

Archaeological evaluation at the former site of Monkscroft Primary School, Cheltenham, Gloucestershire



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With contributions by C Jane Evans and Elizabeth Pearson

Illustrations by Carolyn Hunt

Summary

An archaeological evaluation comprising both geophysical survey and trial trenching was undertaken in February 2018 at a site formerly occupied by Monkscroft Primary School, Shelley Road, Cheltenham (NGR SO 392202 222448). It was commissioned Gloucestershire County Council who has identified the land as a preferred housing site.

The geophysical survey was carried out by a specialist sub-contractor and comprised a detailed magnetic survey. Subsequently, eight trial trenches (seven 25m in length, one 21.5m), amounting to just over 320m² in area, were excavated. These were arranged in a non-gridded array in order to interrogate and characterise geophysical anomalies, to assess survival and level of truncation in areas of former school buildings, and to test the quality of capture from the geophysical survey in apparently blank or less significant areas.

Archaeological remains of varying significance were identified across the site. These appear to demonstrate that the site contains some small-scale prehistoric land use (identified through residual artefacts) but mainly has a focus of Romano-British rural settlement, alongside medieval and post-medieval agricultural remains. The majority of the Roman features corresponded to geophysical anomalies and a number were of considerable size, producing a good assemblage of artefacts and animal bone. This predominantly comprised pottery dating to the 1st to early 2nd century, but later material was also recovered. The features also demonstrated an archaeological component to the site beyond that shown on the geophysical survey.

It was apparent that the middle part of the site had been partly disturbed by truncation from modern landscaping, but the survival of most features and deposits was good and the depth of topsoil and subsoil across the site area has offered some protection. Overall, however, the archaeology is still likely to be vulnerable to any intrusive groundwork should development occur on site.

Report

1 Background

1.1 Reasons for the project

An archaeological evaluation comprising both geophysical survey and trial trenching was undertaken on 11th January and between 6th and 9th February 2018 at a site formerly occupied by Monkscroft Primary School, Shelley Road, Cheltenham (NGR SO 392202 222448; Figure 1). The school buildings were closed then demolished in 2008, with part of the site later developed as a care home. The remainder of the site, which is approximately 1.8ha in size, has been identified as a preferred housing site in a consultation termed 'Cheltenham Plan (Part One): Preferred Options'.

The evaluation was commissioned by Andy Carr, Senior Planning Coordinator, Asset Management and Property Services, Gloucestershire County Council, on behalf of Gloucestershire County Council (the Client). This followed an internal consultation in which archaeological evaluation was identified as being required by Charles Parry, Senior Archaeological Officer at Gloucestershire County Council (the Curator).

The proposed development site was not known to contain archaeological remains but was considered to have the potential to include such heritage assets, the significance of which may be affected by any proposed development.

The project conforms to an outline invitation for a fee quotation provided by the Client and the accompanying requirements for an archaeological evaluation (the Brief) issued by the Curator (Gloucestershire County Council 2017a; 2017b). As a result of these a project proposal (including detailed specification) was produced (Worcestershire Archaeology 2018) alongside a trench layout plan, which was agreed in consultation with the Curator.

The evaluation conformed to this documentation, the proposed trench arrangement, and with industry guidelines and standards set out in *Standard and guidance: Archaeological field evaluation* (CIfA 2014a).

2 Aims

The archaeological evaluation aimed, in general terms, to investigate the archaeological potential of the site and, where present, to characterise and date it. This was broken down into a series of specific stages and objectives set out in the project proposal (Worcestershire Archaeology 2018). The fieldwork stage included provision for an initial geophysical survey of the entire area available for such survey (approx. 1.4ha), followed by a trenching sample of 2% of the total proposed development area (approx. 1.8ha) and a contingency for up to 2% additional trenching if required by the Curator.

It was determined that the evaluation would only assess heritage assets of archaeological interest and not include consideration of Listed Buildings, Conservation Areas, or historic hedgerows.

3 Methods

3.1 Personnel

The project was led by Richard Bradley (BA (hons.), MA; ACIfA), who has been practicing archaeology since 2005, assisted by Elspeth Iloff (BA (hons.), Morgan Murphy (BA (hons.); MA), and James Wilkins (BA (hons.)). The project manager responsible for the quality of the project was Robin Jackson (BA (hons.); ACIfA).

Illustrations were prepared by Carolyn Hunt (BSc (hons.); PG Cert; MCIfA). Elizabeth Pearson (MSc; ACIfA) contributed the environmental report and Jane Evans (BA, MA, MCIfA) the finds report.

3.2 Documentary research

There was no preceding desk-based assessment of the built or buried archaeological heritage assets and, therefore, prior to fieldwork commencing, a search was made of the Gloucestershire Historic Environment Record (HER) within a 1km search radius from the centre of the site. This provided access to records of archaeological sites, monuments and find-spots in the surrounding area. Ordnance Survey historic and modern mapping was also examined and these cartographic sources are listed below.

3.2.1 List of sources consulted

Cartographic sources

- Ordnance Survey 1st edition 1887, 1:2,500 (25")
- Ordnance Survey 1903, 1:2,500 (25")
- Ordnance Survey 1923, 1:2,500 (25")
- Ordnance Survey 1947, 1:10,560 (6")
- Cheltenham Borough Council online mapping of conservation areas (accessed 13 February 2018)

Documentary sources

Published and grey literature sources are listed in the bibliography.

3.3 Fieldwork strategy

3.3.1 Geophysical survey

The first stage of fieldwork involved a geophysical survey carried out by a specialist sub-contractor on 11th January 2018 (SUMO Survey Services Ltd 2018). This comprised a detailed magnetic survey to locate sub-surface anomalies across approximately 1.4ha of the site, undertaken on a traverse interval of 1m with a sample interval set at 0.25m.

All geophysical survey work was undertaken in accordance with the English Heritage document *Geophysical Survey in Archaeological Field Evaluation* (EH 2008) and the European Archaeological Council *Guidelines for the Use of Geophysics in Archaeology* (EAC 2016). The SUMO Survey job reference is 12226.

The results are summarised below (Section 5) but the full report is also appended (Appendix 3).

3.3.2 Trial trenching

The detailed specification for the trial trenching was prepared by Worcestershire Archaeology (WA 2018) and fieldwork was undertaken between the 6th and 9th February 2018. The Worcestershire Archaeology project number is P5197.

Seven 25m long by 1.6m wide trenches and one 21.5m long trench, amounting to just over 320m² in area, were excavated over the 1.8ha site, representing a sample of just under 2%. The location of the trenches is indicated in Figure 2.

The trenches were arranged in a non-gridded array in order to interrogate and characterise geophysical anomalies (Trenches 3, 5, 6, and 7), to assess survival and level of truncation in areas of former school buildings (Trench 2), and to test the quality of capture from the geophysical survey in apparently blank or less significant areas (Trench 1, 4 and 8). The trenches were also positioned within the constraints of known underground services and areas of demolition material from school buildings. All trenches were excavated on or close to their intended positions, although one was shortened slightly due to the identification of a fibre optic cable route on a service plan provided after trenching had commenced (Trench 2). This did not impact on the assessment of geophysical anomalies but did slightly reduce the overall percentage of the site investigated.

Deposits considered not to be significant were removed under archaeological supervision using a 180° wheeled excavator, employing a toothless bucket. 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. Metal detecting was undertaken across spoil heaps and on deposits prior to and during excavation. Deposits were recorded according to standard Worcestershire Archaeology practice (WA 2012) and trench and feature locations surveyed using a differential GPS 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 C Jane Evans

The finds assessment reported on here conforms to the following guidance: for finds work by ClfA (2014b), for pottery analysis by PCRG/SGRP/MPRG (2016), for archive creation by AAF (2011), and for museum deposition by SMA (1993).

3.5.1 Artefact recovery policy

The artefact recovery policy conformed to standard Worcestershire Archaeology practice (WA 2012; appendix 2). Metal detecting was undertaken across the site which located a number of nails, but otherwise only modern metallic finds were recovered, including 20th century coins.

3.5.2 Method of analysis

All hand-retrieved finds were examined. They were identified, quantified and dated to period. A *terminus post quem* (tpq) date was produced for each stratified context. This was used to determine the broad date of identified archaeological phases. All information was recorded on a Microsoft Access database.

A glass bead was recovered from one of the environmental samples. This is included in the tables and discussion below. The other finds from environmental samples (a small quantity of very fragmentary pottery, fired clay, and fuel ash slag) were scanned but did not add to the interpretation of the site and so were not quantified.

The pottery was recorded by eye, and only examined under x20 magnification where this might contribute to the dating. Where specific fabrics are discussed this is done with reference to the Gloucester fabric series (Ireland 1983, Appendix B1).

3.5.3 Discard policy

Artefacts from topsoil and subsoil and unstratified contexts are normally noted but not retained, unless they are of intrinsic interest (eg worked flint or flint debitage, featured pottery sherds, and other potential 'registered artefacts'). Discard of finds from post-medieval and earlier deposits will only be instituted with reference to museum collection policy and/or with agreement of the local museum.

3.6 Environmental archaeology methodology, by Elizabeth Pearson

The environmental work conforms to relevant sections of the *Standard and guidance: Archaeological field evaluation* (ClfA 2014) *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage 2011), and *Environmental archaeology and archaeological evaluations* (AEA 1995).

3.6.1 Sampling policy

Samples were taken according to standard Worcestershire Archaeology practice (WA 2012). A total of four samples (each of up to 20 litres) were taken from the site, all from Roman deposits.

3.6.2 Processing and analysis

The samples were processed by flotation using a Siraf tank. The flots were collected on a 300mm 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 hammscale. 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* (Stace 2010).

Animal bone was identified with the aid of modern bone reference collections housed at the Worcestershire Archaeology offices, alongside identification guides (Schmid 1972 and Hillson 1992).

3.6.3 Discard policy

Remaining sample material and scanned residues will be discarded after a period of 3 months following submission of this report unless there is a specific request to retain them.

3.7 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 comprises a single grass field, formerly a school playing area, accessed from Shelley Road and located in the western suburbs of Cheltenham. It is bounded by 20th century residential properties and streets to the north, east and south, with the west side defined by a new residential care home on the site of the former buildings of Monkscroft Primary School (Figures 1-2; Plate 1). The footprint for these former buildings extends into the western part of the site and is now mainly a compacted area of rubble and demolition material.

There is a gradual north-east to south-west slope in the field, from around 56m AOD (Above Ordnance Datum) down to 53.5m AOD. Geologically, the majority of the site is situated on bedrock of the Charmouth Mudstone Formation, with Cheltenham Sand and Gravel superficial deposits along the north-east edge (BGS 2018).

4.2 Archaeological context

The site is around 2.5km west of the medieval core of Cheltenham and historic Ordnance Survey maps suggest that the area was largely agricultural in use prior to the early 20th century, when extensive suburban expansion occurred. This is reflected in the number of HER records for fields with ridge and furrow cultivation having once existed in the surrounds, now largely subsumed by residential, government and commercial development. The site has survived as a small area of green space situated just beyond the western edge of the Poets (St Mark's) conservation area, a planned residential suburb influenced by the Arts and Crafts movement which was built in the years immediately after the First World War. This was designated by Cheltenham Borough Council in 2001.

There are no designated or undesignated heritage assets recorded on the proposed development site, but the surrounding area has a number of sites and buildings related to the Second World War government offices at Benhall Farm 500m to the west and south-west (later superseded by GCHQ; HER reference 48063). These include a shed depot probably used by the US army (HER 48062), a searchlight battery (HER 48033), and numerous anti-aircraft gun battery sites (eg HER 27082, 27084, 27085), as well as the Church of St Aiden (HER 41809), located 250m to the north-west

and built in the 1950's to serve the community working at GCHQ. Evidence of earlier activity is very sparse but occasional finds spots have been recorded in the vicinity including a 4th century Roman coin recorded 900m to the north-east (HER 5434) and a scatter of possible medieval pottery found 600m to the north-west (HER 6647).

No archaeological investigations have taken place on or immediately adjacent to the site, although there has been a limited amount of work in the wider surrounds in the past 20 years, prior to construction of the new GCHQ building (all HER 20350). A desk-based assessment was completed in 1998, followed by a geophysical survey and trial trenching evaluation in 1999. The evaluation was undertaken by Oxford Archaeology and identified a single undated linear feature and a large stone filled pit containing 19th to 20th century pottery, as well as ridge and furrow cultivation which crossed the site.

Effectively, therefore, before the geophysical survey and trial trenching fieldwork reported on here commenced, the archaeological potential of the site remained primarily unknown as there was little previous knowledge regarding archaeological features in the surrounding area.

