. About 1.5m of overburden had been removed by machine. One small sondage was opened on the western edge of the moat (and described) – but see comments above.
- A large machine trench had been excavated to c. 0.8m exposing the top of the moat fills containing post-medieval dumped bricks.
- Augering indicated that about another 0.6m+ of moat deposits lay unexcavated – and that lay beneath about 0.1 and 0.15m of churned mud at the base of the trench

### Geoarchaeological record

To assist in recording the sediment history, the main moat profile was recorded for Trench 11 from three monolith samples (Fig. 1), and augmented by three further profiles described on site from Trench 10. The latter comprised the deposits exposed in the main moat, and those recovered by auger beneath then unexcavated deposits, and the shallow younger deposits at the edge of moat. A fourth profile described a buried soil which occurs above and over the moat in Trench 10, and was recorded in the previous excavation (Cotswold Archaeological Trust 2001)

### Methods

All faces of all exposed profiles (on site and in monoliths) were cleaned, by sediment fracture rather than cutting and smearing (see Figs 2-5), and were recorded following standard sedimentological notation (Hodgson 1976) and colour (Munsell, sediments recorded moist). The sediments were allowed to re-oxidise, and Munsell colours recorded again. A total of 19 subsamples of 10mm band width were removed at 60mm intervals for the consideration of pollen assessment or analysis.

### Moat deposits (Trenches 10 and 11)

The main moat deposits were described from monoliths (Samples 1, 2 and 3) from Trench 11 (Figs 1 and 2). The sampled sequence showed an upper alluvial silt, possibly overbank floodplain alluvium (context 1126), sealing slowly infilling organic moat silts (context 1135, 1130, 1129 and 1128). The basal deposits were massive, unstructured, stone-free organic silts (1135) overlain by blocky stone-free silty clay and silt loam (1130 and 1129) comprising the main subaqueous moat infill. Above this are organic silts/muds and the presence of ?vivianite might indicate the presence and inclusion of cess and faecal matter in less aqueous deposits; i.e. when the moat was largely infilled, and was largely a muddy ditch environment.

Depth (cm)	Context	Sample	Description	Unit / Comment
0-8			Void	
8-28	1124	10cm 16cm 22cm 28cm	Very dark grey (Gley 1 3/N) stone-free silty clay to silty clay loam with weak small blocky structure, clear boundary	grey alluvial silt ?overbank floodplain alluvium
28-51	1126	34cm 40cm 46cm	Dark grey (Gley 1 4/1) silty clay, rare very small stones medium moderate blocky structure, oxidising to very dark greyish brown to olive brown (2.5Y 3/2-2) - otherwise largely undifferentiable in monolith from above, clear boundary	Organic mud
51-70	1128	52cm 58cm 64cm 70cm	Very dark grey (2.5Y 3/1) silt loam oxidises to olive brown (2.5Y 4/4-6), stone-free with small to medium blocky structure, with clear light bluish grey micro-crystals on macropore voids (?vivianite), clear to abrupt boundary	Organic mud; moat silt - inc ?cess
70-84	1129	76cm 82cm	Olive brown (2.5Y 4/1) stone-free silt loam, medium diffuse mottling, clear boundary	Moat silt

84-107	1130	88cm 94cm 100cm 106cm	Dark greenish grey (Gley 1 4/1) mottled moist silty clay, oxidises to light olive brown (2.5Y 5/4)	Moat silt
107-118	1135	110cm 116cm	Very dark grey (2.5Y 3/1) stone-free moist silty clay, some charcoal flecks, massive - no structure observable	Clean alluvial moat silt
118-135+	1136		Dark greenish grey (Gley 1 3/1) clay to silty clay with rare medium stones and common very fine stones, laminated	Parent material / 'natural'

Descriptions of the moat deposits from Trench 11 (as sampled in Monoliths 1, 2 and 3)

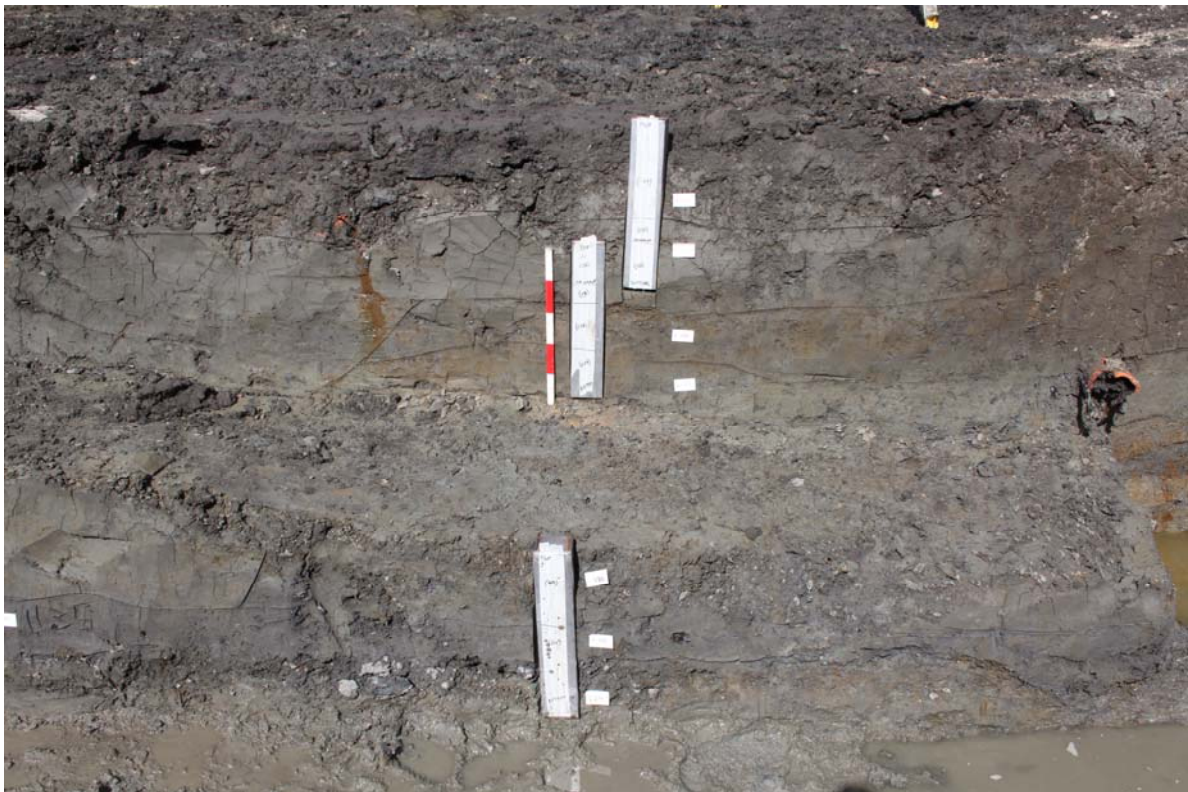
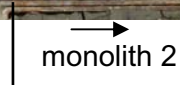


Fig 1. The samples section in Trench 11 (Photo: Cotswold Archaeology)

Monolith 1



Monolith 2





Monolith 3



Figure 2. The sediment record, sampled in Monoliths 1, 2 and 3, Trench 11 (Photo: M.J. Allen)

A similar sequence was recorded in Trench 10, by a combination of field examination and augering. The basal moat deposits were fine-grained compact minerogenic silts and silty clays. No highly organic peaty deposits were encountered in either of the two auger holes. Some fine fragments or waterlogged woody twig were noticed (and were also present in the monolith samples - see above).

