ARCHAEOLOGICAL EVALUATION AT YEW TREE FARM, BUSHCOMBE LANE, WOODMANCOTE, GLOUCESTERSHIRE

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Summary

An archaeological evaluation following a geophysical survey was undertaken at Yew Tree Farm, Bushcombe Lane, Woodmancote, Gloucestershire (centred on NGR 397229 227650). It was commissioned by Brodie Manning Design and Development Consultancy acting on behalf of the landowner, who is proposing residential development of the site. It was considered that any development works on the site could have the potential to affect heritage assets with archaeological interest. These were thought likely to be deposits of later prehistoric and Roman date, based on the known archaeology in the surrounding area, but also elements of medieval or post-medieval agricultural activity.

The geophysical survey and archaeological trenching showed that there were very few archaeological features across the site area and did not identify any later prehistoric or Roman features. However, although of limited extent, some of the archaeological remains encountered are considered to be of high significance. In the southern part of the site, the radiocarbon dating of two ephemeral pit features (cal AD 892-1020 and 890-1020) demonstrates that these could represent small-scale activity, particularly burning, during the late Anglo-Saxon period.

In addition, part of the site appeared to contain a short-term flint knapping site of Mesolithic date. 56 pieces of flint were recovered within one trench, at the interface between two colluvial layers, suggesting the presence of a sealed early prehistoric ground surface, at a depth of 0.20-0.30m below the present surface. The number of artefacts found in close proximity, the presence of microblade and microlith production debitage, microburins, and the lack of finished tools suggested that this scatter was representative of the reduction of cores prepared elsewhere, possibly in a single event. The area of the flint scatter was at least 13m² and probably extended beyond the trench limits, but as only a limited area around the scatter was exposed it is difficult to be certain of the extent of this Mesolithic activity. It should be noted however that a preserved and extensive in situ lithic scatter of early prehistoric date could be considered to be of exceptional interest and warrant protection as a heritage asset of national importance. Mitigation to determine the full extent of the scatter would be by its very nature destructive however, reducing the significance of the remaining in situ archaeological material.

Report

1 Background

1.1 Reasons for the project

An archaeological evaluation following a geophysical survey was undertaken at Yew Tree Farm, Bushcombe Lane, Woodmancote, Gloucestershire, centred on National Grid Reference (NGR) 397229 227650. It was commissioned by Brodie Manning Design and Development Consultancy (the Client) acting on behalf of the landowner, in response to requirements made by Charles Parry, Senior Archaeological Officer for Gloucestershire County Council (the Curator). No specific brief was prepared by the Curator for the work but it was designed by Worcestershire Archaeology to conform to the standard Gloucestershire County Council *Brief for an archaeological evaluation* (the Brief) which has been previously issued (GCC 2013). The project also conforms to the Institute for Archaeologists *Standard and guidance for archaeological field evaluation* (IfA 2008).

It is intended that residential development will occur on the site and a planning application is in the process of being submitted to Gloucestershire County Council. It was considered by the Curator that any development works on the site could have the potential to affect heritage assets with archaeological interest. These were thought likely to be deposits of later prehistoric and Roman date, based on the known archaeology in the surrounding area, but also elements of medieval or post-medieval agricultural activity as there are traces of extant ridge and furrow across the northern part of the site.

The Worcestershire Archaeology reference for this project is P4353.

2 Aims

The aims and scope of this evaluation are to:

- describe and assess the significance of potential heritage assets with archaeological interest;
- to establish the nature, importance and extent of any archaeological site;
- to assess the impact of the application on archaeological remains.

The evaluation is only intended to assess heritage assets of archaeological interest and will not include consideration of Listed Buildings, Conservation Areas, or historic hedgerow boundaries.

3 Methods

3.1 Personnel

The project was undertaken by Richard Bradley (BA (hons.); MA; AIfA), who joined Worcestershire Archaeology in 2008 and has been practicing archaeology since 2005. Fieldwork assistance was provided by Michael Nicholson (BSc (hons.)). The project manager responsible for the quality of the project was Tom Vaughan (BA (hons. Dunelm); MA; AIfA). Illustrations were prepared by Carolyn Hunt (BSc; PG Cert; MIfA). Rob Hedge (MA (Cantab.)) and Laura Griffin (BA (hons.); PG Cert; AIfA) contributed the finds analysis and Elizabeth Pearson (MSc) and Suzi Richer (BSc; MSc; PhD) the environmental information.

3.2 Documentary research

Prior to fieldwork commencing a search was made of the Gloucestershire Historic Environment Record (HER) within a 1km radius of the site, which detailed numerous listed buildings, heritage assets and a scheduled monument in the surrounding area.

Historic maps were also consulted and included:

- 1884 Ordnance Survey, 1st edition 1:2,500 (25":1 mile)
- 1902 Ordnance Survey, 1:2,500 (25":1 mile)

- 1923 Ordnance Survey, 1:2,500 (25":1 mile)

Published and grey literature sources are listed in the bibliography (Section 10).

3.3 Fieldwork strategy

A detailed specification for the project was prepared by Worcestershire Archaeology (WA 2014) and agreed upon by the Client and Curator.

Geophysical survey

The first stage of fieldwork involved a geophysical survey of the site and was subcontracted by Worcestershire Archaeology to specialist archaeological survey company ArchaeoPhysica Limited (2014). This fieldwork took place on the 15 May 2014 and involved a gridded magnetic susceptibility survey across the majority of the field. Unfortunately geotechnical groundworks during the winter months had left substantial rutting in the western and south-western areas of the site, limiting the extent of the survey, but overall there was adequate coverage across the site area.

The survey identified previous agricultural land use in the field, including a former field boundary shown on historic Ordnance Survey mapping, as well as ridge and furrow cultivation. A number of irregular discrete anomalies were highlighted but were not considered to be of archaeological interest. A modern service pipe was located in the east of the site.

The full geophysical report is appended at the end of this text as Appendix 2.

Evaluation trenching

Following the geophysical survey a second stage of fieldwork was undertaken between the 14 and 16 July 2014. Five evaluation trenches, amounting to just over 410m², were excavated in a rough grid array across the site area of *c* 21,400m², representing a sample of *c* 2%. The location of the trenches is indicated in Figure 2. No trenches were excavated in the eastern portion of the site due to the metal service pipe identified during the geophysical survey. Trench 1 was positioned specifically to test the possibility that the discrete but irregular geophysical anomalies across the site were archaeological pit features, whilst Trenches 4 and 5 were arranged so as to check the survival of the ridge and furrow in the central part of the field. A contingency allowance required by the Curator was partly used to expand Trench 5, where archaeological remains were identified that benefited from a limited amount of further investigation.

Deposits considered not to be significant were removed under constant archaeological supervision using a small 360º tracked excavator, employing a toothless bucket. In the event, due to the nature of the colluvial deposits encountered, this was done in stages to check for archaeological features between numerous layers. Subsequent excavation was undertaken by hand. Clean surfaces were inspected and selected deposits were excavated to retrieve artefactual material and environmental samples, as well as to determine their nature. Deposits were recorded according to standard Worcestershire Archaeology practice (WA 2012) and the trenches were located using a differential GPS (Leica NetRover) with an accuracy limit set at <0.04m. On completion of excavation, trenches were reinstated by replacing the excavated material.

3.4 Structural analysis

All fieldwork records were checked and cross-referenced. Analysis was effected through a combination of structural, artefactual and ecofactual evidence, allied to the information derived from other sources.

3.5 Artefact methodology, by Laura Griffin

3.5.1 Recovery policy

The artefact recovery policy conformed to standard Worcestershire Archaeology practice (WA 2012; appendix 2).

3.5.2 Method of analysis

All hand-retrieved finds were examined. They were identified, quantified and dated to period. Where possible, a *terminus post quem* date was produced for each stratified context. The date was used for determining the broad date of phases defined for the site. All information was recorded on a *pro forma* Microsoft Access 2000 database.

3.5.3 Discard policy

The following categories/types of material will be discarded after a period of 6 months following the submission of this report, unless there is a specific request to retain them (and subject to the collection policy of the relevant depository):

- where unstratified
- modern pottery, and;
- generally where material has been assessed as having no obvious grounds for retention.

3.6 Environmental archaeology methodology, by Elizabeth Pearson

The environmental project conforms to relevant sections of the *Standard and guidance for archaeological field evaluation* (IfA 2008), *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage 2010), and *Environmental archaeology and archaeological evaluations* (AEA 1995).

3.6.1 Sampling policy

Samples were taken according to standard Worcestershire Archaeology practice (2012). A total of two samples (each of 10 litres) were taken from two pits located below colluvium.

3.6.2 Processing and analysis

The samples were processed by flotation using a Siraf tank. The flots were collected on a 300μm sieve and the residue retained on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds.

The residues were scanned by eye and the abundance of each category of environmental remains estimated. A magnet was also used to test for the presence of hammerscale. The flots were scanned using a low power MEIJI stereo light microscope and plant remains identified using modern reference collections maintained by Worcestershire Archaeology, and a seed identification manual (Cappers *et al* 2012). Nomenclature for the plant remains follows the *New Flora of the British Isles*, 3rd edition (Stace 2010).

The cell structure of all the non-oak identification samples was examined in three planes under a high power microscope and identifications were carried out using reference texts (Schweingruber 1978; Brazier and Franklin 1961; Hather 2000) and reference slides housed at Worcestershire Archaeology.

3.6.3 Discard policy

Residues will be discarded after 6 months of submission of this report unless a specific request is made to retain them.

3.7 Radiocarbon dating, by Suzi Richer

A total of two radiocarbon dates from two separate contexts were obtained during post-excavation analysis. The dating was undertaken to assist with understanding the chronology of the site, in particular to address the question of whether charcoal (and by inference, the features that contained the charcoal) were contemporary with a nearby lithic scatter.

Both contexts lacked charred plant remains, therefore samples of wood charcoal were used. In both samples, only oak (Quercus sp.) was available and it was not possible to select either twig or sap wood.

Calibrations of the radiocarbon dates in calendar years are given in Table 4 (Section 5.4). The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program OxCal v4.1.7 (Bronk Ramsey 2010) using atmospheric data from Reimer *et al.* (2013).

The calibrated date ranges cited in the text are those for 95.4% (2σ) confidence.

3.8 Statement of confidence in the methods and results

The methods adopted allow a high degree of confidence that the aims of the project have been achieved.

4 The application site

4.1 Topography, geology and current land-use

The site is located on the northern periphery of Woodmancote, approximately 5km north-east of Cheltenham on the south-western edge of Nottingham Hill. As a result, the north-east portion of the site is moderately sloping from approximately 100m to 90m AOD, before breaking into a more gradual slope towards the south-west at around 80m AOD. Pasture fields bound the site to the north and east, Bushcombe Lane forms the southern boundary and Butts Lane the western. The field has been in continuous use as pasture during the ownership of the current landowner (30+ years) and has not been subjected to modern ploughing. Recent geotechnical works have caused considerable intrusive rutting across the field however.

The underlying bedrock geology of the site is the Charmouth Mudstone Formation (BGS 2000) and the soils are mapped as clays of the Evesham 2 association (Ragg *et al* 1984. 190-192; Soil Survey of England and Wales 1983).

4.2 Archaeological context

The site is located within an area of rich archaeological interest and numerous late prehistoric and Roman sites are recorded in the vicinity of Bishop's Cleeve to the west, Gotherington to the north-west and at Nottingham Hill to the north-east. Just over 750m to the north-west, east of Gotherington Lane, an extensive programme of archaeological investigations around Homelands Farm including fieldwalking (HER 20090), geophysical surveys (HER 26649; HER 34489), and evaluation trenching (HER 27114; HER 37007) has collected prehistoric, Roman and medieval material, as well as locating a possible Mesolithic period pit, prehistoric enclosures and extensive areas of ridge and furrow cultivation. Medieval and post-medieval agricultural activity was also revealed immediately west of the site across Butts Lane during evaluation trenching in 2002 (HER 22118) and is visible on aerial photographs in the fields north of the site. Some of the fields here still appear in linear strip-field format. The medieval centre of Woodmancote (HER 7558) is thought to have been to the south and south-east of the site and a recent small evaluation confirmed the presence of earthworks in this area (though they were considered to be post-medieval), as well as locating a medieval pit (HER 45005). Further south, two mill and pond sites (HER 20628; HER 7556) could once have been part of the earlier settlement here.

On the sloping ground around 200m north-east of the site field names suggest possible use as vineyards or cider orchards (HER 7557) and a prehistoric barrow site has been tentatively located in a field 350m to the east (HER 7563). Further to the north-east, medieval and post-medieval quarrying has been noted on the upper part of Nottingham Hill (HER 7562), whilst the top of the hill itself is a Scheduled Ancient Monument (HER 430; SAM 1004864) once containing a Bronze Age barrow cemetery (HER 39288) and an considerable multivallate hill fort and promontory fort of Iron Age date but now significantly eroded, quarried and damaged by modern activity. Occupational finds, skeletal remains and a late Bronze Age hoard including swords, a palstave axe, a knife,

rings, a whetstone and a bronze cylinder have been recovered on the hill during the 19th and 20th century (HER 430).

5 Structural analysis

The trenches and features recorded are shown in Figures 2-4. Plates 2-8 illustrate the nature of the archaeological deposits and finds encountered. The results of the structural analysis are presented in Appendix 1.

5.1.1 Phase 1: Natural deposits

Natural deposits were encountered in all five of the trenches excavated and comprised a sequence of compacted yellow brown clay colluvial layers, deposited across the site from the slope of Nottingham Hill to the north-east, overlying a compact light blue brown clay with pockets of limestone brash. The uppermost colluvial layer was considered to have been deposited from the early medieval period onwards, given the archaeology encountered beneath it (Section 5.1.3 below), and varied in depth between 0.15m-0.32m. A limited amount of 12th to 16th century pottery was also recovered from this deposit in Trench 5 (502). Below this was a further colluvial layer, probably deposited through glaciation in the Palaeolithic based on the archaeological remains found above this, which was 0.28m and 0.30m in depth where machine sondages were excavated through it to reveal the underlying blue brown natural clays.