5 Results

5.1 Geophysical survey

The field proved to be responsive for geophysical survey and produced suitable results to help define the extent and character of archaeological features. As noted above, these are described in the separate report (SUMO Survey Services Ltd 2018; see Appendix 3), but can be summarised as follows:

- A number of strong, positive and broadly parallel linear anomalies in the centre of the site, likely to be former ditches;
- A series of weak linear and discrete anomalies within the area defined by the strong linear anomalies, possibly related to settlement activity;
- Uncertain discrete and weak linear anomalies with an area of increased magnetic response, located in the southern part of the site;
- Strong, widely spaced parallel linear responses, reflecting ridge and furrow cultivation that seemingly truncates the other archaeological responses;
- Areas of magnetic disturbance of modern origin;
- A strong, bipolar linear response indicative of an underground service in the north-west part of the site.

Overall, these results were thought to represent an area of former settlement which had been truncated by medieval or post-medieval agricultural activity.

5.2 Trial trenching

The trenches and features recorded are shown in Figures 2-5. The results of the structural analysis are presented in Appendix 1.

5.2.1 Phase 1: Natural deposits

The natural substrate was encountered in all eight trenches excavated, at between 0.39-0.72m below the current ground surface. This was slightly variable but mainly comprised firm mid yellow brown and blue-grey clay, consistent with the British Geological Survey mapping that shows Charmouth Mudstone Formation across the majority of this area. Some mixed yellow limestone gravel was present in the north-east part of the site (Trench 4), reflecting the Cheltenham Sand and Gravel superficial deposits recorded by the British Geological Survey.

5.2.2 Phase 2: Roman deposits

Numerous features across the trenches are considered to be of Roman date and, when considered as a whole, appear to represent a focus of activity in the central and south-east part of the site (Trenches 3, 5, 6, 7 and 8). This correlates well with the geophysical survey, which indicated a cluster of linear and discrete anomalies in this area. The subsoil and topsoil of these trenches also contained several fragments of Roman pottery.

Trench 3

At the north-east end of Trench 3, and consistent with the location of a linear geophysical anomaly, were three intercutting ditches thought to represent a repeatedly re-cut and re-established boundary or enclosure ditch, [327], [329] and [331] (Figures 3-4). The three ditches measured around 3m in total width, with the latest [331] being 0.88m wide and 0.56m in depth. The fills of the earlier ditches (327 and 329) in the sequence contained pottery dated to the 1st to 2nd century, as well as animal bone and fired clay, whereas the latest ditch was dated to the 2nd to 3rd century.

Further south-west, a series of ditches or gullies ran parallel with the large boundary/enclosure ditch. Two remained unexcavated, [323] and [325], but another was found to have a shallow profile, being 1.40m wide but only 0.20m in depth [306]. This contained Roman pottery and a glass bead, as well as residual flint and Bronze Age pottery. This ditch was notable for being cut into a yellow brown clay layer that included charcoal, partially visible in the trench section, suggesting that this may perhaps be a former agricultural subsoil of prehistoric date (307).

Two unexcavated possible pit features were also identified in this area of Trench 3, [311] and [321], the latter of which was cut into the top of a ditch sequence (Figures 3). An upper ditch, [313], was 1.80m wide and up to 0.38m in depth and again correlated with a geophysical anomaly on a north-west to south-east alignment. This appeared to cut through comparable yellow brown clay subsoil seen further along the trench (307), as well as truncating an earlier ditch [315]. Both ditches contained 1st to 2nd century date Roman pottery and animal bone.

At the south-west end of the trench was an uncertain feature that remained unexcavated, [309]. Only one edge of this was observed, but it appeared to correspond to the location of an irregular geophysical anomaly.

Trench 5 and Trench 6

Trench 5 and Trench 6 were joined together and located in the central part of the site, where there was an extensive array of geophysical anomalies (Figure 3; Plate 2; see also Appendix 3, fig 4: 3).

Trench 5 included two parallel north-east to south-west aligned ditches, [505] and [509], both of which were Roman in date and corresponded with the geophysics. The more easterly of the two was sample excavated and found to have an unusual profile, with a steep side and a moderate side, being 1.03m in width and 0.42m in depth [509] (Plate 3). The fill included residual Bronze Age pottery as well as 1st to 2nd century Roman material. In between the ditches was one edge of an apparent pit feature, [507], extending beyond the trench limits.

In the centre of Trench 5 was a small and shallow oval pit [511], 0.09m in depth, which did not contain any dating evidence but is considered to be associated with the Roman activity in the surrounds. Close to this, and extending into Trench 6, was a large irregular feature that was not excavated but from which 1st to 2nd century Roman pottery and iron nails were recovered [513] (Plate 2). This directly corresponded with an irregular geophysical anomaly.

Trench 6 included the edge of an apparent pit feature, [614]; this was not excavated, but again appeared to represent a geophysical anomaly. At the south-west end of the trench was a moderately large ditch [610], 1.96m wide and 0.55m in depth, which included a main dark grey fill rich in pottery and animal bone (609) (Figure 3; Figure 5; Plate 4). Some of the pottery was dated to the 1st to 2nd century, but there was also some of mid-3rd to 4th century date. This feature may be the same ditch as one identified in Trench 7 [709], although the profile is not directly

comparable. It also corresponds to a clear linear geophysical anomaly on a north-west to south-east alignment that runs across the field.

Ditch [601] was partially truncated on its south-west edge by a shallow pit or linear terminus, [606], which contained prehistoric and Roman pottery. A further possible pit feature in this part of the trench was not excavated [612].

Trench 7

At the south-west end of Trench 7 was a small pit, partially visible against the edge of the trench, but this had only survived up to 0.04m in depth [717]. This was adjacent to a large ditch orientated north-west to south-east and aligned with the linear geophysical anomaly that potentially also continued into Trench 6 (Figure 2). The main ditch cut, [709], was 2.40m wide and up to 1.10m in depth and contained undated fired clay and animal bone (Plate 5). This had been re-cut by a 0.70m wide steep sided feature, either a small ditch or possibly a palisade trench or posthole [706]; this contained a fill including 1st to 2nd century Roman pottery and was sealed by a layer or fill dated to the 2nd or 3rd century (704).

The ditch was cut into a brown clay layer that included charcoal, visible in the trench section, which was similar to the deposit seen in Trench 3 that may be former agricultural subsoil (703). It also cut into a series of natural deposits, as well as an earlier shallow ditch of uncertain date and on a different alignment [715].

Trench 8

Two Roman features were identified in Trench 8, both located towards the central part of the trench. One was a small linear gully, 0.44m wide and 0.11m in depth, which was aligned north to south and contained an abraded sherd of Roman pottery. The other was a curved shallow ditch with a flat base, 0.71m wide, which included Roman pottery and animal bone.

5.2.3 Phase 3: Medieval/post-medieval deposits

In Trenches 1 and 4, close to the north-east edge of the site, were a number of furrows likely related to medieval and later agriculture (Figure 2). These were broadly aligned north-east to south-west, spaced around 5.5m apart, and correlated with geophysical anomalies interpreted as such features. There was little in the way of clear dating evidence, although undiagnostic ceramic building material was recovered and post-medieval or modern china was found in a possible furrow in Trench 1, which may suggest that the furrows survived on site until the development of the school.

The subsoil on much of the middle part of the site was heavily disturbed and in some cases appeared redeposited. It contained residual Roman artefacts, as well as post-medieval pottery which suggested its formation was associated with the agricultural use of the field in the medieval and post-medieval period.

5.2.4 Phase 4: Modern deposits

A series of land drains on various orientations were identified in Trench 1 and Trench 8, probably associated with post-medieval and modern agricultural drainage. Extensive modern truncation was apparent in Trench 2, located within the footprint of the former school buildings, and included a concrete cap for a service pipe. Modern disturbance was also noted in the central part of the site; Trenches 3, 5 and 6 all included a compacted layer of pinkish hardcore, 0.10-0.18m in depth, which sealed some of the archaeological features in these trenches (301; 503; 602; see Figure 5). In the central part of Trench 6 in particular this was noticeable within cut marks left by a toothed machine bucket, suggestive of modern levelling and landscaping of the field.

The topsoil on site contained modern ceramics and building material (most not retained), as well as 20th century coins and metal objects, reflecting the previous land use as a school playing field.

6 Artefacts

6.1 Artefactual analysis, by C Jane Evans

The finds assemblage is summarised in Tables 1 and 2.

The assemblage came from 32 stratified contexts, predominantly associated with ditch fills, and could be dated to the Bronze Age/early Iron Age and late Iron Age/Roman periods (Tables 1 and 2). Using pottery as an index of artefact condition, the majority of sherds displayed high levels of abrasion, but the sherd weight was about average.

period	material class	material subtype	object specific type	count	weight (g)	average weight (g)
prehistoric	stone	flint	flake	1	7	7
Bronze Age/Iron Age	ceramic	earthenware	pot	2	19	10
Bronze Age?	ceramic	earthenware	pot	1	2	2
early Bronze Age	ceramic	earthenware	pot	1	2	2
late Bronze Age	ceramic	earthenware	pot	1	21	21
LIA/ERB	ceramic	earthenware	pot	14	141	10
Roman	ceramic	earthenware	pot	148	1678	11
Roman	glass		bead	1	0.27	0.27
post-med/modern	ceramic	earthenware	brick/tile	3	42	14
post-med/modern	ceramic	earthenware	pot	2	27	14
modern	ceramic	earthenware	pot	2	1	1
undated	bone	animal bone	fragment	116	1256	11
undated	ceramic	fired clay	fragment	35	163	5
undated	metal	iron	nail	4	20	5
undated	organic	fuel ash slag	fragment	1	11	11
undated	organic	shell	snail	2	4	2

Table 1: Quantification of the assemblage by period

Feature type	period	material class	material subtype	object specific type	count	weight(g)
Ditch	Bronze Age?	ceramic	earthenware	pot	1	2
	early Bronze Age	ceramic	earthenware	pot	1	2
	late Bronze Age	ceramic	earthenware	pot	1	21
	LIA/ERB	ceramic	earthenware	pot	14	141
	prehistoric	stone	flint	flake	1	7
	Roman	ceramic	earthenware	pot	126	1248
	Roman	glass		bead	1	0.27
	undated	bone	animal bone	fragment	103	1158
	undated	ceramic	fired clay	fragment	32	150
	undated	metal	iron	nail	1	5
	undated	organic	fuel ash slag	fragment	1	11
	undated	organic	shell	snail	2	4
Furrow	modern	ceramic	earthenware	pot	1	0.5
	undated	bone	animal bone	fragment	2	5
	undated	ceramic	fired clay	fragment	2	11
	undated	metal	iron	nail	1	4
Gully	Roman	ceramic	earthenware	pot	1	22
Modern Layer	modern	ceramic	earthenware	pot	1	0.5
	post-med/modern	ceramic	earthenware	brick/tile	3	42
Pit	Bronze Age/Iron Age	ceramic	earthenware	pot	2	19
	Roman	ceramic	earthenware	pot	11	107
	undated	bone	animal bone	fragment	11	93
	undated	ceramic	fired clay	fragment	1	2
	undated	metal	iron	nail	2	11
Subsoil	post-med/modern	ceramic	earthenware	pot	1	12
	Roman	ceramic	earthenware	pot	6	205
Topsoil	post-med/modern	ceramic	earthenware	pot	1	15
	Roman	ceramic	earthenware	pot	4	96

Table 2: Quantification of the assemblage by feature type and period

6.2 Summary artefactual evidence by period

Overall, the assemblage suggest that the geophysical survey and stratigraphic evidence for previously unidentified activity on the site is mainly of Roman date, and also hints at some level of earlier prehistoric activity in the vicinity (Table 3).

6.2.1 Prehistoric flint and Bronze Age to early/middle Iron Age pottery

Seven sherds most likely date to the Bronze Age to early/middle Iron Age, based on fabric, however, all were residual in contexts containing Roman pottery.

Pit [606] (fill 605) produced a fossil shell-tempered body sherd. Unpublished evidence from Beckford, Worcestershire has indicated that this fabric had gone out of use by the middle Iron Age. The sherd had no other distinguishing features to allow closer dating.

A tiny body sherd from ditch [610] (fill 609), tempered with shell and quartz, is possibly Bronze Age in date. Another tiny sherd came from ditch [509] (fill 508). This was tempered with quartz, and had a firing characteristic of some earlier prehistoric wares, with a black inner margin and surface and a reduced external margin and surface. This had possible combed decoration, suggesting an early Bronze Age date, but the surface was so abraded and the sherd so small this could not be identified with any certainty.

The final sherd came from ditch [306] (fill 305). This was in a distinctive fabric with angular quartz temper, and hard fired which suggested a later Bronze Age date rather than earlier (Robin Jackson pers. comm.). This was associated with a flint flake, which at some point had been burnt and shattered. This could only be attributed a general prehistoric date (Rob Hedge pers. comm.).

6.2.2 Late Iron Age and Roman pottery

The bulk of the pottery assemblage was Roman. A handful of sherds were dated to the late Iron Age-early Roman period. These included sherds in Palaeozoic limestone tempered ware (Fabric TF33), including a heavy rim from a large storage jar, and four small sherds in a black fired, grog tempered ware (Fabric TF2?). These are both Iron Age fabrics that continue in use into the earliest Roman period, so need not necessarily indicate pre-Roman activity. Most sherds were in oxidised and reduced coarsewares, predominantly Severn Valley ware and including organic tempered ware (Fabric TF17) dating to the 1st to early 2nd century. A number of diagnostic forms supported a late 1st to 2nd century date (Webster 1976 fig 1.2, 3; fig 4.20; fig 9.59, 60). One sherd of Savernake ware (Fabric TF6) was also noted, characteristic of early Roman assemblages.

