THAMES VALLEY

ARCHAEOLOGICAL

SERVICES

Land at Manor Farm, Bloswood Lane, Whitchurch, Hampshire

An archaeological evaluation

by Steve Crabb

Site Code MBW11/107

(SU 4580 4830)

Manor Farm, Bloswood Lane, Whitchurch, Hampshire

An Archaeological Evaluation

for Bewley and Banner Homes

by Steven Crabb

Thames Valley Archaeological Services Ltd

Site Code MBW11/107

January 2012

Summary

Site name: Manor Farm, Bloswood Lane Whitchurch, Hampshire

Grid reference: SU 4580 4815

Site activity: Evaluation

Date and duration of project: 14th–21st December 2011

Project manager: Steve Ford

Site supervisor: Steven Crabb

Site code: MBW 11/107

Area of Site: *c.* 3.1 ha

Summary of results: Earthwork survey, a small trial trench and geophysical survey have suggested that a circular mound is probably the remains of a round barrow of Bronze Age date. A large volume of Roman pottery recovered is indicative of both early and late Roman occupation in the area. A few sherds of abraded medieval pottery are likely to reflect medieval manuring of farmland.

Location and reference of archive: The archive is presently held at Thames Valley Archaeological Services, Reading and will be deposited at Hampshire County Museum Service in due course.

Report edited/checked by:	Steve Ford✓ 24.01.12
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Manor Farm, Bloswood Lane, Whitchurch, Hampshire
An Archaeological Evaluation

by Steven Crabb

Report 11/107b

Introduction

This report documents the results of an archaeological field evaluation carried out on land off Bloswood Lane, (SU 4580 4830) (Fig. 1). The work was commissioned by Mr Andrew Morris of Bewley Homes, Inhurst House, Brimpton Road, Baughurst, Hampshire, RG26 5JJ on behalf of Bewley Homes and Banner Homes.

Planning permission is to be sought from Basingstoke and Deane Borough Council for residential development of the site. Archaeological evaluation of the site has been requested in order to enable an informed planning decision with respect to the potential archaeological impact of the proposal.

This is in accordance with the Department for Communities and Local Government's Planning Policy Statement, *Planning for the Historic Environment* (PPS5 2010), and the Borough Council's policies on archaeology. The field investigation was carried out to a specification drawn up in consultation with Mr David Hopkins of Hampshire County Council. The fieldwork was undertaken by Steven Crabb, Christopher Crabb and Daniel Bray between 14th and 21st December 2011 and the site code is MBW11/107. The archive is presently held at Thames Valley Archaeological Services, Reading and will be deposited with Hampshire Museums Service in due course.

Location, topography and geology

The site is located on the south-west margins of Whitchurch, between Andover and Basingstoke in Hampshire (SU 4580 4815)(Fig. 1). It is bounded to the north by Bloswood Road and to the east by the embankment of a defunct railway line; to the south is a recent residential development and the site backs onto open land rising up to the west (Fig. 2. The site is an irregular parcel of land measuring *c*. 3.1ha in area). The site currently consists of an area of open uncultivated grassland. The underlying geology consists of river and valley gravel (BGS 1975). This was observed in the trench as a fine flint gravel in a dark reddish brown silty clay matrix. The site is at a height of approximately 75m above Ordnance Datum.

Archaeological background

The archaeological potential of Whitchurch in general has recently been summarized (HCC 2002). The site's archaeological potential stems from its location relatively close to the historic core of Whitchurch which has late Saxon origins and is recorded in Domesday Book (Williams and Martin 2002). The site lies in an area where probable Saxon burials were found during construction of the former railway. It also relatively close to Manor Farm, which may have medieval origins, and several earthworks close to Bloswood Lane on the site itself may relate to medieval occupation. However, evaluation of a parcel of land to the south (Wallis 2007) found nothing of archaeological interest.

More immediately relevant, however, the site has a number of upstanding earthworks present which were been recorded during a walkover survey in November 2011 (Fig. 3). These mostly comprise a miscellany of linear features but notably include an oval mound, *c*. 1m high and up to 19m across. There was no obvious surrounding ditch. This feature is thought possibly to be a round barrow, though other less common circular structures such as a motte or windmill mound are also possibilities. It was also a possibility that it was a modern feature such as a dump of soil or demolition rubble. This mound is the subject of the evaluation reported here. A geophysical survey was also undertaken of the mound and its environs (Sabin and Donaldson 2011) and forms Appendix 6.

Objectives and methodology

The purpose of the evaluation was to determine the character and date of the mound. This was to take place with as little excavation as possible so as to maintain the integrity of the earthwork should it be thought desirable to preserve it *in-situ*. A single trench was to be excavated in the south-eastern corner of the earthwork mound. It was initially to be 4m long by 1m wide but was later extended. The turf was to be removed by hand, under the supervision of an ecologist who was present to observe and relocate any reptiles found. The remaining topsoil and subsoil were also removed by hand and all archaeological deposits were cleaned and excavated by hand.

The trench details are listed in Appendix 1. Appendix 2 catalogues the features excavated.

Results

The trench initially measured 4m in length and 1m in width and was aligned SSE-NNW. It was subsequently extended by a further 3.5m (Figs 3 and 4). The stratigraphy consisted of topsoil (50), between 0.1m–0.25m of

dark grey brown clayey loam with occasional flint fragments and frequent roots, above 0.20m of a dark reddish brown silty clay (51) subsoil which was present along the whole length of the trench.

At the south-eastern end of the trench was a second subsoil deposit of grey/reddish/brown silty clay with frequent flint gravel and fragments of flint (55) which overlay the natural geology, the latter comprising gravel in a mid reddish brown silty clay matrix (Fig. 4).

At the northern end of this initial trench a wide feature (1) was recorded (Pl. 1). This lay beneath the silty clay (51) but cut subsoil (55) and the natural geology. This feature was up to 5m wide. It was partially excavated to a depth of 0.55m below the top of the natural geology and appears to be a ditch or large pit. The uppermost layer of the ditch (57) was a loose gravel within a grey/brown silty clay matrix, which also extended beyond the ditch cut. Surprisingly, the deposits excavated below this (52–54) produced 818 sherds (97% of the total assemblage) of Roman pottery. The assemblage is chronologically mixed with small sherd size suggesting either a long lifespan or material derived from a redeposited midden. Whilst most of the pottery is early Roman, late Roman pottery is also recorded.

The initial trench was located across what was then considered to be the tail of the mound but the discovery of the large ditch suggested that the mound proper had not been examined. Therefore, the trench was extended by a further 3.5m towards the centre of the mound.

The northern edge of feature 1 was uncovered in this extension and after its definition the feature was not further examined. The stratigraphy of the extension trench comprised topsoil (50) and subsoil (51) above a thin lens (56) of dark grey/brown silty clay with occasion gravel inclusions, perhaps representing a remnant turfline. This extended partially over the northern edge of the ditch and petered out midway along the trench (less than halfway across the ditch). These overlay layer (57) which was observed to be continuous from the top infill of feature 1 across the mound and is considered to be denuded mound material.

At the northern end of the trench beneath layer 57, lying at the same level as the surface of the natural gravel was a line of large flint nodules with some chalk lumps (59). The line was up to 0.5m wide and 0.13m high and comprised unbonded nodules and lumps up to 0.18m across (Pl. 2). It was well faced to both sides and laid flat. It overlay a chalky deposit (60), perhaps a bedding layer, which was not investigated. The alignment of the nodules was parallel to that of feature 1 but in the narrow trench this could be misleading. It is considered that this is more likely to be a kerb to a barrow rather than a dwarf wall of a building. To the north of the kerb, that is within the mound, was a brown/grey gravel in a silty clay matrix (58) considered to be another make up

layer of the mound. A single base sherd of coarse flint-tempered prehistoric pottery was recovered from context 58.

Finds

Pottery by Jane Timby

The archaeological work resulted in the recovery of a moderately large assemblage of 844 sherds of pottery weighing *c* 7kg (Appendix 3). Most of the pottery dates to the Roman period with some possible later prehistoric sherds and two later pieces of medieval date. The assemblage was sorted into broad fabric types based on the principal inclusions present in the clay, the frequency and grade of the inclusions and the firing colour. Codes given for the prehistoric pottery reflect the inclusions present in the pastes using the recommendations outlined in the Prehistoric Ceramics Research Group (PCRG 1997). For the Roman wares, named or known regional types were classified using the National Roman fabric reference collection (Tomber and Dore 1998). The entire assemblage was quantified by sherd count and weight for each recorded context.

Description of fabrics and forms (Appendix 3)

The assemblage was quite diverse in composition and appears to be chronologically mixed. The earliest material present is handmade flint tempered wares (FL1), mostly quite coarse in nature which account for 42% of the assemblage. The only featured sherd is a beaded rim jar. A single finer flint-tempered bodysherd was also recovered. The sherds could be of later Iron Age or early Roman date. Of probably similar date are a number of handmade grog-tempered wares which make up a further 12.1% by sherd count of the assemblage. Forms include necked, cordoned jars, beaded rim jars, everted rim jars and curved wall dishes. Various other mixed grit fabrics present in minor amounts (eg. sandy with flint (SAFL); sandy with organic matter (SAOR); grog and sand (GRSA)) are also likely to date to the later Iron Age or early Roman period. Products of the Alice Holt industry dominate the assemblage accounting for around 38.2% by count. These can divided into coarser black sandy wares typical of the earlier phases of the industry; a coarse oxidized ware also an early product and the more standardized grey wares. The black wares include 'Surrey' bowls (Lyne and Jefferies 1979, class 5), necked bowls, dishes with burnished interiors, beaded rim jars and everted rim jars. The grey wares appears as a variety of jars, everted, beaded rim and flat rim (Lyne and Jefferies 1979, classes 1, 3A and 4), dishes with flat or grooved rims; a hemispherical flanged bowl and a platter imitating a moulded imported form.