5.1.2 Phase 2: Prehistoric deposits

In Trench 5, towards the north-east, a group of worked flint waste flakes, rejuvenated cores and part finished tools (504) were encountered at the interface between the upper colluvial material (502) and the lower colluvium (503). This area was subsequently extended to check for associated features and to examine the extent of the flint deposition on both sides of the trench, revealing further flint scatters to the east (505) and west (506) (Figure 4; Plates 4 and 8). It is likely that these continued beyond the areas opened up during the trenching, but once an absence of cut features was established and the additional flint was exposed, it was not deemed appropriate strategy to impact upon the site further at this stage of investigative works. In total, 56 pieces of flint were recovered and found to be immediately at the top of the lower colluvium, indicating that this was potentially the former early prehistoric ground surface. On first observation it was considered that the flint could have been transported down slope within the colluvial layer from a higher site, but upon expansion of the trench the number of artefacts found in close proximity, the presence of microblade and microlith production debitage, microburins, and the lack of finished tools suggested that this scatter was representative of a temporary knapping area. Preliminary analysis of the flint indicates technological elements characteristic of the Mesolithic period, suggesting that this is a Mesolithic site and possibly representative of a single event.

5.1.3 Phase 3: Early medieval deposits

Two small sub-circular pit features of comparable size and form, [405] and [408], were initially considered to be dated to the prehistoric period onwards, based on the visibility of the features in the stratigraphic sequence on site. Both were revealed in Trench 4 beneath the upper colluvial layer (401) and cut into the lower colluvial material (402), a similar position to that of the Mesolithic flint scatter located in the adjacent Trench 5 (Figure 3). Scientific dating of charcoal from the fills has indicated that these are Anglo-Saxon however, dating to around cal AD 890-1020 and thus much later than the lithics (Section 5.4 below).

Pit [405] was found at the south-east corner of the trench and extended beyond the limit of excavation. It was at least 0.42m in diameter and 0.13m deep, containing two clayey fills with charcoal and burnt clay (Plate 6). Pit [408] was within the centre of Trench 4, 0.54m in diameter and 0.11m in depth, again containing charcoal-rich clay fills (Plate 7). Environmental sampling of the deposits has identified that the charcoal in both features was from oak, but that plant remains recovered are likely to be resultant from intrusive rooting. Because of the rather ephemeral nature

of these pits, the charcoal content and a lack of occupational evidence for the site, it is probable that they are small fire pits or hearths indicative of short-term use. However, it is also possible that these are on the periphery of more substantial settlement that, by its very nature, is not well-preserved or defined, such as Saxon buildings with associated activity, which rarely exhibit extensive material culture. These have the potential to be close to, but outside of, the excavated trenches.

5.1.4 Phase 4: Post-medieval/modern deposits

Later archaeological activity across the site was minimal; a shallow 1m wide linear feature was identified in Trench 1 [105], cut into upper colluvium (101), that correlates with the alignment of a furrow identified parallel with this on the geophysical survey. This was the only feature demonstrating the past agricultural land use of the site, although the remnants of ridge and furrow could also be observed within the grey brown clayey loam topsoil across the field, both in variable vegetation growth and through the undulation of the topsoil layer when it was removed with the machine. This topsoil varied between 0.08m to 0.38m in depth, sometimes being little more than a scrape of turf above the colluvium, and evidence from Trench 5 suggested that it had been heavily landscaped in recent years, probably with a bulldozer. Here, revealed beneath the modern turf and topsoil (500), was an earlier soil horizon (501) that contained decaying vegetation and had clearly been waterlogged, probably as a depression (or pond area) in the field that was filled in during the landscaping (Plate 5). Extensive mixing of finds of varying dates was noted, both in this earlier soil and the modern topsoil above it, including debris dating to the later 20th century and pottery of 12th-14th century date. Some of this artefact deposition probably occurred during manuring in the medieval and post-medieval periods when the field was cultivated, but is also indicative of considerable disturbance of the upper soils in recent times.

A number of land drains were observed, particularly in Trench 3, 4 and 5. Modern trial holes were also seen across the field and noted in Trenches 1 and 3, as well as wheel ruts, probably relating to the recent geotechnical groundworks on site.

5.2 Artefact analysis, by Laura Griffin and Rob Hedge

The artefactual assemblage recovered is summarised in Tables 1 and 2.

The assemblage consisted of 148 finds weighing 1321g. None came from specific features but were recovered from topsoils, subsoils and colluvial layers. The assemblage could be dated from the Mesolithic period onwards (see Table 1). Using pottery as an index of artefact condition, this was generally fair with sherds displaying moderate levels of abrasion.

period	material class	material subtype	object specific type	Count	Weight (g)
		coal		1	9
	metal	iron	nail	1	22
	metal	lead		1	8
	organic	shell	oyster	8	56
mesolithic	stone	flint		56	192
medieval	ceramic	earthenware	pot	51	244

post-medieval	ceramic		clay pipe	1	4
post-medieval	ceramic	earthenware	drain	1	241
post-medieval	ceramic	earthenware	pot	2	28
post-medieval	glass		vessel	2	28
post-medieval/modern	ceramic	earthenware	cbm	5	60
post-medieval/modern	ceramic	earthenware	drain	3	118
modern	ceramic	stoneware	pot	12	62
modern	glass		vessel	1	14
modern	metal	iron	?chisel	1	35
modern	metal	iron	spanner	1	114
modern	metal	tin	toy	1	86

Table 1: Quantification of the assemblage

5.2.1 Summary of artefactual evidence by period

All material has been spot-dated and quantified (Tables 1 and 2) and those of particular interest are discussed by period below. For the purposes of this assessment, pottery has not been quantified by specific fabric or form type but the general composition of the group has been noted.

Mesolithic (by Rob Hedge)

Fifty-six pieces of struck flint were recovered. The material comprised good quality off-white to pale grey flint with occasional blue-grey mottling and with some post-depositional iron staining. Light beige cortex is present on the dorsal surfaces of only two of the pieces, suggesting that primary reduction took place elsewhere. The presence of small (*c* 5mm) débitage suggests that the scatter represents an *in situ* knapping site. A number of larger waste flakes are also present, including a large probable twisted burin spall, a number of unretouched flakes, a distinctive plunging core rejuvenation tablet and two possible rejuvenation flakes. Several flakes exhibit signs of heating.

The proportion of finished tools within the assemblage is low. An end scraper fashioned from the distal portion of a thick blade, and a possible dihedral burin on the proximal end of a flake, represent the only clear examples. The assemblage also contains a number of segmented blades and microblades, some snapped perpendicular to the longitudinal axis but a few segmented at a pronounced angle. There are two distinctive and diagnostically Mesolithic proximal microburins. A small possible crested blade (with removals from a single versant, and cortex on the other) is also indicative of bladelet production.

The assemblage is Mesolithic in date (Hugo Anderson-Whymark, pers comm.) and is likely to represent *in situ* evidence of flint knapping at the site, probably comprising the reduction of cores prepared elsewhere and possibly representing a single event.

Medieval

Material that could be confidently dated to the medieval period consisted of 51 sherds of pottery. The vast majority of these were from cooking pot vessels, with diagnostic sherds within the group

indicating a date of late 12th–14th century. Fabrics included a significant proportion of unglazed Malvernian ware, supplemented by vessels of locally produced sandy fabrics and two fragments with oolitic limestone temper.

Glazed sherds included fragments from jug forms, the date of which is thought to be consistent with that of the cooking pots. In addition, there were three sherds of much finer fabric with brownish orange glazes, reminiscent of Herefordshire fabric A7d (Vince 1985, 44) and which could be dated to the later medieval period (contexts 400 and 500). These included the rim from a pipkin form (context 500) in a fine, bright orange fabric and which could be dated to the late 15th–16th century.

Overall, such a medieval assemblage is typical of domestic activity for the period represented.

Late post-medieval and modern

Remaining finds were of later post-medieval and modern date. The most datable of this material was the pottery which mainly consisted of small fragments of transfer-decorated modern china from dinner services of late 19th–20th century date. In addition, there were seven sherds of creamware and one of porcelain (context 400) which could be dated to the late 18th century. This assemblage derived from typical domestic activity of the period represented.

context	material class	material subtype	object specific type	count	weight (g)	start date	end date	*tpq* date range
100	ceramic	earthenware	drain	2	102	19C	20C	20C
100	ceramic	stoneware	pot	2	23	19C	20C	
100	ceramic	earthenware	pot	2	28		18C	
100	metal	iron	spanner	1	114		20C	
100	glass		vessel	1	14	19C	20C	
200	ceramic	earthenware	drain	1	16	19C	20C	20C
200	ceramic	stoneware	pot	1	2	19C	20C	
200	organic	shell	oyster	7	24			
200	metal	lead		1	8			
300	ceramic	earthenware	pot	9	45	13C	14C	20C
300	ceramic	stoneware	pot	1	10	19C	20C	
300	ceramic	earthenware	cbm	5	60	L18C	20C	
300	organic	shell	oyster	1	32			
300		coal		1	9			
400	ceramic	stoneware	pot	8	27	19C	20C	20C
400	ceramic	earthenware	pot	5	15	L12C	16C	
400	metal	iron	?chisel	1	35	19C	20C	

400	ceramic	earthenware	drain	1	241	19C	20C	
500	ceramic	earthenware	pot	19	86	13C	16C	20C
500	glass		vessel	2	28	18C	20C	
500	ceramic		clay pipe	1	4			
501	ceramic	earthenware	pot	14	81	L12C	13C	20C
501	metal	tin	toy	1	86		20C	
502	ceramic	earthenware	pot	4	17	L12C	16C	?medieval
502	metal	iron	nail	1	22		?medieval	
504	stone	flint		9	35			Mesolithic
505	stone	flint		38	128			Mesolithic
506	stone	flint		9	29			Mesolithic

Table 2: Summary of context dating based on artefacts

5.3 Environmental analysis, by Elizabeth Pearson and Suzi Richer

The environmental evidence recovered is summarised in Table 3.

Context	charcoal	Uncharred plant	Comment
404	abt	abt*	abt fired clay
407	abt	abt*	abt burnt clay

Table 3: Summary of environmental remains

occ = occasional, mod = moderate, abt = abundant, *probably intrusive

5.3.1 Hand-collected material

A small assemblage of animal bone totalling 3 fragments (62g) was hand-collected from former topsoil (501) which included a juvenile bone with a cut end. Oyster shell (7 fragments, 24g) was also recovered from topsoil (bulldozed ridge and furrow; context 200). No further work was carried out on this material.

5.3.2 Macrofossil remains

Charcoal was abundant in both pits [405] and [408] in association with abundant burnt clay. The charcoal was poorly preserved and warped, a small number of fragments being identifiable as oak (*Quercus robur/petraea*), which could derive from either branchwood or heartwood. Abundant fine herbaceous root fragments are most likely to be modern and intrusive as there was no known waterlogged conditions in which these remains could have survived for a significant length of time.

The charcoal and burnt clay are presumably associated with a hearth or fire pit. The burnt clay may be the remains of a deliberately constructed clay hearth lining or structure, but could have also resulted from a fire pit cut into natural clay.

It was not possible to determine the date of the features based on the remains recovered. Oak charcoal that is not identifiable as branchwood or roundwood would not normally be considered appropriate for radiocarbon dating as it may originate from the heart of a tree which could be up to 1000 years old, and if coppiced could have reached beyond 1000 years (Royal Forestry Society 2013). The accuracy of the date could thus be very low, but results could be used to distinguish

between a feature of early prehistoric and late prehistoric to historic date. In addition, oak, after an initial expansion from the south-west (up the Severn valley) from 9000 BP, has appeared as a major component in pollen diagrams from across the British Isles from 8000 BP onwards (Huntley and Birks 1983, 361), therefore identifying that the pit features must be of Mesolithic or later date, not earlier.

5.4 Radiocarbon dating results, by Suzi Richer

The charcoal samples were submitted to SUERC for Accelerator Mass Spectrometry (AMS) radiocarbon dating, and the results are shown in Table 4 and the calibration curves are illustrated in Appendix 3. All calibrated date ranges cited in the text are those for 95.4% confidence. Full radiocarbon reports are retained in the archive.

context number	laboratory code	material	13C/12C	14C Age BP	OxCal calibrated age (95.4% probability or 2 sigma)
404	SUERC-54813 (GU35222)	*Quercus* sp. charcoal	-25.7 ‰	1077 ± 36	cal AD 892-1020
407	SUERC-54812 (GU35221)	*Quercus* sp. charcoal	-27.2 ‰	1084 ± 36	cal AD 890-1020

Table 4: Radiocarbon dating results (404) - a charcoal-rich primary fill of pit [405]; (407), a charcoal-rich primary fill of pit [408]

The two radiocarbon dates from the pits indicate that the charcoal within them is Anglo-Saxon in date. Both samples gave almost identical dates, cal AD 892-1020 (404) and 890-1020 (407), respectively.

As noted above, the dates need to be viewed with some caution, due to the fact that the material dated was oak (*Quercus* sp). Oak is notoriously long lived and this longevity can induce substantial errors to radiocarbon dates. However, the similarity between the dates would suggest that the pieces of wood may have come from a short-lived part of an individual tree, e.g. a small branch or a young trunk, which would account for the slight difference between the dates. If a larger part of an old trunk had been dated, there would be a far greater possibility of observing a larger difference between the dates. On balance, despite the problems inherent in dating samples from oak, and even with a margin of error taken into consideration for this, the charcoal is not contemporary with the flint scatters and is instead likely to reflect Anglo-Saxon activity on the site.