There was, however, some evidence for Roman activity continuing into the 2nd to 3rd and 3rd to 4th centuries. The best dating evidence for this came from sherds of Black-burnished ware 1 (BB1; Fabric TF4), the presence of which in itself is usually interpreted as an indicator of activity postdating c AD 120. Ditch [706] (fill 704) produced a sherd of BB1 from a jar, decorated with the right-angle cross hatch typical of late 2nd to early 3rd century vessels. Associated with this was the rim from a small jar or cooking pot, also dating to the late 2nd century (Gillam 1976 no 17). The rim of a Severn Valley ware tankard found in ditch [331] (fill 330) is broadly contemporary with this (Webster 1976, fig 7.40-42). Ditch [610] (fill 609) produced a sherd of BB1 decorated with obtuse cross hatch burnish, indicating a date from the mid-3rd to 4th centuries. This was associated with a Severn Valley ware jar that is probably contemporary.

6.2.3 Other finds

Other finds were present in small quantities. Of particular interest was a tiny, complete globular bead in opaque white glass decorated with blue lines; diameter 2.7mm, perforation diameter 1mm, height 2mm (Plate 6). This came from ditch [306] (fill 305) and is, therefore, probably Roman.

Post-medieval and modern pottery and brick/tile was recovered from a feature identified as a furrow [104] (fill 103), a modern layer (805), subsoil (302) and topsoil (800). The pottery included post-medieval red ware with a black glaze (Fabric TF61) and modern blue and white china.

Four nails were not closely datable. One came from furrow [104] (fill 103) but the others came from the fill of a pit [513] (fill 512) and ditch [313] (fill 312) associated with Roman pottery, and could be Roman. A number of ditch fills produced small quantities of fired clay or fuel ash slag (Table 2), none of which had diagnostic features.

context	material class	material subtype	object specific type	count	Weight (g)	period	start date	end date	tpq date range
103	bone	animal bone	fragment	2	5	undated			modern
	metal	iron	nail	1	4	undated			
	ceramic	earthenware	pot	1	0.5	modern	1900	2050	
302	ceramic	earthenware	pot	1	12	post-med/modern	1600	1900	1600-1900
305	ceramic	earthenware	pot	1	21	late Bronze Age			Roman
	ceramic	earthenware	pot	3	29	Roman	late 1st	410	
	glass		bead	1	0.27	Roman			
	stone	flint	flake	1	7	prehistoric			
308	bone	animal bone	fragment	2	48	undated			undated
312	bone	animal bone	fragment	1	2	undated			Roman (late 1st-2nd)
	ceramic	earthenware	pot	2	9	LIA/ERB	1st	1st	
	ceramic	earthenware	pot	8	34	Roman	late 1st	2nd	
	metal	iron	nail	1	5	undated			
314	ceramic	earthenware	pot	2	34	Roman	late 1st	2nd	Roman (late 1st-2nd)
326	ceramic	fired clay	fragment	16	85	undated			Roman (late 1st-2nd)
	bone	animal bone	fragment	16	103	undated			
	organic	shell	snail	2	4	undated			
	ceramic	earthenware	pot	4	16	LIA/ERB	1st	1st	
	ceramic	earthenware	pot	18	103	Roman	late 1st	2nd	
328	ceramic	earthenware	pot	8	99	Roman	late 1st	2nd	Roman (late 1st-2nd)
	bone	animal bone	fragment	3	14	undated			
330	ceramic	earthenware	pot	3	17	Roman	2nd	3rd	Roman (2nd-3rd)
	bone	animal bone	fragment	2	40	undated			
405	ceramic	fired clay	fragment	2	11	undated			undated
501	ceramic	earthenware	pot	3	153	Roman	late 1st	2nd	Roman (late 1st-2nd)

504	ceramic	earthenware	pot	2	4	Roman	late 1st	410	Roman
508	ceramic	earthenware	pot	1	2	early Bronze Age			Roman (120+)
	ceramic	earthenware	pot	2	102	LIA/ERB	1st	1st	
	ceramic	earthenware	pot	10	76	Roman	late 1st	2nd	
	ceramic	earthenware	pot	1	2	Roman	120	410	
	ceramic	fired clay	fragment	2	8	undated			
	bone	animal bone	fragment	5	50	undated			
510	bone	animal bone	fragment	3	4	undated			undated
512	ceramic	earthenware	pot	6	58	Roman	late 1st	2nd	Roman (late 1st-2nd)
	bone	animal bone	fragment	2	3	undated			
	metal	iron	nail	2	11	undated			
600	ceramic	earthenware	pot	4	96	Roman	late 1st	410	Roman
601	ceramic	earthenware	pot	1	30	Roman	late 1st	2nd	Roman (late 1st-2nd)
605	ceramic	earthenware	pot	2	19	Bronze Age/Iron Age			Roman
	ceramic	earthenware	pot	3	44	Roman	late 1st	410	
	ceramic	fired clay	fragment	1	2	undated			
	bone	animal bone	fragment	6	86	undated			
607	ceramic	earthenware	pot	5	46	Roman	late 1st	410	Roman
	bone	animal bone	fragment	3	6	undated			
	ceramic	fired clay	fragment	2	4	undated			
609	ceramic	earthenware	pot	1	2	Bronze Age?			Roman (mid-3rd-4th)
	ceramic	earthenware	pot	4	48	Roman	late 1st	early 2nd	
	ceramic	earthenware	pot	15	203	Roman	late 1st	410	
	ceramic	earthenware	pot	2	71	Roman	3rd?	4th	
	ceramic	earthenware	pot	3	37	Roman	mid 3rd	4th	
	bone	animal bone	fragment	8	58	undated			
611	ceramic	earthenware	pot	2	5	Roman	late 1st	early 2nd	Roman (late 1st-2nd)
701	ceramic	earthenware	pot	1	7	Roman	late 1st	410	

704	ceramic	earthenware	pot	16	226	Roman	late 1st	410	Roman (late 2nd-early 3rd)
	ceramic	earthenware	pot	17	98	Roman	120	late 2nd/e 3rd	
	ceramic	earthenware	pot	3	7	LIA/ERB	1st	1st	
	ceramic	fired clay	fragment	3	8	undated			
	bone	animal bone	fragment	31	369	undated			
705	ceramic	earthenware	pot	3	7	LIA/ERB	1st	1st	Roman (late 1st-2nd)
	ceramic	earthenware	pot	2	19	Roman	late 1st	2nd	
707	bone	animal bone	fragment	20	376	undated			undated
	ceramic	fired clay	fragment	2	13	undated			
708	bone	animal bone	fragment	8	25	undated			undated
	ceramic	fired clay	fragment	4	27	undated			
714	bone	animal bone	fragment	1	41	undated			undated
800	ceramic	earthenware	pot	1	15	post-med/modern	1600	1900	1600-1900
801	ceramic	earthenware	pot	1	15	Roman	late 1st	410	Roman
803	ceramic	earthenware	pot	3	44	Roman	120	410	Roman (120+)
	ceramic	earthenware	pot	4	58	Roman	late 1st	410	
	bone	animal bone	fragment	3	26	undated			
	ceramic	fired clay	fragment	3	5	undated			
	organic	fuel ash slag	fragment	1	11	undated			
805	ceramic	earthenware	brick/tile	3	42	post-med/modern			1800-2000
	ceramic	earthenware	pot	1	0.5	modern	1800	2000	
813	ceramic	earthenware	pot	1	22	Roman	late 1st	410	Roman

Table 3: Summary of context dating based on artefacts

6.3 Recommendations

6.3.1 Significance

Few Roman pottery assemblages have been recorded from Cheltenham, so this makes a valuable addition to the dataset. The assemblage is native and rural in character, dominated by local wares and wares with late Iron Age origins. In this respect it is broadly similar to the assemblage from a comparable site at West Drive, Cheltenham (Timby 2002), though the rural character of the Monkscroft assemblage is even more pronounced; the evaluation produced no colour-coated wares, mortaria, samian or amphorae. Detailed analysis will be required should any further fieldwork be undertaken on the site.

6.3.2 Discard and retention

Modern finds from metal detecting have been discarded. Retention and discard of other finds will be reviewed in the light of the nature of the excavated assemblage and the possibility of further fieldwork.

7 Environmental remains

7.1 Environmental analysis, by Elizabeth Pearson

Context	Sample	Feature type	Fill of	Period	Phase	Sample volume (L)	Volume processed (L)	Residue assessed	Flot assessed
305	3	Ditch	306	Roman	Late 1 st to 2 nd C	10	10	Yes	Yes
326	4	Ditch	327	Roman	Late 1 st to 2 nd C	20	10	Yes	Yes
705	1	Ditch	706	Roman	Late 1 st to 2 nd C	20	10	Yes	Yes
708	2	Ditch	709	Roman		10	10	Yes	Yes

Table 4: List of bulk samples

7.1.1 Hand-collected animal bone and mollusc

The results of the environmental analysis are summarised in Table 5.

A total of 1.26 kg (116 fragments) of animal bone was hand-collected during excavation. This assemblage was dominated by cattle bone (some of which was butchered), with occasional sheep/goat bones. The assemblage was small but well-preserved, and should further excavation take place, it is suggested that animal bone is likely to be recovered in significant quantities for analysis.

A small number of common garden snail (*Cepea sp*) shells were also recorded in ditch fill (326).

Context	Material class	Material subtype	Count	Weight(g)	Feature type	Fill of	Period	Phase
103	bone	animal bone	2	5	Furrow	104	Post-med	
308	bone	animal bone	2	48	Ditch	309	undated	
312	bone	animal bone	1	2	Ditch	313	Roman	1 st to 2 nd C
326	bone	animal bone	16	103	Ditch	327	Roman	1 st to 2 nd C
328	bone	animal bone	3	14	Ditch	329	Roman	1 st to 2 nd C
330	bone	animal bone	2	40	Ditch	331	Roman	2 nd to 3 rd C
508	bone	animal bone	5	50	Ditch	509	Roman	1 st to 2 nd C
510	bone	animal bone	3	4	Pit	511	Roman	
512	bone	animal bone	2	3	Pit	513	Roman	1 st to 2 nd C
605	bone	animal bone	6	86	Pit	606	Roman	
607	bone	animal bone	3	6	Ditch	610	Roman	
609	bone	animal bone	8	58	Ditch	610	Roman	Mid 3 rd to 4 th C
704	bone	animal bone	31	369	Ditch	706	Roman	Late 2 nd – early 3 rd C
707	bone	animal bone	20	376	Ditch	709	Roman	
708	bone	animal bone	8	25	Ditch	709	Roman	
714	bone	animal bone	1	41	Ditch	715	undated	
803	bone	animal bone	3	26	Ditch	804	Roman	120 AD+
Totals			116	1256				
326	organic	shell	2	4	Ditch	327	Roman	1 st – 2 nd C

Table 5: Hand-collected animal bone

7.1.2 Plant macrofossil remains

Results are summarised in Tables 6 and 7.

Uncharred remains, consisting of mainly root fragments, are assumed to be modern and intrusive as they are unlikely to have survived in the soils on site for long without charring or waterlogging.

Only occasional charred cereal grains were recorded, which included free-threshing wheat (*Triticum sp* free-threshing) and fescue/rye-grass (*Festuca/Lolium sp*) grains in ditch [327] (fill 326) and [706] (fill 705) respectively.

The assessment showed no evidence of significant disposal of charcoal or charred cereal crop waste, and little interpretation could be made of these remains.

Context	Sample	Large mammal	Mollusc	Charcoal	Charred plant	Uncharred plant	Artefacts
305	3	occ		occ		occ*	occ coal, clinker, pot, heat-affected stone, bead
326	4	occ	occ		occ	occ*	occ clinker, fired clay, pottery, mortar
705	1	occ	occ	occ	occ	occ*	occ fe slag ?,
708	2	occ	occ			occ*	occ clinker. Mod fired clay

Table 6: Summary of remains from bulk samples;

occ = occasional; mod = moderate; abt = abundant, * = probably modern and intrusive

Context	Sample	Preservation type	Species detail	Category remains	Quantity/diversity
305	3	ch	unidentified wood fragments	misc	+/low
305	3	?wa*	unidentified herbaceous root fragments	misc	+/low
326	4	ch	<i>Triticum sp</i> (free-threshing) grain	grain	+/low
326	4	?wa*	unidentified herbaceous root fragments	misc	+/low
705	1	ch	unidentified wood fragments	misc	+/low
705	1	ch	<i>Festuca/Lolium sp</i> grain	grain	+/low
705	1	?wa*	unidentified herbaceous root fragments	misc	+/low
708	2	?wa*	unidentified herbaceous root fragments	misc	+/low

Table 7: Plant remains from bulk samples

Key:

Preservation	Quantity
ch = charred	+ = 1 - 10
?wa = waterlogged or uncharred	* = probably modern and intrusive

7.1.3 Significance

The evaluation showed the potential for animal bone to be recovered in significant quantities for analysis, should further fieldwork be carried out on the site, but otherwise, environmental remains were of low significance.