The whole moat sequence was buried and sealed by nearly a metre of redeposited alluvium containing a mass of post-medieval/modern bricks and tile, dumped over an organic mud possibly presenting the final vestiges of the moat in post-medieval to modern times. The upper black waterlogged organic muds (Tr 10) contained modern woven textiles (not retained), wood chips and freshwater shells. It is possible that the upper redeposited alluvium (c. 0.8m) containing brick and silt was dumped to infill the moat.

Depth <sup>1</sup>	Description	Unit / Comment
0-c. 75cm	Dark greenish grey (10GY 5/1) massive stone-free silt, <u>rapidly</u> oxidising to olive (5Y 4/4), (looks yellowish brown) stone-free. Contains small waterlogged wood fragments, and post-medieval whole brick and tile at an array or	Redeposited alluvium

	angles or repose clearly indicating bricks thrown into soft silts, and/or the mass dumping of this entire upper fill	
68-93	Black organic silt loam with freshwater shells, woven fabric, and wood chips in a light olive grey silt	Organic mud
<b>Depth<sup>2</sup></b>		
75-130cm	Dark greenish grey to dark olive firm fine, well-sorted silt to silt clay	Clean alluvial moat silt
130-138+	Very stiff light yellow to olive brown firm clay	?weathered parent material / 'natural'

<sup>1</sup> depth from step in trench, <sup>2</sup> augered profile through unexcavated deposits  
 Descriptions of the moat fills and redeposited alluvium (Tr 10)

### ***West edge of the moat deposits (later fills) - Tr 10***

#### *West edge of moat (west end Tr 10)*

The west edge of the moat contained largely inorganic minerogenic moat silts (Fig. 3), but which were mixed toward the upper surface suggesting deposition of fine waste.



Figure 3. Western edge of the moat (Tr 10) showing largely fine grained minerogenic sediments

The deposits are fine-grained minerogenic waterlogged deposits. Although some more robust waterlogged material may survive (wood), the deposits themselves are not organic. These are shallow deposits and probably represent the later fills of the moat.

Depth*	Description	Unit / Comment
0-25cm	Light greenish grey (10Y 7/1) uniform, massive silt to silty clay, stone-free, clear to diffuse boundary	Alluvial silt
25-44cm	Very dark grey (Gley 1 N/3N) oxidising to olive (5Y 5/3), mixed and mottled silty loam, rare small stones and freshwater shell, some small organic matter (fine woody stem), clear boundary	Dump and occupation debris is silt
44-67cm	As above but mixed with few small stones	Alluvial silt some occupation detritus
67-90cm	Dark grey (Gley 1 4/N) fine-grained silt	Clean alluvial moat silt
90+cm	Parent material Clay	Parent material / 'natural'

\*Depth from top of step in trench

Description of the deposits at the edge of the moat (Tr 10)

#### **Post medieval buried soil (west end Tr 10)**

The buried soil high in the sequence is that reported previously (CAT 2001, context 103) and is an immature humic worm-worked grassland / pasture soil developing in the upper dumped upper moat fill, and rapidly sealed by alluvium dumped on its surface. The latter activity caused some disruption to its upper surface (Figs 4 and 5).



Concrete

Dumped alluvium

Buried soil A horizon

Buried soil B horizon

Figure 4. The post medieval buried soil





Figure 5. Detail of the post medieval buried soil

<b>Depth*</b>	<b>Description</b>	<b>Unit / Comment</b>
0-22cm	Concrete over gravel (hard standing / floor), sharp boundary	Concrete hard standing
22-64cm	Dark greenish grey (Gley 1 10Y 4/1) sold massive silty <u>clay</u> , stone-free with very large subangular blocky structure From 40cm some (1%) coarse diffuse mottling, some very fine stones, sharp smooth boundary with clear undulations and intrusions indicating disturbance of layer below	Dumped alluvium
64-79cm	Very dark greyish brown (2.5Y 3/2) humic silty loam to silty clay loam, very firm compact, rare fine charcoal, very rare very small distinct mottles of strong brown (7.5YR 5/6), clear boundary	Buried soil A horizon
79-90+cm	Dark greenish grey (5GY 4/1) oxidising to olive brown (2.5Y 4/3) silt to silt loam, fine smooth and slightly gritty to feel	B horizon of buried soils and upper moat fill

\*Depth from surface

Description of the post medieval buried soil (Tr 10)

### Interpretative comments

The deposits in the moat are well-sorted minerogenic silts largely derived from the weathering of the sides and bottom of the moat. There is no highly organic mud or peat indicating the build up and accretion of decaying vegetative detritus in the moat. We may take this to suggest that the moat, like medieval fish-ponds, was regularly cleaned out. The lack of such deposits during the demise of the moat may suggest relatively rapid silting. The upper part, comprising more than half its depth, seems to have been composed of dumped demolition debris.

The basal deposits are humic fine-grained well-sorted silts, typical of those forming in closed pools of water, but there is little evidence of heavy vegetation. But as indicated above, these deposits may only represent the last sediment accumulation if the moat was regularly cleaned out.

### MOLLUSCS

A series of five bulk samples (Samples 4-8) were taken from the main moat fills in Trench 10 (Table 1), by Cotswold Archaeology. The bulk samples were split into large bulk samples (9-18 litres) for sieving and smaller (1 litre) for flotation for the recovery of waterlogged remains. Samples were processed by Cotswold Archaeology and the flots and residues supplied for the assessment of the molluscs. The samples comprised 20 wet/waterlogged residue and flot fractions and 6 dry residue fractions (Table 1)

Sample	Context	wet sieved Vollwt	Floated V ol / w t	Flot		Residue			
				0.25mm	1mm	0.25mm	0.5mm	1mm	2mm
4	1126	1L / 1.2Kg	9L / 11Kg	-	-	W	-	-	W
5	1128	1L / 1.2Kg	-	W	W	W	D	W+D	W
6	1129	1L / 1.3Kg	-	-	-	W	-	W	W
7	1130	1L / 1.2Kg	18L / 22Kg	W	W	W	D	W+D	W
8	1135	1L / 1.2Kg	14L / 20Kg	W	W	W	D	W+D	W

Table 1. Waterlogged and dried flot and residue fractions provided for the assessment/analysis of molluscs

#### Methods

All 26 flots and residue fractions were sorted under an illuminated magnifying lens and under x10 to x30 stereo binocular microscope, then re-wetted and returned to their containers. The

dry residues were sorted under a stereo binocular microscope and x10 to x30 magnifications.