The similarity in date between the two contexts could be indicative of human activity and/or woodland management in the area. As few as two trees could have been felled within a relatively short time span (a few years), or a larger scale clearance could have occurred that led to a lot of timber/firewood that would potentially all originate from a similar date. Either way, the similarity in date from two separate contexts is likely to suggest re-use of the site over a relatively short period of time.

6 Synthesis

Whilst the potential for later prehistoric and Roman archaeology, as well as medieval and post-medieval agricultural activity, was highlighted for this site, in practice there was limited evidence for significant survival of remains from these periods. The geophysical survey did not identify any features of archaeological significance, but did indicate the outline of former agricultural land patterns in the field. This was noted with the presence of ridge of furrow in the evaluation trenches, both through the undulations in the topsoil and a 1m wide linear feature found in Trench 1. Much of this later agricultural activity appears to have been lost through extensive modern landscaping however. The medieval pottery finds found in the upper deposits across the trenches are likely to relate to this agriculture, probably originating through the discard of domestic material when manuring fields that are thought to be in close proximity to the medieval centre of Woodmancote.

In broad terms, there were very few archaeological features across the evaluated area, but those that were revealed have the potential to be of high significance. In particular, the lithic scatter identified in Trench 5 is technologically characteristic of the Mesolithic period and probably represents evidence of *in situ* knapping on site, possibly from a single event. The area of the scatter was not fully established but was at least 13m² and may have extended beyond the trench limits, potentially being of considerable size. This flint was likely to have been collected from river banks or brought to the site from outcrops a considerable distance away, as flint is not native to the Cotswolds area (Darvill 2011, 51), and suggests that this location was deliberately chosen as an appropriate place to work the material into tools. The position of the scatter, on a slight plateau at the lower slopes of uplands where the topography changes into the low-lying stream valleys of the area that head westwards towards the Severn, may indicate a small level of permanence to the site, perhaps as a short-term camp. Extensive scatters of working debris are often found in sheltered spots on the edge of a different environment in the later Mesolithic period (Darvill 2011, 57). This would fit in with the broader picture from the county, as Gloucestershire is thought to have been peripheral to early Mesolithic (*c* 10000-8000 years BP) activity and only a few small camping sites are known, whereas later Mesolithic (*c* 8000-6000 years BP) sites interpreted as hunting camps or seasonal base camps are more common, perhaps because of the woodlands across the county providing considerable hunting opportunities (Darvill 2011, 48-57). A similar scenario has been proposed for Mesolithic sites in Worcestershire to the north, specifically where a large concentration of flint waste flakes (over 1,400 pieces) alongside associated features was found during work near to Kidderminster (Jackson *et al* 1994). This was dated to the earlier Mesolithic to later Mesolithic transitional period and interpreted as a camp site used when exploiting hunting opportunities across a heavily wooded landscape, identified through pollen analysis of peat beds.

Radiocarbon dating has shown that the two small pit features recorded in Trench 4 are not associated with the Mesolithic lithics, but could also be of considerable archaeological significance, dating to around cal AD 890-1020. This would place the activity here towards the latter end of the Anglo-Saxon period, which is often notoriously difficult to identify in the archaeological record. Later Saxon evidence is scarce for Gloucestershire, as with western Britain generally, but a number of discoveries in Bishop's Cleeve, which is known to have developed around a Saxon monastery directly to the west of the site, suggest that these pits may be a small part of a wider Saxon landscape (Reynolds 2006, 133-160). This includes a 6th century cemetery (Holbrook 2000) and a number of minor features dated between the 7th and 9 h centuries found during excavations elsewhere around the village (Reynolds 2006, 152). It is possible that the small pit features here represent temporary fire sites, perhaps associated with general agricultural activity across the area or due to land clearance during intensification of farming on the hill slopes around the site. Given the similarity of the radiocarbon dates for the separate pits, it is probable that the burning activity represented by both took place using wood from a single tree. There is also the potential for these features to be part of a wider cluster of occupation on the site during this period, but that it exists outside of the trench area. However, given the lack of other occupational evidence and the absence of any material culture from this period on the site, it is more likely that these are purely short-term fire pits.

On site interpretation indicated that the Mesolithic flints and the Saxon pits were both sealed by an upper colluvial subsoil deposit of variable depth which, given the stratigraphic sequence and the radiocarbon dating, would appear to have accumulated across the field during the past millennium. The limited amount of 12th to 16th century pottery found within it in Trench 5 would also support this inference. It is likely that this deposition occurred as a result of deforestation on Nottingham Hill to the north-east of the site, coupled with an increase in farming during the medieval and post-medieval periods causing downslope erosion (as indicated by the extensive ridge and furrow ploughing in the area). It is also possible that a contributing factor in this accumulation of colluvial clay observed across the trenches was increased rainfall during worsening climate conditions during the middle ages. Studies of upland peat bog accumulation have shown that AD 900-1100

and 1300-1500 were climatically wet periods (e.g. Barber *et al* 1994) and that this increased rainfall would have increased run-off and colluviation more generally across the country.

6.1 Research frameworks

The site has the potential to feed into a number of research priorities identified in *A Research Agenda for Archaeology in South West England* (Webster 2008a, 269-94), most notably:

> 'Research Aim 1: Extend the use of proven methodologies for site location and interpretation, and encourage the development of new techniques... c. There is a need for controlled excavation of stratified Palaeolithic and Mesolithic sites in order to address research questions that have arisen in recent years.' (*ibid*, 274)
>
> 'Research Aim 2 [synthesis]: Encourage works of synthesis within and across periods, settlements, monuments and areas… c. Landscape use models need development and refinement, principally for the Mesolithic, including raw material transfers, human mobility (including the relative usage of upland, lowland and coastal environments and topographical locations), subsistence strategies, and landscape modification, amongst other factors. In the case of the Mesolithic this goal reflects the relative richness of the archaeological record for this period, especially, but not limited to, Somerset.' (*ibid*, 276)
>
> 'Research Aim 5 [recording]: Encourage the study of artefact scatters using innovative methodologies both in the field and on previous collections… c. Approaches to the investigation and interpretation of lithic scatters have become rather mechanical. We need to think of new forms of interrogation and interpretation, perhaps working within finer temporal and spatial scales.' (*ibid*, 278)

Hosfield, Straker, and Gardiner are more expansive:

> 'There are several other key themes in Mesolithic archaeology, to which the archaeology of the South West can potentially contribute. With regard to the interpretation of Mesolithic assemblages, both Mellars (1976) and Barton (1992) have provided models, exploring the implications of microlith and scraper percentages for understanding site function, and the relationships between artefact frequencies, topographic locations, geology, and site function. Raw material source data can also highlight mobility patterns and/or exchange networks, while site locations and topography highlight patterns in Mesolithic land-use, economy and subsistence strategies.' (Hosfield, Straker, and Gardiner 2008, 49)

7 Significance, by Richard Bradley and Tom Vaughan

Assessment of significance

7.1 Nature of the archaeological interest in the site

There were limited archaeological features identified across the site area. However, the dating of the remains encountered has shown that two ephemeral and small pit features could represent small-scale burning associated with agricultural activity during the Anglo-Saxon period, and that part of the site may contain a short-term camp site involving flint knapping during the later Mesolithic. The archaeological significance of these features is high and the potential for the site has been demonstrated.

7.2 Relative importance of the archaeological interest in the site

According to Hosfield, Straker, and Gardiner '… surface or shallow sub-surface [Mesolithic] lithic scatters are … common, especially in the west [of the South-West region]' (Hosfield, Straker, and Gardiner 2008, 23). Assemblages of later Mesolithic tools have been found at some 40 sites in Gloucestershire although these are '…primarily focused in the centre, south and west of the county…' (Hosfield, Straker, and Gardiner 2008, 56), rather than the north, although it is unclear how many of these were in situ or were unstratified and dispersed lithic scatters or isolated finds.

The largest assemblage in the county was identified locally, approximately 12km to the south-west at Syreford Mill, Whittington. This included over 100 cores, with a similar amount of waste debris, and over 56 microliths (Darvill 2011, 51-2). As there were 56 varied pieces found on this site at Woodmancote the scatter could potentially rival Syreford Mill in size, if it does extend outside of the trenched area. Therefore, whilst a Mesolithic period site in itself is not a rare find for Gloucestershire, the Woodmancote assemblage does have the potential to be of national significance, given its high quality, apparent short time span of deposition and likely undisturbed, in situ survival (English Heritage 2000, 7; English Heritage 2012, 9 and 12).

The flint was protected from disturbance by a thin colluvial deposit, and the field has been used as pasture for a considerable period; therefore it could be expected that it is located relatively securely in its original place of deposition. This is unusual at sites such as this, which are very fragile and vulnerable in nature are often disturbed through ploughing, and as such identifying and protecting early prehistoric sites from further destruction is considered to be a priority by English Heritage (English Heritage 2012). Although sites without structures are not eligible for designation through scheduling (English Heritage 2000, 5), early prehistoric sites comprising object groups with associated deposits are demonstrably of national importance and could warrant protection through other means, such as preservation in situ (English Heritage 2012).

The Mesolithic assemblage and potential associated deposits are therefore considered to be of both high regional and national significance.

As Anglo-Saxon archaeology is generally underrepresented in the archaeological record, the features dating to this period have an inherent significance beyond what would normally be appropriate for two small and isolated pits. The potential for further discrete and ephemeral features of this date across the area should be considered.

The later artefacts recovered from the upper soil deposits on site are of no special inherent significance as they are entirely typical of their period, though locally they do provide useful data for establishing patterns of use (i.e. production and trade).

7.3 Physical extent of the archaeological interest in the site

The extent of archaeological remains identified on the site was small, although the potential exists for deposits and finds to extend across a wider area. Given the focus of the lithic scatter and the level at which it was discovered (around 0.20-0.30m below the present ground surface), the survival of further objects and features of Mesolithic date in this area is a strong possibility due to the lack of arable agriculture in the field in modern times. It is possible that a prehistoric ground surface, upon which knapping took place, is preserved in this part of the site. As only a limited area of the scatter was exposed, it is difficult to be certain of the extent of this Mesolithic activity, but, as mentioned above, it should be noted that a preserved and extensive in situ lithic scatter of early prehistoric date could be considered to be of exceptional interest and warrant protection as a heritage asset of national importance (English Heritage 2000). In counterpoint to this, proving that the flint scatter is extensive and well-preserved enough to warrant full protection from development would probably entail additional work and disturbance of the site, thereby resulting in further removal of archaeological remains and thus reducing the significance of the area of archaeology for preservation.

At least one of the Anglo-Saxon pits extends beyond the limits of the trenches, although these features were very isolated and small, with nothing comparable seen elsewhere, so it would be surprising if activity of this period continues across a considerable area of the site.

8 The impact of the development, by Tom Vaughan

The exact scope of the proposed development, in terms of the depth and extent of foundations, service trenches, landscaping, plant access routes and site compounds, etc., are at present unknown. The Mesolithic flint scatter was revealed at *c* 0.20-0.30m, and the Anglo-Saxon pits at *c* 0.30-0.40m below the present ground level. This means that they are highly vulnerable to

disturbance during the development, even if this area is not intended to be altered or is to be raised. This is due to the action of machines tracking across the ground which will compact below ground deposits and could cause ruts which actively cut into and break up below ground deposits.

9 Recommendations, by Tom Vaughan

Given the high significance of the remains, and their shallow depth, it is considered that mitigation in the form of further intrusive investigation should be considered. This could take the form of an open area excavation around the areas of the Anglo-Saxon pits and the Mesolithic flint scatter to define associated features and the extent of activity. Alternatively, and less intrusively, for the flint scatter, test pits of c 1m square might be excavated at regular intervals extending out from their known location to define the full extent and spread (English Heritage 2000, 3).

The exact scope and specification of mitigation works should be agreed with Charles Parry (Senior Archaeology Officer, Gloucestershire County Council) and the English Heritage Regional Inspector, as appropriate.

Any site investigation works required would be concluded by production of an archaeological report (and appropriate publication in a regional or period journal) to be deposited for public consultation with the Gloucestershire Historic Environment Record (GHER) and a project archive to be deposited at a local museum.

10 Publication summary

Worcestershire Archaeology has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, Worcestershire Archaeology intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication:

An archaeological evaluation following a geophysical survey was undertaken at Yew Tree Farm, Bushcombe Lane, Woodmancote, Gloucestershire, centred on NGR 397229 227650. A proposal for residential development of the site is in place and it was considered that any development works on the site could have the potential to affect heritage assets with archaeological interest.

The geophysical survey and archaeological trenching showed that there were very few archaeological features across the site area and did not identify any later prehistoric or Roman features. However, although of limited extent, some of the archaeological remains encountered are considered to be of high significance. In the southern part of the site, the radiocarbon dating of two ephemeral pit features (cal AD 892-1020 and 890-1020) demonstrates that these could represent small-scale activity, particularly burning, during the late Anglo-Saxon period.

In addition, part of the site appeared to contain a short-term flint knapping site of Mesolithic date. 56 pieces of flint were recovered within one trench, at the interface between two colluvial layers, suggesting the presence of a sealed early prehistoric ground surface. The number of artefacts found in close proximity, the presence of microblade and microlith production debitage, microburins, and the lack of finished tools suggested that this scatter was representative of the reduction of cores prepared elsewhere, possibly in a single event. The area of the flint scatter was at least 13m² and probably extended beyond the trench limits, but as only a limited area of the scatter was exposed it is difficult to be certain of the extent of this Mesolithic activity.