8 Summary and discussion

The evaluation has established that the site contains a number of archaeological features, predominantly focused in the central and south-east area and characteristic of part of a Romano-British settlement. Residual prehistoric material identified in Roman deposits suggests that either earlier activity or multiple phases of activity throughout the prehistoric and into the Roman period are present on site, but have not been clearly established in this stage of work. Post-medieval and modern artefacts recovered from later features and landscaping disturbance, including plough furrows and land drains, demonstrated that a medieval to post-medieval agricultural landscape existed prior to development of the site as a school and playing field in the later 20th century. Although the trenches excavated represent only a sample of this site, it is considered that a general characterisation of the level and nature of the archaeology present has been defined.

In addition, most of the features had a good correlation with the geophysical anomalies, particularly larger irregular or discrete features and substantial ditches, as well as plough furrows (see Appendix 3). Alongside these were a further range of features (particularly pits, but also more diffuse ditches and gullies) that demonstrated a further archaeological component to the site beyond that identified in the geophysical survey. Given the largely accurate correlation of the clear geophysical anomalies with the identified archaeological features, the lack of either Roman features or finds in the north-west part of the site (Trenches 1 and 2), as well as the lack of features apart from furrows in the north-east and eastern areas (Trench 4), the evidence can probably be taken to reflect an absence of earlier or significant deposits and activity in these parts of the site.

Prehistoric activity

There were no features clearly dating to the prehistoric period, suggesting that no extensive occupation activity was present in this area. However, the Roman features were in some cases cut into a possible former subsoil and there was a limited recovery of residual prehistoric finds across the centre of the site, most likely dating from the Bronze Age to the early/middle Iron Age (Trenches 3, 5 and 6). This included pottery and an undiagnostic flint, and suggests at least the presence of a prehistoric community in the vicinity producing and using this material, perhaps with some low-level agricultural land use.

Roman

Roman features were present in Trenches 3, 5, 6, 7 and 8 and it is probable that other features and deposits seen in these trenches, but either not excavated or that did not contain artefactual material, are of similar origin. There were no obvious structural remains observed, but the combination of clearly defined geophysical anomalies, as well as the observed and excavated linear ditches/gullies and irregular and discrete pits, alongside the pottery, animal bone and other artefacts, would suggest that this site contains at least part (or even a large proportion) of a Romano-British rural agricultural settlement.

The number of features in Trench 3, Trench 5 and Trench 6 in particular may indicate that this part of the site contains a focus of activity associated with occupation, something reflected in the considerable amount of artefacts recovered from features in these trenches. This included items such as nails, slag, and a small decorative glass bead and it is unlikely that this sort of material is being transported long distances from elsewhere before being disposed of or dropped. There were also some instances of truncation and sequences of intercutting features in these trenches that demonstrate the presence of stratigraphic relationships consistent with higher intensity, repeated activity.

It appears that this area was largely defined by the long and broadly parallel north-west to south-east aligned ditches visible on the geophysical survey and excavated in Trenches 3, 6 and 7. These were fairly substantial and could represent settlement boundaries or landscape divisions. Although the majority of dating evidence for this phase appeared to be earlier Roman, generally of late 1st to 2nd century date, these ditches at the edges of the central area all contained either a

sequence of re-cuts, layers or upper fills with later Roman pottery dating to the 2nd-3rd and 3rd-4th centuries. This may demonstrate that there was longevity of Roman land use on site, or perhaps represent a series of separate phases.

A small Roman gully and curving shallow ditch identified in Trench 8 were around 40m or 50m south of the majority of Roman features, and were covered by deeper deposits of topsoil and subsoil than elsewhere which may have affected their visibility on the geophysical survey. They suggest that additional features not highlighted by the geophysics will be present in the vicinity of this trench, potentially being external to the main settlement focus.

Later activity

Plough furrows identified in Trench 4 were regularly spaced and aligned north-east to south-west, corresponding with the geophysical survey. An additional furrow was located in Trench 1. These are likely to have been part of an open field system surrounding Cheltenham in the medieval and post-medieval period, and it is apparent that after the end of Roman activity the site reverted to one of agricultural land use. Based on a small number of modern finds within the furrows and the modern disturbance noted in the central part of the site, it is possible that evidence of ridge and furrow cultivation remained visible until the 20th century.

Apart from the insertion of a series of land drains it appears that there was no other activity on site until the construction of the school, which included services, foundation trenches and some levelling and landscaping of the playing field.

9 Significance

9.1 Nature of the archaeological interest and significance of the site

The archaeological remains identified demonstrate that the site may contain some evidence of small-scale prehistoric activity and land use (identified through residual artefacts) but mainly that it includes a focus of Romano-British rural settlement, alongside medieval and post-medieval agricultural remains. The majority of the Roman features corresponded to geophysical anomalies and a number were of considerable size, producing a good assemblage of artefactual evidence. This predominantly comprised pottery dating to the 1st to early 2nd century, but later material was also recovered.

Overall, the features were of variable significance; the later agricultural remains were of limited interest, but the prehistoric to Roman activity is important on a local and regional level with the potential to improve understanding of the extent, nature and chronology of rural occupation at Cheltenham and in the surrounding area. To date, there is limited knowledge regarding activity in Cheltenham in the Roman period. As noted above (Section 4.2), there have been very few finds recovered within the vicinity of the site and there is a general scarcity of Roman material from the town, so the probable site type identified here, although relatively common on a regional and national scale, represents a rare occurrence for the locality. The nearest agricultural and/or settlement sites of Roman date have been identified at Arle Court, located 1.2km to the south-west (Cutler *et al.* 2005), and at West Drive, 3km to the north-east (Catchpole 2002). Both comprised piecemeal but detailed excavations on the edge of Iron Age to Roman enclosures, thought to be farmsteads or perhaps located in close proximity to rural settlement but lacking any structures suggestive of direct occupation. There exists the potential for the remains here at Monkscroft Primary School to complement those excavations and offer a comparative dataset. At West Drive in particular, the pottery assemblage was similar to that identified here and could be indicative of similar site use (see Timby 2002).

It is possible, therefore, that this phase of activity on the site could contribute to the research priorities for the region, as identified in the *Research Agenda for Archaeology in South West England* (Webster 2008b, 269-94), such as:

- **Research Aim 29:** Improving understanding of non-villa Roman rural settlement;

- **Research Aim 41:** Assess the impact of the Roman empire on farming.

9.2 Physical extent and preservation of the archaeological site

Archaeological features were recorded across the site area, and found in all trenches apart from Trench 2. The main focus of Roman archaeology was, however, found in the central and south-east part of the site (Trenches 3, 5, 6, 7 and 8). Some of the Roman features were of substantial size and continued beyond the trench limits. It is clear from the geophysical survey that there are further features likely to be of similar date around these trenches.

The site exhibits good preservation of artefacts and animal bone, with the potential for the recovery of a larger assemblages of both, but charred plant remains were not well preserved in the environmental samples assessed at this stage.

It was apparent that the middle part of the site had been partly disturbed by truncation from modern landscaping, but the survival of most features and deposits was good and the depth of topsoil and subsoil across the site area has offered some protection. Overall, however, the archaeology is still likely to be vulnerable to any intrusive groundwork should development occur on site.

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 comprising both geophysical survey and trial trenching was undertaken in February 2018 at a site formerly occupied by Monkscroft Primary School, Shelley Road, Cheltenham (NGR SO 392202 222448).

The geophysical survey was carried out by a specialist sub-contractor and comprised a detailed magnetic survey. Subsequently, eight trial trenches were excavated. These were arranged in a non-gridded array in order to interrogate and characterise geophysical anomalies, to assess survival and level of truncation in areas of former school buildings, and to test the quality of capture from the geophysical survey in apparently blank or less significant areas.

Archaeological remains of varying significance were identified across the site. These appear to demonstrate that the site contains some small-scale prehistoric land use (identified through residual artefacts) but mainly has a focus of Romano-British rural settlement, alongside medieval and post-medieval agricultural remains. The majority of the Roman features corresponded to geophysical anomalies and a number were of considerable size, producing a good assemblage of artefacts and animal bone. This predominantly comprised pottery dating to the 1st to early 2nd century, but later material was also recovered. The features also demonstrated an archaeological component to the site beyond that shown on the geophysical survey.

It was apparent that the middle part of the site had been partly disturbed by truncation from modern landscaping, but the survival of most features and deposits was good and the depth of topsoil and subsoil across the site area has offered some protection. Overall, however, the archaeology is still likely to be vulnerable to any intrusive groundwork should development occur on site.

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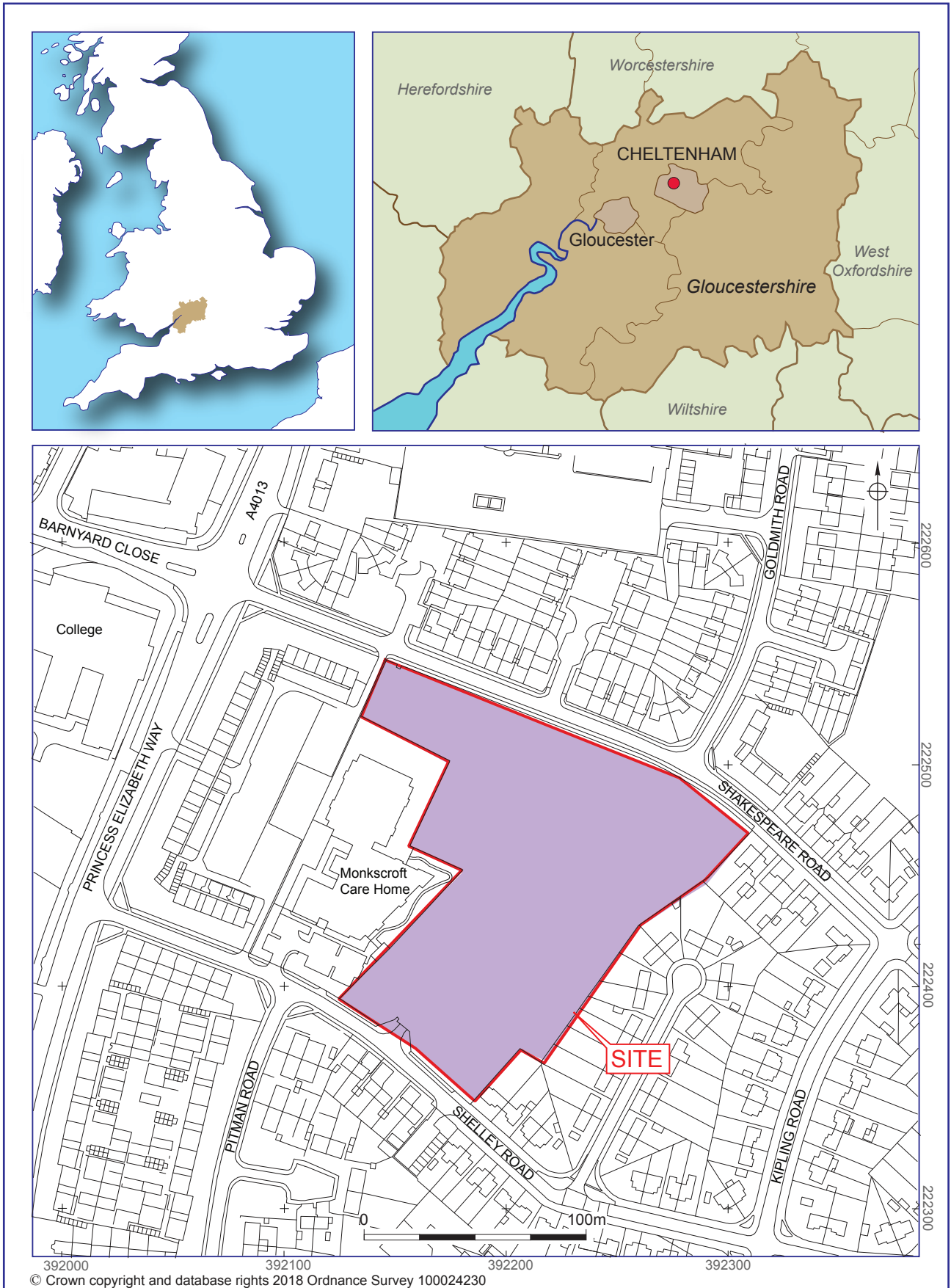
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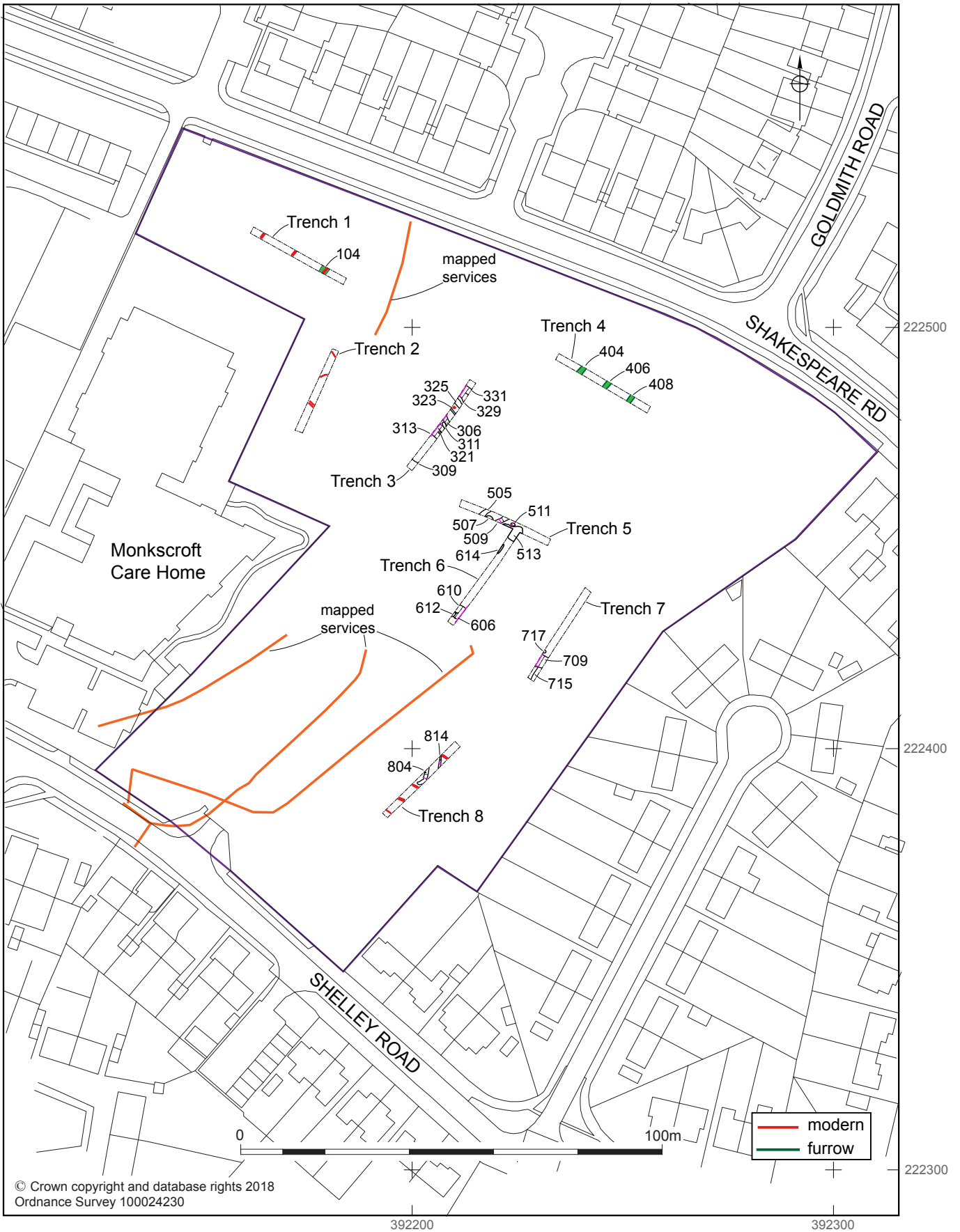
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Figures