Mollusc fragments were removed and identified (Table 2) where nomenclature follows Anderson (2005).

### Mollusca

There were very few shells, and only three samples contained apical fragments (Table 2), and less than 20 shells were recovered. Due to the low number of shells present, they were all identified using the authors' reference material and standard texts (e.g. Kerney 1999; Macan 1977).

The numbers of shells are not great enough to make any significant or detailed palaeo-environmental interpretation, but a few comments can be made. Both land and fresh-water shells were present. The terrestrial shells are both species typical of humanly disturbed environments and gardens (Kerney and Cameron 1979). The freshwater snails may include species living in the moat as well as those on its sides and margins. All species present can tolerate drying out, and *Anisus leucostoma* is considered amphibian (Robinson 1988). They tend to indicate shallow pools and swampy ditch environments and *Planorbis planorbis* is common in small bodies of well-vegetated water.

Although shell numbers were very low we can tentatively suggest that these tend to reflect shallow water, muddy, environments rather than deeper clean moat water. As such they may represent the final infill environments rather than that mainly contemporary with the medieval moat.

	Feature		Moat		
Context	1135	1130	1129	1128	1126
Sample	8	7	6	5	4
Wt (Kg)	21.2	23.2	1.3	12.1	1.2
LAND MOLLUSCA					
<i>Discus rotundatus</i> (Müller)	-	1	-	1	-
<i>Trochulus hispidus</i> (Linnaeus)	-	-	-	1	-
FRESHWATER MOLLUSCA					
<i>Planorbis planorbis</i> (Linnaeus)	-	1	-	-	-
<i>Anisus leucostoma</i> (Millet)	-	8	2	-	-
<i>Gyraulus crista</i> (Linnaeus)	-	1	-	-	-
Taxa	0	4	1	2	0
<b>TOTAL</b>	<b>0</b>	<b>11</b>	<b>2</b>	<b>2</b>	<b>0</b>

Table 2. Mollusca from the bulk samples from Trench 11

### POLLEN

A series of 19 subsamples were taken from the monoliths (see above). These are only worth pursuing if

- a) the deposits are well-dated, and
- b) the basal deposits do relate the medieval moat infill, rather than a much later infill history

### **SUMMARY: GEOARCHAEOLOGY**

The moat deposits were waterlogged and slightly humic fine-grained minerogenic deposits. There was little evidence of the accumulation of decaying vegetative detritus. Overall these infills suggest the later final infilling history of the neglected moat, with a strong possibility that many of the original medieval deposits had been cleaned out.

The very few molluscs present were largely those that could tolerate drying out, and suggested either the moat margin environs, or the demise of the moat and a constant water-filled feature.

The upper organic muds and buried soil indicate the nature of the moat as a damp ditch or hollow prior to its burial by post-medieval /modern alluvium.

The geoarchaeological potential beyond what is reported here is limited. The molluscs have been reported in full.

### **Recommendations**

1. The monolith recording is completed and the monoliths (Samples 1, 2 and 3) should be considered for discard.
2. No further work on the molluscs is required.
3. If the basal deposits are well-dated and are considered to be medieval, then pollen assessment could be considered.
4. The geoarchaeological and mollusc information here provides the main basis of the reporting. If publication is considered, then this data would form the basis of that report with some re-working of the text recommended.

### *Acknowledgements*

I would like to thank Jon Hart for assistance on site and Sarah Cobain for supplying samples, sample information and processing details.

## References

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## APPENDIX E: INSECT REMAINS ASSESSMENT

### INTRODUCTION

This assessment of the potential for insect remains reports on one sample taken from a moat ditch associated with a former manor house. This sample (sample 8/ context 1135) came from the basal layer of the ditch.

It was hoped that an assessment of the insect remains from this sample would provide information on the following:

- 1) Are insects present?
- 2) Are the insect faunas of interpretative value and warrant further investigation?
- 3) Do the insects suggest the nature of the environment in the area around the ditch?
- 4) Do insects suggest that settlement material was dumped into the ditch?

### METHODS

The samples were processed using the standard method of paraffin flotation as outlined in Kenward *et al.* (1980). The system for 'scanning' faunas as outlined by Kenward *et al.* (1985) was followed in this assessment.

When discussing the faunas recovered, the following considerations should be taken into account:

- 1) Identifications of the insects present are provisional. In addition, many of the taxa present could be identified down to species level during a full analysis, producing more detailed information.
- 2) The various proportions of insects suggested are very notional and subjective. As a result, these faunas should be regarded as incomplete and possibly biased.

### RESULTS

The insect taxa recovered are listed in Table 1. The taxonomy follows that of Lucht (1987) for the Coleoptera (beetles).

The numbers of individuals present for each taxa is estimated using the following scale: + = 1-2 individuals, ++ = 2-5 individuals, +++ = 5-10 individuals, ++++ = 10-20 individuals, +++++ = 100s of individuals. The nature of the preservation and the potential for archaeological interpretation is outlined in Table 2.

The majority of the insect fauna recovered were Coleoptera (beetles) along with a large number of the resting egg pouch stage of *Daphnia* 'water fleas'. The fauna examined was well preserved and produced a fauna of small to moderate size.

### DISCUSSION

The relatively moderate insect fauna recovered contains a number of taxa such as *Ochthebius*, *Hydrophilus* and *Cercyon* spp. that are associated with slow-flowing water (Hansen 1987). There are no indications for any standing waterweeds or other emergent vegetation in the ditch at this time. In contrast the gyridid *Orectochilus villosus* is normally associated with faster flowing waters.

There is limited evidence for the presence of pasture and grassland. This is suggested by the recovery of a few *Aphodius* 'dung beetles' which are associated with dung lying in pasture (Jessop 1986). Similarly, *Gymnetron pascorum* and *G.* spp. are generally associated with plantains (*Plantago* spp.) (Lucht 1992). *Sitona* and *Apion* species also are common in this type of landscape.

There are indications that settlement waste may have entered this deposit to a limited extent. This is suggested by the recovery of *Cryptophagus*, *Lathridius minutus* and *Ptinus fur*; all of which are common around settlement.

There also is an indication that pine trees and timber may have been present in the area. This is indicated by the recover of *Leperisinus villosus*, *Hylastes* spp. and *Rhyncolus* spp. which are associated with either with pine or rotting wood in general (Lucht 1992).