The group includes a few of continental and regional imports. The former are limited to a single sherd of Central Gaulish samian from a decorated bowl (Drag. 30 or 37) and a single sherd of Baetican olive-oil *amphora*

from southern Spain. Regional imports are confined to four sherds of Dorset black burnished ware, one Oxfordshire colour-coated sherd and six sherds from products of the New Forest. The former includes jar, flanged rim conical bowl and plain-walled dish; the latter an indented beaker all typical of the later Roman period.

Other sherds comprise unprovenanced sandy wares dominated by various grey wares which account for 38% of the whole assemblage. Few sherds are featured but most come from everted rim jars. At least two poppyhead beakers are present amongst the grey and black finer wares. The only other sherd worthy of note is a white-slipped oxidized base with a post-firing sgraffito X scratched onto the underside.

Distribution

Most of the assemblage, some 818 sherds (97%), was recovered from a single feature probably a ditch. The assemblage appears mixed chronologically, with wares of later Iron Age-early Roman character alongside 2nd-century sherds and some pieces dating to the later 3rd-4th century. The emphasis is on the earlier material. Later Roman sherds, exemplified by the regional imports (Dorset BB1, Oxfordshire and New Forest wares) were present in contexts 52, 53 and 54. The single sherd of Lezoux samian (context 53) along with some vessels, such as the poppyhead beakers are probably 2nd-century in date. The fragmentation rate appears moderately high with a low overall average sherd weight of 8.3g, more typical of redeposited or disturbed material. The assemblage thus does not represent a single event but either indicates backfill from mixed deposits in the late Roman or post-Roman period or could perhaps suggest midden material from a long standing settlement nearby.

The single sherd recovered from the mound deposits (58) is a coarse flint-tempered basesherd which is of later prehistoric date but whether it is Bronze Age or Iron Age is impossible to say. Two sherds of medieval date and further Roman sherds were recovered from the subsoil.

Struck Flint by Steve Ford

A small collection comprising just 23 struck flints was recovered during the course of the evaluation Appendix 4). These comprise 20 flakes and 3 spalls (pieces less than 20x20mm). Ditch 1 produced most of the flintwork, 14 pieces in all but all as residual finds from within the Roman levels. The flint is made from a range of flint colours with black and grey flint represented. Some flints are relatively fresh whereas others are lightly patinated and edge damaged. The flint could have come from either the underlying gravel or nearby chalk. None of the items are closely datable in themselves and could be of Neolithic or Bronze Age date. The seemingly high

number of narrow flakes, is not considered to reflect a Mesolithic or an earlier Neolithic component to the collection but fortuitous by products of the knapping process.

Metalwork by Steven Crabb

Two iron nails were recovered from this site; both were recovered from ditch 1 (middle fill 53).

Ceramic Building Material by Danielle Milbank

The evaluation produced 15 pieces of ceramic building material weighing 391g in total (Appendix 5). These were examined at x10 magnification.

The collection included two tile fragments (43g) one of which is hard and well-fired, with a reduced core. The other is softer and an orange red colour. Both are from the subsoil layer (51). Neither are closely dateable but are likely to be medieval or post medieval.

A total of 13 fragments (348g) of less diagnostic material was recovered from feature 1. Of these, one was large and well-fired, with a slightly reduced core, and may be a Roman brick fragment (Brodribb 1987). The remainder were a light red colour, and in a fine, hard sandy fabric with occasional poorly-sorted inclusions (possibly limestone). No wattle impressions were present to suggest they are daub fragments. Roman brick and tile fragments are a frequent find on sites with Roman activity, and also in later periods, which reflects the durable nature of building materials, especially thick and well-fired pieces such as the fragment from context 52.

Geophysical Survey

The full geophysical report is presented as Appendix 6. In summary, curvilinear anomalies can be identified coincident with the mound area (Appendix 6, fig. 04). These anomalies appear to indicate that feature 1 found by the evaluation trench was responsible for one of these anomalies and is thus not a field boundary or enclosure (as thought possible from the presence of the Roman pottery). The outer two curvilinear anomalies appear to form a circular plan around the mound and plausibly represent a ring ditch. The inner anomaly is unexplained.

Conclusion

The intention of this evaluation was to determine the nature of the near circular earthwork present on this site. This was achieved by the excavation of a trench into the mound and by geophysical survey.

The size and shape of the mound suggested that it was most likely to be one of the commonest of circular mounds in the landscape, that of a round barrow or a less common feature such as a motte (an early castle

mound) or windmill. The suggestion that it was a windmill seems least likely, due to the siting of the mound on low-lying, relatively sheltered ground. Similarly, whilst the context of a late Saxon and early medieval manor and town would be a typical setting for an early castle, the relatively small area of the mound even if denuded, and lack of earthworks forming a bailey, seem to argue against a fortification. The trenching has also confirmed that the mound is not a product of modern dumping.

The evaluation revealed the presence of a large feature, in a location which could be anticipated for a ditch surrounding the mound if the structure was a typical barrow. Whilst the exact nature of the feature nor its orientation were determined by the evaluation trench, the geophysical survey indicates a circular plan.

The presence of a large volume of Roman pottery deposited in later Roman times in the upper fill of the ditch suggests that this ditch was still open at this time and that Roman occupation is likely to be present nearby. However, despite the presence of such a large volume of pottery, it is noteworthy that none was recovered from the layers making up the mound. This is either a remarkable feature of the formation of the archaeological record, or, the mound was already in existence prior to this Roman activity.

No definitive data on the construction of the mound could be identified other than dump material consistent with upcast from ditch digging through gravel. At the base of the mound a line of flint nodules with some chalk, parallel to the side feature 1 is considered to be a kerb. Such features are recorded for Bronze Age round barrows (Ashbee 1960, 47). The relatively low elevation of the mound and its spread across the top of feature 1 suggests that it might have been over-ploughed in post-Roman times with the few sherds of abraded medieval pottery from the subsoil being indicative of when this might have taken place.

It is considered that this circular mounded feature is the remains of a round barrow, probably of Bronze Age date.

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APPENDIX 1: Trench details

0m at SE end

Trench	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Comment*
1	7.5	1	1.5	SW end: 0-0.25m topsoil dark grey/brown clayey loam (50); 0.25-0.5m dark reddish brown silty clay subsoil (51); 0.5-0.7m grey/ reddish/brown silty clay with frequent gravel subsoil (55); 0.7m+ natural geology brown/red sandy silt and gravel. Feature 1, Mound and Kerb 59. **[Pls 1 and 2].**

APPENDIX 2: Feature details

Trench	*Cut*	*Fill (s)*	*Type*	*Date*	*Dating evidence*
1	1	52, 53, 54	Ditch?	Prehistoric? Upper fill 4th C AD	Pottery
1		59	Kerb	Prehistoric?	Morphology
1		56, 57, 58	Mound	Prehistoric?	Pottery, Morphology

APPENDIX 3: Summary of Roman pottery

	Fabric	*Description*	*No*	*No%*	*Wt*	*Wt %*
Import	LEZ SA	Central Gaulish samian	1	0.1	2	0.0
	BAT AM	Baetican amphora	2	0.2	40	0.6
Regional	DOR BB1	Dorset black burnished ware	4	0.5	38	0.5
	NFO RS/CC	New Forest colour-coated ware	5	0.6	53	0.8
	NFO PA?	New Forest coarse parchment ware	1	0.1	5	0.1
	OXF RS	Oxfordshire colour-coated ware	1	0.1	4	0.1
Local	ALH BW	Alice Holt black sandy	103	12.2	631	9.0
	ALH RE	Alice Holt greyware	215	25.5	1540	21.9
	ALH OX	Alice Holt oxidised ware	4	0.5	51	0.7
Other	BWF	fine black ware	1	0.1	5	0.1
	BWFMIC	fine micaceous black ware	4	0.5	15	0.2
	BWNSA	brown sandy ware	1	0.1	3	0.0
	FL1	coarse flint-tempered ware	42	5.0	468	6.7
	FL2	finer flint-tempered ware	1	0.1	7	0.1
	GR	grog-tempered ware	102	12.1	1404	20.0
	GRSA	sandy grog-tempered ware	6	0.7	61	0.9
	GREY	miscellaneous sandy grey wares	320	38.0	2500	35.6
	GYF	fine grey ware	6	0.7	34	0.5
	OXID	miscellaneous sandy ware	11	1.3	57	0.8
	OXIDF	fine oxidised ware	4	0.5	16	0.2
	SAFL	sandy flint-tempered ware	3	0.4	46	0.7
	SAOR	organic tempered sandy ware	4	0.5	19	0.3
	WSOXID	white-slipped oxidised ware	1	0.1	24	0.3
TOTAL			**842**		**7023**	

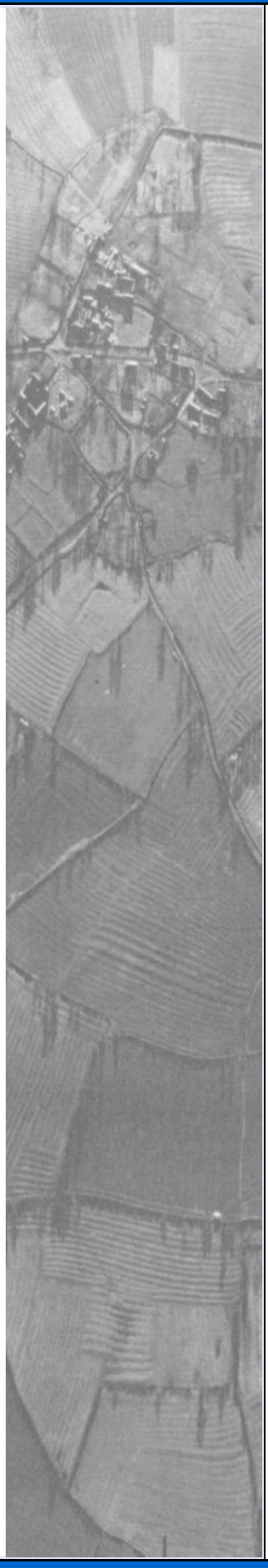
APPENDIX 4: Catalogue of struck flint

Cut	*Deposit*	*Intact Flake*	*Intact Blade*	*Broken Flake*	*Broken Blade*	*Spall*
	50	2	2	2	-	1
	51	-	-	1	-	-
1	52	3	1 (serrated?)	5	-	1
1	53	1	-	-	1	1
1	54	1	-	-	-	-
	58	-	1		-	-