Location of the site

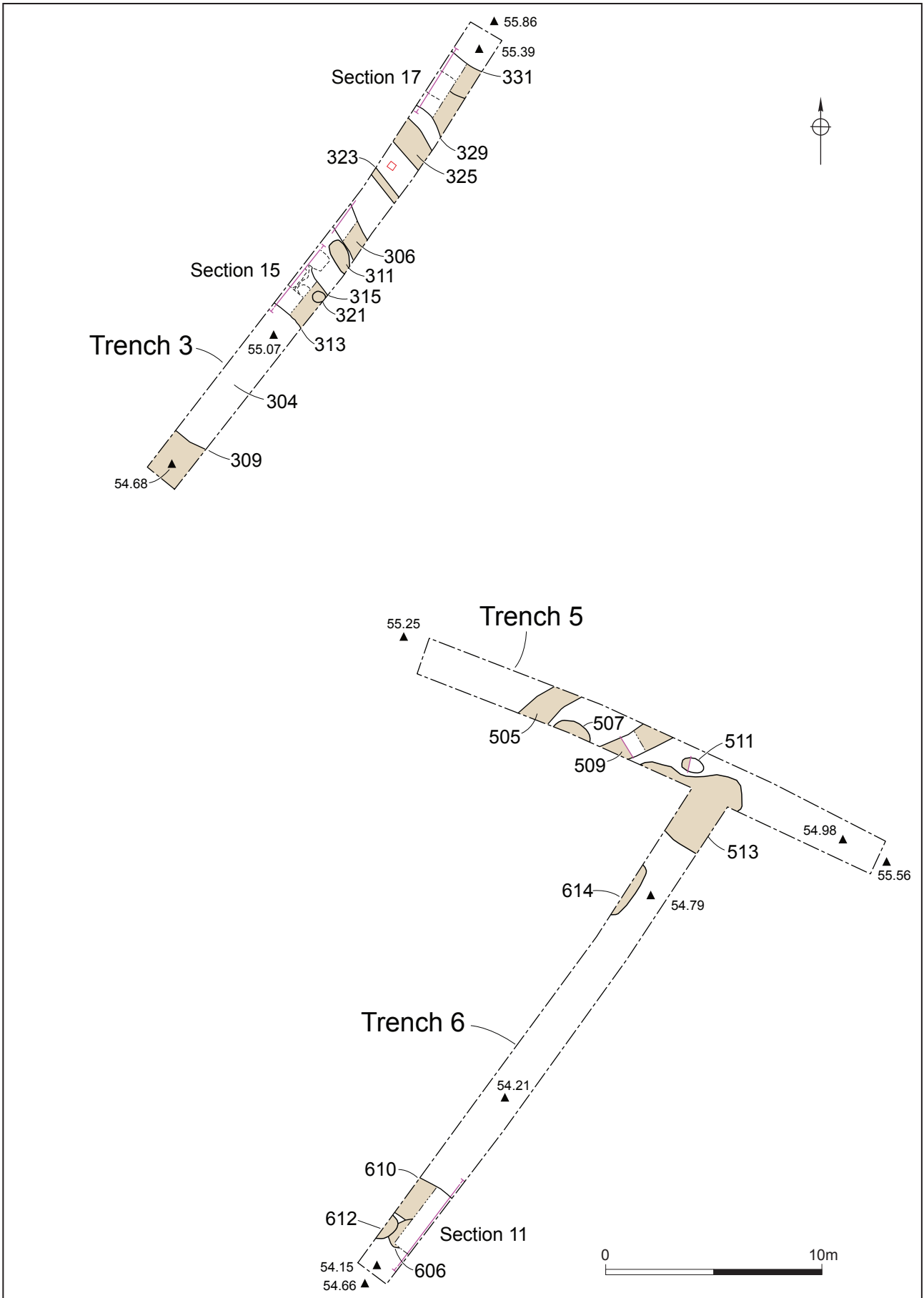
Figure 1



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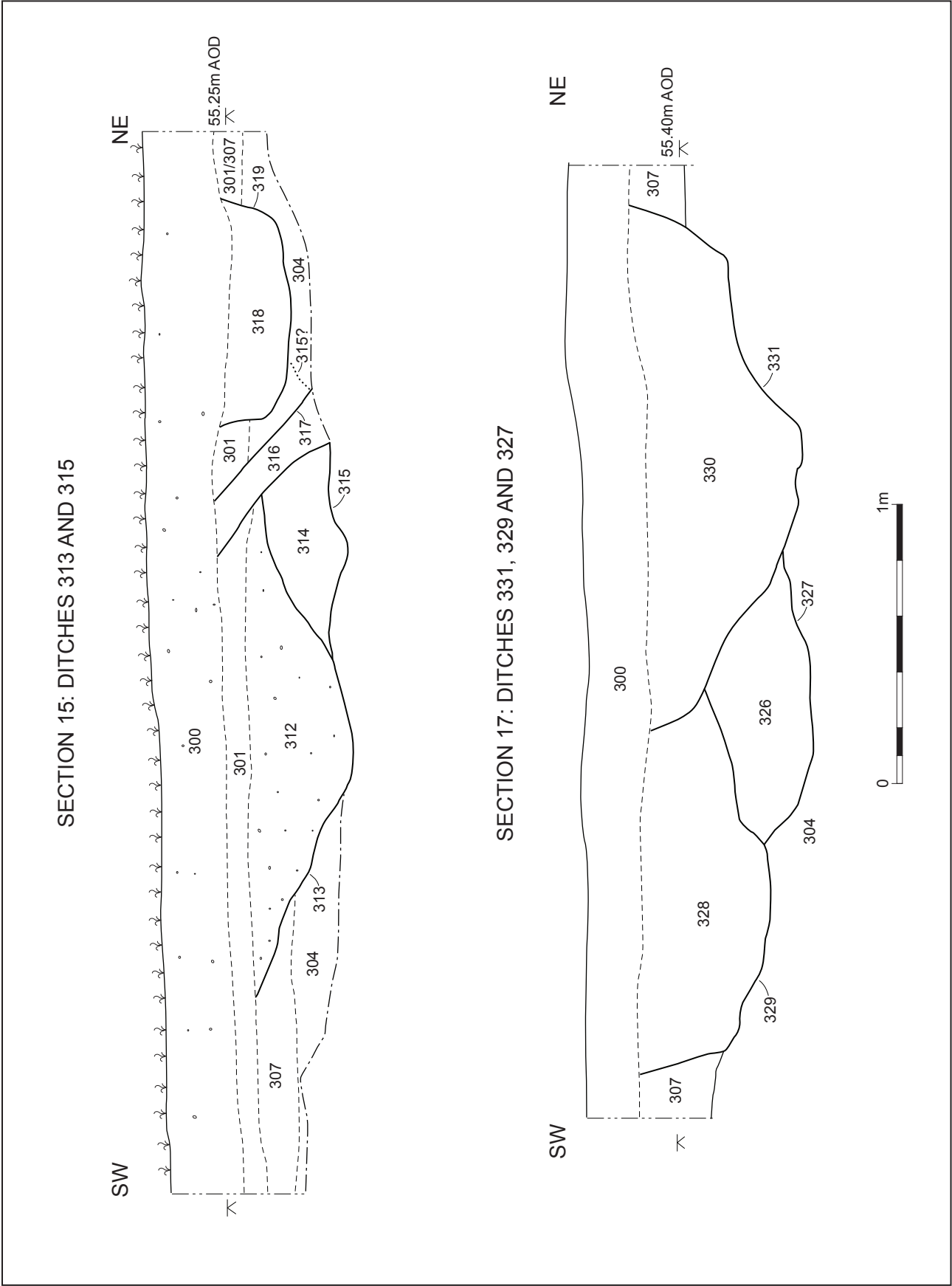
Trench location plan

Figure 2



Detail of Trenches 3, 5 and 6

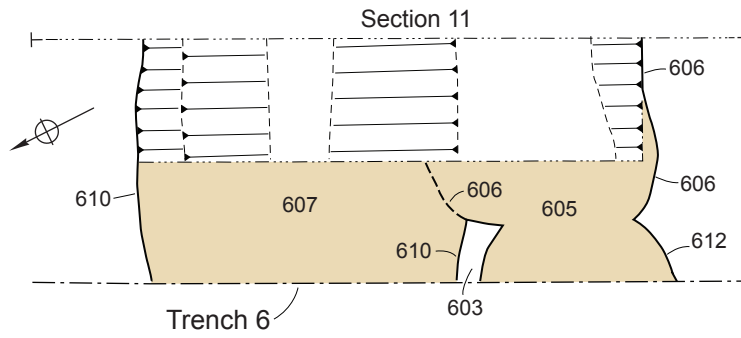
Figure 3



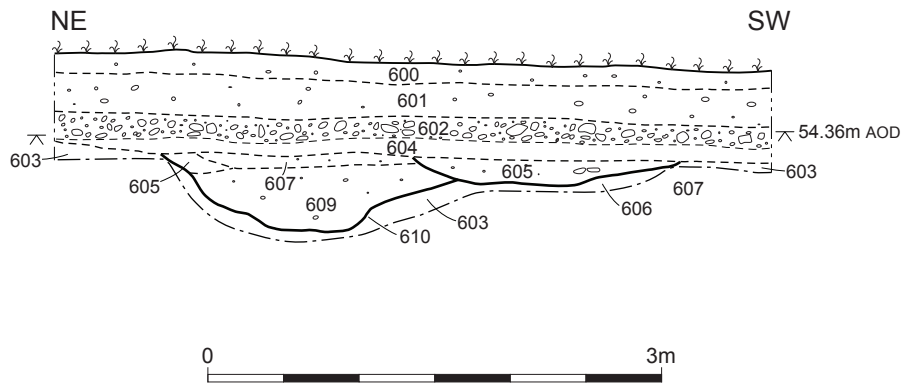
Trench 3: sections 15 and 17

Figure 4

PLAN OF DITCH 610 AND PIT 606



SECTION 11: DITCH 610 AND PIT 606



Trench 6: plan and section of ditch 610 and pit 606

Figure 5

Plates



Plate 1: The site during opening of trenches



Plate 2: General view of Trench 6 at junction with Trench 5 - feature 513 is in the foreground (1m scales)