### CONCLUSIONS

The insects from this moat ditch suggest that it contained still water and was kept relatively clear of waterside vegetation. There are indications that open pasture and grassland occurred in the vicinity around the ditch and that limited dumping of settlement waste occurred.

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Table 1. Insect fauna recovered from Stoke Orchard (SOR 12).

<b>Sample number</b>	<b>8</b>
Context number	1135
Sample Weight (Kg)	10
Sample volume (L)	11
<b>COLEOPTERA</b>	
<i>Carabidae</i>	
<i>Carabus spp.</i>	+
<i>Bembidion doris (Panz.)</i>	+
<i>B. guttula (F.)</i>	++
<i>Bembidion spp.</i>	+
<i>Gyrinidae</i>	
<i>Orectochilus villosus</i> (Müll)	+
<i>Dytiscidae</i>	
<i>Hydroporus spp.</i>	
<i>Hydraenidae</i>	
<i>Ochthebius spp.</i>	++
<i>Helophorus spp.</i>	++
<i>Hydrophilidae</i>	
<i>Cercyon spp.</i>	+
<i>Megasternum boletophagum (Marsh.)</i>	+
<i>Staphylinidae</i>	
<i>Omalium spp.</i>	+
<i>Lesteva spp.</i>	++
<i>Trogophloeus spp.</i>	+
<i>Oxytelus sculptus Grav.</i>	++
<i>Platystethus cornutus</i> (Grav.)	+
<i>Stenus spp.</i>	+
<i>Lathrobium spp.</i>	+
<i>Philonthus spp.</i>	++
<i>Cryptophagidae</i>	
<i>Cryptophagus spp.</i>	+
<i>Lathridiidae</i>	
<i>Lathridius minutus</i> (Group)	++
<i>Ptinidae</i>	
<i>Ptinus fur (L.)</i>	+
<i>Anthicidae</i>	
<i>Anthicus spp.</i>	+
<i>Scarabaeidae</i>	
<i>Aphodius spp.</i>	++
<i>Chrysomelidae</i>	
<i>Phyllotreta spp.</i>	+
<i>Scolytidae</i>	
<i>Hylastes spp.</i>	++
<i>Leperisinus varius (F.)</i>	



<i>Curculionidae</i>	
<i>Rhynchites spp.</i>	
<i>Apion spp.</i>	++
<i>Sitona spp.</i>	++
<i>Rhyncolus spp.</i>	+
<i>Rhinocus spp.</i>	+
<i>Geutorhynchus contractus (Marsh.)</i>	+
<i>Cidnorhinus quadrimaculatus (L.)</i>	+
<i>Gymnetron pascuorum (Gyll.)</i>	+
<i>Gymnetron spp.</i>	+

Table 2. Summary of the nature of the insect faunas from Stoke Orchard (SOR 12).

Number	Degree of preservation	Comparative size of faunas	Water conditions	Landscape	Overall potential of sample
8	good	Small / moderate	<i>Hydrophilus</i> , <i>Ochthebius</i> , <i>Cercyon</i> suggest slow-flowing water. <i>Orectochilus villosus</i> is normally associated with faster waters	<i>Aphodius</i> 'dung beetle', <i>Sitona</i> and <i>Gymnetron</i> suggest the presence of grazing animals and grassland. Small number of <i>Cryptophagus</i> , <i>Lathridius</i> and <i>Ptinus</i> fur may suggest settlement waste.	moderate

**APPENDIX F: LEVELS OF PRINCIPAL DEPOSITS AND STRUCTURES**

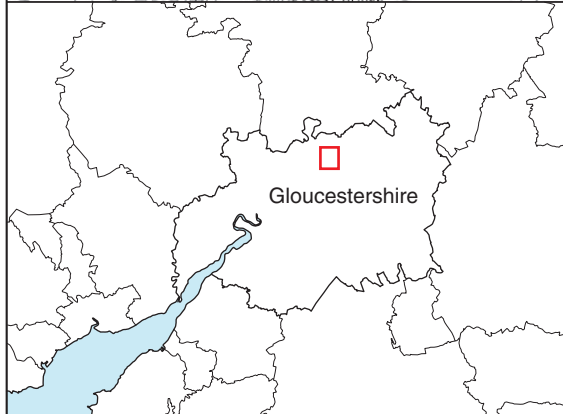
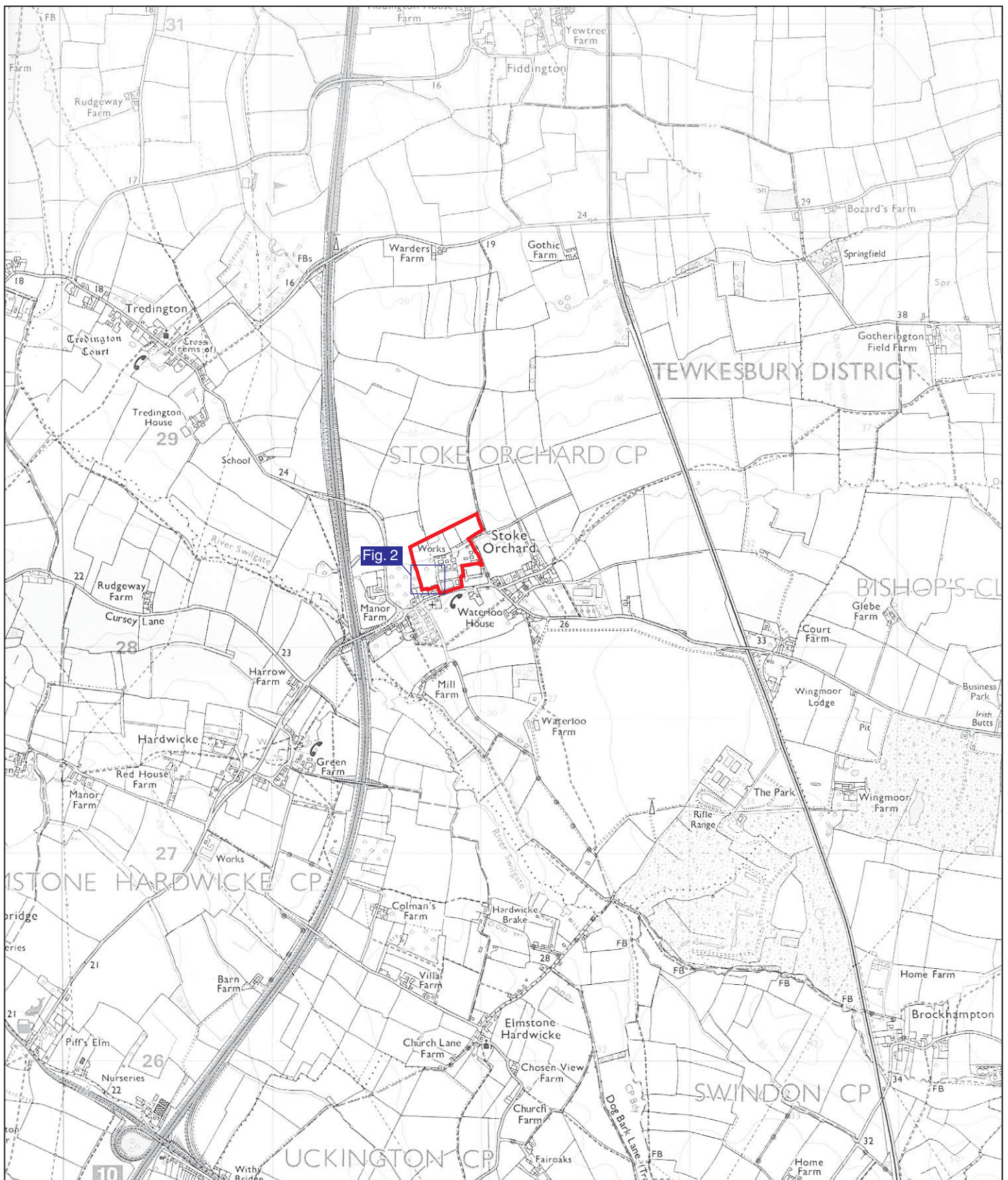
Levels are expressed as metres below current ground level and as metres Above Ordnance Datum (AOD), calculated using a Leica 1200 series SmartRover GPS.

