Archaeological Evaluation at Land North of Taylor's Lane Worcester

Worcestershire Archaeology for CgMs Heritage

November 2018







LAND NORTH OF TAYLOR'S LANE WORCESTER WORCESTERSHIRE

Archaeological Evaluation Report







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Worcestershire Archaeology
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SITE INFORMATION

Site name: Land North of Taylor's Lane

Local planning authority: Malvern Hills District Council

Planning reference: 13/01617/OUT

Central NGR: SO 85794 51634

Commissioning client: CgMs Heritage

WA project number: P5403

WA report number: 2631

HER reference: WSM70852

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CONTENTS

SUMMA	ARY	4
REPOR	RT	5
1 INT	RODUCTION	5
1.1	Background to the project	
1.2	Site location, topography and geology	5
2 AR	CHAEOLOGICAL AND HISTORICAL BACKGROUND	5
2.1	Introduction	
2.2	Prehistoric	
2.3	Roman	
2.4	Medieval and post medieval	
2.5	Undated	
3 PR	OJECT AIMS	6
4 PR	OJECT METHODOLOGY	6
5 AR	CHAEOLOGICAL RESULTS	7
5.1	Introduction	
5.2	Trench descriptions	
5.2.1	Natural deposits across the site	
FIFI D	1	7
5.2.2	Trench1	
5.2.3	Trench 2	
5.2.4	Trench 3	
5.2.5	Trench 4	
5.2.6	Trenches 5 and 6	
5.2.7	Trench 7	
5.2.8	Trench 8	
FIELD :	2	8
5.2.9	Trench 9	_
5.2.10	Trench 10	8
5.2.11	Trench 11	8
5.2.12	Trench 12	8
5.2.13	Trench 13	8
5.2.14	Trench 14	8
5.2.15	Trench 15	9
5.2.16	Trench 16	9
5.2.17	Trench 17	9
FIELD:	3	9
5.2.18		
5.2.19	Trench 19	9
5.2.20		
FIELD 4	4	9

	5.2.21	Trench 21	9
	5.2.22	2 Trench 22	9
	5.2.23	3 Trench 23	9
	5.2.24	1 Trench 24	9
	5.2.25	5 Trench 25	9
	5.2.26	6 Trench 26	.10
6		RTEFACTUAL EVIDENCE BY ROB HEDGE	
	6.1.1	Artefact methodology	
	6.1.2	Recovery policy	
	6.1.3	Method of analysis	
	6.1.4 6.1.5	Discard policyArtefactual analysis	
	6.1.6	Summary artefactual evidence by period	
	6.1.7	Significance	
	6.1.8	Recommendations	
		er analysis and reporting	
		rd and retention	
	Disca	TO AND TELEMILION	. 41
7	EN	IVIRONMENTAL EVIDENCE BY ELIZABETH PEARSON	21
	7.1.1	Project parameters	
	7.1.2	Aims	.21
	7.1.3	Methods	.21
	7.1.4	Discard policy	.22
	7.1.5	Report	. 22
	7.1.6	Significance	. 23
8		ADIOCARBON DATING BY ELIZABETH PEARSON	
	8.1	Sample selection	
	8.2	Methods	
	8.3	Results	. 24
0	DIS	SCUSSION	24
9	9.1	Iron Age	
	9.2	Roman	
	9.3	Saxon / Medieval	
	9.4	Post-medieval	
	9.5	Undated	
	0.0		
1	0 5	SIGNIFICANCE	26
1	1 I	MPACTS	26
1	2 (CONCLUSIONS	26
	-	DO JECT DEDOCUMEN	
1	3 F	PROJECT PERSONNEL	27
4	4 <i>A</i>	ACKNOW! EDGEMENTS	27
1	4 <i>F</i>	ACKNOWLEDGEMENTS	21
1	5 E	BIBLIOGRAPHY	28
100		416461848418791	

FIGURES

PLATES

APPENDIX 1: TRENCH DESCRIPTIONS

APPENDIX 2: RADIOCARBON DATING REPORT

APPENDIX 3: SUMMARY OF PROJECT ARCHIVE (WSM70852)