11 Acknowledgements

Worcestershire Archaeology would like to thank the following for their kind assistance in the successful conclusion of this project: Wendy Hopkins (Brodie Manning Ltd); Charles Parry (Senior Archaeology Officer, Gloucestershire County Council); Mr Davies (Landowner); and Dr Hugo Anderson-Whymark (freelance lithics consultant).

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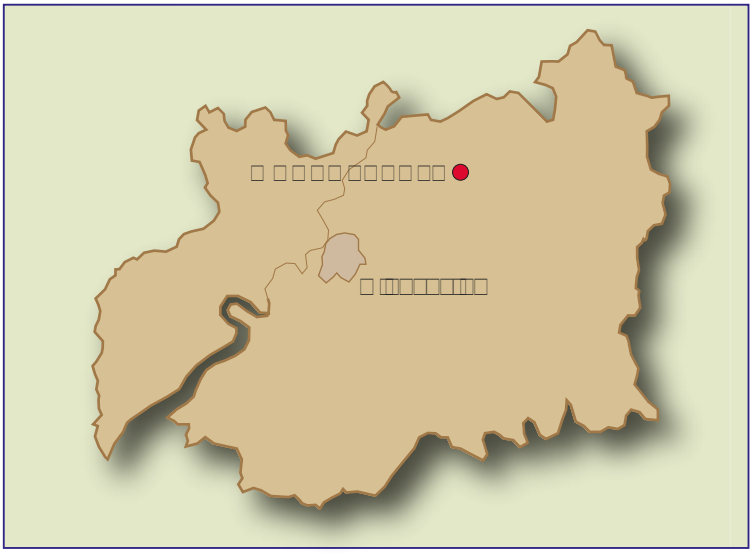
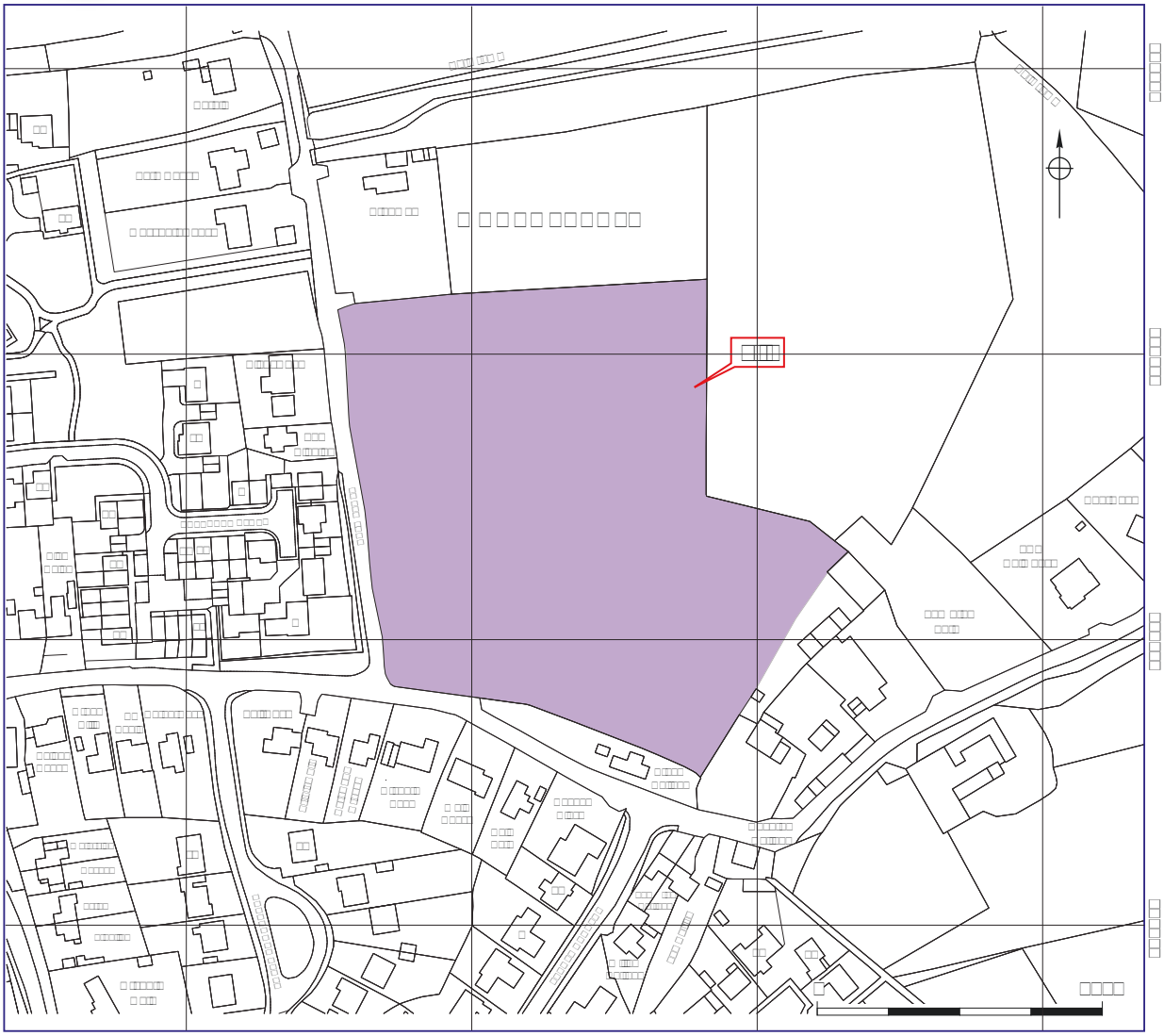
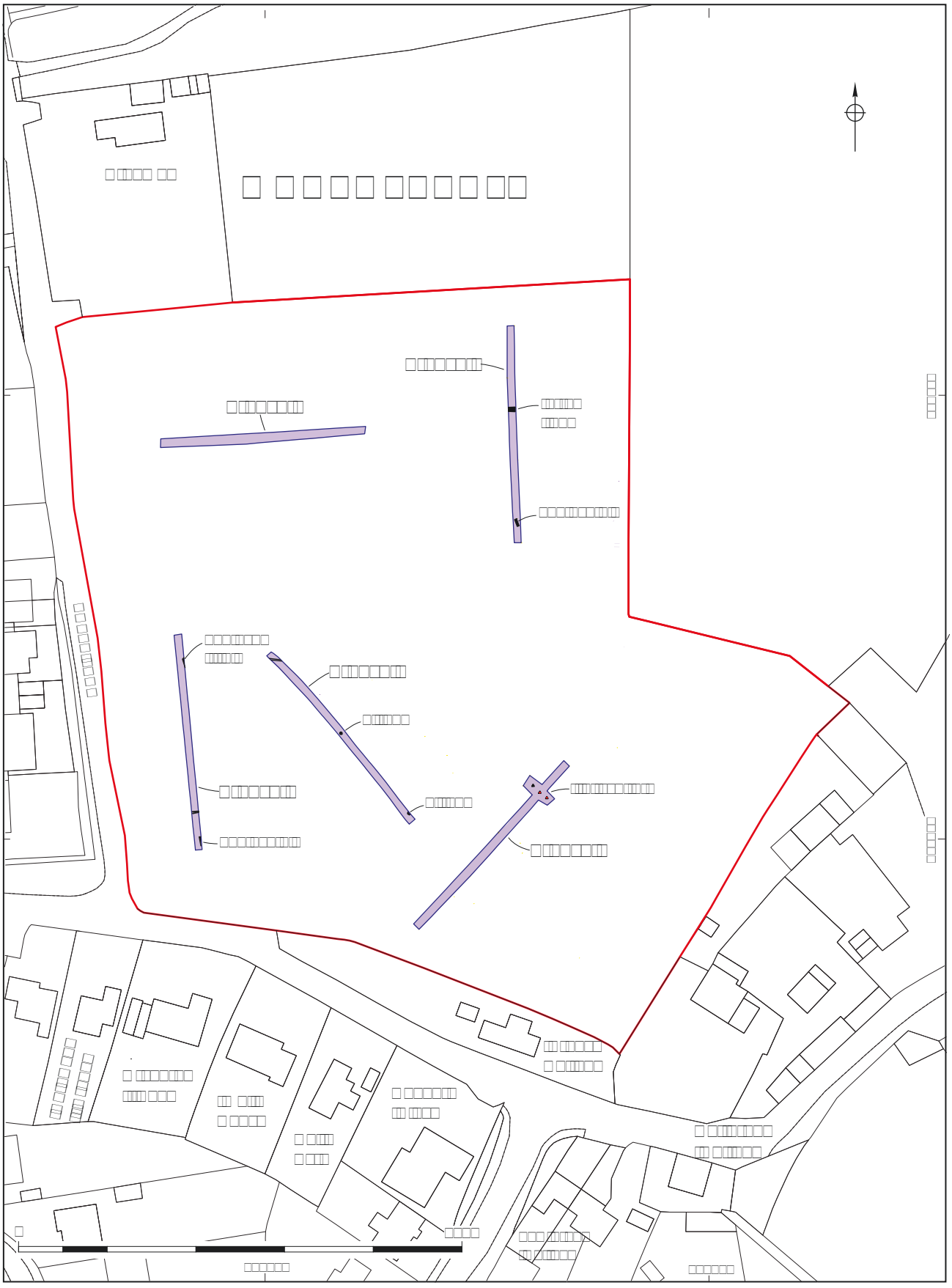
Figures







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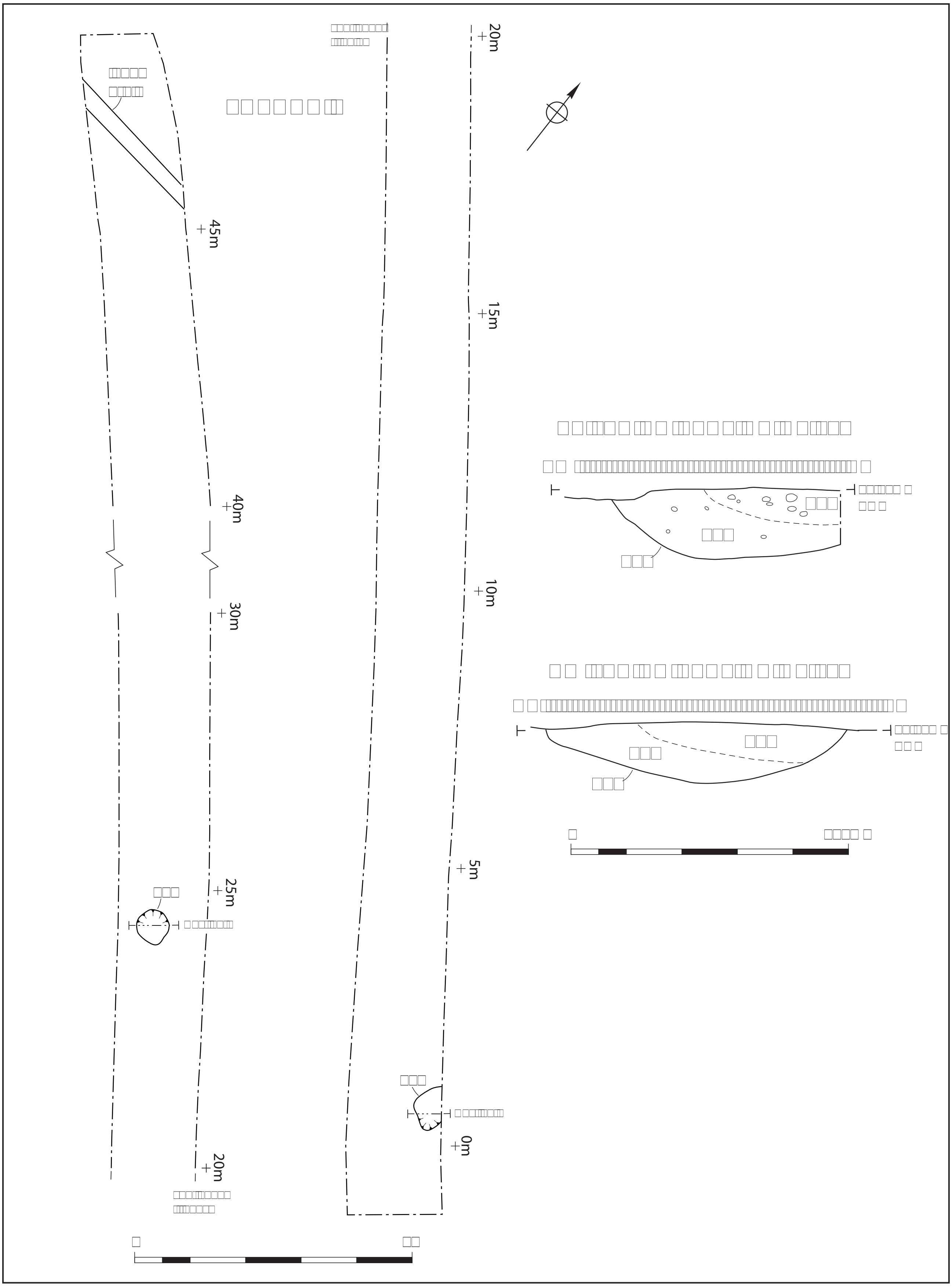