	Trench 9	Trench 10	Trench 11	Trench 12
Present ground level	0.00m (22.34- 23.25m)	0.00m (22.65- 23.24m)	0.00m (23.39- 23.43m)	0.00m (23.64- 23.83)
Level of uppermost (post-medieval/modern) moat fills	0.4m (22.65m)	0.30m (22.3m)	1.1m (22.29m)	0.7m (23.1)
Level of uppermost in-situ/basal moat ditch fills	-	0.6m (22.05m)	1.19m (22.2)	-
Level of base of moat ditch	-	-	2.75m (20.64m)	-

Upper figures are depth below modern ground level; lower figures in parentheses are metres AOD.

## APPENDIX G: OASIS REPORT FORM

<b>PROJECT DETAILS</b>		
Project Name	Former Coal Research Establishment, Stoke Orchard, Gloucestershire	
Short description (250 words maximum)	<p>An archaeological evaluation was undertaken by Cotswold Archaeology in August and September 2012 at the former Coal Research Establishment site, Stoke Orchard, Gloucestershire. Four trenches were excavated.</p> <p>The location and depth of a moated enclosure, previously identified during evaluation trenching in 2001, was recorded through investigations along its eastern and northern arms. The earliest surviving, waterlogged, silt-clay fills were undated. There was no evidence for gradual and prolonged accumulation of decaying vegetative detritus and these basal moat fills may represent rapid and relatively late silting of the ditch, with the strong possibility that many or all of the original medieval deposits had been cleaned out.</p> <p>Palaeo-environmental and geoarchaeological assessment of the earliest surviving moat fills within Trench 11 revealed few and generally poorly preserved molluscs and plant remains present, and pollen assessment is not considered useful given that the basal deposits are not well dated and not definitely of medieval date. Several moat fills contained post-medieval artefacts, together with residual medieval and Roman pottery. Further residual Roman pottery was recovered from a pit cut into the partially infilled moat, and from a post-medieval soil horizon. Extensive modern dumping was noted within the moat ditch.</p>	
Project dates	28 August – 12 September 2012	
Project type	Field evaluation	
Previous work	Desk-based assessment (Alison Borthwick and Associates 1996) Field evaluation: Cotswold Archaeological Trust 2001	
Future work	Unknown	
<b>PROJECT LOCATION</b>		
Site Location	Stoke Orchard, Gloucestershire	
Study area (M <sup>2</sup> /ha)	1.615m <sup>2</sup>	
Site co-ordinates (8 Fig Grid Reference)	SO 39183 22834	
<b>PROJECT CREATORS</b>		
Name of organisation	Cotswold Archaeology	
Project Brief originator	-	
Project Design (WSI) originator	Cotswold Archaeology	
Project Manager	Simon Cox	
Project Supervisor	Alistair Barber and Jon Hart	
<b>MONUMENT TYPE</b>		
<b>SIGNIFICANT FINDS</b>	none	
<b>PROJECT ARCHIVES</b>		
	Intended final location of archive	Content (e.g. pottery, animal bone etc)
Physical	Cheltenham Museum	Ceramics, glass
Paper	Cheltenham Museum	Trench Recording Forms, Context sheets, Photographic Registers, Drawing Register, matrix
Digital	Cheltenham Museum	Digital photos
<b>BIBLIOGRAPHY</b>		
CA (Cotswold Archaeology) 2012 <i>Former Coal Research Establishment, Stoke Orchard, Gloucestershire: Archaeological Evaluation</i> . CA typescript report <b>12245</b>		



Cirencester 01285 771022  
 Milton Keynes 01908 218320  
 Andover 01264 326549  
 www.cotswoldarchaeology.co.uk  
 enquiries@cotswoldarchaeology.co.uk

**PROJECT TITLE**  
 Former Coal Research Establishment  
 Stoke Orchard, Gloucestershire

**FIGURE TITLE**  
 Site location plan

PROJECT NO.	3911	DATE	20-09-2012	FIGURE NO.
DRAWN BY	IA	REVISION	00	
APPROVED BY	PJM	SCALE@A4	1:25,000	<b>1</b>

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917

918



- site
- evaluation trench CA 2012
- evaluation trench CAT 2001
- archaeological feature
- revised alignment of moat
- modern



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 Cirencester 01285 771022  
 Milton Keynes 01908 218320  
 Andover 01264 326549  
 www.cotswoldarchaeology.co.uk  
 enquiries@cotswoldarchaeology.co.uk

**PROJECT TITLE**  
 Former Coal Research Establishment  
 Stoke Orchard, Gloucestershire

**FIGURE TITLE**  
 Trench location plan, showing  
 archaeological features

PROJECT NO.	3911	DATE	20-09-2012	FIGURE NO.	
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APPROVED BY	PJM	SCALE@A3	1:500		<b>2</b>