APPENDIX 4: SUMMARY OF DATA FOR HER – WSM 70852

Archaeological Evaluation at Land North of Taylor's Lane, Worcester

By Jem Brewer

With contributions by Elizabeth Pearson and Rob Hedge Illustrations by Carolyn Hunt / Laura Templeton

Summary

An archaeological evaluation was undertaken at Land North of Taylor's Lane, Worcester, Worcestershire (NGR SO 85794 51634). It was commissioned by CgMs Heritage on behalf of St Modwen, in advance of a proposed mixed use development. Planning permission for the scheme has been granted subject to a programme of archaeological works. Archaeological evaluation of the site comprises one stage of this programme. Other stages have included a geophysical survey and watching briefs maintained on ground investigation works.

The site is located between Broomhall Way A4440 and Taylor's Lane to the south of Worcester. It comprises four fields, in a line, set to pasture at the time of the evaluation. Twenty six trenches were excavated over the four fields in a modified grid array.

No significant archaeological features were present in the majority of trenches. Furrows, the truncated remains of medieval and post medieval strip field agriculture were widespread across the site. A number of other linear cut features were also present which were largely undated.

Within two adjacent trenches to the south of the site, archaeological features of more interest were revealed. In one of these small fragments of Malvernian pottery were retrieved from one small oval pit as well as large fragments of charred oak with narrow growth rings. Similar fragments were retrieved from a pit in an adjacent trench as well as fired clay and glass slag. It is thought that these pits are likely to be contemporary and may represent the remains of charcoal or ceramic production. To the south of the second pit a Malvernian oven plate of 2nd – 4th century date was retrieved from a small ditch. This may be associated with the presence of a prefabricated oven for provisioning workers or travellers in the Roman period.

Metal detecting of topsoil spoil heaps produced a range of artefacts including a lead bullet (1000) which may relate to the nearby Civil War battlefield and a lead seal (4000).

Report

1 Introduction

1.1 Background to the project

An archaeological evaluation was undertaken by Worcestershire Archaeology (WA) in October 2018 at Land North of Taylor's Lane, Worcester, Worcestershire (NGR SO 85794 51634). This comprised 26 evaluation trenches across four fields. The project was commissioned by CgMs Heritage on behalf of St Modwen, in advance of a proposed mixed use development. Planning permission has been granted subject to a programme of archaeological works (13/01617/OUT).

Aidan Smyth, Planning Archaeologist for Malvern Hills District Council, Aidan Smyth, considered that the proposed development had the potential to impact upon possible heritage assets.

A Written Scheme of Investigation (WSI) was prepared by Worcestershire Archaeology (WA2018) and approved by Aidan Smyth. The evaluation conforms to the guidelines and standards set out by the Chartered Institute for Archaeologists in *Standard and guidance: for archaeological field evaluation* (ClfA 2014) and the *Standards and guidelines for archaeological projects in Worcestershire* (WCC 2010)

1.2 Site location, topography and geology

The site is located approximately 5km south from the historic core of Worcester, and 200m south of the A4440 Broomhall Way ring road. The site comprises four fields of open grassland, approximately 17.5 ha, on ground to the east of the River Severn approximately 400m away.

The site is bounded to the north, east and west by hedgerows, while Taylor's Lane makes up the southern boundary. The field is generally flat, at *c* 28m Above Ordnance Datum (AOD). The site was formerly pasture fields in the immediate past, but in earlier periods included orchards and hop fields.

The underlying geology comprises bedrock of both dolomitic Siltstone and Mudstone, of Sidmouth Mudstone Formation, formed in the Triassic periods. No superficial deposits are recorded to overlay the site (BGS 2018).

2 Archaeological and historical background

2.1 Introduction

A geophysical survey of the site has been prepared (Archaeophysica 2013) which highlighted orchard bank earthworks and ridge and furrow. Two phases of geotechnical works within the site were subject to an archaeological watching brief, both carried out by Worcestershire Archaeology. No significant archaeological remains were recorded. An archaeological desk-based assessment (DBA) of the site was undertaken by EDP (EDP 2012), on behalf of St Modwen Homes, and an Environmental Impact Statement (Atkins 2013) has been prepared. The findings presented in the Environmental Impact Statement are summarised below.