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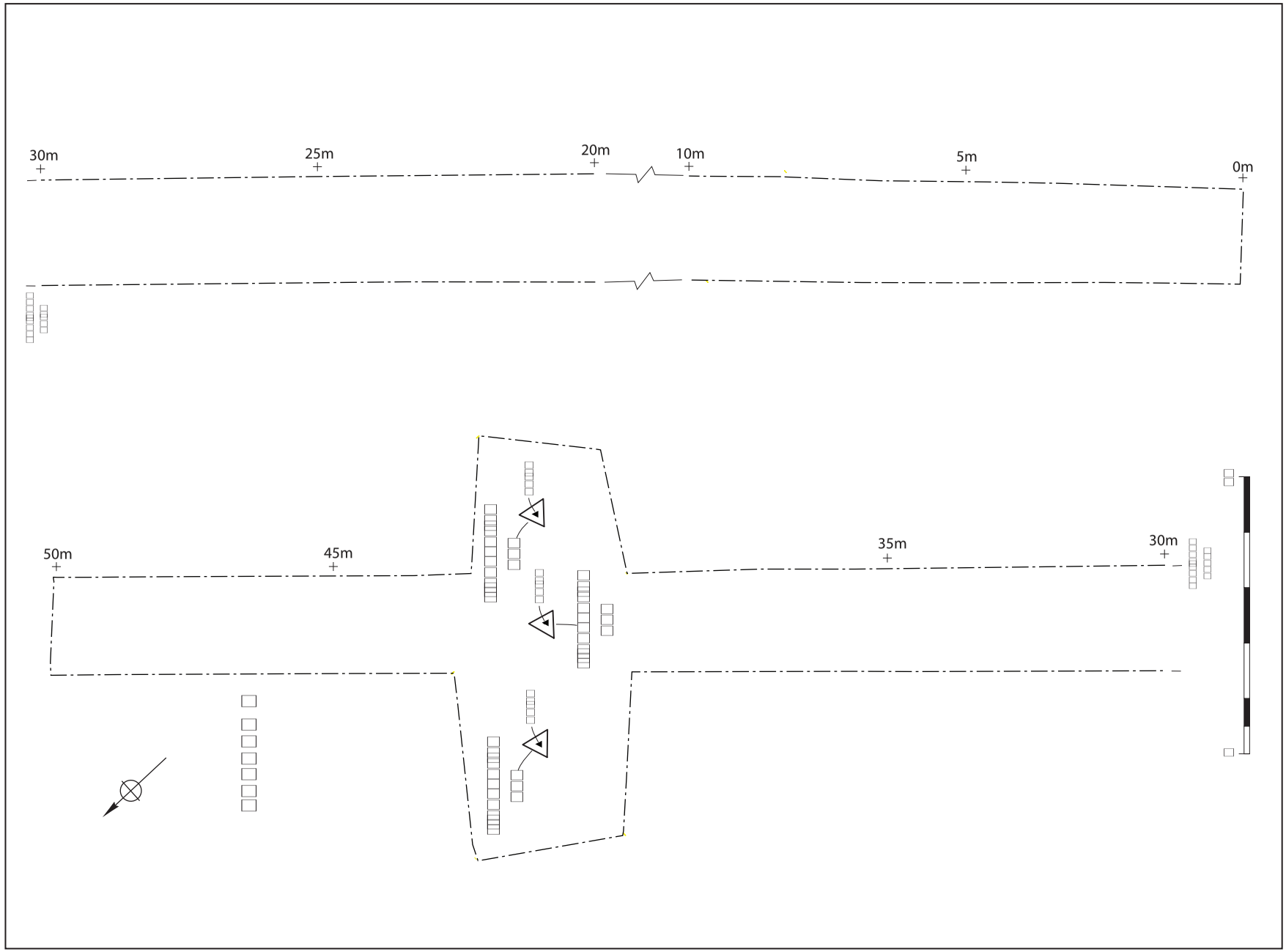
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Plates

Plate 1: General view of site looking north-east towards Nottingham Hill

Plate 2: Section of Trench 2 showing upper colluvium (201) above lower colluvium (202) at base

Plate 3: General view of Trench 5 before expansion, view south-west

Plate 4: Trench 5 extended at location of flint scatters (504), (505) and (506)

Plate 5: Section of Trench 5 showing former topsoil (501) above upper colluvium (502)

Plate 6: Small pit [405] in Trench 4

Plate 7: Plan view of small pit [408] in Trench 4

Plate 8: Mesolithic flint scatter found in Trench 5

Appendix 1 Trench descriptions

Trench 1

Length: 50m Width: 1.60m Orientation: NE-SW

Context summary:

Context	Feature	Context	Description	Height/ depth	Interpretation
100	Topsoil	Layer	Moderately Compact light greyish brown clay loam	0.08-0.38m	Turf and topsoil layer covering site, same as (200), (300) etc.
101	Colluvium	Layer	Compact light yellowish brown silty clay	0.26m	Upper colluvial layer cut by furrow
102	Colluvium	Layer	Compact mid yellowish brown silty clay	0.30m	Earlier colluvial layer below (101)
103	Natural	Layer	Compact light blueish brown clay		Underlying clays seen in machine sondage at SW end of trench. Occasional patches of limestone brash.
104	Furrow	Fill	Moderately Compact mid brown silty clay	0.10m	Fill of furrow [105] - topsoil
105	Furrow	Cut		0.10m	Base of E-W furrow, cut into colluvial layers below topsoil
106	Modern intrusion	Cut			Modern trial hole for water testing

Trench 2

Length: 50m Width: 1.60m Orientation: E-W

Context summary:

Context	Feature	Context	Description	Height/ depth	Interpretation
200	Topsoil	Layer	Moderately Compact mid greyish brown clay loam	0.14m	Turf and topsoil layer covering field - bulldozed ridge and furrow
201	Colluvium	Layer	Compact light yellowish brown silty clay	0.32m	Colluvial deposit from hill slope to NE
202	Colluvium	Layer	Compact mid yellowish brown clay	0.28m	Lower colluvial deposit, similar to deposit (201). Probably glacial in origin
203	Natural	Layer	Compact light blueish brown clay		Underlying clay deposit seen in machine sondage at W end of trench

Trench 3

Length: 50m Width: 1.60m Orientation: N-S

Context summary:

Context	Feature	Context	Description	Height/ depth	Interpretation
300	Topsoil	Layer	Moderately Compact mid brownish grey clay loam	0.26m	Turf and topsoil layer covering site - bulldozed ridge and furrow
301	Colluvium	Layer	Compact light yellowish brown silty clay	0.20m	Colluvial deposit from hill slope to NE
302	Colluvium	Layer	Compact mid yellowish brown silty clay		Earlier colluvial deposit from hill slope to NE. Probably glacial in origin
303	Modern intrusion	Cut			Modern trial hole for water testing. Dug in AD2014
304	Modern intrusion	Cut			Modern trial hole for water testing. Dug in AD2014

Trench 4

Length: 50m Width: 1.60m Orientation: NW-SE

Context summary:

Context	Feature	Context	Description	Height/ depth	Interpretation
400	Topsoil	Layer	Moderately Compact mid greyish brown clay loam	0.30m	Turf and topsoil layer across site - bulldozed ridge and furrow
401	Colluvium	Layer	Compact light yellowish brown silty clay	0.15m	Colluvial deposit from hill slope to NE
402	Colluvium	Layer	Compact mid yellowish brown silty clay		Earlier colluvial deposit - probably glacial in origin
403	Pit	Fill	Soft mid brown silty clay	0.06m	Fill of pit [405]. Contained burnt stone and charcoal flecks, evidence of fire. No finds but sealed by upper colluvium (401) which is probably of later prehistoric date onwards.
404	Pit	Fill	Moderately Compact dark brownish black silty clay	0.13m	Primary burnt fill of pit [405] - charcoal rich clay. Clay mix with charcoal suggests this deposit was open to weathering following possible fire.
405	Pit	Cut		0.13m	Cut of small pit, extends under trench baulk. Appears to be a small fire pit or a small scoop excavated to dispose of fire waste material, similar to pit [408].
406	Pit	Fill	Moderately Compact light brown silty clay	0.07m	Upper fill of [408]. Clay deposit with occasional charcoal flecks, probably inwashed material mixing with (407) below.
407	Pit	Fill	Moderately Compact light blackish brown silty clay	0.11m	Primary fill of pit [408]. Mix of clay and charcoal, probably burnt in-situ.
408	Pit	Cut		0.11m	Cut of small circular pit, similar in date and function to pit [405]. Possible temporary fire site.

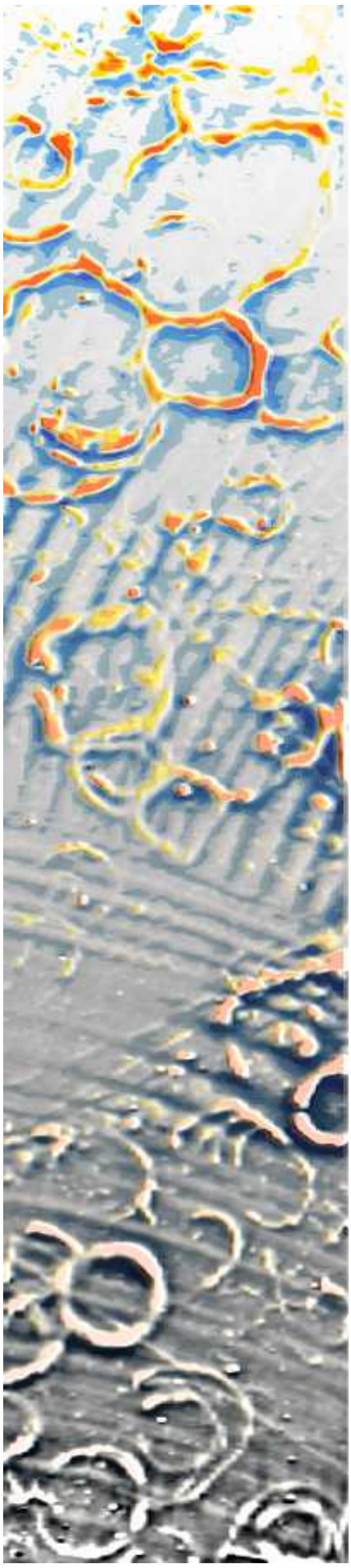
Trench 5

Length: 50m Width: 7.60m max Orientation: NE-SW

Context summary:

Context	Feature	Context	Description	Height/ depth	Interpretation
500	Topsoil	Layer	Moderately Compact mid greyish brown silty clay	0.30m	Turf and topsoil layer across site - bulldozed ridge and furrow
501	Topsoil	Layer	Moderately Compact dark greyish brown silty clay	0.26m	Former topsoil in depression of field, waterlogged. Sealed recently by modern topsoil as a result of bulldozing of ridge and furrow.
502	Colluvium	Layer	Compact light yellowish brown clay	0.23m	Colluvial deposit from hill slopes to NE. Flint scatters found at base.
503	Colluvium	Layer	Compact mid greyish yellow clay		Earlier colluvial layer. Flint scatters found at top of this deposit. Probably glacial in origin.
504	Flint scatter	Arbitrary number			Scatter of flint in central area of trench. Early prehistoric in date. Small find 1. Found at interface between base of colluvium (502) and earlier colluvial layer (503). Possible knapping site.
505	Flint scatter	Arbitrary number			Scatter of flint in eastern box extension of trench 5. Early prehistoric in date. Small find 2. Found at interface between base of colluvium (502) and earlier colluvial layer (503). Possible knapping site.
506	Flint scatter	Arbitrary number			Scatter of flint in western box extension of trench 5. Early prehistoric in date. Small find 3. Found at interface between base of colluvium (502) and earlier colluvial layer (503). Possible knapping site.

Appendix 2 Geophysical survey report



Yew Tree Farm, Woodmancote Gloucestershire

Geophysical Survey Report

Produced for Worcestershire Archaeology

Project code YWG141

29th May 2014

R Fry BA(Hons) MSc. Geophysicist

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Non-Technical Summary

A magnetic survey was commissioned by Worcestershire Archaeology to prospect land at Yew Tree Farm, Woodmancote, Gloucestershire for buried structures of archaeological interest.

Apart from the line of a former field boundary no features of archaeological interest have been identified from this survey although slight variations in magnetic texture exist that might hint at variations in land use and there may also be some tree holes in the northern part of the site.

Digital Data

Item	Sent to	Sent date
CAD – Vector Elements	Tom Vaughan	29th May 2014

Audit

Version	Author	Checked	Date
Interim			
Draft Final	R Fry	MJ Roseveare	29th May 2014
Final			
Revision			
OASIS			

Table of Contents

1 Introduction

Land at Yew Tree Farm, Woodmancote, Gloucestershire was surveyed to prospect for buried structures of archaeological interest.

1.1 Location

Country	England
County	Gloucestershire
Nearest Settlement	Woodmancote
Central Co-ordinates	397227,227640

1.43ha of land was surveyed over a single pasture field.

1.2 Constraints & variations

Recent geotechnical groundwork had left many large ruts in the field which limited the survey on some parts of the site but where the ground was suitable for survey, all measures were taken to ensure adequate coverage.

2 Context

2.1 Archaeology

The following is extracted verbatim from the site WSI (Worcestershire Archaeology 2014, Page 1):

"Numerous late prehistoric settlement sites and Roman sites are recorded in the Historic Environment Record (HER) in the vicinity of Bishop's Cleeve to the west, Gotherington to the north-west and at Nottingham Hill to the north-east. Around Homelands Farm to the north-west fieldwalking recovered very small quantities of prehistoric and Roman material and very low densities of medieval and later finds (HER 20090), while evaluation identified areas of Bronze Age and Iron Age enclosure activity (NMR 1537081). The site lies outside the focus of the medieval settlement, which lay along Stockwell lane to the south-east. There are traces of extant ridge and furrow earthworks (evidence of medieval or post-medieval strip field agricultural activities), aligned approximately east to west across the northern two-thirds of the site.

Significant deposits may therefore be defined as those likely to be of prehistoric and Roman date, although evidence of activity of later date should not be discounted."

2.2 Environment

Superficial 1: 50000 BGS	None Recorded
Bedrock 1:50000 BGS	Charmouth Mudstone Formation (CHAM)
Topography	Gentle slope up to the east.
Hydrology	Presumed natural
Current Land Use	Pasture Field
Historic Land Use	Farming (mixed?)
Vegetation Cover	Grass
Sources of Interference	None. Survey size however limited by ruts left by recent groundwork.