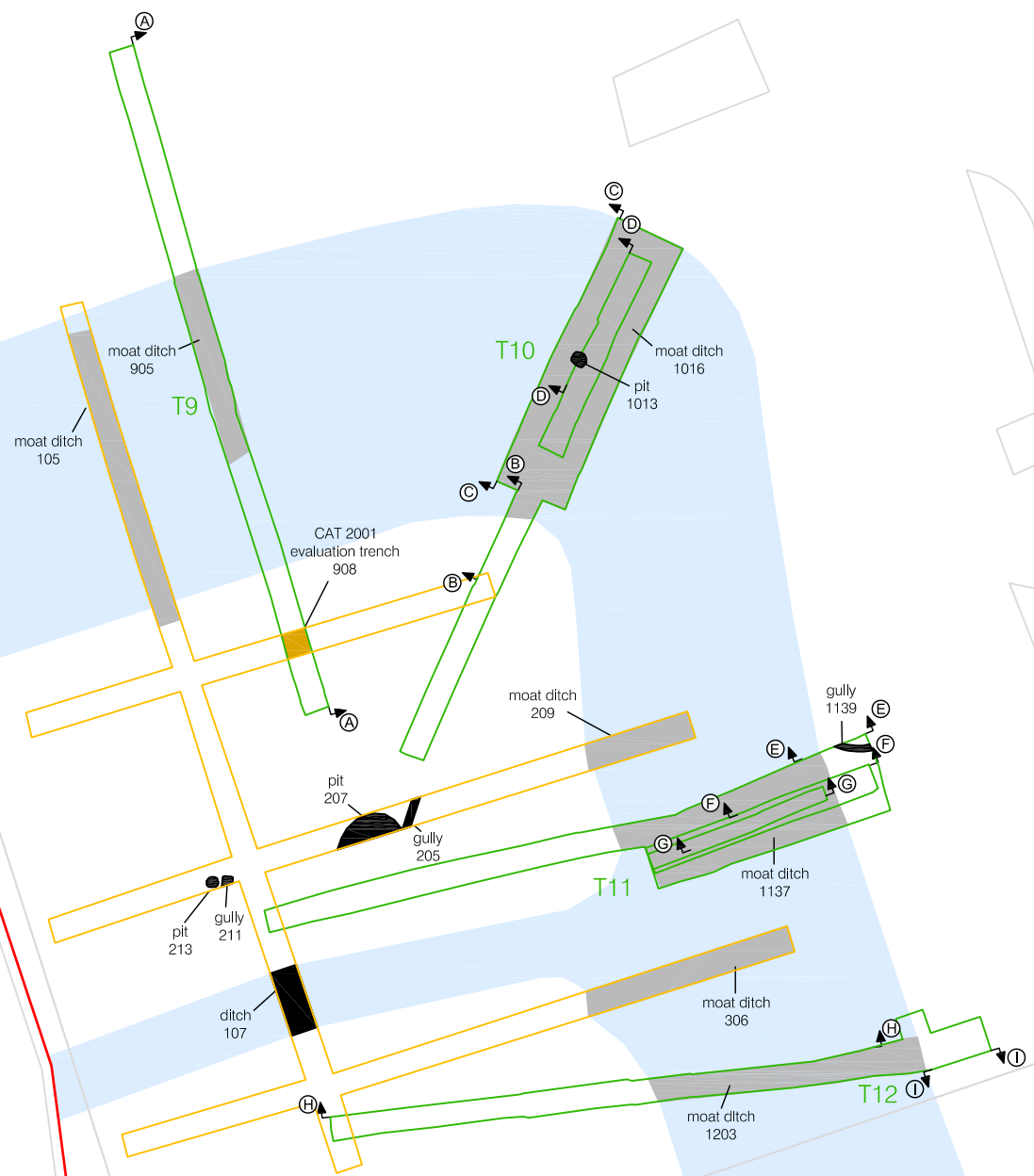
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283

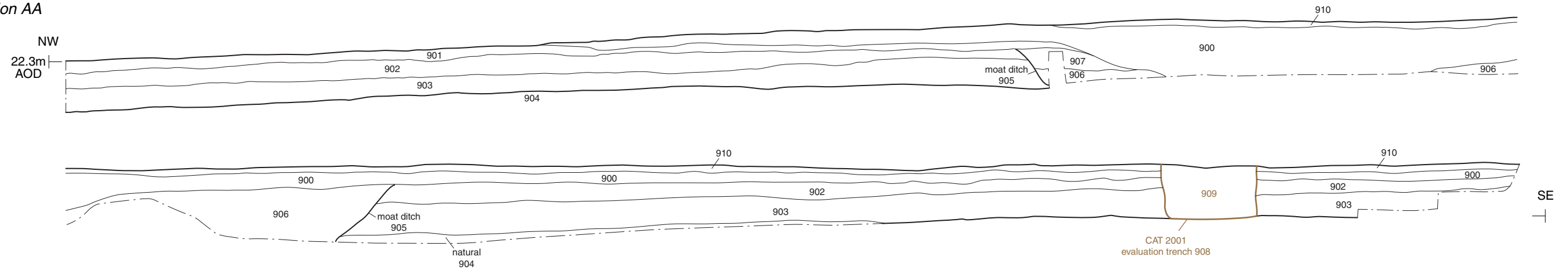
SO

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Lorien  
 Windrush

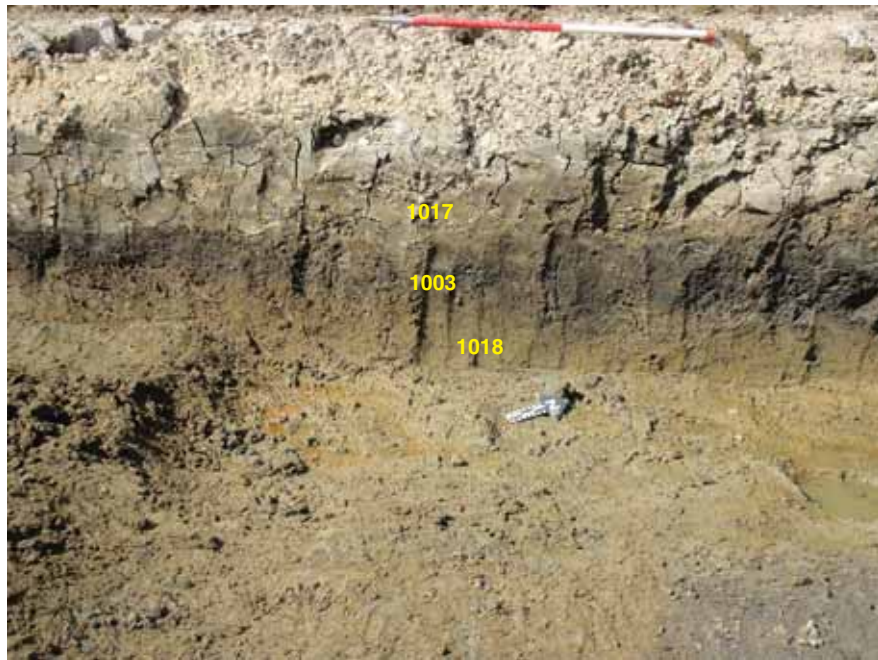


Section AA



Modern backfill deposit 907 and 906, partly removed, within moat ditch 905; looking north-west (2 x 1m scales)





Soil horizon 1003, over moat ditch fill 1018, looking north-west (1 x 1m scale)