2.2 Prehistoric

Prehistoric activity in the area included a Mesolithic hunting camp ([MWR26120], at Bath Road *c*. 500m north-west of the site. This site at Bath Road was active through the Late Iron Age with probable small to medium sized rural farmsteads identified through excavation [MWR27319] and the site carried on into the Roman period. A further site located *c*.500m to the south-east [MWR28213] shows a similar pattern of activity from Late Iron Age to Roman period.

2.3 Roman

A Roman road [MWR6553 & MWR26482], aligned north to south lies *c*.100m west of the Site. Although a geophysical investigation [EWR4711] identified two parallel ditches on the same

alignment, some areas of the road may have been destroyed as only partial survival was indicated in geophysical survey and archaeological investigations.

A known occupation site has been identified *c*.750m to the east of the site [MWR8460], which appears to have been occupied from the second century through to the third or early fourth century [EWR735]. The site also provided for evidence of industrial activity.

2.4 Medieval and post medieval

Upper Broomhall Farm, immediately to the south of the site, may have Medieval origins, although the extant buildings are of post-Medieval date. The ridge and furrow within the Site [MWR8789], and that to the south of the farmstead [MWR8790], are closely associated with Upper Broomhall Farm, and testify to the longevity of farming at this location. There is some speculation, however, that the asset to the south of the farm may not be composed of features relating to medieval agriculture and could relate to the planting of an orchard in the 1920s to 1930s.

The first skirmish of the English Civil War took place on September 23rd 1642 at the site of Powick Bridge [MWR5627] c.1 km to the north-west of the Site. A small Parliamentarian force failed in its attempt to raid a Royalist treasure caravan. Worcester eventually saw the English Civil War come full circle with the final battle taking place in 1651 to the north /north-west of the Site, on the north side of Broomhall Way [DWR6158]. This is now a Registered Battlefield. The area of the battlefield immediately to the north of the Site has already been developed. Other evidence associated with the battle is recorded at the sites of important river crossings [MWR5628, 25361,& 25362].

2.5 Undated

There are two undated assets recorded in the vicinity of the site, an enclosure east of Middle Broomhall Farm [MWR531], and an enclosure and associated ridge and furrow north of Lower Broomhall Farm [MWR3141].

3 Project aims

The aims and scope of the project were to undertake sufficient fieldwork to:

- Determine the presence or absence of archaeological deposits beyond reasonable doubt;
- Identify their location, nature, date and preservation;
- Assess their significance;
- Assess the likely impact of the proposed development.

4 Project methodology

A Written Scheme of Investigation (WSI) was prepared by Worcestershire Archaeology (WA 2018). Fieldwork was undertaken between 22 October and 9 November 2018.

26 trenches, amounting to 2340m^2 in area, were excavated over the c 17.5 ha site, representing a sample of c 1.3%. The location of the trenches is indicated in Figure 2. The trenches were laid out in a modified grid array. With the following exceptions, all trenches were excavated as per the agreed array:

- Trench 7 was moved south to avoid the pond area,
- Trench 9 is not straight as it was originally started incorrectly and then rotated to reach the correct alignment, and
- Trench 13 was rotated to avoid extant apple trees.

Deposits considered not to be significant were removed under constant archaeological supervision using a 360° tracked 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. Deposits were recorded according to standard Worcestershire Archaeology practice (WA 2012) and trench and feature locations were 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.

A metal detecting survey was undertaken on the excavated topsoils using a Garrett ACE 150 Metal Detector, set at full sensitivity and using the 'All-Metal Mode', except for trenches 18,19 and 20 in field 3. Field 3 was used recently for growing hops and contained the remains of hop poles and modern ferrous debris related to these growing activities. Accordingly, the mode was set to exclude ferrous materials when surveying these trenches.

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

The project archive is currently held at the offices of Worcestershire Archaeology. Subject to the agreement of the landowner it is anticipated that it will be deposited at Worcestershire County Museum.

5 Archaeological results

5.1 Introduction

The features recorded in the trenches are shown in Figures 4, 6 and 8. The trench and context inventory is presented in Appendix 1.