Plate 3: Ditch 509 in Trench 5, facing south-west (0.5m scale)



Plate 4: Ditch 610 in Trench 6, facing south-east (1m scales)



Plate 5: Ditch 709 in Trench 7, facing north-west (1m scales)

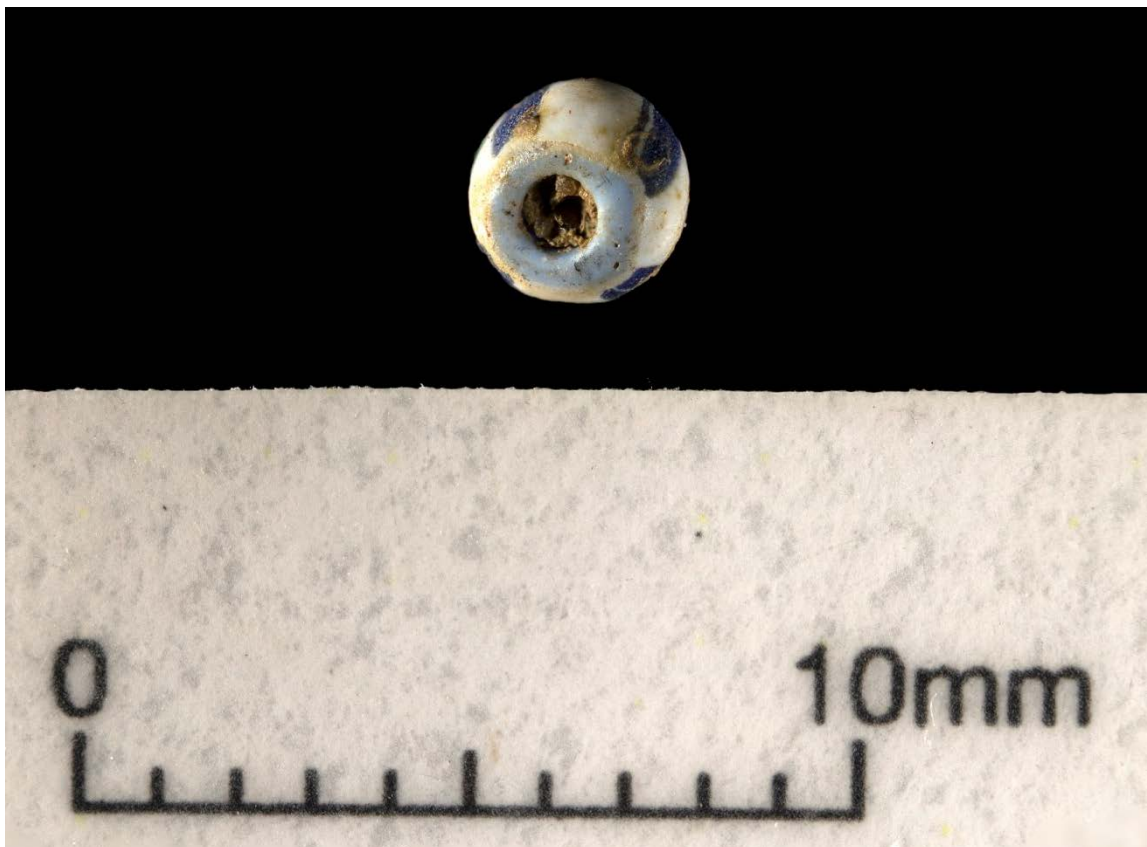


Plate 6: Tiny glass bead from ditch 306, Trench 3,

Appendix 1 Trench descriptions

Trench 1

Length: 25m Width: 1.60m Orientation: north-west to south-east

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
100	Topsoil	Layer	Playing field turf	0.32m	firm mid grey brown silty clay
101	Subsoil	Layer		0.20m	firm light grey brown silty clay
102	Natural	Layer		0.12m+	compact yellowish brown clay with blue-grey mottling
103	Furrow	Fill	Fill in furrow [104]		light brown clay
104	Furrow	Cut	Base of furrow		
105	Drain	Fill	Land drain fill		blueish yellow clay
106	Drain	Cut	Cut of land drain		
107	Drain	Fill	Land drain fill		blueish yellow clay
108	Drain	Cut	Cut of land drain		
109	Drain	Fill	Land drain fill		blueish yellow clay
110	Drain	Cut	Cut of land drain		

Trench 2

Length: 21.5m Width: 1.60m Orientation: north-east to south-west

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
200	Topsoil	Layer	scrub topsoil	0.17m	greyish brown silty clay
201	Modern Layer	Layer	modern, mixed brick, cbm, plastic, metal tarpaulin, and ash/clinker in grey clay	0.70m	grey clay made ground
202	Natural	Layer	Natural clay scalped away by school buildings	0.10m+	firm blueish grey clay
203	Foundation trench	Structure	rubble and gravel hardcore in [204]		
204	Foundation trench	Structure	Grubbed out foundations		
205	Unknown	Structure	Concrete capping for pipe		

Trench 3

Length: 25m

Width: 1.60m

Orientation: north-east to south-west

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
300	Topsoil	Layer	Playing field turf	0.21m	friable greyish brown clay silt
301	Subsoil	Layer	pinkish gravel perhaps used to level field	0.10m	pink gravel hardcore
302	Subsoil	Layer		0.16m	moderately compact greenish brown silty clay, rare charcoal flecks
303	VOID		VOID number		number not used
304	Natural	Layer		0.08m+	mid grey and yellow clay
305	Ditch	Fill	Fill of [306]	0.20m	firm light grey clay
306	Ditch	Cut	Shallow linear ditch contains Roman pot and bone so likely associated with nearby settlement.	0.20m	
307	Layer	Layer	Layer of light brown clay cut by Roman ditch, quite dirty and contains charcoal but is ill-defined - could be a former subsoil that has survived later truncation?	0.30m	firm light yellowish brown clay
308	Ditch	Fill	Fill of [309]		mid grey brown clay
309	Ditch	Cut	Linear (or pit?) cut at SW end of trench		
310	Pit	Fill	Fill of [311]		light grey brown clay
311	Pit	Cut	Irregular feature, possible pit		
312	Ditch	Fill	Dark yellowish clay fill of ditch [313]. Roman date with some possible residual pre-historic activity, fairly sterile and homogenous.	0.38m	compact yellowish grey silty clay
313	Ditch	Cut	Cut of Roman ditch aligned NW-SE, may be related to parallel ditches 306, 309, and 325. Possibly a recut of ditch [315]	0.38m	
314	Ditch	Fill	Yellow clay fill of Roman ditch [315] heavily truncated by ditch [313] and modern cuts [317] and [319].	0.31m	compact greyish yellow silty clay
315	Ditch	Cut	Cut of ditch which is truncated by ditch [313] and modern features [314] [317]. [313] is possibly a recut of this ditch.	0.31m	
316	Unknown	Fill	Redeposited natural in angled cut		compact greyish blue clay
317	Unknown	Cut	Modern intrusion, cut on angle and visible in section,		
318	Pit	Fill	Fill of cut [319]		firm brownish grey silty clay

319	Pit	Cut	Modern pit or ditch visible cutting subsoil , undated but late in sequence		
320	Pit	Fill	Fill of [321]		firm grey clay
321	Pit	Cut	Pit cut, unexcavated. Cut into top of (312)		
322	Gully	Fill	Fill of [323]		firm greyish brown silty clay
323	Gully	Cut	Small gully, unexcavated		
324	Linear	Fill	Fill of [325]		firm greyish brown silty clay
325	Linear	Cut	Linear ditch, unexcavated		
326	Ditch	Fill	Fill of likely Roman ditch [327] Packed with finds suggesting domestic activity.	0.28m	moderately compact greyish green silty clay
327	Ditch	Cut	Cut of ditch with domestic waste, enclosure ditch? Not very deep, cut by two later ditches.	0.28m	
328	Ditch	Fill	Fill of ditch [329] fill contained pot and animal bone. Likely near settlement.	0.46m	moderately compact greenish brown silty clay
329	Ditch	Cut	Cut of a ditch containing pot and animal bone. Cuts (326) and is cut by [331].	0.46m	
330	Ditch	Fill	Fill of ditch [331]. Contained Roman pot,	0.56m	moderately compact greenish brown silty clay
331	Ditch	Cut	Cut of Roman ditch cutting both [327] and [329]. Follows the line of a boundary of some kind.	0.56m	

Trench 4

Length: 25.4m

Width: 1.60m

Orientation: north-west to south-east

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
400	Topsoil	Layer	Playing field turf	0.19m	friable greyish brown silty clay
401	Subsoil	Layer		0.20m	firm yellowish brown clay
402	Natural	Layer	brown and grey blue clay		mixed limestone gravel with mid
403	Furrow	Fill	Fill of furrow		brown silty clay
404	Furrow	Cut	Cut of furrow, matches geophysics, not excavated		
405	Furrow	Fill	Fill of furrow, cbm and charcoal		brown silty clay
406	Furrow	Cut	Parallel to [404], not excavated		
407	Furrow	Fill	Fill of [408]		brown silty clay
408	Furrow	Cut	Matches others and geophysics. Not excavated		

Trench 5

Length: 25m

Width: 1.60m

Orientation: north-west to south-east

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
500	Topsoil	Layer	Same as 600	0.23m	
501	Subsoil	Layer		0.28m	compact mid brownish yellow silty clay
502	Natural	Layer	Natural Charmouth Mudstone	0.11m+	compact light brownish yellow silty clay
503	Modern Layer	Layer	Purple/pink hardcore - see (602), only present in southern baulk below (500) and above (501)	0.10m	
504	Ditch	Fill	Fill of [505].		firm greyish brown clay
505	Ditch	Cut	Unexcavated, cut of linear ditch		
506	Pit	Fill	Fill of [507].		firm greyish brown clay
507	Pit	Cut	Cut of pit, unexcavated.		
508	Ditch	Fill	Contains domestic waste including Roman pottery	0.42m	firm grey silty clay
509	Ditch	Cut	Linear ditch with unusual profile, v steep. Possibly a boundary ditch. Part of complex features in this area.	0.42m	
510	Pit	Fill	Fill of pit [511]	0.09m	firm grey silty clay
511	Pit	Cut	Shallow oval pit, unclear purpose or date but likely to be related to settlement activity in this area.	0.09m	
512	Pit	Fill	Fill of [513]		firm dark grey clay
513	Pit	Cut	Irregular large pit or series of pits		

Trench 6

Length: 25m

Width: 1.60m

Orientation: north-east to south-west

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
600	Topsoil	Layer	Playing field turf	0.20m	moderately compact brown silty clay
601	Subsoil	Layer	Redeposited subsoil	0.40m	compact brownish yellow silty clay
602	Modern Layer	Layer	Hardcore, stone and gravel, compacted because it has been rolled.	0.18m	
603	Natural	Layer	Charmouth Mudstone		
604	Subsoil	Layer	in-situ sub/post-Roman cultivation soil	0.14m	
605	Pit	Fill	Fill of possible pit [606]. Some Roman pot and animal bone, likely an abandonment layer or midden material.	0.20m	compact yellowish grey silty clay
606	Pit	Cut	Cut of ovoid feature, likely a pit but could possibly be a ditch terminus. Appears to truncate ditch [610] although not obvious.	0.20m	
607	Ditch	Fill	Thin upper fill of ditch [610] similar to (604) but slightly lighter. Contains Roman pot and bone likely a final dump to fill ditch hollow.	0.11m	compact blueish grey silty clay
608	Ditch	Fill	Slump of redeposited yellow clay natural down north-east edge of ditch [610].	0.14m	compact brownish yellow silty clay
609	Ditch	Fill	Primary fill of ditch [610]. Dark and full of pottery, homogenous, all indicative of a dump of waste/midden material in order to backfill the ditch.	0.44m	compact yellowish grey silty clay
610	Ditch	Cut	Cut of fairly large ditch, likely more than a field boundary ditch as fills are dark and full of pot. Indicative of occupational activity in immediate vicinity. Possibly same as ditch in Trench 7 but different profiles.	0.55m	
611	Pit	Fill	Fill of pit [612] unexcavated		
612	Pit	Cut	Cut of pit		
613	Pit	Fill	Fill of pit [614] not excavated		
614	Pit	Cut	Cut of pit at limit of excavation, not excavated		