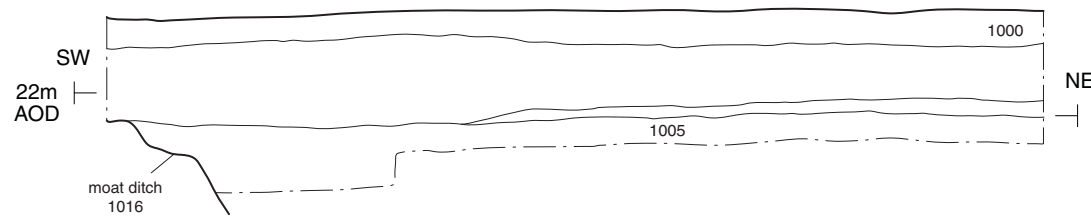


Basal moat fills and overlying modern dump deposits within moat ditch recut 1021, looking west (1 x 1m scale)

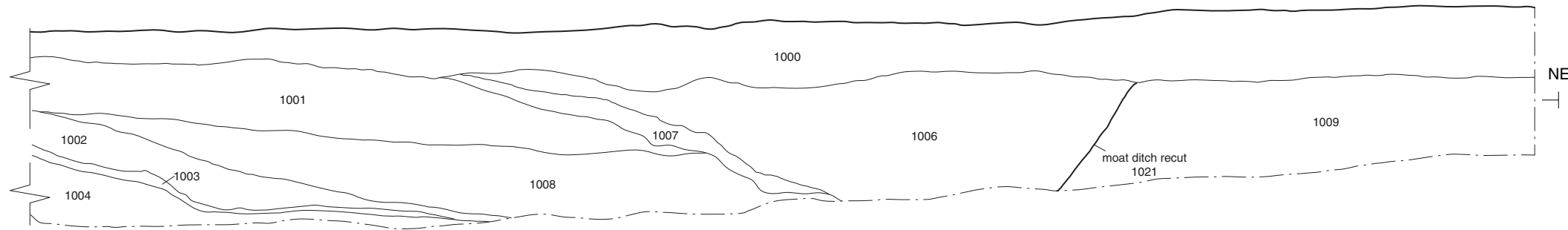
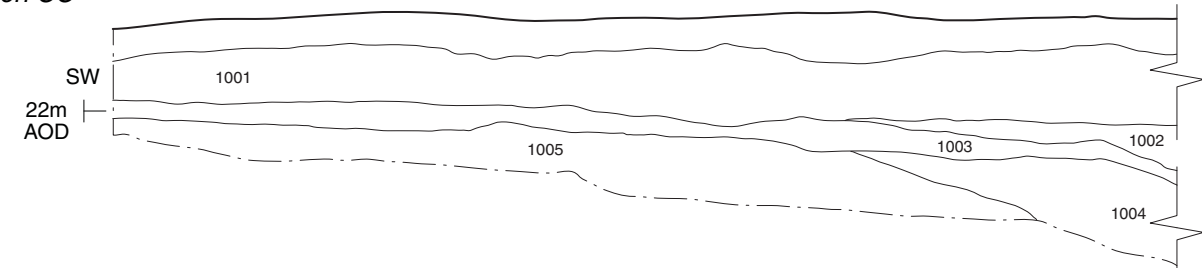


Pit 1013, looking north-west (1 x 1m scale)

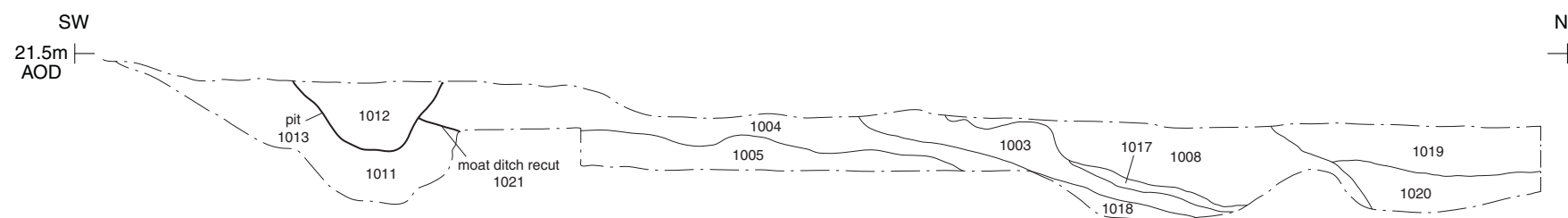
Section BB



Section CC



Section DD



**Cotswold Archaeology**  
 Cirencester 01285 771022  
 Milton Keynes 01908 218320  
 Andover 01264 326549  
 www.cotswoldarchaeology.co.uk  
 enquiries@cotswoldarchaeology.co.uk

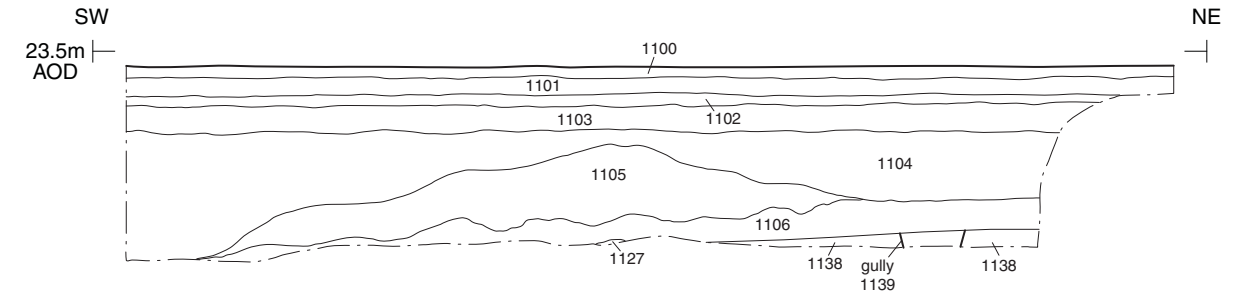
PROJECT TITLE  
 Former Coal Research Establishment  
 Stoke Orchard, Gloucestershire

FIGURE TITLE  
**Trench 10; photographs and sections showing moat ditch 1016**

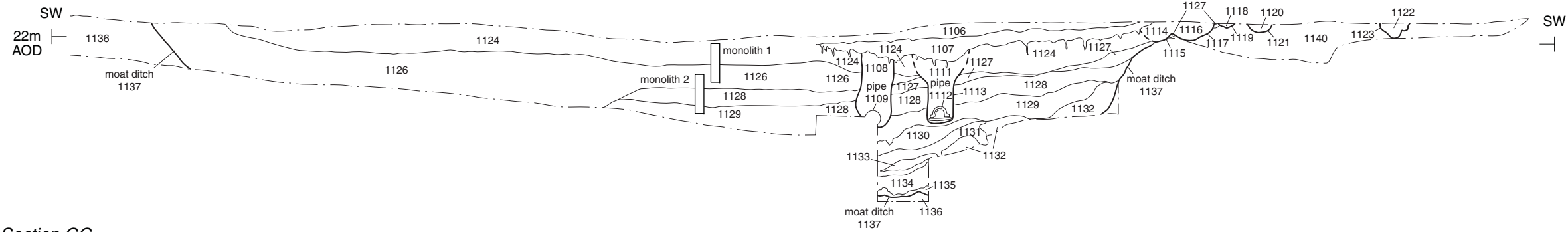
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APPROVED BY	PJM	SCALE@A3	1:50	