The following section is laid out by field and then by trench.

5.2 Trench descriptions

5.2.1 Natural deposits across the site

The natural substrate observed on-site comprised a moderately compact mid red silty clay with grey and blue mottling between 0.43m-0.60m below ground surface. Some variation was observed in the colour with a brownish hue predominant in the east of the site, and a pinkish hue further to the west. The natural substrate contained occasional small to medium sub rounded pebbles and gravels.

No alluvial deposits were observed.

Field 1

5.2.2 Trench1

A moderately compact, mid brownish red, silty-clay deposit overlay the natural substrate. This deposit was present across all the trenches in this field, measuring between 0.21m-0.34m in depth, and is interpreted as a subsoil.

The topsoil overlying this field consists of a soft and friable, mid reddish brown, clay silt, containing rare sub rounded pebbles, and very rare limestone and charcoal flecks. The deposit varied from 0.18m-0.28m in depth.

No features were observed in this trench. Artefacts recovered from the topsoil included a lead bullet (see 6.1.6 below).

5.2.3 Trench 2

This trench contains linear features, one of which was investigated and interpreted as the base of a furrow.

5.2.4 Trench 3

This trench contains linear features, one of which was investigated and interpreted as the base of a furrow.

5.2.5 Trench 4

No archaeological features were observed in this trench. Artefacts recovered from the topsoil included a lead seal (see 6.1.6. below).

5.2.6 Trenches 5 and 6

These trenches contained a single heavily truncated gully [5004] and [6003] running in a north east to south west alignment. These are thought to be the same feature and either reflect a furrow base, although on a different alignment to the rest of the furrows identified on the site or more likely a former field boundary.

5.2.7 Trench 7

This trench contained two ditches [7004] and [7005], both interpreted as possible post medieval drainage ditches, probably related to the pond located directly to the north of the trench. A small, heavily truncated, sub oval pit [7006] contained frequent charcoal fragmnets and some very small fragments of Iron Age pottery.

5.2.8 Trench 8

No archaeological features were observed in this trench.

Field 2

5.2.9 Trench 9

A soft and cohesive mid yellowish brown silty clay deposit overlay the natural substrate in this field. This deposit was observed across all trenches in this field, measuring between 0.18m-0.23m in depth, and is interpreted as subsoil. The topsoil across this field is a soft and friable, mid greyish brown silty clay with frequent roots, occasional small rounded pebbles and gravels and occasional charcoal flecks. The topsoil varied in depth between 0.21m-0.32m.

This trench contained a north-south aligned truncated gully [9003], together with an east-west aligned ditch [9005] which has been interpreted as a field boundary. This ditch contained a fragment of Romano-British Malvernian oven plate. In addition, the trench included a pit [9007], which was recorded in a section of the trench wall. The trench was extended to reveal the entirety of this pit in plan, and it was subsequently fully excavated.

The pit contained layers of burnt wood material, covered by layers of fired clay fragments, some with marks indicating that the clay had been pushed against sticks.

5.2.10 Trench 10

This trench contained a linear feature, which has been interpreted as a furrow.

5.2.11 Trench 11

No archaeological features were observed in this trench.

5.2.12 Trench 12

This trench contained a number of linear features, again interpreted as furrows.

5.2.13 Trench 13

This trench contained one linear feature, interpreted as a furrow.

5.2.14 Trench 14

This trench contained one east-west aligned ditch [14003].

5.2.15 Trench 15

This trench contained a number of linear features, interpreted as furrows. The distance from furrow to furrow in the trench is 7m. The distance from furrow to furrow in the extant ridge and furrow is 5m.

5.2.16 Trench 16

This trench contained a number of linear features interpreted as furrows, together with a further linear feature, ditch [16003]. This has been interpreted as a probable field boundary due to its size, length and as it runs parallel to the modern field boundaries on the site.

5.2.17 Trench 17

This trench contained linear features, both furrows and a ditch (unexcavated) which appears to be a continuation of [16003] in Trench 16.