APPENDIX 5. Ceramic Building Material

Cut	*Deposit*	*No.*	*Wt (g)*	*Comment*
	51	2	43	Medieval or later tile
1	52	8	272	
1	53	5	76	

APPENDIX 6. Geophysical Survey



Land at Manor Farm
Bloswood Lane
Whitchurch
Hampshire

MAGNETOMETER SURVEY REPORT

for

TVAS

David Sabin and Kerry Donaldson

December 2011

Ref. no. 391

ARCHAEOLOGICAL SURVEYS LTD

Land at Manor Farm, Bloswood Lane Whitchurch, Hampshire

Magnetometer Survey

for

TVAS

Fieldwork by David Sabin
Report by David Sabin BSc (Hons) MIFA and Kerry Donaldson BSc (Hons)

Survey date **- 29th December 2011**
Ordnance Survey Grid Reference - **SU 45900 48155**

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CONTENTS

LIST OF FIGURES

LIST OF PLATES

LIST OF TABLES

SUMMARY

A magnetometer survey was carried out by Archaeological Surveys Ltd, at the request of Thames Valley Archaeological Services, on land at Manor Farm, Bloswood Lane, Whitchurch, Hampshire. The site contains a low circular mound and an evaluation excavation on its south eastern edge has revealed evidence of a ditch containing Romano-British pottery in the upper layers. The magnetometry located a number of very weakly positive curvilinear and discrete anomalies within the vicinity of the mound; however, it is uncertain as to whether this is material contained within former cut features or whether it is accumulated soil. A high magnitude and circular area of magnetic disturbance on the north eastern side of the mound could be consistent with a long steel or iron object lying vertically below the surface; a service appears to be conjoined with this object and continues to the east, beyond the limit of the survey. Any relationship between this unusual feature and the mound itself cannot be determined from the survey results.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Thames Valley Archaeological Services (TVAS) to undertake a magnetometer survey of an area of land at Manor Farm, Bloswood Lane, Whitchurch, Hampshire. The site contains a low, circular mound, and a trial excavation prior to the survey revealed a ditch containing Romano-British pottery. The survey forms part of an archaeological assessment of the site.

1.2 Survey objectives and techniques

1.2.1 The objective of the survey was to use magnetometry to locate geophysical anomalies that may be archaeological in origin, so that they may be assessed prior to development of the site.

1.2.2 The methodology is considered an efficient and effective approach to archaeological prospection. The survey and report generally follow the recommendations set out by: English Heritage, 2008, *Geophysical survey in archaeological field evaluation;* and Institute for Archaeologists, 2002, *The use of Geophysical Techniques in Archaeological Evaluations*.

1.3 Site location, description and survey conditions

1.3.1 The site is located at Manor Farm, Bloswood Road on the western edge of Whitchurch in Hampshire and centred on Ordnance Survey National Grid Reference (OS NGR) SU 45900 48155, see Figures 01 and 02.

1.3.2 The geophysical survey covers approximately 0.7ha of land containing rough grass and wild plants, see Plate 1. The survey focused on covering a low, circular mound and as much of the surrounding area as possible within a day. The survey area was constrained by tall vegetation to the south and south east of the mound and by fencing and a hedge to the north and west.

1.3.3 The ground conditions across the site were generally considered to be acceptable for the collection of magnetometry data within the limits described above. Weather conditions were fine.

Plate 1: View of survey area looking south east

1.4 Site history and archaeological potential

1.4.1 The site contains a low, circular mound that appears similar to a round barrow. A small archaeological evaluation excavation, carried out by TVAS, has located a ditch containing Romano-British pottery close to the south eastern edge of the mound. The geophysical survey was commissioned in order to try to define the limits of the mound and locate any potential cut features associated with it.

1.5 Geology and soils

1.5.1 The underlying geology is chalk with overlying river terrace deposits of undifferentiated sands and gravels (BGS, 2011). The overlying soils across the site are from the Sonning 1 association and are typical paleo-argillic brown earths. These consist of well drained, flinty, coarse loamy and sandy soils (Soil Survey of England and Wales, 1983).

1.5.2 Magnetometry survey carried out over similar geology and drift deposits has resulted in a variable response, but former cut features are normally visible within the magnetic data.

2 METHODOLOGY

2.1 Technical synopsis

2.1.1 Magnetometry survey records localised magnetic fields that can be associated with features formed by human activity. Magnetic susceptibility and magnetic thermoremnance are factors associated with the formation of localised fields. Additional details are set out below and within Appendix A.

2.1.2 Iron minerals within the soil may become altered by burning and the break down of biological material; effectively the magnetic susceptibility of the soil is increased, and the iron minerals become magnetic in the presence of the Earth's magnetic field. Accumulations of magnetically enhanced soils within features, such as pits and ditches, may produce magnetic anomalies that can be mapped by magnetic prospection.

2.1.3 Magnetic thermoremnance can occur when ferrous minerals have been heated to high temperatures such as in a kiln, hearth, oven etc. On cooling, a permanent magnetisation may be acquired due to the presence of the Earth's magnetic field. Certain natural processes associated with the formation of some igneous and metamorphic rock may also result in magnetic thermoremnance.

2.1.4 The localised variations in magnetism are measured as sub-units of the Tesla, which is a SI unit of magnetic flux density. These sub-units are nano Teslas (nT), which are equivalent to 10^{-9} Tesla (T).

2.2 Equipment configuration, data collection and survey detail

2.2.1 The detailed magnetic survey was carried out using a Bartington Grad 601-2 gradiometer. The instrument effectively measures a magnetic gradient between two fluxgate sensors mounted vertically 1m apart. Two sets of sensors are mounted on a single frame 1m apart horizontally.

2.2.2 The instrument is extremely sensitive and is able to measure magnetic variation to 0.01nanoTesla (nT), with an effective resolution of 0.03nT. The data are limited to ±100nT when surveying with the highest sensitivity. All readings are saved to an integral data logger for analysis and presentation.

2.2.3 The instrument is operated according to the manufacturer's instructions with consideration given to the local conditions. An adjustment procedure is required, prior to collection of data, in order to balance the sensors and remove the effects of

the Earth's magnetic field; further adjustment is required during the survey due to instrument drift often associated with temperature change.

2.2.4 It can be very difficult to obtain optimum balance for the sensors due to localised magnetic vectors that may be associated with large ferrous objects, geological/pedological features, 'magnetic debris' within the topsoil and natural temperature fluctuations. Imperfect balance results in a heading error often visible as striping within the data; this can be effectively removed by software processing and generally has little effect on the data unless extreme.

2.2.5 The Bartington gradiometer undergoes regular servicing and calibration by the manufacturer. A current assessment of the instrument is shown in Table 1 below.

Sensor type and serial numbers	Bartington Grad - 01 – 1000 Nos. 084, 085, 242 and 396
Date of certified calibration/service	Sensors 084 and 085 - 6th August 2010 (due Aug 2012)
Bandwidth	12Hz (100nT range) both sensors
Noise	<100pT peak to peak
Adjustable errors	<2nT

Table 1: Bartington fluxgate gradiometer sensor calibration results

The instrument was considered to be in good working order prior to the survey, with no known faults or defects.

2.2.6 Data were collected at 0.25m centres along traverses 1m apart. The survey area was separated into 30m by 30m grids (900m²) giving 3600 recorded measurements per grid. This sampling interval is very effective at locating archaeological features and is the recommended methodology for archaeological prospection (English Heritage, 2008).

2.2.7 The survey grids were set out to the Ordnance Survey OSGB36 datum using a Penmap RTK GPS. The GPS is used in conjunction with Leica's SmartNet service, where positional corrections are sent via a mobile telephone link. Positional accuracy of around 10 – 20mm is possible using the system. The instrument is regularly checked against the ETRS89 reference framework using Ordnance Survey ground marker C1ST7784 (Horton).

2.2.8 The fixed orientation of survey grids based on the OSGB36 datum was considered appropriate given that the orientation of land boundaries was variable and consequently partial survey grids were unavoidable. In addition, there is an optimum north – south traverse direction for magnetic survey (English Heritage, 2008). Survey in this direction can produce anomalies with a higher contrast when compared to other orientations; this is a function of their presence within the Earth's magnetic field. A fixed grid across the site also simplifies its relocation should that be required.

2.3 Data processing and presentation

2.3.1 Magnetometry data downloaded from the Grad 601-2 data logger are analysed and processed in specialist software known as ArcheoSurveyor. The software allows greyscale and trace plots to be produced for presentation and display. Survey grids are assembled to form an overall composite of data (composite file) creating a dataset of the complete survey area. Appendix C contains specific information concerning the survey and data attributes and is derived directly from ArcheoSurveyor; this should be used in conjunction with information provided by Figure 02.

2.3.2 Only minimal processing is carried out in order to enhance the results of the survey for display. Raw data are always analysed, as processing can modify anomalies. The following schedule sets out the data and image processing used in this survey:

- clipping of the raw data at ±20nT to improve greyscale resolution,
- clipping of processed data at ±3nT to enhance low magnitude anomalies,
- de-stagger is used to enhance linear anomalies,
- edge match is used to match grids where strong anomalies have caused widespread magnetic disturbance,
- zero median/mean traverse is applied in order to balance readings along each traverse.