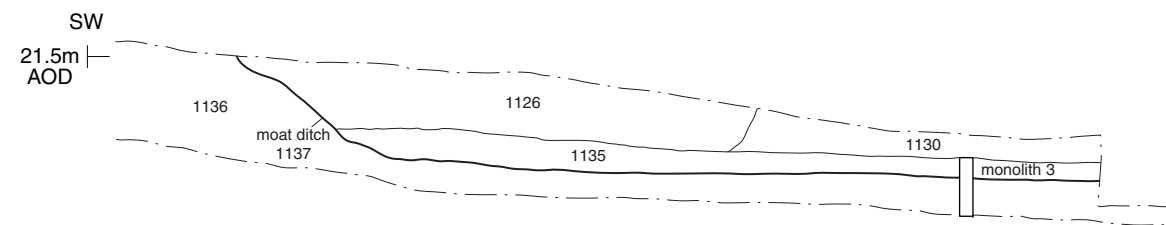
Section EE



Section FF



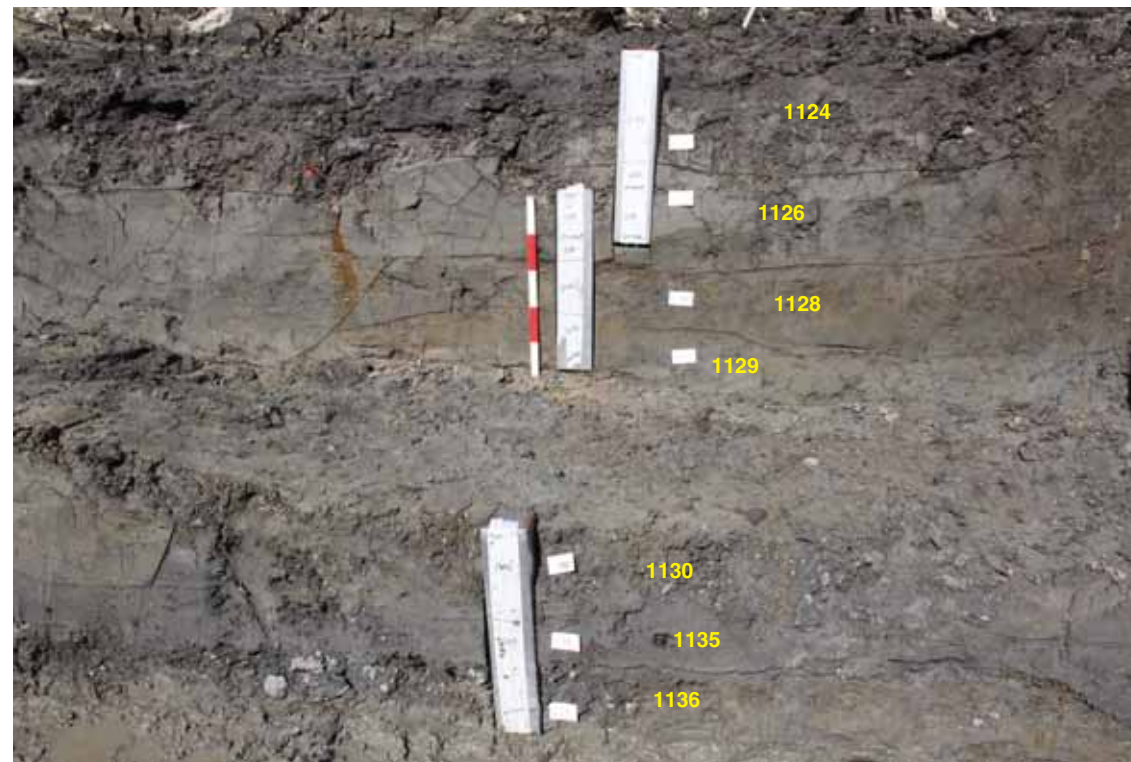
Section GG



NE



Full profile through moat ditch 1137 after removal of modern dump deposits looking north-west (2 x 1m scale)



Monolith samples 1 to 3 in situ through basal moat fills, looking north-west (0.5m scale)



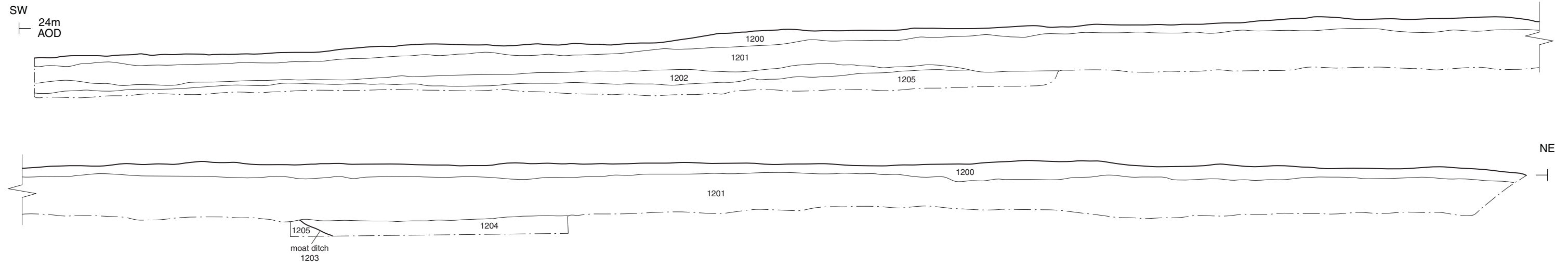
**Cotswold Archaeology**  
 Cirencester 01285 771022  
 Milton Keynes 01908 218320  
 Andover 01264 326549  
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 enquiries@cotswoldarchaeology.co.uk

PROJECT TITLE  
**Former Coal Research Establishment  
 Stoke Orchard, Gloucestershire**

FIGURE TITLE  
**Trench 11; sections and photographs  
 showing basal moat fills**

PROJECT NO. 3911 DATE 24-09-2012 FIGURE NO.  
 DRAWN BY IA REVISION 00  
 APPROVED BY PJM SCALE@A3 1:50 **5**

Section HH



Modern backfill deposit 1204 within moat ditch 1203, looking west (2 x 1m scale)

Section II