Field 3

5.2.18 Trench 18

A soft and friable mid brown silty clay deposit overlay the natural substrate in this field. This deposit was observed across all trenches in this field, measuring between 0.17m-0.30m in depth, and is interpreted as a subsoil. The topsoil across this field is a soft and friable, dark brown clay silt with frequent roots, and occasional small rounded pebbles and gravels. The topsoil varied in depth between 0.23m-0.32m.

No archaeological features were observed in this trench.

5.2.19 Trench 19

This trench contained a linear feature which is interpreted as a furrow.

5.2.20 Trench 20

No archaeological features were observed in this trench.

Field 4

5.2.21 Trench 21

A soft and friable, mid brown, silty clay deposit overlay the natural substrate in this field. This deposit was observed across all trenches in this field, measuring between 0.14m-0.25m in depth, and is interpreted as subsoil. The topsoil across this field is a soft and friable, dark brown, clay silt with frequent roots, and occasional sub rounded and sub angular pebbles. The topsoil varied in depth between 0.20m-0.28m.

No archaeological features were observed in this trench.

5.2.22 Trench 22

This trench contained two linear features, running approximately north-south, ditches [22003] and [22005].

5.2.23 Trench 23

This trench contained one linear feature, ditch [23004].

5.2.24 Trench 24

This trench contained one linear feature, ditch [24006], and an area of gleyed material, which has been interpreted as a possible pond.

5.2.25 Trench 25

No archaeological features were observed in this trench.

5.2.26 Trench 26

This trench contained a number of linear features, which have been interpreted as furrows.

6 Artefactual evidence by Rob Hedge

Artefacts spanning the Iron Age to the 20th century were recovered, mostly from agricultural soils. A few diagnostic finds within features indicate the presence of Iron Age and Roman activity on the site, albeit at relatively low density.

6.1.1 Artefact methodology

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

6.1.2 Recovery policy

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

6.1.3 Method of analysis

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

Artefacts from environmental samples were examined and included in the assessment. Metal artefacts recovered from spoilheaps using metal detector were quantified, with diagnostic pieces selected for discussion.

The pottery and ceramic building material was examined under x20 magnification and referenced as appropriate by fabric type and form according to the fabric reference series maintained by Worcestershire Archaeology (Hurst and Rees 1992 and www.worcestershireceramics.org).

6.1.4 Discard policy

Artefacts from topsoil and subsoil and unstratified contexts will normally be noted but not retained, unless they are of intrinsic interest (eg worked flint or flint debitage, featured pottery sherds, and other potential 'registered artefacts'). All artefacts will be collected from stratified excavated contexts, except for large assemblages of post-medieval or modern material, unless there is some special reason to retain such as local production. Such material may be noted and not retained, or, if appropriate, a representative sample may be collected and retained. 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.

See the environmental section for other discard where appropriate.

6.1.5 Artefactual analysis

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

The assemblage comprised 380 artefacts, weighing 7017.5g. It came from 35 stratified contexts and could be dated from the Iron Age period onwards (see Table 1). Using pottery as an index of artefact condition, this was generally poor with the majority of sherds displaying high levels of abrasion. At 15.6g, the mean sherd size was above average, but this largely reflects the presence of sherds from a few large, robust vessels such as the post-medieval redwares.

The majority of the assemblage came from topsoil or subsoil deposits, with relatively little material from archaeological features. Much of the metalwork — mostly recovered from spoilheaps with the aid of a metal detector — was undiagnostic and heavily corroded undiagnostic ironwork. This assessment, therefore, comprises a brief description of the general character of the assemblage from agricultural soils, with more detailed trench-specific analysis reserved for finds from features or of special intrinsic interest.