Reference should be made to Appendix B for further information on the specific processes carried out on the data. Appendix C metadata includes details on the processing sequence used.

2.3.3 An abstraction and interpretation is offered for all geophysical anomalies located by the survey. A brief summary of each anomaly, with an appropriate reference number, is set out in list form within the results (Section 3) to allow a rapid and objective assessment of features within the survey area.

2.3.4 The main form of data display prepared for this report is the greyscale plot. Both 'raw' and 'processed' data have been shown followed by an abstraction and interpretation plot. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing.

2.3.5 Graphic raster images in bitmap format (.BMP) are initially prepared in ArcheoSurveyor. Regardless of survey orientation, data captured along each traverse are displayed and processed by ArcheoSurveyor from left to right; this corresponds to a direction of south to north in the field. Prior to displaying against base mapping, raster graphics require a rotation of 90° anticlockwise to restore north to the top of the image. Greyscale images are rotated by AutoCAD.

2.3.6 The raster images are combined with base mapping using ProgeCAD Professional 2009 and AutoCAD LT 2007, creating DWG file formats. All images are externally referenced to the CAD drawing in order to maintain

good graphical quality. Quality can be compromised by rotation of graphics in order to allow the data to be orientated with respect to grid north; this is considered acceptable as the survey results are effectively georeferenced allowing relocation of features using GPS, resection method etc.

2.3.7 A digital archive is produced with this report, see Appendix D below. The main archive is held at the offices of Archaeological Surveys Ltd.

3 RESULTS

3.1 General assessment of survey results

3.1.1 The detailed magnetic survey was carried out over approximately 0.7ha. The survey area was constrained by tall vegetation to the south and south east and by boundaries to the north and west.

3.1.2 Magnetic anomalies located can be generally classified as positive linear and discrete positive responses of an uncertain origin, areas of magnetic debris and disturbance, strong discrete dipolar anomalies relating to ferrous objects and strong multiple dipolar linear anomalies relating to buried services or pipelines. Anomalies located within the survey area have been numbered and are described below.

3.2 Statement of data quality

3.2.1 Data are considered representative of the magnetic anomalies present within the site. Small positional errors were caused by the nature of the surface conditions within the site and some correction was carried out during processing. No significant degradation to the data is apparent.

3.2.2 Magnetic disturbance caused by modern ferrous objects may obscure low magnitude anomalies; this is most apparent on the northern side of the mound and may be detrimental to the interpretation of the feature.

3.3 Data interpretation

3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A basic explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, a basic key is indicated to allow cross referencing to the abstraction and interpretation plot. CAD layer names are included to aid reference to associated digital files (.dwg/.dxf). Sub-headings are then used to group anomalies with similar

characteristics for each survey area.

Report sub-heading CAD layer names and plot colour	Description and origin of anomalies
Anomalies with an uncertain origin AS-ABST MAG POS LINEAR UNCERTAIN AS-ABST MAG NEG LINEAR UNCERTAIN AS-ABST MAG POS DISCRETE UNCERTAIN AS-ABST MAG NEG AREA UNCERTAIN	The category applies to a range of anomalies where there is not enough evidence to confidently suggest an origin. Anomalies in this category may well be related to archaeologically significant features, but equally relatively modern features, geological/pedological features and agricultural features should be considered. Positive anomalies are indicative of magnetically enhanced soils that may form the fill of 'cut' features or may be produced by accumulation within layers or 'earthwork' features; soils subject to burning may also produce positive anomalies. Negative anomalies are produced by material of comparatively low magnetic susceptibility such as stone and subsoil.
Anomalies associated with magnetic debris AS-ABST MAG DEBRIS AS-ABST MAG STRONG DIPOLAR	Magnetic debris often appears as areas containing many small dipolar anomalies that may range from weak to very strong in magnitude. It often occurs where there has been dumping or ground make-up and is related to magnetically thermoremnant materials such as brick or tile or other small fragments of ferrous material. This type of response is occasionally associated with kilns, furnace structures, or hearths and may therefore be archaeologically significant. It is also possible that the response may be caused by natural material such as certain gravels and fragments of igneous or metamorphic rock. Strong discrete dipolar anomalies are responses to ferrous objects within the topsoil.
Anomalies with a modern origin AS-ABST MAG DISTURBANCE AS-ABST MAG SERVICE	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc.. Often a significant area around such features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically and with hysteresis adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.

Table 2: List and description of interpretation categories

3.4 List of anomalies

Anomalies with an uncertain origin

(1) – An extremely weak positive curvilinear anomaly appears to form the southern side of an ovoid shaped feature and is possibly associated with anomaly (2). The response is very weak, generally <1nT, although it is possible that it is a response to a cut feature. The anomaly appears close to the southern edge of the mound.

(2) – A positive curvilinear anomaly to the north of anomaly (1), with a response of <2.5nT, may relate to a cut feature (1).

(3) – A discrete positive response may indicate a pit-like feature in the centre of the survey area. The anomaly occurs close to the centre of the mound.

(4) – A discrete positive response, surrounded by a negative response is located on the eastern side of anomalies (1) and (2). An infilled archaeological evaluation trench was noted in the vicinity, and it is possible that the response is associated with uncovered and backfilled material.

(5) – A positive curvilinear anomaly located to the north of anomaly (2), may define the edge of the circular mound within the survey area. A moderately strong discrete anomaly is located 3m to the east and may relate to a pit-like feature, or extension of anomaly (5).

(6) – Two broad positive linear anomalies lie either side of a negative linear anomaly. They may relate to the line of a former field boundary, possibly representing a former bank and flanking ditches.

(7) – Several short, weak, positive linear anomalies, and a short negative linear anomaly have been located on the eastern side of the survey area. Their form and magnitude prevent confident interpretation.

Anomalies associated with magnetic debris

(8) – A small patch of magnetic debris appears to disturb anomaly (6). This is a response to magnetically thermoremnant material that is likely to have been dumped on site.

(9) - The survey area contains several strong, discrete dipolar anomalies that indicate the presence of ferrous objects in the topsoil.

Anomalies with a modern origin

(10 & 11) – Two strong, multiple dipolar, linear anomalies appear to be responses to buried services or pipes. Widespread magnetic disturbance is associated with them, with the western extent of anomaly (10) causing a very strong response possibly indicating a very long, vertical ferrous object below the surface.

(12) – Magnetic disturbance is a response to ferrous objects and material within and surrounding the site, e.g. electricity poles and wire fencing.

4 CONCLUSION

4.1.1 Several low magnitude positive curvilinear and discrete responses have been located in the vicinity of a low circular mound evident within the survey area. Although they have a weak response, and unclear morphology, it is possible that they are a response to weakly magnetically enhanced material. It is uncertain as to whether this material is associated with the fill of cut features

or whether it represents accumulations of soil.

4.1.2 A very strong magnetic response is located on the north eastern edge of the circular mound, and a steel/iron pipe appears conjoined and heading in an easterly direction beyond the limit of the survey. The area of magnetic disturbance is large, appears almost perfectly circular and is dominated by a single magnetic pole; such anomalies are uncommon and could certainly be consistent with a long, thin ferrous object buried vertically. With the conjoined steel/iron pipe appearing to be linked to the centre of this disturbance and not continuing beyond, it is tentatively suggested that there may be a borehole or well on the edge of or immediately adjacent to the mound. Any relationship between this feature and the mound cannot be determined from the survey results.

5 REFERENCES

British Geological Survey, 2011. *Geology of Britain viewer, 1:50 000 scale [online]* available from http://maps.bgs.ac.uk/geologyviewer/ [accessed 12/1/2012].

English Heritage, 2008. *Geophysical survey in archaeological field evaluation. Research and Professional Service Guideline No.1.* 2nd ed. Swindon: English Heritage.

Institute for Archaeologists, 2002. *The use of Geophysical Techniques in Archaeological Evaluations*. IFA Paper No. 6. IFA, University of Reading.

Soil Survey of England and Wales, 1983. *Soils of England and Wales, Sheet 6 South East England.*

Appendix A – basic principles of magnetic survey

Iron minerals are always present to some degree within the topsoil and enhancement associated with human activity is related to increases in the level of magnetic susceptibility and thermoremnant material.

Magnetic susceptibility is an induced magnetism within a material when it is in the presence of a magnetic field. This can be thought of as effectively permanent due to the presence of the Earth's magnetic field.

Thermoremnant magnetism occurs when ferrous material is heated beyond a specific temperature known as the Curie Point. Demagnetisation occurs at this temperature with re-magnetisation by the Earth's magnetic field upon cooling.

Enhancement of magnetic susceptibility can occur in areas subject to burning and complex fermentation processes on biological material; these are frequently associated with human settlement. Thermoremnant features include ovens, hearths, and kilns. In addition thermoremnant material such as tile and brick may also be associated with human activity and settlement.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil can create an area of enhancement compared with surrounding soils and subsoils into which the feature is cut. Mapping enhanced areas will produce linear and discrete anomalies allowing an assessment and characterisation of hidden subsurface features.

It should be noted that areas of negative enhancement can be produced from material having lower magnetic properties compared to the topsoil. This is common for many sedimentary bedrocks and subsoils which were often used in the construction of banks and walls etc. Mapping these 'negative' anomalies may also reveal archaeological features.

Magnetic survey or magnetometry can be carried out using a fluxgate gradiometer and may be referred to as gradiometry. The gradiometer is a passive instrument consisting of two fluxgate sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the upper sensor measures the Earth's magnetic field as does the lower sensor but this is influenced to a greater degree by any localised buried field. The difference between the two sensors will relate to the strength the magnetic field created by the buried feature. If no enhanced feature is present the field measured by both sensors will be similar and the difference close to zero.