The Charmouth Mudstone Formation seems to support a reasonable degree of magnetic susceptibility enhancement based upon comparison with other surveys although anomalies can sometimes be weak.

3 Methodology

3.1 Survey

3.1.1 Technical equipment

Measured variable	Magnetic flux density / nT
Instrument	Array of Geometrics G858 Magmapper caesium magnetometers
Configuration	Non-gradiometric transverse array (4 sensors, ATV towed)
Sensitivity	0.03 nT @ 10 Hz (manufacturer's specification)
QA Procedure	Continuous observation
Spatial resolution	1.0m between lines, 0.3m mean along line interval

3.1.2 Monitoring & quality assessment

The system continuously displays all incoming data as well as line speed and spatial data resolution per acquisition channel during survey. Rest mode system noise is therefore easy to inspect simply by pausing during survey, and the continuous display makes monitoring for quality intrinsic to the process of undertaking a survey. Rest mode test results (static test) are available from the system.

3.2 Data processing

3.2.1 Procedure

All data processing is minimised and limited to what is essential for the class of data being collected, e.g. reduction of orientation effects, suppression of single point defects (drop-outs or spikes) etc. The processing stream for this data is as follows:

Process	**Software**	**Parameters**
Measurement & GNSS receiver data alignment	Proprietary	
Temporal reduction, regional field suppression	Proprietary	High pass 5s/nT Low pass 0.3s/nT
Gridding	Surfer	Kriging, 0.25m x 0.25m
Smoothing	Surfer	Gaussian lowpass 3x3 data
Imaging and presentation	Manifold GIS	

The initial processing uses proprietary software developed in conjunction with the multisensor acquisition system. Gridded data is ported as data surfaces (not images) into Manifold GIS for final imaging and detailed analysis. Specialist analysis is undertaken using proprietary software.

General information on processes commonly applied to data can be found in standard text books and also in the 2008 English Heritage Guidelines "Geophysical Survey in Archaeological Field Evaluation" at http://www.helm.org.uk/upload/pdf/Geophysical_LoRes.pdf.

ArchaeoPhysica uses more advanced processing for magnetic data using potential field techniques standard to near-surface geophysics. Details of these can be found in Blakely, 1996, "Potential Theory in Gravity and Magnetic Applications", Cambridge University Press.

All archived data includes process metadata.

3.3 Interpretation resources

Numerous sources are used in the interpretive process which takes into account shallow geological conditions, past and present land use, drainage, weather before and during survey, topography and any previous knowledge about the site and the surrounding area. Old Ordnance Survey mapping is consulted

and also older sources if available. Geological information is sourced only from British Geological Survey resources and aerial imagery from online sources. Topographic data is usually sourced from the Environment Agency (LiDAR) unless derived from original ArchaeoPhysica survey.

Information from nearby ArchaeoPhysica surveys is consulted to inform upon local data character, variations across soils and near-surface geological contexts. Published data from other contractors may also be used if accompanied by adequate metadata.

3.4 Interpretive classes

3.4.1 Introduction

Key to interpretation is separation of each anomaly into broad classes, namely whether caused by agricultural processes (e.g. ploughing, composting, drainage etc.), geological factors or whether a structure of archaeological interest is likely. Within these anomalies are in turn classified by whether they most likely represent a fill or a drain, or a region of differing data texture, etc. More detailed descriptions are included below.

The actual means of classification is based upon geophysical understanding of anomaly formation, the behaviour of soils, landscape context and structural form. For example, to consider just one form of anomaly: weakly dipolar discrete magnetic anomalies of small size are likely to have shallow non-ferrous sources and are therefore likely to be pits. Larger ones of the same class could also be pits or locally-deeper topsoil but if strongly magnetic could also be hearths. Strongly dipolar discrete anomalies are in all cases likely to be ferrous or similarly magnetic debris, although small repeatedly heated and in-situ hearths can produce similar anomalies.

3.4.2 Agriculture – boundaries

Coherent linear dipolar enhancement of magnetic field strength marking ditch fills, narrow bands of more variable magnetic field or changes in apparent magnetic susceptibility, are all included within this category if they correlate with boundaries depicted on the Tithe Map or early Ordnance Survey maps. If there is no correlation then these anomaly types are not categorised as a field boundaries.

3.4.3 Agriculture – cultivation

Banded variations in apparent magnetic susceptibility caused by a variable thickness of topsoil, depositional remanent magnetisation of sediments in furrows or susceptibility enhancement through heating (a by product of burning organic matter like seaweed) tend to indicate past cultivation, whether ridge-based techniques, medieval ridge and furrow or post medieval 'lazy beds'. Modern cultivation, e.g. recent ploughing, is not included.

3.4.4 Agriculture – drains

In some cases it is possible to identify drainage networks either as ditch-fill type anomalies (typically 'Roman' drains), noisy or repeating dipolar anomalies from terracotta pipes or reduced magnetic field strength anomalies from culverts, plastic or non-reinforced concrete pipes. In all cases identification of a herring bone pattern to these is sufficient for inclusion within this category.

3.4.5 Archaeology – fills

Any linear or discrete enhancement of magnetic field strength, usually with a dipolar character of variable strength, that cannot be categorised as a field boundary, cultivation or as having a geological origin, is classified as a fill potentially being of archaeological interest. Fills are normally earthen and include an often invisible proportion of heated soil or topsoil that augments local magnetic field strength. Inverted anomalies are possible over non-earthen fills, e.g. those that comprise peat, sand or gravel within soil. This category is

subject to the 'habitation effect' where, in the absence of other sources of magnetic material, anomaly strength will decrease away from sources of heated soil and sometimes to the extent of non-detectability.

Former enclosure ditches that contained standing water can promote enhanced volumetric magnetic susceptibility through depositional remanence and remain detectable regardless of the presence of other sources of magnetic material.

3.4.6 Archaeology – other discrete

This category is secondary to fills and includes anomalies that by virtue of their character are likely to be of archaeological interest but cannot be adequately described as fills. Examples include strongly magnetic bodies lacking ferrous character that might indicate hearths or kilns. In some cases anomalies of ferrous character may be included.

3.4.7 Archaeology – structures

On some sites the combination of plan form and anomaly character, e.g. rectilinear reduced magnetic field strength anomalies, might indicate the likely presence of masonry, robber trenches or rubble foundations. Other types of structure are only included if the evidence is unequivocal, e.g. small ring ditches with doorways and hearths indicating hearths. In some circumstances a less definite category may be assigned to the individual anomalies instead.

3.4.8 Archaeology – zones

On some sites it is possible to define different areas of activity on the basis of magnetic character, e.g. texture and anomaly strength. These might indicate the presence of middens or foci within larger complexes. This category does not indicate a presence or absence of anomalies possibly of archaeological interest.

3.4.9 Geology – discrete

On some sites, e.g. some gravels and alluvial contexts, there will be anomalies that can obscure those potentially of archaeological interest. They may have a strength equal to or greater than that associated with more relevant sources, e.g. ditch fills, but can normally be differentiated on the basis of anomaly form coupled with geological understanding. Where there is ambiguity, or relevance to the study, these anomalies will be included in this category.

3.4.10 Geology – zones

Not all changes in geology can be detected at the surface, directly or indirectly, but sometimes there will be a difference evident in the geological data that can be attributed to a change, e.g. from alluvium to tidal flat deposits, or bedrock to alluvium. It some cases the geophysical difference will not exactly coincide with the geological contact and this is especially the case across transitions in soil type.

3.4.11 Services

All overheard (OH) and underground (UG) services are depicted where these are detectable in the data or may influence aspects of the interpretation.

3.4.12 Texture

Geophysical data varies in character across areas, due to a range of factors including soil chemistry, near surface geology, hydrology and land use past and present. Where these variations are of interest or relevance to the study they are included in this category.

3.5 Standards & guidance

All work was conducted in accordance with the following standards and guidance:

- David et al, "Geophysical Survey in Archaeological Field Evaluation", English Heritage, 2008.
- "Standard and Guidance for Archaeological Field Evaluation", Institute for Archaeologists, 2008.

In addition, all work is undertaken in accordance with the high professional standards and technical competence expected by the Geological Society of London and the European Association of Geoscientists and Engineers.

All personnel are experienced surveyors trained to use the equipment in accordance with the manufacturer's expectations. All aspects of the work are monitored and directed by fully qualified professional geophysicists.

4 Discussion

4.1 Introduction

The sections below first discuss the geophysical context within which the results need to be considered and then specific features or anomalies of particular interest. Not all will be discussed here and the reader is advised to consult the catalogue (ibid) in conjunction with the graphical elements of this report.

4.2 Principles

In general, topsoil is more magnetic than subsoil which can be slightly more magnetic than parent geology, whether sands, gravels or clays, however, there are exceptions to this. The reasons for this are natural and are due to biological processes in the topsoil that change iron between various oxidation states, each differently magnetic. Where there is an accumulation of topsoil or where topsoil has been incorporated into other features, a greater magnetic susceptibility will result.

Within landscapes soil tends to accumulate in negative features like pits and ditches and will include soil particles with thermo-remanent magnetization (TRM) through exposure to heat if there is settlement or industry nearby. In addition, particles slowly settling out of stationary water will attempt to align with the ambient magnetic field at the time, creating a deposit with depositional remanent magnetization (DRM).

As a consequence, magnetic survey is nearly always more a case of mapping accumulated magnetic soils than structures which would not be detected unless magnetic in their own right, e.g. built of brick or tile. As a prospecting tool it is thus indirect. Fortunately, the mechanisms outlined above are commonplace and favoured by human activity and it is nearly always the case that cut features will alter in some way the local magnetic field.

4.2.1 Instrumentation

The use of the magnetic sensors in non-gradiometric (vertical) configuration avoids measurement sensitisation to the shallowest region of the soil, allowing deeper structures, whether natural or otherwise to be imaged within the sensitivity of the instrumentation. However, this does remove suppression of ambient noise and temporal trends which have to be suppressed later during processing. When compared to vertical gradiometers in archaeological use, there is no significant reduction in lateral resolution when using non-gradiometric sensor arrays and the inability of gradiometers to detect laminar structures is completely avoided.

Caesium instrumentation has a greater sensitivity than fluxgate instruments, however, at the 10 Hz sampling rate used here this increase in sensitivity is limited to about one order of magnitude.

The array system is designed to be non-magnetic and to contribute virtually nothing to the magnetic measurement, whether through direct interference or through motion noise. There is, however, some limited contribution from the towing ATV.

4.3 Character & principal results

4.3.1 Geology

The magnetic contrast across the site has been suitable for the detection of features of archaeological interest. The flatter south west part of the site may have a slightly greater soil depth, which might be weakly apparent in the magnetic data. It is possible that areas [4] and [5] also reflect natural changes in the soil but modification from differing agricultural usage over time is also possible.

4.3.2 Land use

Former agricultural activity on the site can be identified within the data. Linear enhanced anomaly [1] represents the route of a former field boundary depicted on historic Ordnance Survey maps between 1884-1891. Further regular, weak linear anomalies [2] are the result of ridge and furrow cultivation.

A strong dipolar anomaly [3] is a modern underground service pipe. Anomaly [6] has been highlighted as an example of an anomaly that could be described as due to a pit fill but in this context could be a tree throw.

4.3.3 Archaeology

No features of archaeological interest have been identified from this survey.

4.4 Conclusions

Apart from the change in the agricultural layout of the site, no features of archaeological interest have been identified in the magnetic data.

4.5 Caveats

Geophysical survey is a systematic measurement of some physical property related to the earth. There are numerous sources of disturbance of this property, some due to archaeological features, some due to the measuring method, and others that relate to the environment in which the measurement is made. No disturbance, or 'anomaly', is capable of providing an unambiguous and comprehensive description of a feature, in particular in archaeological contexts where there are a myriad of factors involved.

The measured anomaly is generated by the presence or absence of certain materials within a feature, not by the feature itself. Not all archaeological features produce disturbances that can be detected by a particular instrument or methodology. For this reason, the absence of an anomaly must never be taken to mean the absence of an archaeological feature. The best surveys are those which use a variety of techniques over the same ground at resolutions adequate for the detection of a range of different features.

Where the specification is by a third party ArchaeoPhysica will always endeavour to produce the best possible result within any imposed constraints and any perceived failure of the specification remains the responsibility of that third party.

Where third party sources are used in interpretation or analysis ArchaeoPhysica will endeavour to verify their accuracy within reasonable limits but responsibility for any errors or omissions remains with the originator.

Any recommendations are made based upon the skills and experience of staff at ArchaeoPhysica and the information available to them at the time. ArchaeoPhysica is not responsible for the manner in which these may or may not be carried out, nor for any matters arising from the same.