Period	Material class	Object specific type	Count	Weight (g)
Iron Age	ceramic	Pot	8	3
early Roman	ceramic	Pot	1	28
	ceramic	fired clay	101	865
Roman	Ceramic	Pot	2	52
	glass	glass slag	1	1
Roman/medieval	ceramic	oven plate	1	91
Noman/medieval	Coramic	unident	2	66
	ceramic	Pot	1	9
medieval	Ceramic	roof tile	1	82
	lead	Seal	1	6
medieval/early post-	ceramic	Pot	1	7
medieval	Coramic	roof tile	39	719
late med/early post-med	ceramic	Pot	2	41
late meareany post med		roof tile	16	243
	ceramic	brick/tile	9	61
medieval/post-medieval	iron	iron object	1	12
medieval/post medieval	11011	Nail	29	403
	lead	window came	1	2
		Brick	4	435
		brick/tile	1	2
		clay pipe	3	5
	ceramic	Pot	26	535
post-medieval		roof tile	11	495
		Saggar	1	18
	glass	Vessel	3	269
	copper alloy	Button	1	1
	lead	lead bullet	1	28.5

Period	Material class	Object specific type	Count	Weight (g)
	ceramic	Pot	31	425
	Ceramic	pot waster	1	8
	glass	Vessel	2	189
		Buckle	1	10
	copper	Clasp	2	12
post-medieval/modern	alloy	decorative fitting	1	28
		chain link	1	49
	iron	Handle	1	42
	lion	iron object	1	139
		washer	1	53
	ceramic	glazed tile	1	39
		Pot	1	23
	glass	Window	2	3
	aluminium	drinks can	1	4
modern	copper	copper alloy fragment	1	9
		mechanical timer	1	46
		window channel	1	16
	iron	Bolt	2	36
	bone	burnt bone	1	3
	animal bone	mammal bone	10	109
undated	ceramic	fired clay	6	13
unuateu	copper alloy	copper alloy fragment	2	9
	iron	iron object	34	1141
	11011	unident	1	61

Period	Material class	Object specific type	Count	Weight (g)
	charcoal	charcoal	2	1
	shell	oyster shell	1	2
	slag	unident	2	44
	slag(cu)	copper alloy slag	1	24
		Total	380	7017.5

Table 1: Quantification of the assemblage

Broad period	Fabric code	Fabric common name	Count	Weight (g)
Iron Age	3	Malvernian ware	8	3
	3.1	Slab-built Malvernian ware	1	91
	12	Severn Valley ware	1	50
Romano-British	12.2	Oxidised organically tempered Severn Valley ware	1	28
	98	Miscellaneous Roman wares	1	2
Medieval	56	Malvernian unglazed ware	1	9
late med/early post-	69	Oxidized glazed Malvernian ware	2	46
med	72	Brown glazed with flecks	1	2
	78	Post-medieval red ware	11	531
	90	Post-medieval orange ware	1	9
Doot woodings	91	Post-medieval buff wares	2	11
Post-medieval	81.5	White salt-glazed stoneware	4	27
	84	Creamware	3	6
	100	Miscellaneous post-medieval wares	5	26
Post- medieval/modern	83	Porcelain	1	8
Modern	81.4	Miscellaneous late stoneware	5	111
wodem	85	Modern china	26	196

Broad period	Fabric code	Fabric common name	Count	Weight (g)
		Totals:	74	1156

Table 2 Quantification of the pottery by fabric

6.1.6 Summary artefactual evidence by period

For the finds from individual features, including specific types of pottery, consult Tables 3 and 2 in that order and in combination.

Iron Age

A very small quantity of pottery and fired clay was recovered from environmental samples of fill (7007) from pit [7006]. The eight fragments of pottery — collectively weighing just 3g — were too abraded for a conclusive identification: none of the surfaces survived. However, the presence of fragments of Malvernian rock within a soft, dark grey fabric suggests that they are likely to be Malvernian ware (fabric 3), produced locally in the later prehistoric period.

Roman

The only conclusively dated Roman feature was encountered within Trench 9: fill (9006) of ditch [9005] yielded a distinctive fragment of Malvernian (fabric 3.1) oven plate: usually dating to the 3rd/4th centuries A.D. (but sometimes occurring in earlier deposits), these are thought to have been associated with prefabricated ovens for provisioning workers or travellers (Evans et al. 2017).

Nearby, fills (9009) and (9010) of pit [9007] produced large quantities of fired clay: this is a frequent feature of prefabricated ovens, which appear to have been constructed on a 'hearth' of broken pot, tile, or packed clay, and were sometimes covered with a layer of insulating clay (*ibid*, 54-5).