There are a number of factors that may affect the magnetic survey and these include soil type, local geology and previous human activity. Situations arise where magnetic disturbance associated with modern services, metal fencing, dumped waste material etc., obscures low magnitude fields associated with archaeological features.

Appendix B – data processing notes

Clipping

Minimum and maximum values are set and replace data outside of the range with those values. Extreme values are removed improving colour or greyscale contrast associated with data values that may be archaeologically significant. It has been found that clipping data to ranges between ±5nT and ±1nT often improves the appearance of features associated with archaeology. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Zero Median/Mean Traverse

The median (or mean) of each traverse is calculated ignoring data outside a threshold value, the median (or mean) is then subtracted from the traverse. The process is used to equalise slight differences between the set-up and stability of gradiometer sensors and can remove striping. The process can remove archaeological features that run along a traverse so data analysis is also carried out prior its application.

De-stagger

Compensates for small positional errors within data collection by shifting the position of the readings along each traverse by a specified amount. Data lost at the end of each traverse are extrapolated from adjacent value in the same row.

Deslope

Corrects for striping and distortion caused by metal objects/services etc.. The process calculates a curve based on a polynomial best fit mathematical function for each traverse. This curve is then subtracted from the actual data.

Edge Match

Calculates the mean of the 2 lines (rows or columns) of data either side of the edge to match. It then subtracts the difference between the means from all datapoints in the selected area.

FFT (Fast Fourier Transform) spectral filtering

A mathematical process used to determine the frequency components of a traverse. Repetitive features, such as plough marks, produce characteristic spectral zones that can be suppressed allowing greyscale images to appear clearer.

Appendix C – survey and data information

Raw data

COMPOSITE
Filename: J391-mag-raw.xcp
Instrument Type: Bartington (Gradiometer)
Units: nT
Surveyed by: on 29/12/2011
Assembled by: on 29/12/2011
Direction of 1st Traverse: 0 deg
Collection Method: ZigZag
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 32702

Dimensions
Composite Size (readings): 600 x 120
Survey Size (meters): 150 m x 120 m
Grid Size: 30 m x 30 m
X Interval: 0.25 m
Y Interval: 1 m

Stats
Max: 20.00
Min: -20.00
Std Dev: 5.27
Mean: 0.56
Median: 0.35
Composite Area: 1.8 ha
Surveyed Area: 0.6735 ha

Processes: 3
1 Base Layer
2 Clip from -30.00 to 30.00 nT
3 Clip from -20.00 to 20.00 nT

Source Grids: 15
1 Col:0 Row:0 grids\14.xgd
2 Col:0 Row:1 grids\15.xgd
3 Col:1 Row:0 grids\11.xgd
4 Col:1 Row:1 grids\12.xgd
5 Col:1 Row:2 grids\13.xgd
6 Col:2 Row:0 grids\07.xgd
7 Col:2 Row:1 grids\08.xgd
8 Col:2 Row:2 grids\09.xgd
9 Col:2 Row:3 grids\10.xgd
10 Col:3 Row:0 grids\03.xgd
11 Col:3 Row:1 grids\04.xgd
12 Col:3 Row:2 grids\05.xgd
13 Col:3 Row:3 grids\06.xgd
14 Col:4 Row:1 grids\01.xgd
15 Col:4 Row:2 grids\02.xgd

Processed data

COMPOSITE
Filename: J391-mag-proc.xcp

Stats
Max: 3.00
Min: -3.00
Std Dev: 1.51
Mean: 0.04
Median: 0.02
Composite Area: 1.8 ha
Surveyed Area: 0.6735 ha

Processes: 7
1 Base Layer
2 DeStripe Mean Traverse: Grids: 07.xgd 08.xgd 09.xgd 10.xgd 03.xgd 04.xgd 05.xgd 06.xgd 01.xgd 02.xgd Threshold: 0.1 SDs
3 DeStripe Mean Traverse: Grids: 14.xgd 15.xgd 11.xgd 12.xgd 13.xgd Threshold: 0.1 SDs
4 Clip from -3.00 to 3.00 nT
5 Edge Match (Area: Top 30, Left 480, Bottom 59, Right 599) to Left edge
6 Edge Match (Area: Top 60, Left 480, Bottom 89, Right 599) to Left edge
7 Clip from -3.00 to 3.00 nT

Appendix D – digital archive

Archaeological Surveys Ltd hold the primary digital archive at Castle Combe, Wiltshire (see inside cover for address). Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site.

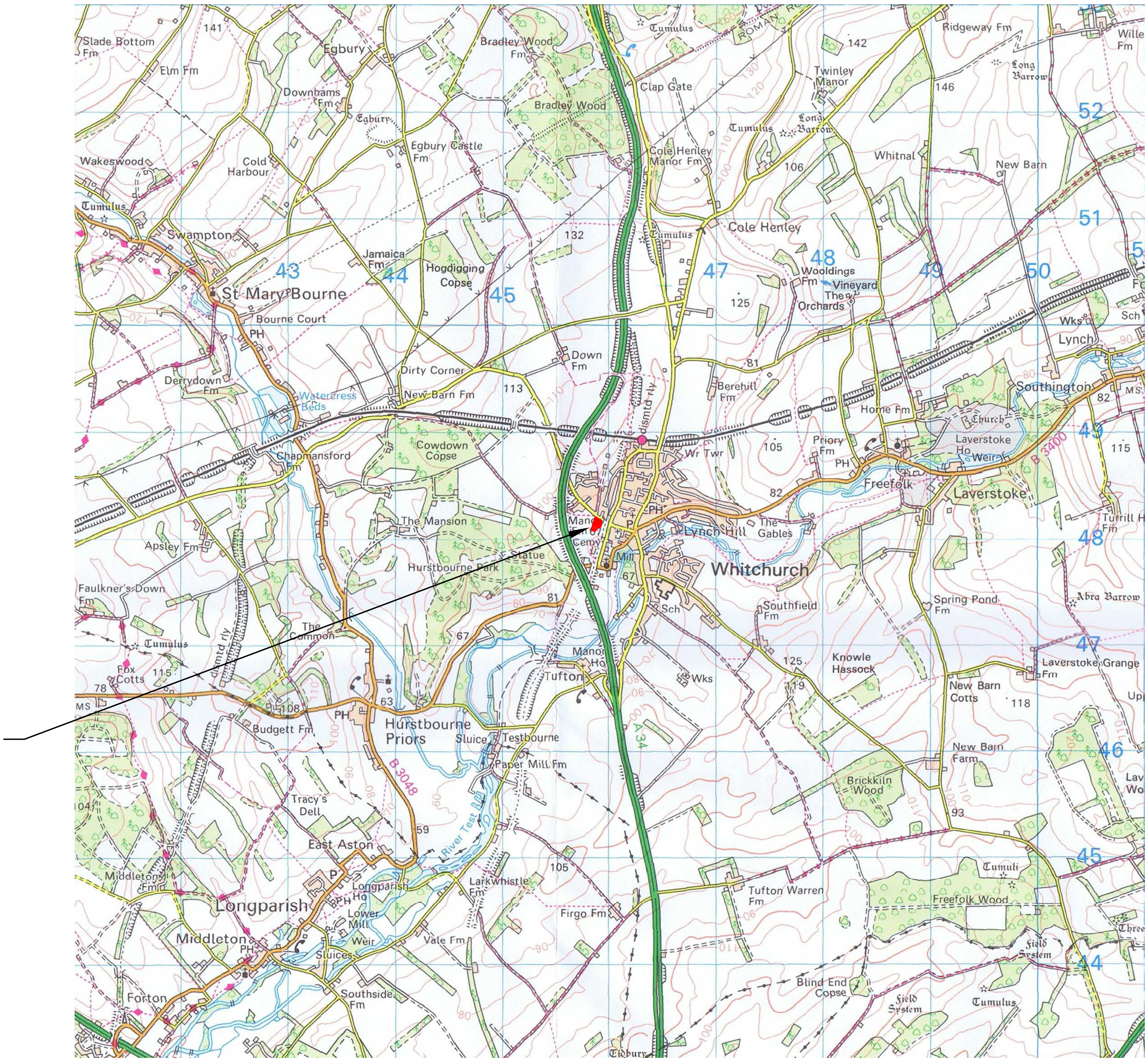
Surveys are reported on in hardcopy (recycled paper) using A4 for text and A3 for plots (all plots are scaled for A3). The distribution of both hardcopy report and digital data is considered the responsibility of the Client unless explicitly stated in the survey Brief, Written Scheme of Investigation or other contractual agreement.

This report has been prepared using the following software on a Windows XP platform:

- ArcheoSurveyor version 2.5.14.0 (geophysical data analysis),
- ProgeCAD Professional 2009 (report graphics),
- AutoCAD LT 2007 (report figures),
- OpenOffice.org 3.0.1 Writer (document text),
- PDF Creator version 0.9 (PDF archive).