4.6 Bibliography & selected reference

Aspinall *et al*, 2008. "Magnetometry for Archaeologists", Geophysical Methods for Archaeology, Altamira Press

Blakely, 1996, "Potential Theory in Gravity and Magnetic Applications", Cambridge University Press

David *et al*, 2008, "Geophysical Survey in Archaeological Field Evaluation", English Heritage

Gaffney *et al*, 2002, "Technical Note 6: The use of geophysical techniques in archaeological evaluations", Institute for Archaeologists

Milsom, 2003, "Field Geophysics", 3rd edition, The Geological Field Guide Series, Wiley

Schmidt, A., 2013, "Geophysical Data in Archaeology: A Guide to Good Practice", ADS

Scollar, 1990, "Archaeological Prospecting and Remote Sensing", Topics in Remote Sensing 2, Cambridge University Press

Tarling *et al* (ed.), 1999, "Palaeomagnetism and Diagenesis in Sediments", Geological Society, London, Special Publications, 151

Telford *et al*, 1990, "Applied Geophysics", 2nd Edition, Cambridge University Press

Worcestershire Archaeology, 2014, "Written Scheme of Investigation for an archaeological evaluation and geophysical survey at Yew Tree Farm, Bushcombe Lane, Woodmancote, Cheltenham, Gloucestershire", Worcestershire County Council. Worcester

5 Appendices

5.1 Project metadata

Project Name	Yew Tree Farm, Woodmancote, Gloucestershire
Project Code	YWG141
Client	Worcestershire Archaeology
Fieldwork Dates	15th May 2014
Field Personnel	S Purvis, R Fry
Data Processing Personnel	R Fry
Reporting Personnel	R Fry
Draft Report Date	29th May 2014
Final Report Date	

5.2 Archiving

ArchaeoPhysica maintains an archive for all its projects, access to which is permitted for research purposes. Copyright and intellectual property rights are retained by ArchaeoPhysica on all material it has produced, the client having full licence to use such material as benefits their project. Access is by appointment only and some content is restricted and not available to third parties

Archive formation is in the spirit of Schmidt, A., 2013, "Geophysical Data in Archaeology: A Guide to Good Practice", ADS.

ArchaeoPhysica has a policy of contributing in time to the ADS Grey Literature library, usually after about six months post-dating release of the report. In addition, extracts of data images may be used, without reference to their source, in marketing and similar material. In these cases anything that might identify the project or client is removed.

5.3 ArchaeoPhysica

5.3.1 The company

ArchaeoPhysica has provided geophysical survey to archaeologists since 1998 and is consequently one of the oldest specialist companies in the sector. It has become one of the most capable operations in the UK, undertaking 1000 hectares of magnetic survey per annum. In addition 2D & 3D electrical, low frequency electromagnetic and radar surveys are regularly undertaken across the UK, also overseas. ArchaeoPhysica is the most established provider of caesium vapour magnetic survey in Europe, and holds probably the largest archaeological archive of total field magnetic data in the world. Unusually for the archaeological sector, key staff are acknowledged qualified geophysical specialists in their own right and regularly contribute to in-house and other research projects. For a number of years the company taught applied geophysics to Birkbeck College (London) undergraduate and post-graduate archaeology students, and developed a new and comprehensive course for the College.

All work is undertaken by qualified and experienced geophysicists who have specialised in the detection and mapping of near surface structures in archaeology and other disciplines using a wide variety of techniques. There is always a geophysicist qualified to post-graduate level on site during fieldwork and all processing and interpretation is undertaken under the direct influence of either the same individual or someone of similar qualifications and experience.

ArchaeoPhysica meets with ease the requirements of English Heritage in their 2008 Guidance "Geophysical Survey in Archaeological Field Evaluation" section 2.8 entitled "Competence of survey personnel". The company is one of the most experienced in European archaeological prospection and is a key professional player. It only employs people with recognised geoscience qualifications and capable of becoming Fellows of

the Geological Society of London, the Chartered UK body for geophysicists and geologists.

5.3.2 Senior Geophysicist: Martin J Roseveare, MSc BSc(Hons) MEAGE FGS MIfA

Martin specialised (MSc) in geophysical prospection for shallow applications at the University of Bradford in 1997 and has worked in commercial geophysics since then. He was elected a Fellow of the Geological Society of London in 2009 and is also a full member of the Institute of Archaeologists. He has taught applied geophysics for Birkbeck College's archaeological degree students for a number of years. Professional interests outside archaeology include the application of geophysics to agriculture, also geohazard monitoring and prediction. He also has considerable practical experience of the improvement and integration of geophysical hardware and software. At ArchaeoPhysica Martin carries overall responsibility for all things geophysical and is often found writing reports or buried in obscure software and circuit diagrams. He was elected onto the EuroGPR and IfA GeoSIG committees in Autumn 2013.

5.3.3 Operations Manager: Anne CK Roseveare, BEng(Hons) DIS

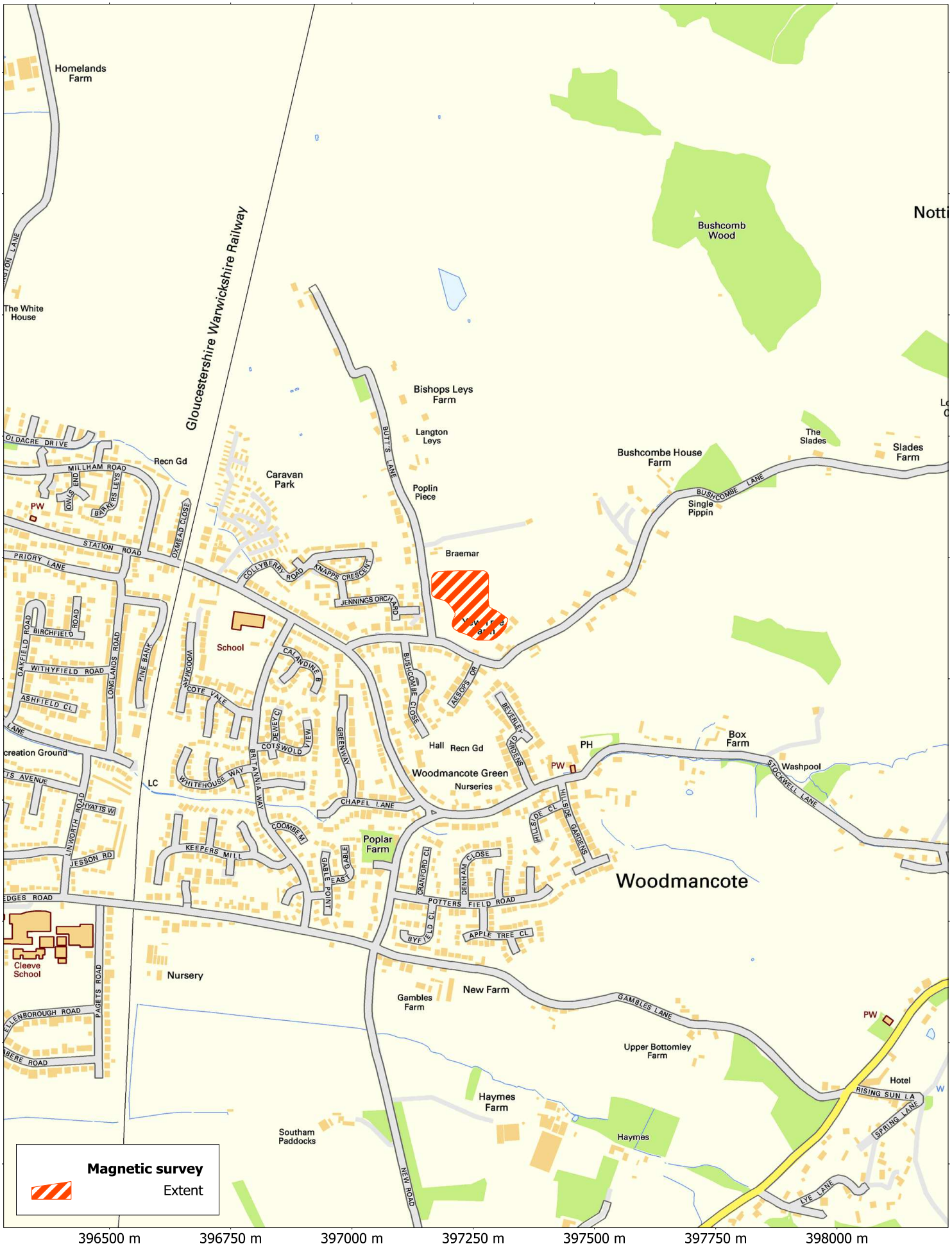
On looking beyond engineering, Anne turned her attention to environmental monitoring and geophysics and has since been applying specialist knowledge of chemistry & fluid flow to soils. She is member of the British Society of Soil Science and is interested in the use of agricultural applications of geophysics. Anne was the founding editor of the International Society for Archaeological Prospection (ISAP) and has spent many years walking fields in parallel lines. Much of her time now is spent managing complicated scheduling and logistics for ArchaeoPhysica, overseeing safety procedures and data handling, while dreaming of interesting places around the world to undertake surveys, including researching the urban archaeology of Asia.

5.3.4 Geophysicist: Robert Fry, MSc BA(Hons), PhD candidate

Rob studied Archaeology B.A.(Hons.) at the University of Reading from 2004-07 where his research was heavily influenced by geophysical techniques and work included organising and leading the magnetic survey of Silchester Roman Town. Following university, he joined the British School at Rome, conducting magnetic surveys in Spain, Italy and Libya. After working briefly as a geophysicist at Wessex Archaeology, Rob became Project Officer of The Silchester Mapping Project at the University of Reading. Since then, he has gained an MSc in Archaeological Prospection from the University of Bradford. He is now writing up his PhD thesis in time-lapse geophysical monitoring techniques and analysis as part of the DART Project. Rob is currently the editor of ISAP News. At ArchaeoPhysica Rob is normally found in the field or in the office besieged by colossal quantities of survey data.

5.3.5 Geophysical Technician: Samuel Purvis, BSc(Hons), MSc candidate

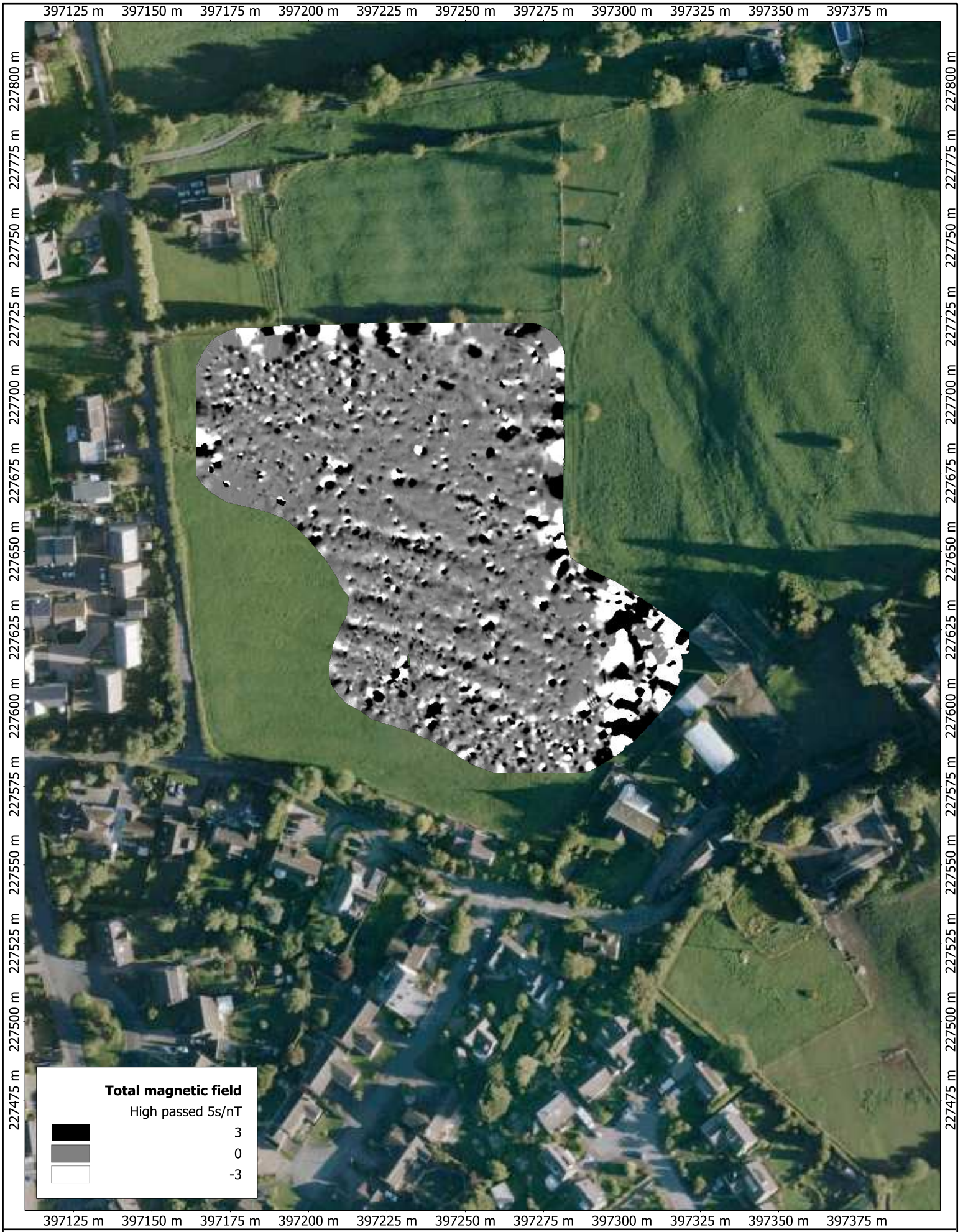
Sam studied Archaeology at The University of Bradford before progressing to a Masters in Archaeological Prospection. His primary research focus is on electromagnetic methods of shallow survey and is an expert with the newest multicoil electromagnetic instrumentation. Sam's main role at ArchaeoPhysica is technical, collecting high quality data, maintaining systems and keeping the show on the road.