Elsewhere, organic tempered Severn Valley ware (fabric 21.2) dating to the 1st/2nd century AD was found within fill (16004) of ditch (16003), along with a small fragment of undiagnostic tile/plate material. A medieval date cannot be excluded for the latter.

Small quantities of abraded Roman pottery were found within the topsoil of trenches 12 and 14: these are typical of a background scatter reflecting nearby Roman activity.

Medieval

A small quantity of medieval pottery — probably introduced onto the site by agricultural practices such as manuring — was present within topsoil. This included typical local wares: Malvernian unglazed (fabric 56) cooking pot, and later medieval/early post-medieval Malvernian glazed ware (fabric 69) and early redware (fabric 72).

Roof tile was present in sizeable quantities, including Worcester tile (fabric 2b) of 13th to 15th century date, and Malvernian glazed (fabric 3) ridge tile of 13th to 17th century date. Later medieval and early post-medieval tiles in Worcester fabric 2c were also present. Most of this is likely to have been reused in drainage or as hardcore. There is no evidence that it originated from a building within the site area.

A small lead seal – probably a fragment from a customs seal, used for marking cloth and other taxable goods — was recovered from topsoil. 19mm in diameter, it bears the design of a cross extending across the upper surface, with a single pellet in each quadrant (plate 14). The proportions and design suggest a medieval date.

Post-medieval

A single lead bullet (plate 13) was recovered from the spoilheap of Trench 1, in the western part of the site. Approximately 16mm in diameter and weighing 28.5g, it is approximately 16 bore (bullets to a pound of lead) in calibre. This falls within an awkward range – too small for a musket but too large for a pistol or carbine. However, it is a good fit for a smaller 'bastard musket' of the type in use during the 17th century (Foard 2009, 8-9). A connection to the Civil War battlefield cannot be conclusively proven, but is considered likely. The bullet is slightly sub-spherical, has no protruding casting marks, and the sprue has been snipped: this indicates that it has probably been fired. It does not show any significant impact damage, so may have landed, therefore, in soft ground.

A range of typical post-medieval pottery, metalwork, tile, and glass were present within agricultural soils across the site. A porcelain waster and fragment of saggar are likely to have been incorporated into the site as hardcore, originating from one of the Worcester porcelain factories in the late 18th or 19th centuries.

Undated

Many of the corroded fragments of iron could not be closely dated. Nails were largely classified as medieval/post-medieval: although almost all pre-dated the late 19th century introduction of round-wire nails, the extent of corrosion meant that earlier hand-made nails could not be readily distinguished from early to mid-19th century cut nails.

Context	Material	Object type	Count	Weight (g)	Start date	End date	TPQ date range	
	ceramic	roof tile	2	43	1475	1700		
	iron	iron object	4	107				
1000	11011	nail	1	19	1066	1900	AD 1600 - 1900	
	lead	lead bullet	1	28.5	1600	1800		
	slag	unident	1	9				
2000	copper alloy	copper alloy fragment	1	2			AD 1066 - 1900	
	iron	nail	3	32	1066	1900	- 1900	
2002	ceramic	brick	2	301	1600	1900	AD 1600 - 1900	
2003		roof tile	7	111	1500	1800		
2000	iron	bolt	1	16	1900	2000	AD 1900	
3000		iron object	5	126			- 2000	
	bone	burnt bone	1	3			AD 1500 - 1700	
3003	ceramic	pot	1	2	1500	1700		
3003		roof tile	4	33	1475	1700		
	charcoal	charcoal	2	1				
	:	iron object	4	237				
	iron	nail	2	23	1066	1900	AD 4000	
4000	lead	seal	1	6	1066	1540	- AD 1066 - 1900	
	slag(cu)	copper alloy slag	1	24				
5000	ceramic	pot	1	39	1500	1630	AD 1850	