Digital data produced by the survey and report include the following files:

- ArcheoSurveyor grid and composite files for all geophysical data,
- CSV files for raw and processed composites,
- geophysical composite file graphics as Bitmap images,
- AutoCAD DWG files in 2000 and 2007 versions,
- report text as OpenOffice.org ODT file,
- report text as Word 2000 doc file,
- report text as rich text format (RTF),
- report text as PDF,
- PDFs of all figures,
- photographic record in JPEG format.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Hurstbourne Priors
Longparish
Laverstoke
Freefolk
Tufton
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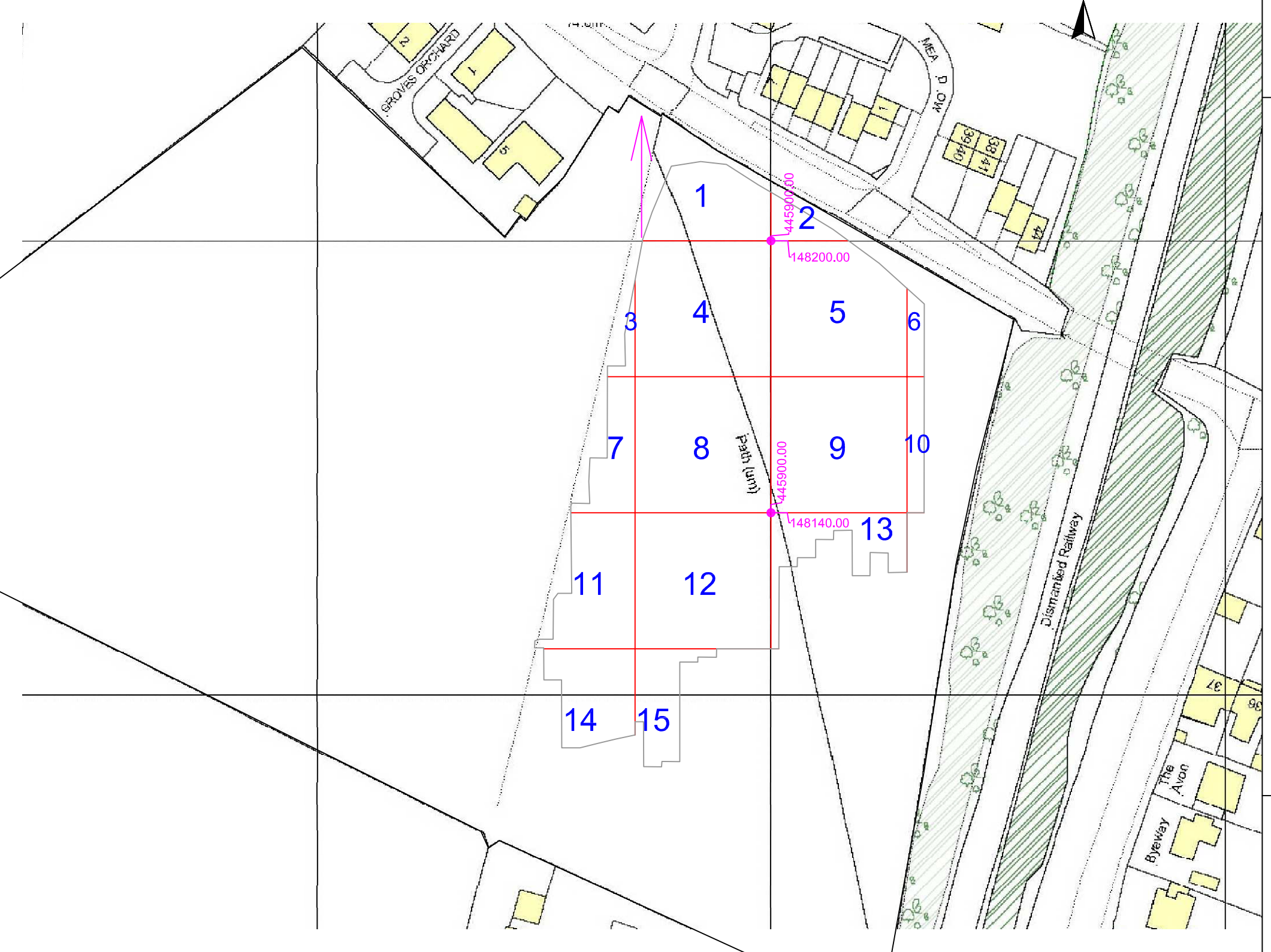