YWG141 Yew Tree Farm, Woodmancote, Gloucestershire
DWG 01 Location Map

ArchaeoPhysica Ltd

Orthographic Centre X: 397255.52 m Centre Y: 227629.38 m Scale: 1:10000 @ A4 Spatial Units: Meter. Do not scale off this drawing



YWG141 Yew Tree Farm, Woodmancote, Gloucestershire
DWG 02 Magnetic Data

ArchaeoPhysica Ltd

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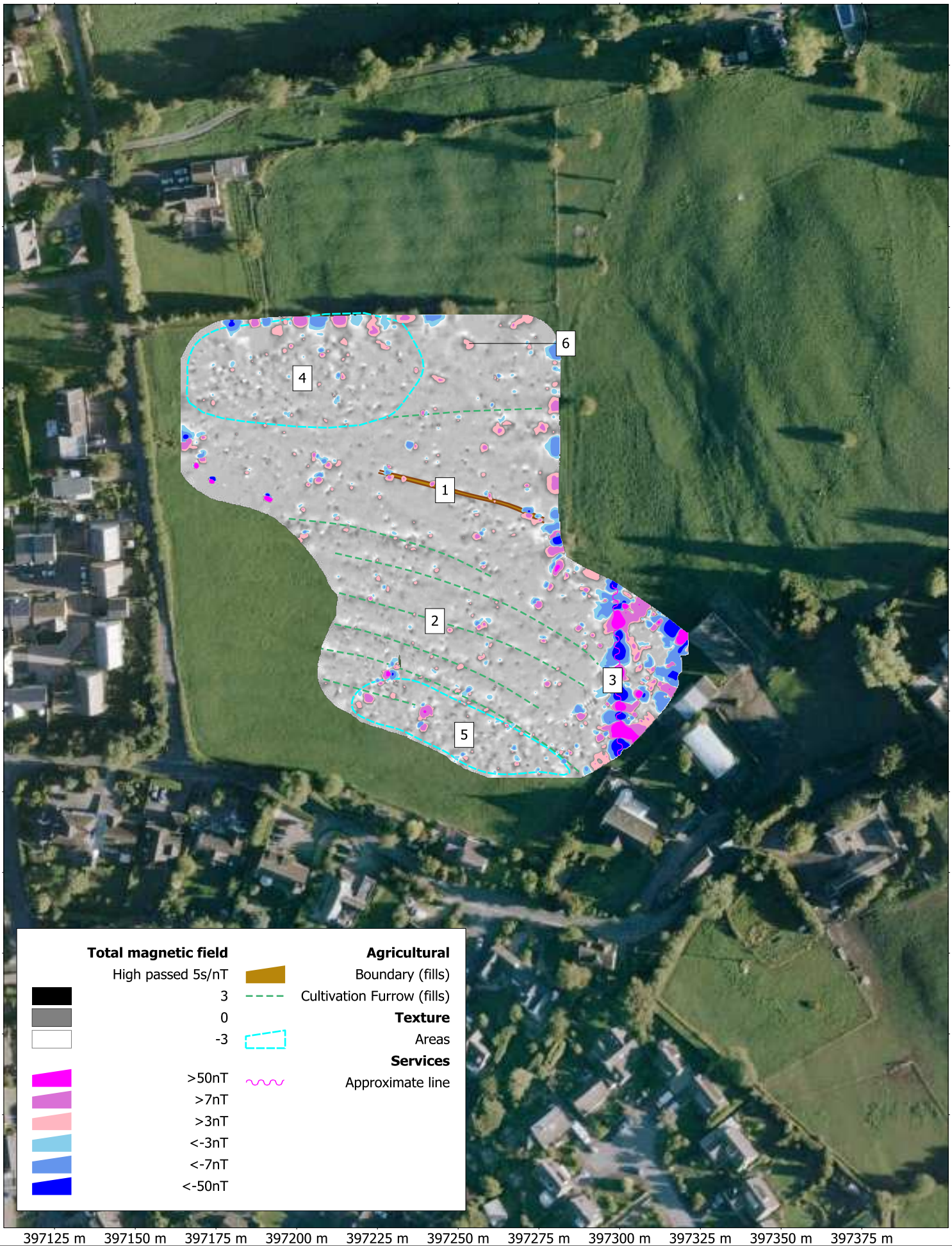


YWG141 Yew Tree Farm, Woodmancote, Gloucestershire
DWG 03 Catalogue

ArchaeoPhysica Ltd

Orthographic Centre X: 397255.52 m Centre Y: 227629.38 m Scale: 1:1500 @ A4 Spatial Units: Meter. Do not scale off this drawing

Appendix 3 Radiocarbon dating calibration curves

Scottish Universities Environmental Research Centre

Director: Professor R M Ellam

Rankine Avenue, Scottish Enterprise Technology Park,
East Kilbride, Glasgow G75 0QF, Scotland, UK
Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

26 August 2014

Laboratory Code	SUERC-54812 (GU35221)
Submitter	Suzi Richer Worcestershire Archaeology The Hive, Sawmill Walk, The Butts, Worcester,, WR1 3PB
Site Reference	P4353 Woodmancote
Context Reference	407
Sample Reference	P4353/407/2
Material	Charcoal : Quercus
$\delta^{13}C$ relative to VPDB	-27.2 ‰
Radiocarbon Age BP	1084 ± 36

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

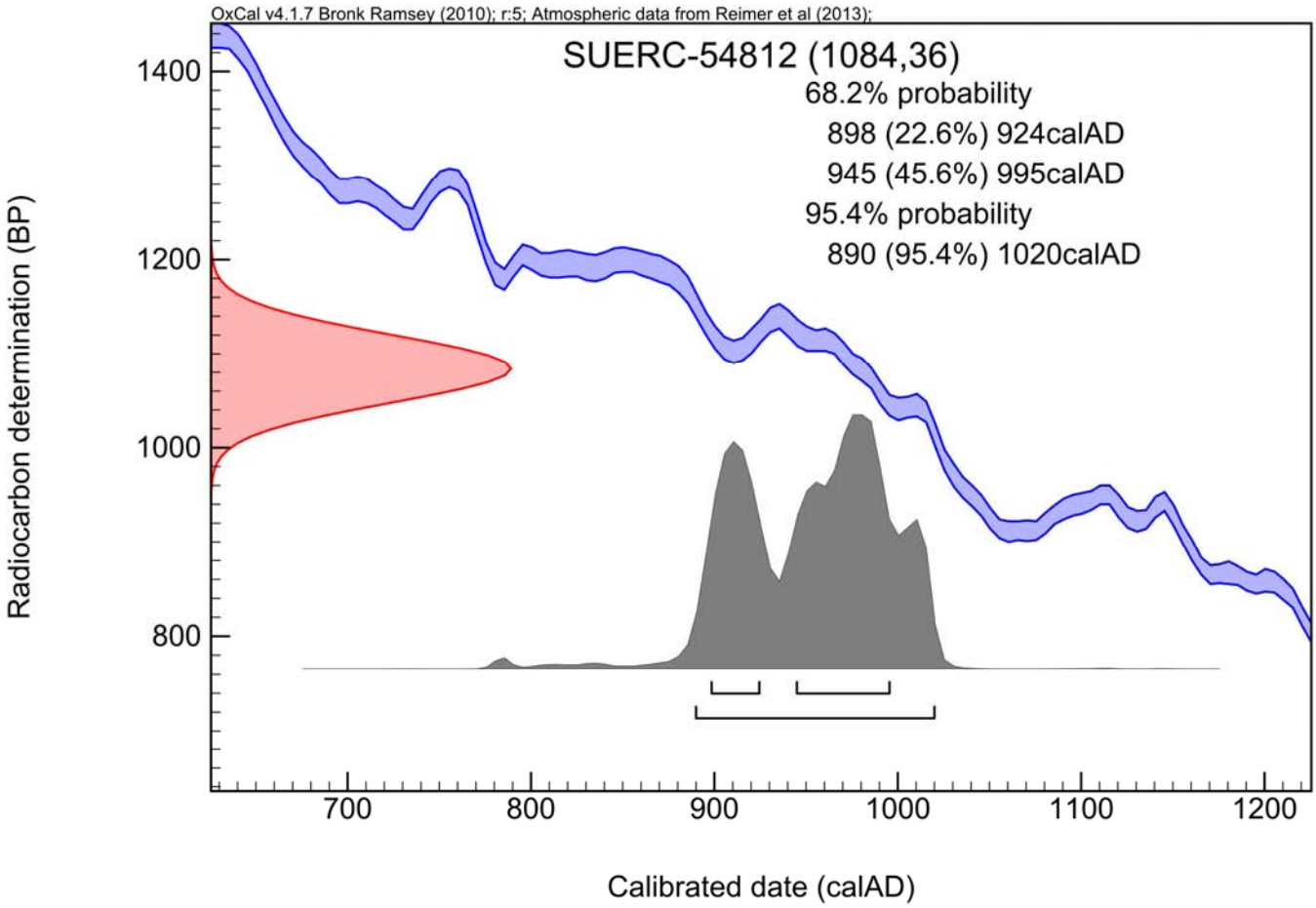
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- N. Rutt Date :- 26/08/2014

Checked and signed off by :- E. Dunbar Date :- 26/08/2014

Calibration Plot



Scottish Universities Environmental Research Centre

Director: Professor R M Ellam

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RADIOCARBON DATING CERTIFICATE

26 August 2014

Laboratory Code	SUERC-54813 (GU35222)
Submitter	Suzi Richer Worcestershire Archaeology The Hive, Sawmill Walk, The Butts, Worcester,, WR1 3PB
Site Reference	P4353 Woodmancote
Context Reference	404
Sample Reference	P4353/404/1
Material	Charcoal : Quercus
$\delta^{13}C$ relative to VPDB	-25.7 ‰
Radiocarbon Age BP	1077 ± 36

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

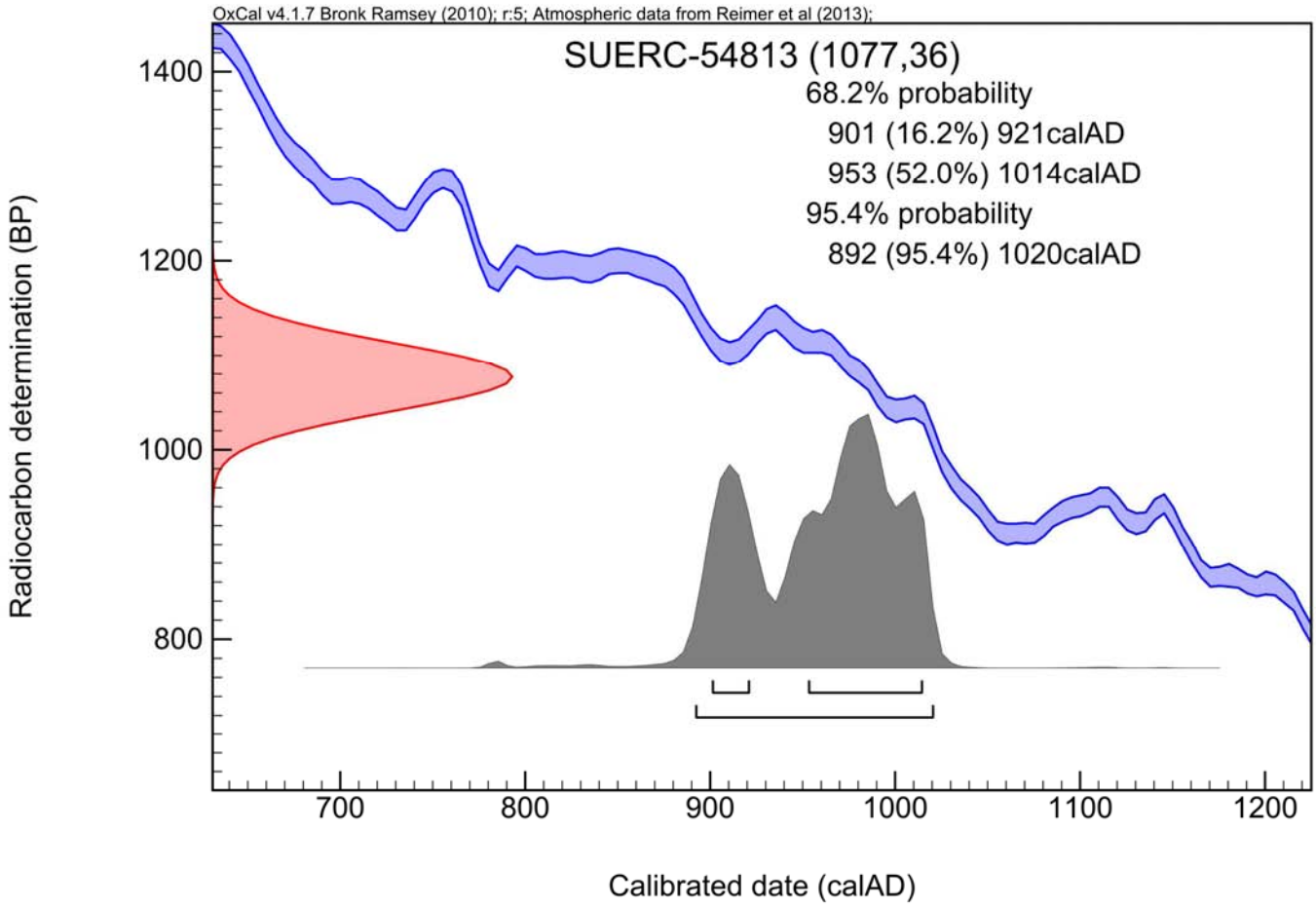
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- N. Rutt Date :- 26/08/2014

Checked and signed off by :- E. Dunbar Date :- 26/08/2014

Calibration Plot



Appendix 4 Technical information

The archive

The archive consists of:

6	Context records AS1
3	Field progress reports AS2
1	Photographic records AS3
56	Digital photographs
1	Drawing number catalogues AS4
2	Scale drawings
1	Recorded finds records AS13
2	Sample records AS17
1	Sample number catalogues AS18
2	Flot records AS21
5	Trench record sheets AS41
1	Box of finds
4	Bags of flot and residue
1	CD-Rom/DVDs
1	Copy of this report (bound hard copy)

The project archive is intended to be placed at:

Cheltenham Art Gallery and Museum
Clarence Street
Cheltenham
Gloucestershire
GL50 3JT