Trench 7

Length: 25m

Width: 1.60m

Orientation: north-east to south-west

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
700	Topsoil	Layer	Playing field turf	0.21m	friable greyish brown clay silt
701	Subsoil	Layer		0.30m	moderately compact greenish brown silty clay
702	Natural	Layer			moderately compact yellowish grey clay
703	Subsoil	Layer	A relic subsoil or could be upper fill of [713].	0.26m	moderately compact brownish green clay
704	Ditch	Fill	Fill of re-cut [706].	0.22m	moderately compact brownish grey silty clay
705	Ditch	Fill	Fill of cut [706]. Vertical nature of fill suggests post or palisade? Likely deliberate removal of post.	0.46m	moderately compact mid brownish grey silty clay
706	Ditch	Cut	Cut of a possible ditch, or a post or palisade replacing earlier ditch [709]?	0.68m	
707	Ditch	Fill	Fill of ditch [709] - contained pot, animal bone and lots of fired clay flecks. Mixed siltation with occasional waste.	0.48m	moderately compact greenish brown silty clay
708	Ditch	Fill	Mottled yellowish/greenish brown with patches of orange fired clay. Fill of ditch [709].	0.58m	moderately compact yellowish brown silty clay
709	Ditch	Cut	Cut of ditch, likely earliest phase. Looks to be defensive and likely Roman.	1.1m	
710	Posthole	Fill	Possible natural or post packing		
711	Pit	Fill	Possible natural or post packing?		
712	Ditch	Fill	Possible natural or fill of earliest ditch		
713	Ditch	Cut	Possible over excavation or cut of earliest ditch		
714	Ditch	Fill	Fill of gully or ditch [715]		
715	Ditch	Cut	Cut of gully or ditch		
716	Pit	Fill	Fill of possible pit [717]	0.04m	moderately compact yellow brown clay
717	Pit	Cut	Cut of possible pit	0.04m	

Trench 8

Length: 25m

Width: 1.60m

Orientation: north-east to south-west

Context summary:

Context	Feature type	Context	Description	Height/ depth	Deposit description
800	Topsoil	Layer	Playing field turf	0.22m	friable greyish brown loam
801	Subsoil	Layer		0.50m	moderately compact greyish brown silty clay
802	Natural	Layer	mottled yellow brown with patches of blueish grey clay	0.12m+	compact yellow brown clay
803	Ditch	Fill	Fill of ditch [804] containing pottery	0.15m	moderately compact greenish brown silty clay
804	Ditch	Cut	Cut of a possible Roman ditch, could be a ring gully, ditch very shallow and flat bottomed.	0.15m	
805	Modern Layer	Fill	Fill of modern feature [806]		
806	Modern Layer	Cut	Cut of modern feature		
807	Drain	Fill	Fill of land drain [808]		
808	Drain	Cut	Cut of land drain		
809	Drain	Fill	Fill of land drain [810]		
810	Drain	Cut	Cut of land drain		
811	Drain	Fill	Fill of land drain [812]		
812	Drain	Cut	Cut of land drain		
813	Gully	Fill	Fill of possible gully, one piece of pot looks to be Roman.	0.11m	moderately compact greenish brown silty clay
814	Gully	Cut	Cut of a possible gully, nature of fill suggests domestic activity nearby.	0.11m	

Appendix 2 Technical information

The archive

The archive consists of:

31	Context records AS1
2	Field progress reports AS2
2	Photographic records AS3
97	Digital photographs
1	Drawing number catalogues AS4
18	Scale drawings
1	Sample number catalogues AS18
8	Trench record sheets AS41
1	Box of finds
1	Bag of flots and sorted remains from residues
1	Bag of hand-collected animal bone
1	CD-Rom/DVDs
1	Copy of this report (bound hard copy)

The project archive is intended to be placed at:

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

A copy of the report will be deposited with the appropriate Historic Environment Record (HER).

Appendix 3 Geophysical survey report

GEOPHYSICAL SURVEY REPORT

sumo

Survey

**GEOPHYSICS FOR
ARCHAEOLOGY &
ENGINEERING**

**Former Monkscroft Primary School,
Cheltenham, Gloucestershire**

Client
Worcestershire County Council

Survey Report
12226

Date
January 2018

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GEOPHYSICAL SURVEY REPORT

Project name:
**Former Monkscroft Primary School,
Cheltenham, Gloucestershire**

SUMO Job reference:
12226

Client:
Worcestershire County Council

Survey date:
11 January 2018

Report date:
24 January 2018

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2	INTRODUCTION	1
3	METHODS, PROCESSING & PRESENTATION	2
4	RESULTS	3
5	DATA APPRAISAL & CONFIDENCE ASSESSMENT	4
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Appendix A Technical Information: Magnetometer Survey Method

Appendix B Technical Information: Magnetic Theory

LIST OF FIGURES

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Figure 02	1:1000	Location of Survey Area
Figure 03	1:1000	Magnetometer Survey - Greyscale Plot
Figure 04	1:1000	Magnetometer Survey - Interpretation

DIGITAL CONTENT (Archive Data CD/DVD)

- Minimally Processed Greyscale Images and XY Trace Plots in DWG format
- Digital Copies of Report Text and Figures (both PDF and native formats)

1 SUMMARY OF RESULTS

A detailed magnetometer survey was conducted over approximately 1.5 ha on a former playing field, at Monkscroft, Cheltenham. Possible enclosures, ditches and discrete features are visible in the data, along with potential evidence of small-scale industrial activity. Ridge and furrow dominates the data, and appears to have truncated some of the archaeological remains.

2 INTRODUCTION

2.1 Background synopsis

SUMO Services Ltd were commissioned to undertake a geophysical survey of an area outlined for development. This survey forms part of an archaeological investigation being undertaken by **Worcestershire County Council**.

2.2 Site details

NGR / Postcode	SO 921 224 / GL51 7DW
Location	The site is located towards the west of Cheltenham, Gloucestershire. Shelley Road bounds the site to the south, with Shakespeare Road to the north, residential houses to the east and Monkscroft Care Centre to the west.
HER/SMR	Gloucestershire
District	Cheltenham
District Ward	St. Mark's
Topography	Flat
Current Land Use	Disused playing field
Weather	Fair
Geology	Solid: Charmouth Mudstone Formation - mudstone. Superficial: No superficial deposits recorded across the south, with Cheltenham Sand and Gravel - sand and gravel, recorded across the north (BGS 2018).
Soils	Unsurveyed - mainly urban and industrial areas (SSEW 1983).
Archaeology	No details available.
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	1.5 ha

2.3 Aims and Objectives

To locate and characterise any anomalies of possible archaeological interest within the study area.

3 METHODS, PROCESSING & PRESENTATION

3.1 Standards & Guidance

This report and all fieldwork have been conducted in accordance with the latest guidance documents issued by Historic England (EH 2008) (then English Heritage), the Chartered Institute for Archaeologists (CIfA 2014) and the European Archaeological Council (EAC 2016).

3.2 Survey methods

Detailed magnetic survey was chosen as an efficient and effective method of locating archaeological anomalies.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1.0m	0.25m

More information regarding this technique is included in Appendix A.

3.3 Data Processing

The following basic processing steps have been carried out on the data used in this report:
De-stripe; de-stagger; interpolate

3.4 Presentation of results and interpretation

The presentation of the results for each site involves a grey-scale plot of processed data. Magnetic anomalies are identified, interpreted and plotted onto the 'Interpretation' drawings. The minimally processed data are provided as a greyscale image in the Archive Data Folder with an XY trace plot in CAD format. A free viewer is available: <https://viewer.autodesk.com>

When interpreting the results, several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as: *Abbey Wall* or *Roman Road*. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: *Probable*, or *Possible Archaeology*. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification *Possible*.

4 RESULTS

Specific anomalies have been given numerical labels [1] [2] which appear in the text below, as well as on the Interpretation Figure.

4.1 **Probable / Possible Archaeology**

4.1.1 A small number of strong, positive linear anomalies [1-2] have been detected in the centre of the area, and are likely related to former ditches. The responses may form part of a larger enclosure or field system, though further interpretation is difficult due to truncation from ridge and furrow.

4.1.2 Several weak linear and discrete anomalies, along with a small area of enhanced response, [3] are visible within the two ditches [1-2]. The ridge and furrow has cut into magnetically enhanced material, however, it is possible that responses are a result of settlement activity, though their interpretation as such is tentative. The combination of the truncation and alignment of the agriculture makes further archaeological interpretation difficult.

4.2 **Uncertain**

4.2.1 A series of discrete responses, weak linear trends and an area of increased magnetic response at the south of the area are of uncertain origin. Given their proximity to probable archaeological features, an archaeological provenance cannot be entirely ruled out. It is possible that they relate to a former occupation site, though they could equally be natural, agricultural or modern.

4.3 **Agricultural – Ridge and Furrow**

4.3.1 Strong, widely spaced, slightly curved parallel linear responses are present across the site, and are a result of medieval ridge and furrow cultivation. The ridge and furrow appears to follow the same orientation as some of the archaeological features, and seemingly truncates some of the archaeology.

4.4 **Ferrous / Magnetic Disturbance**

4.4.1 Areas of strong magnetic disturbance in the south and north of the area are likely to be of modern origin, and probably relate to the site's former use as a playing field.

4.4.2 A strong bipolar linear response in the northwest of the area is indicative of an underground service, such as a pipe or cable.

4.4.3 Ferrous responses close to boundaries are due to adjacent fences and gates. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and their form is best illustrated in the XY trace plots. These responses are characteristic of small pieces of ferrous debris (or brick / tile) in the topsoil and are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretation diagram.

5 DATA APPRAISAL & CONFIDENCE ASSESSMENT

- 5.1 Historic England guidelines (EH 2008) Table 4 states that the average magnetic response on mudstone is poor, however data across Charmouth Mudstone generally provides good results. Given that archaeological anomalies have been detected, along with evidence of ridge and furrow, it can be determined that the survey has been effective.

6 CONCLUSION

- 6.1 The survey at Monkscroft, Cheltenham has revealed both probable and possible archaeological responses. An area of former settlement activity, comprising possible enclosures, ditches and discrete features are visible in the data. Ridge and furrow dominates the data, and appears to have truncated the archaeological remains in places, making further interpretation difficult. The remaining responses are modern, and include an underground service and disturbance from nearby ferrous metal objects, likely to be related to the site's former use as a playing field.

7 REFERENCES

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Appendix A - Technical Information: Magnetometer Survey Method

Grid Positioning

For hand held gradiometers the location of the survey grids has been plotted together with the referencing information. Grids were set out using a Trimble R8 Real Time Kinematic (RTK) VRS Now GNSS GPS system.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. This results in an accuracy of around 0.01m.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1m	0.25m

Instrumentation: **Bartington Grad 601-2**

Bartington instruments operate in a gradiometer configuration which comprises fluxgate sensors mounted vertically, set 1.0m apart. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried, or cart mounted, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method, though strongly magnetic objects may be visible at greater depths. The Bartington instrument can collect two lines of data per traverse with gradiometer units mounted laterally with a separation of 1.0m. The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

Data Processing

Zero Mean Traverse	This process sets the background mean of each traverse within each grid to zero. The operation removes striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

Display

Greyscale/ Colourscale Plot	This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly, all values below the given range are represented by the minimum intensity shade. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set.
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Interpretation Categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall, etc.*) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

<i>Archaeology / Probable Archaeology</i>	This term is used when the form, nature and pattern of the responses are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
<i>Possible Archaeology</i>	These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
<i>Industrial / Burnt-Fired</i>	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
<i>Former Field Boundary (probable & possible)</i>	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
<i>Ridge & Furrow</i>	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity.
<i>Agriculture (ploughing)</i>	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes.
<i>Land Drain</i>	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
<i>Natural</i>	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
<i>Magnetic Disturbance</i>	Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present. They are presumed to be modern.
<i>Service</i>	Magnetically strong anomalies, usually forming linear features are indicative of ferrous pipes/cables. Sometimes other materials (e.g. pvc) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
<i>Ferrous</i>	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.
<i>Uncertain Origin</i>	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of <i>Possible Archaeology / Natural</i> or (in the case of linear responses) <i>Possible Archaeology / Agriculture</i> ; occasionally they are simply of an unusual form.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

Appendix B - Technical Information: Magnetic Theory

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTeslas (nT) in an overall field strength of 48,000 (nT), can be accurately detected.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