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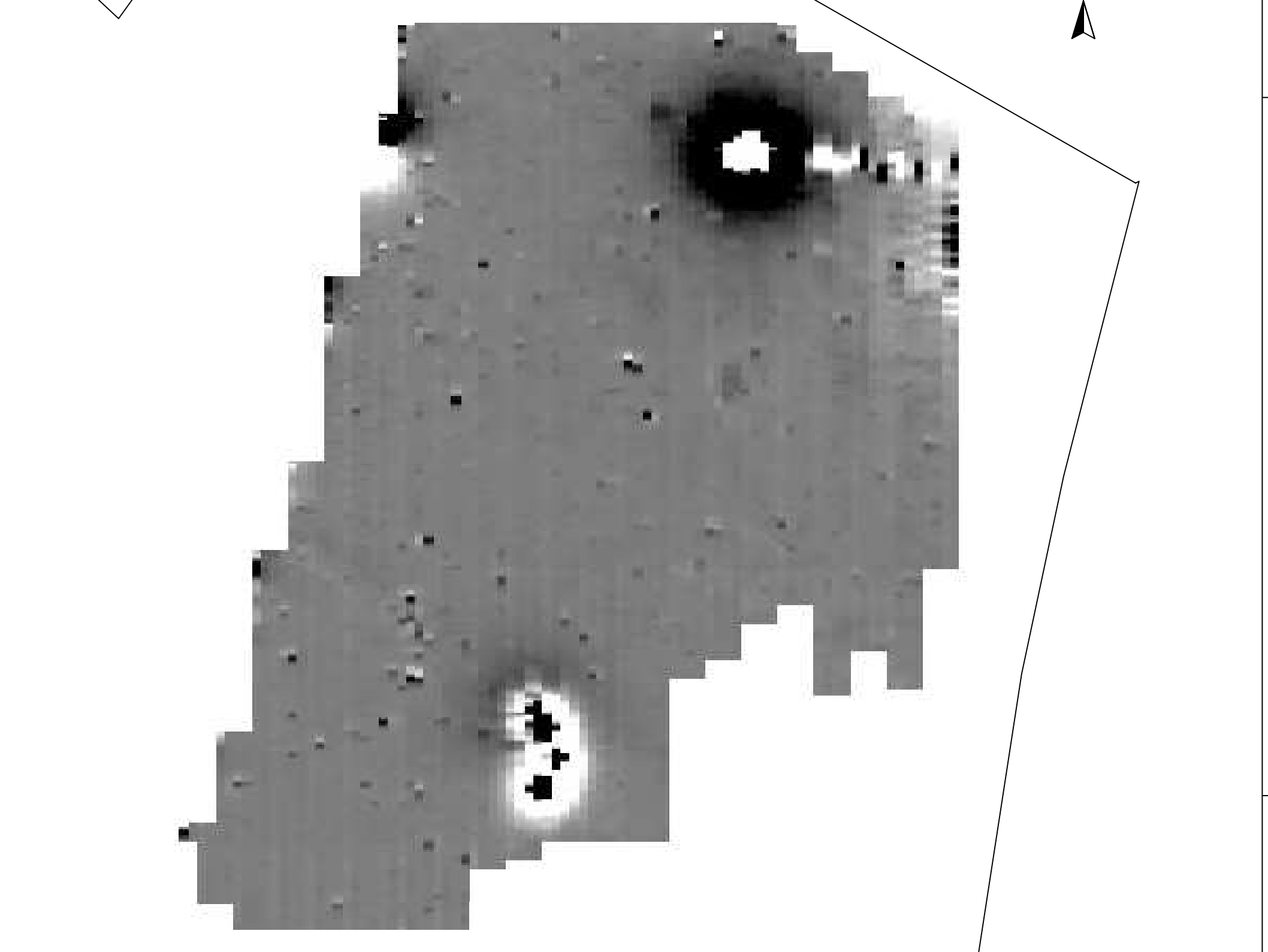
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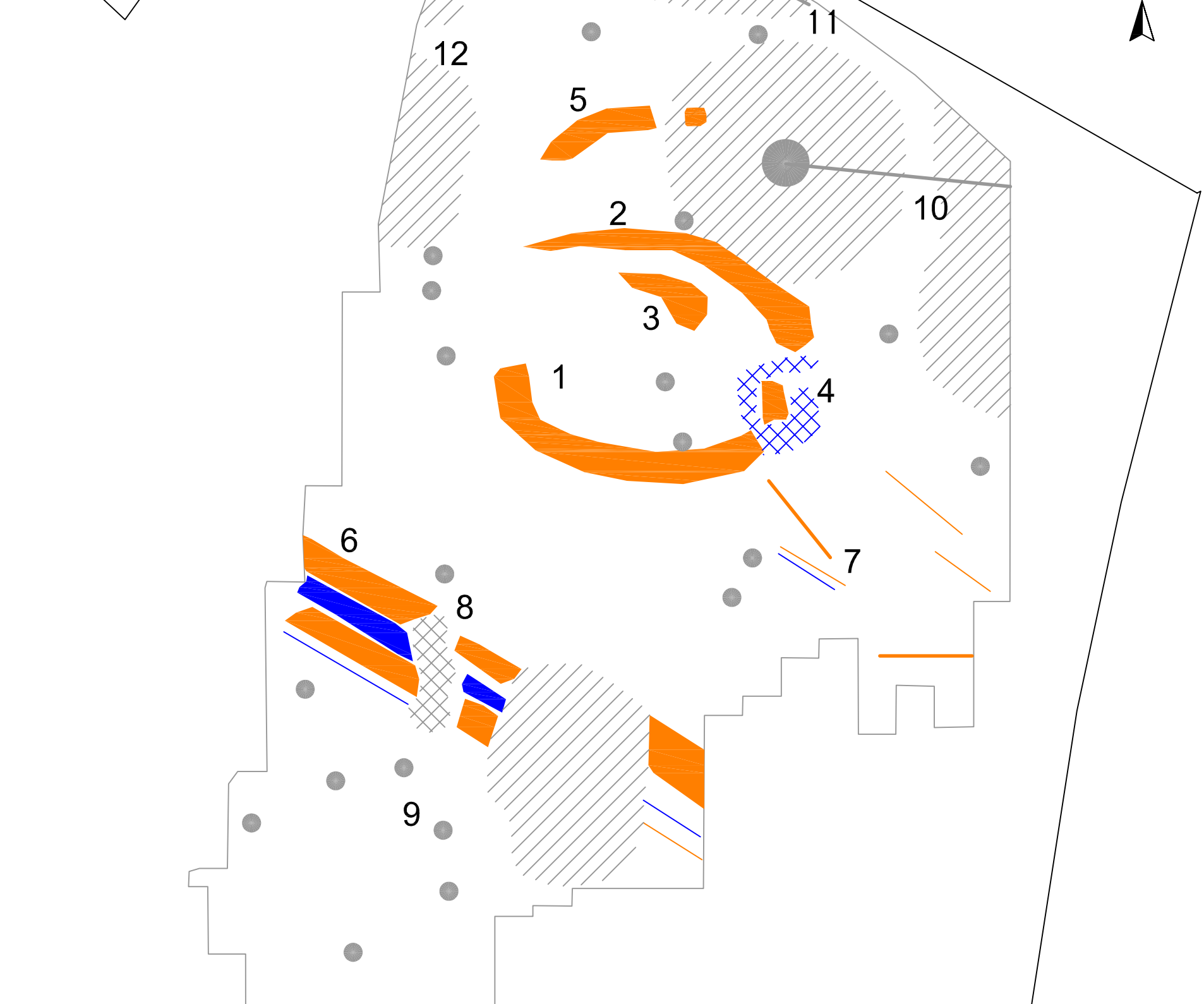
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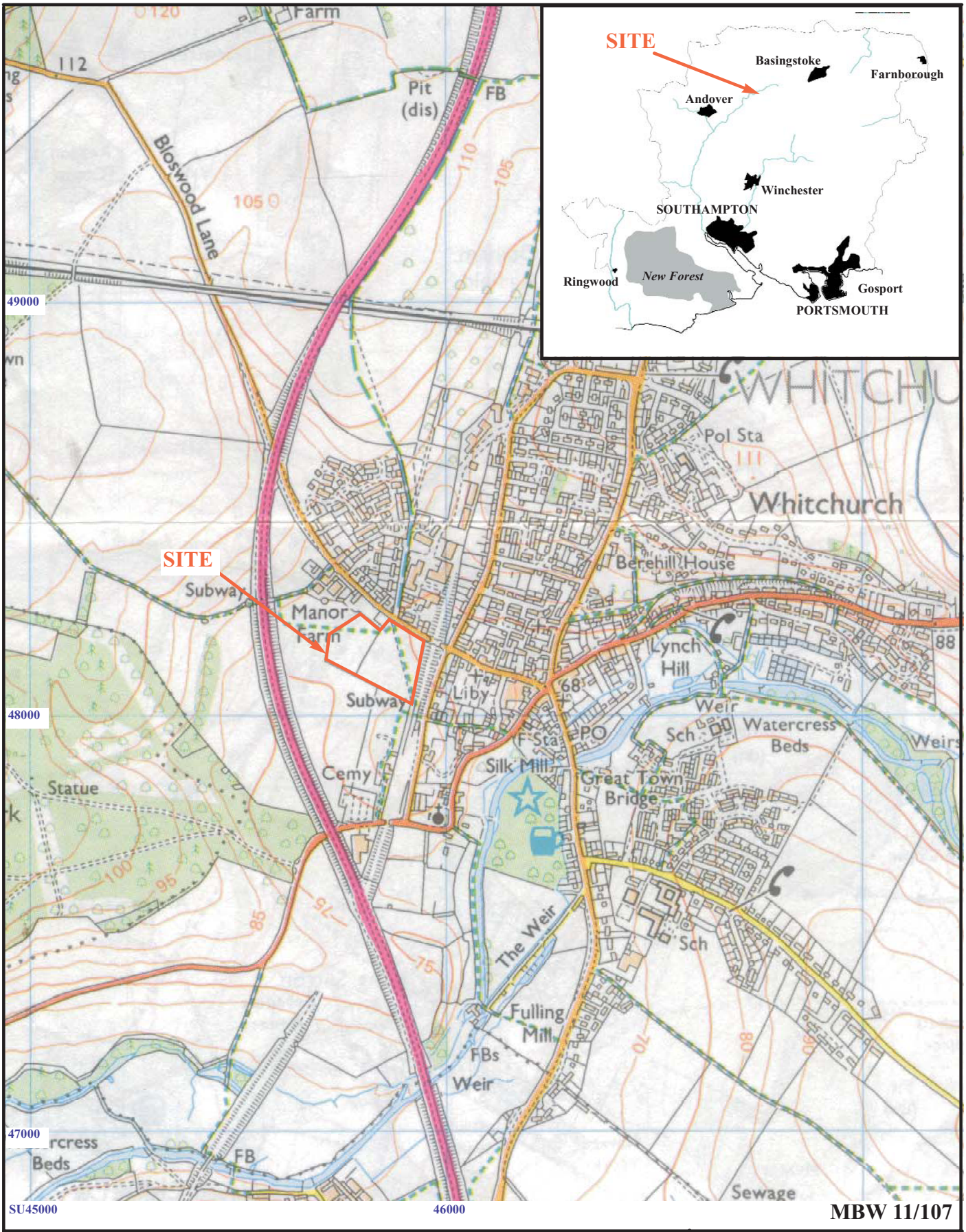
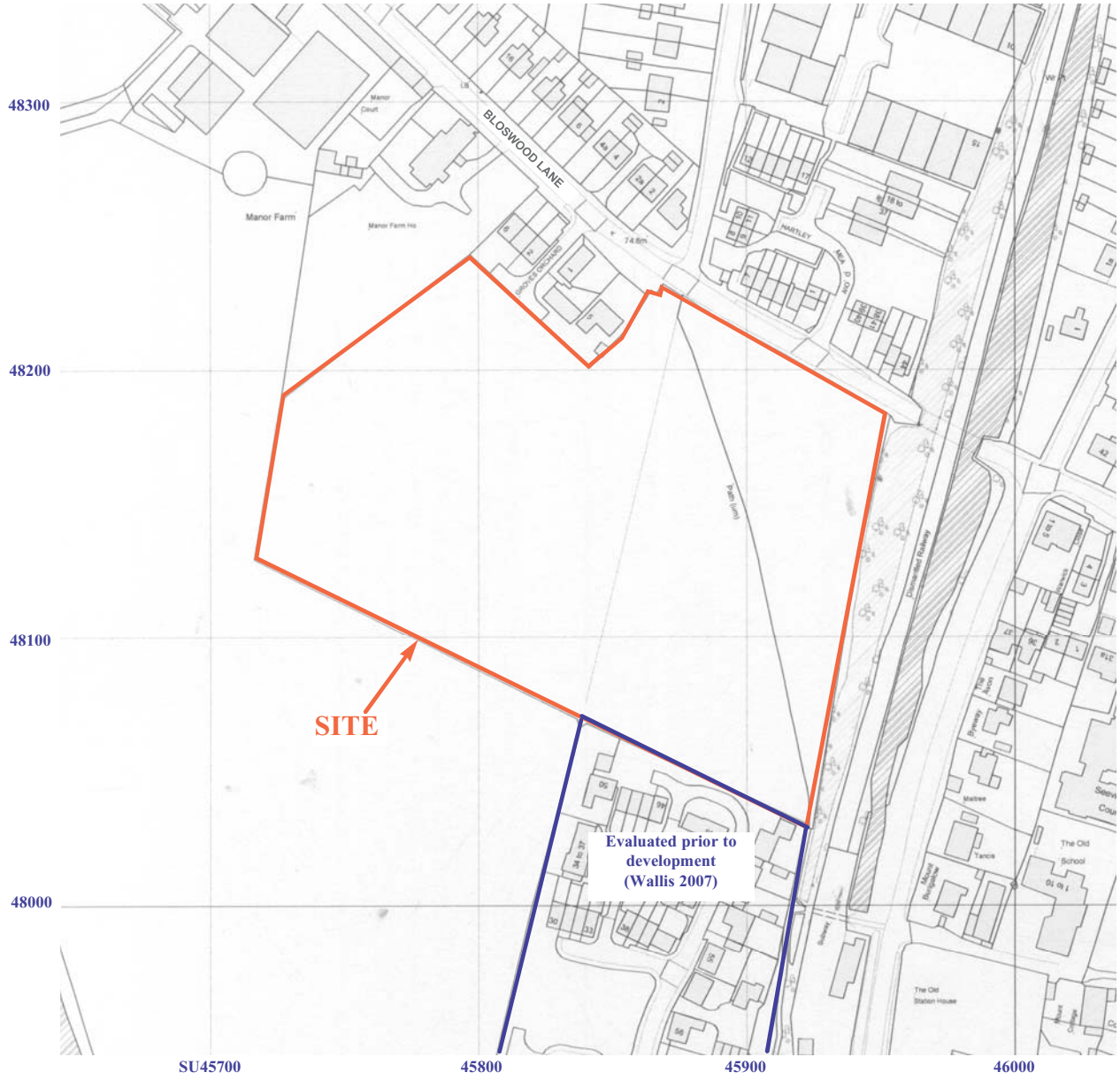


MBW 11/107

Land at Manor Farm, Bloswood Lane, Whitchurch
Hampshire, 2011
Archaeological Evaluation

Figure 1. Location of site within Whitchurch and Hampshire.

THAMES VALLEY ARCHAEOLOGICAL SERVICES



MBW 11/107

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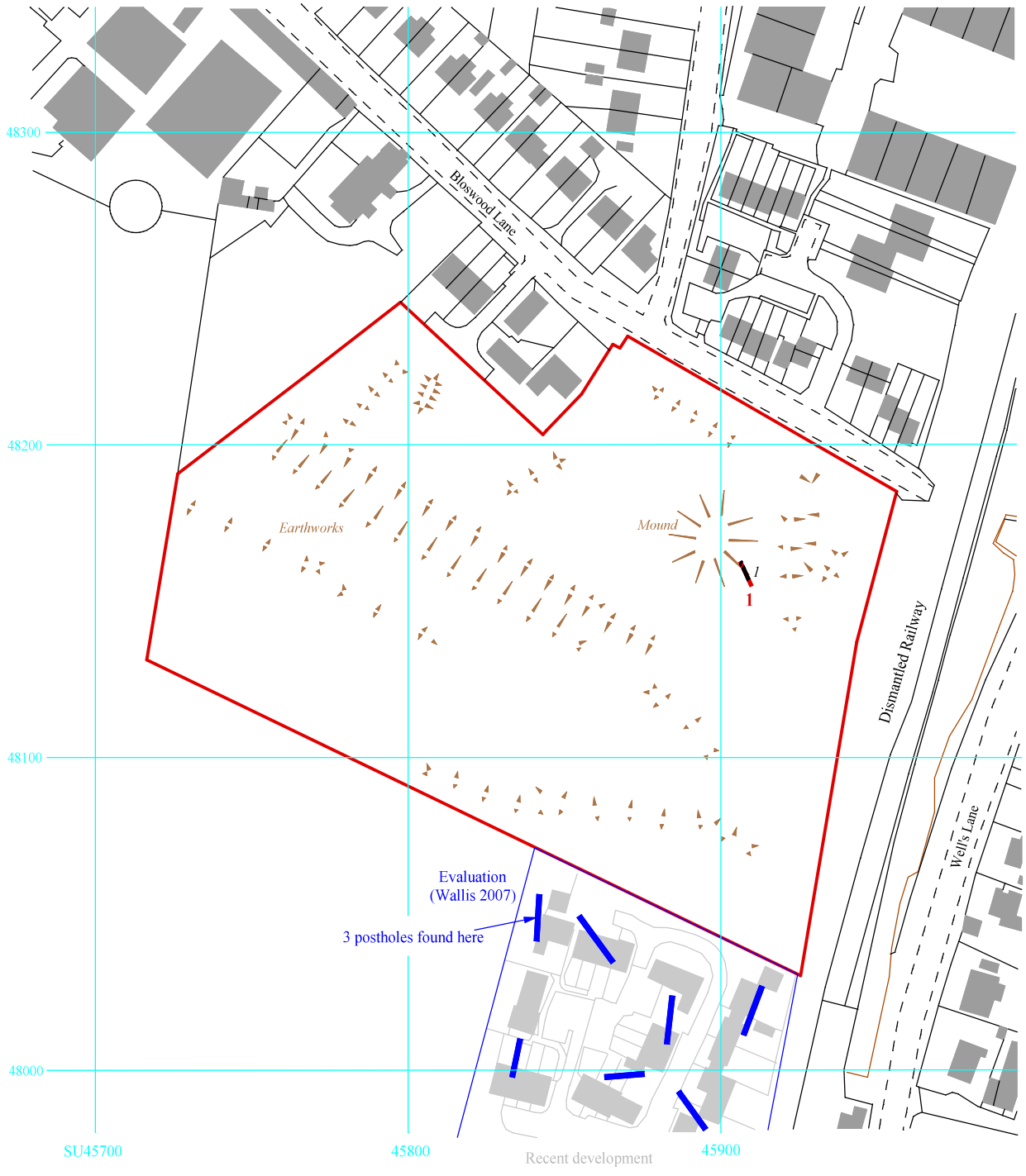
Land at Manor Farm, Bloswood Lane, Whitchurch, Hampshire, 2012
Archaeological Evaluation

Figure 2. Detailed location of site off Blosworth Lane.

THAMES VALLEY ARCHAEOLOGICAL SERVICES



MBW 11/107

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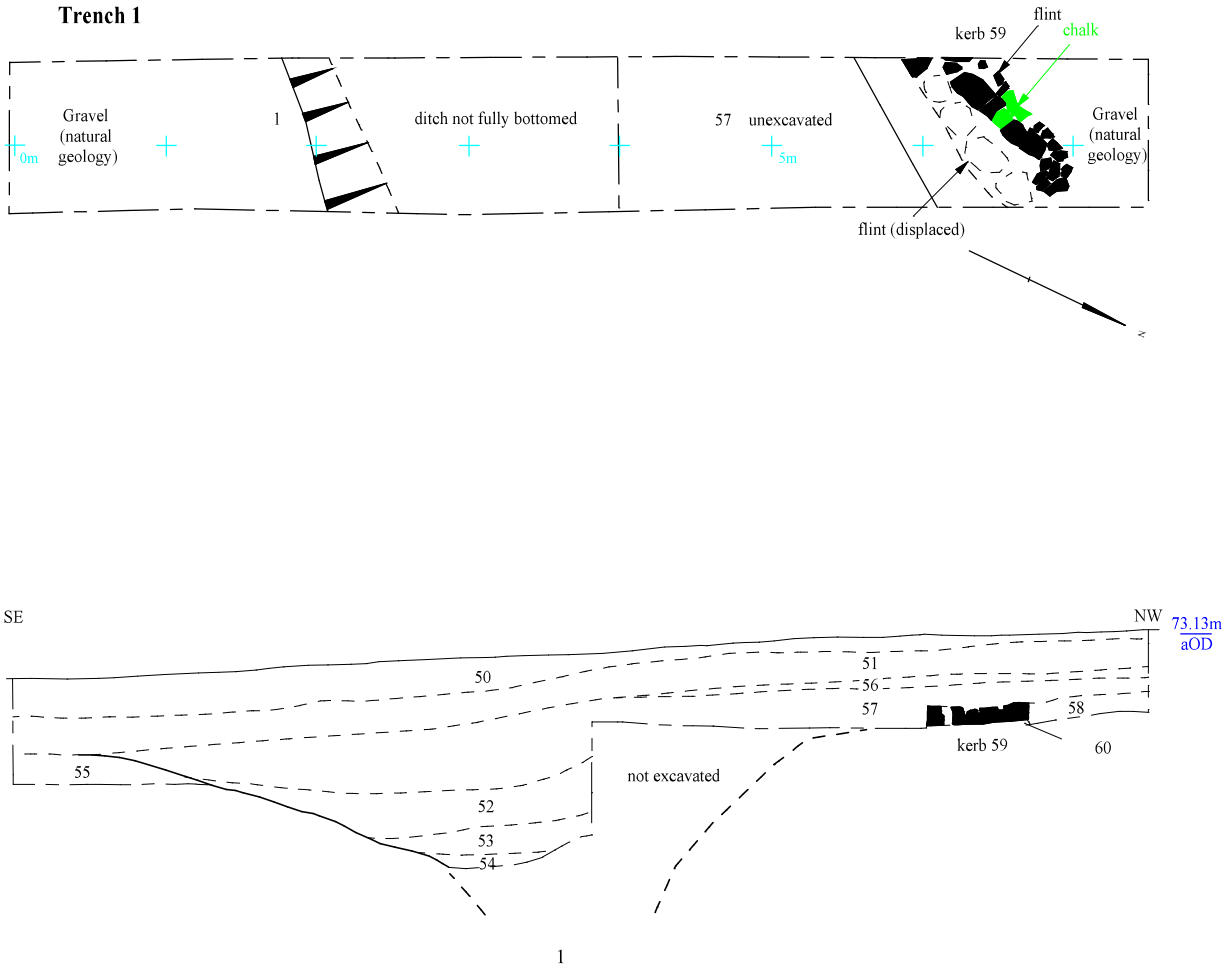
Land at Manor Farm. Bloswood Lane, Whitchurch, Hampshire, 2012
Archaeological Evaluation

Figure 3. Location of trenches, in relation to earthworks.

0 100m

THAMES VALLEY ARCHAEOLOGICAL SERVICES



MBW 11/107

Land at Manor Farm. Bloswood Lane, Whitchurch, Hampshire, 2012
Archaeological Evaluation

Figure 4. Detail of Trench 1.

0 5m

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Plate 1. Trench 1, ditch 1, looking south west, Scales: 2m and 1m

Plate 2. Trench 1 north west end, flint kerb 59, looking south west, Scales: 1m and 0.5m.

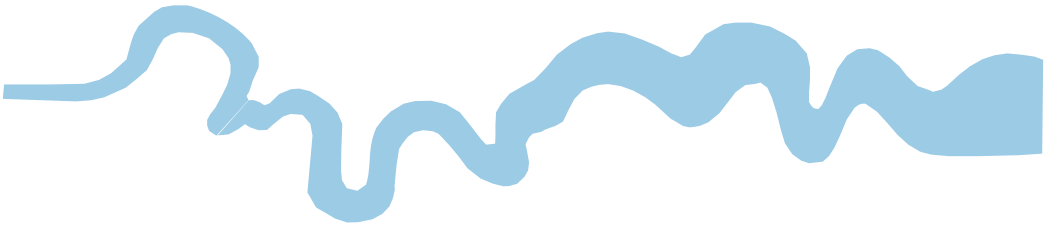
MBW 11/107

Land at Manor Farm, Bloswood Lane, Whitchurch, Hampshire, 2012
Archaeological Evaluation
Plates 1 and 2.

THAMES VALLEY ARCHAEOLOGICAL SERVICES

TIME CHART

	Calendar Years
Modern	AD 1901
Victorian	AD 1837
Post Medieval	AD 1500
Medieval	AD 1066
Saxon	AD 410
Roman	AD 43
Iron Age	BC/AD 750 BC
Bronze Age: Late	1300 BC
Bronze Age: Middle	1700 BC
Bronze Age: Early	2100 BC
Neolithic: Late	3300 BC
Neolithic: Early	4300 BC
Mesolithic: Late	6000 BC
Mesolithic: Early	10000 BC
Palaeolithic: Upper	30000 BC
Palaeolithic: Middle	70000 BC
Palaeolithic: Lower	2,000,000 BC



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