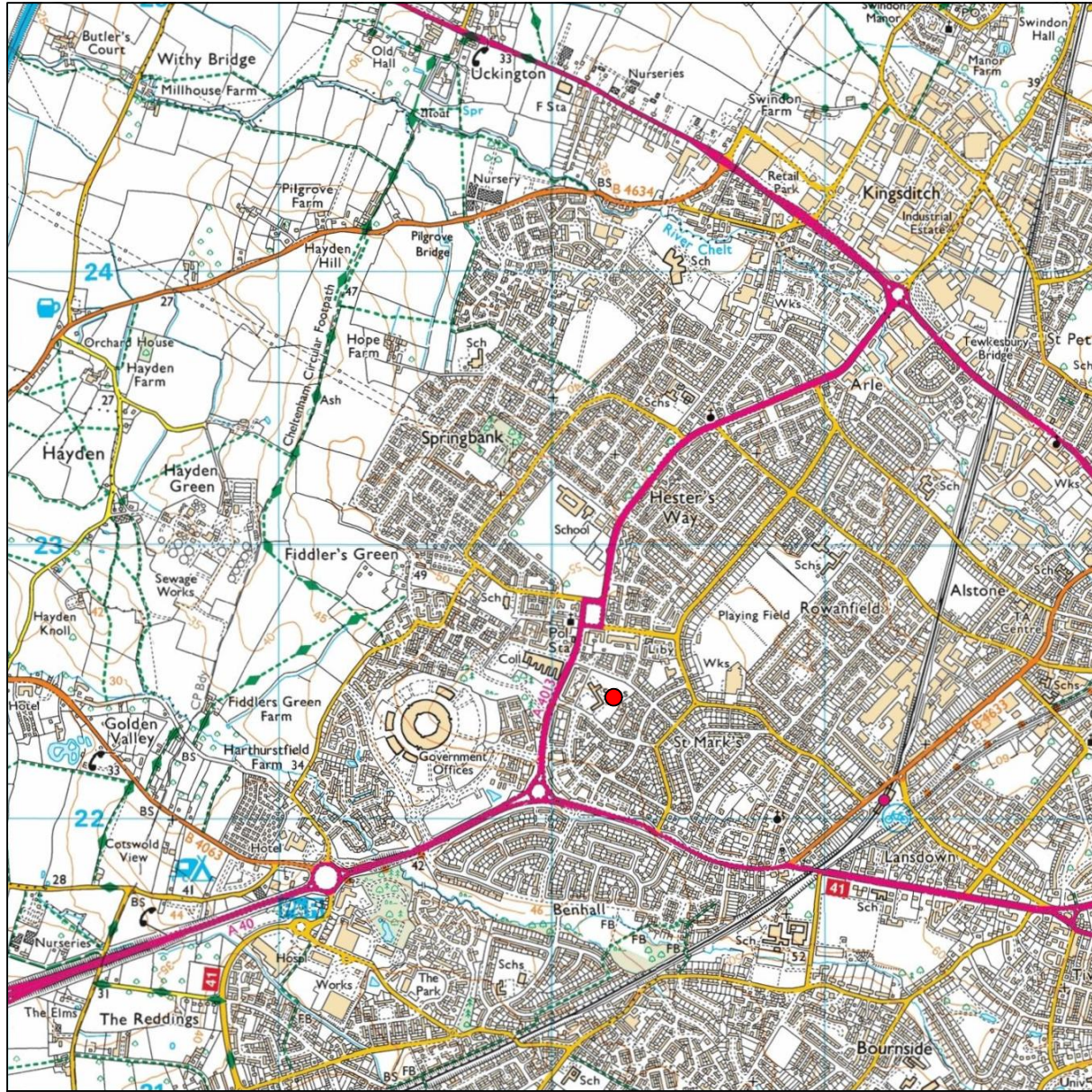
Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns; material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

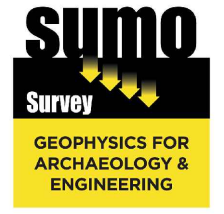
Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried feature. The difference between the two sensors will relate to the strength of a magnetic field created by this feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity and disturbance from modern services.



Site Location

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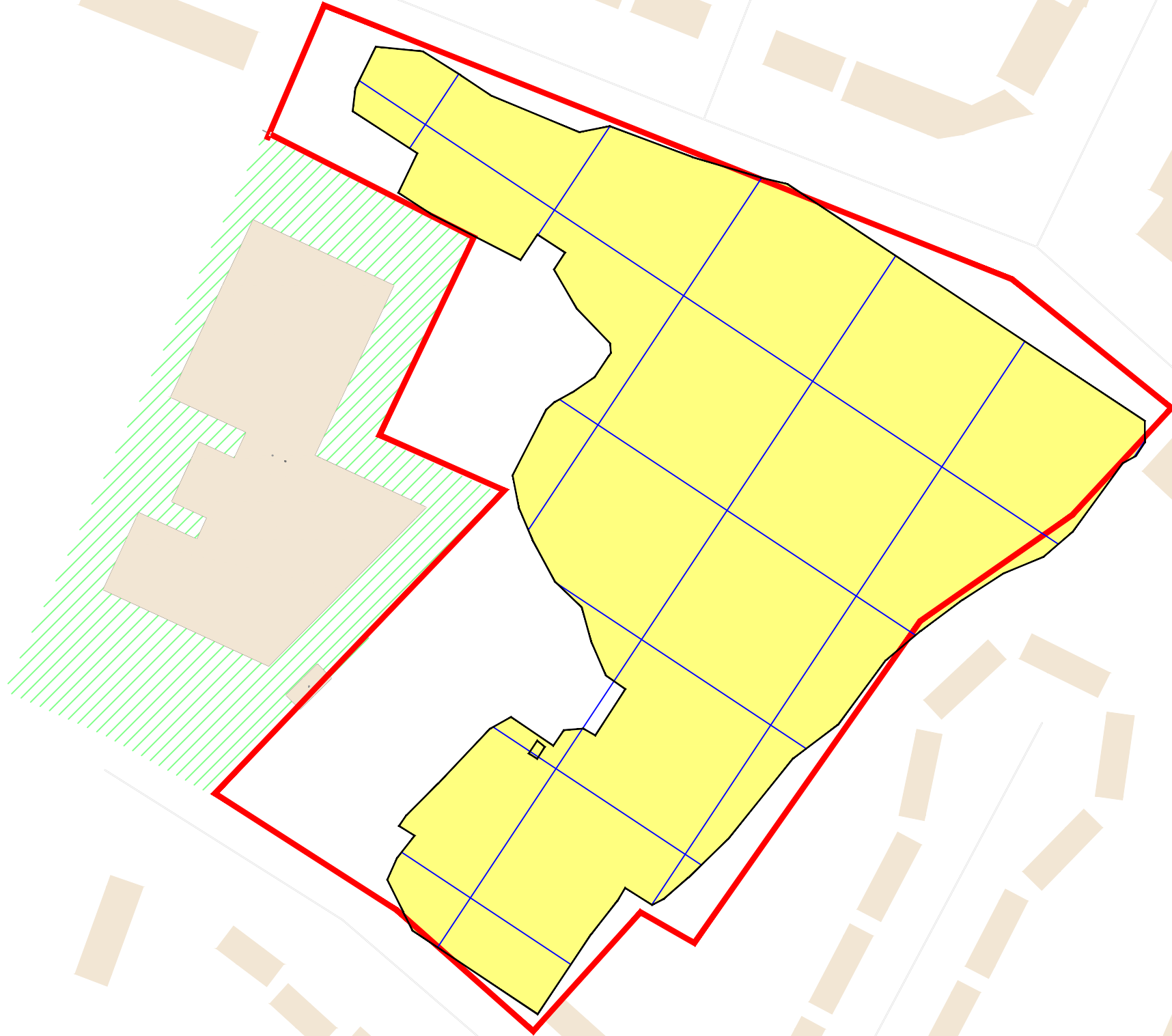
Title: Site Location Diagram

Client: Worcestershire County Council

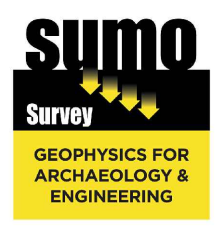
Project: 12226 - Former Monkscroft Primary School, Cheltenham, Gloucestershire

Scale: 0 metres 1000
1:25000 @ A3

Fig No: 01



Survey Area - showing 30m grid



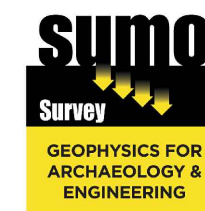
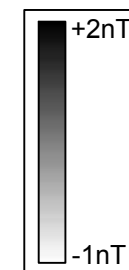
Title: Location of Survey Area

Client: Worcestershire County Council

Project: 12226 - Former Monkscroft Primary School, Cheltenham, Gloucestershire

Scale: 0 metres 50
1:1000 @ A3

Fig No: 02



Title: Magnetometer Survey - Greyscale Plot

Client: Worcestershire County Council








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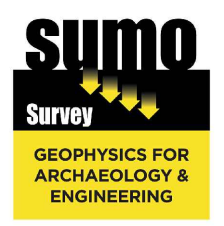
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Fig No: 03



KEY

	Probable archaeology (discrete anomaly)
	Possible archaeology (discrete anomaly / trend / area of increased response)
	Uncertain Origin (discrete anomaly / trend / area of increased response)
	Agriculture (ridge and furrow)
	Magnetic disturbance
	Service
	Ferrous



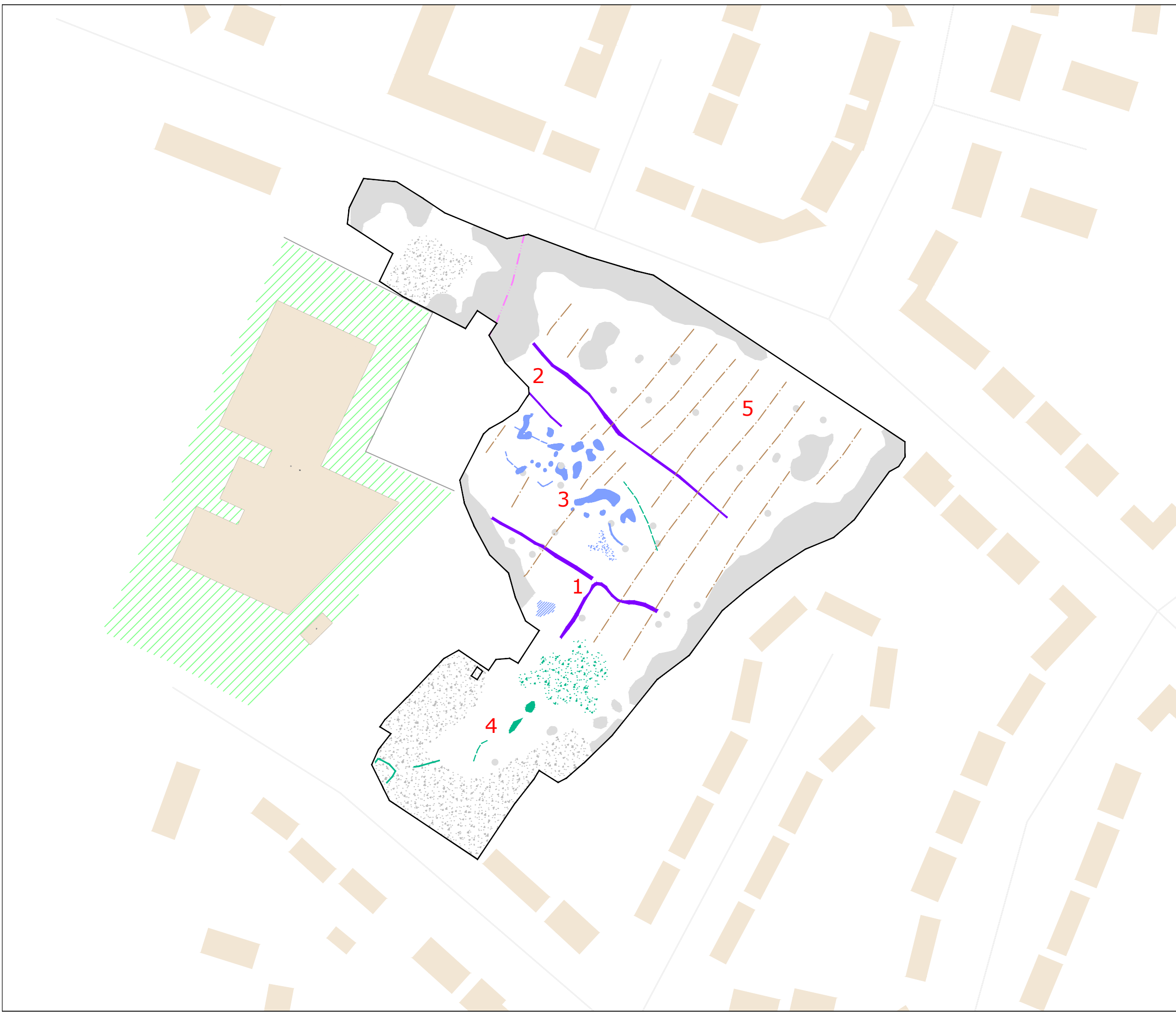
Title: Magnetometer Survey - Interpretation

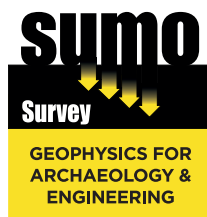
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Scale: 0 metres 50
1:1000 @ A3

Fig No: 04





- Archaeological
- Geophysical
- Laser Scanning
- Measured Building
- Topographic
- Utility Mapping

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