Context	Material	Object type	Count	Weight (g)	Start date	End date	TPQ date range
			1	18	1850	1950	- 1950
		roof tile	3	234	1600	1800	
	copper alloy	button	1	1	1600	1900	
	iron	iron object	2	46			
	ceramic	pot	1	7	1600	1800	
	Ceramic	roof tile	1	22	1500	1800	
	aluminium	drinks can	1	4	1950	2000	
	copper	copper alloy fragment	1	9	1900	2000	
6000	alloy	window channel	1	16	1900	1980	AD 1950 - 2000
	iron	bolt	1	20	1900	2000	
		iron object	1	47			
		nail	1	19	1066	1900	
	lead	window came	1	2	1200	1900	
7000	iron	iron object	1	17			AD 1066
7000	11011	nail	2	21	1066	1900	- 1900
7007	ceramic	fired clay	6	13			800 -
7007	Ceramic	pot	8	3	-800	-100	100 BC
7010	animal bone	mammal bone	3	8			Undated
7040		re of tile	5	178	1550	1800	AD 1550
7012	ceramic	roof tile	36	531	1200	1700	- 1800
8000	iron	iron object	3	174			Undated
			4	30	1820	2000	AD 1900 - 2000
9000	ceramic	pot	1	9	1795	1830	
			3	26	1700	1800	

Context	Material	Object type	Count	Weight (g)	Start date	End date	TPQ date range	
			1	66	1800	2000		
			2	72	1700	1800		
	glass	vessel	1	197	1780	1820		
	giass		1	154	1850	1950		
		window	2	3	1900	2000		
	copper alloy	clasp	2	12	1600	2000		
	iron	handle	1	42	1600	2000		
	11011	nail	5	84	1066	1900		
9006	ceramic	oven plate	1	91	200	410	AD 200 - 410	
0000	ceramic	fired clay	80	502	43	410	Undated	
9009	glass	glass slag	1	1	43	410	Undated	
	ceramic	fired clay	21	343	43	410		
9010		roof tile - ?intrusive	1	3	1550	1800	Undated	
	ceramic	brick	1	40	1600	1900		
			3	18	1800	2000		
		not	1	16	1720	1770		
		pot	1	22	1850	1950		
10000			1	5	1700	1800	AD 1850 - 2000	
		chain link	1	49	1800	2000		
	iron	nail	3	15	1066	1800		
	lion	unident	1	61				
		washer	1	53	1800	2000		
		brick/tile	1	2	1600	1900		
11000	ceramic	not	1	20	1870	1950	AD 1870 - 1950	
		pot	1	10	1770	1950		

Context	Material	Object type	Count	Weight (g)	Start date	End date	TPQ date range	
			1	1	1760	1820		
			2	14	1775	1830		
			1	2	43	410		
		roof tile	2	34	1500	1800		
	iron	iron object	2	43				
	11011	nail	1	7	1066	1900		
	slag	unident	1	35				
12000	ceramic	brick	1	94	1600	1900	AD 1750	
12000	Ceramic	pot waster	1	8	1750	1950	- 1950	
	ceramic	brick/tile	5	28	1200	1800	AD 1870 - 2000	
		pot	2	51	1870	1950		
13000			3	13	1800	2000		
13000	glass	vessel	1	35	1850	1950		
	iron	iron object	4	87				
	shell	oyster shell	1	2				
		brick/tile	4	33	1200	1800		
		glazed tile	1	39	1900	2000		
	ceramic	not	1	50	43	410		
14000		pot	8	54	1800	2000	AD 1900 - 2000	
		roof tile	1	49	1600	1900		
	iron	iron object	3	104				
	iron	nail	2	5	1066	1900		
	animal bone	mammal bone	7	101			AD 1900 - 2000	
15000			2	326	1600	1800		
	ceramic	pot	2	33	1800	2000	- 2000	
			1	23	1900	2000		

Context	Material	Object type	Count	Weight (g)	Start date	End date	TPQ date range
	iron	iron object	3	97			
	iron	nail	4	33	1066	1900	
16000	iron	iron object	2	56			AD 1066
	lion	nail	2	26	1066	1900	- 1900
16004	ceramic	pot	1	28	43	200	AD 43 -
	ceramic	unident	1	36	43	1500	1500
17000	ceramic	roof tile	1	82	1200	1500	AD 1200 - 1500
18000	ceramic	unident	1	30	43	1500	AD 43 - 1500
	ceramic	pot	1	7	1200	1630	
40000	copper alloy	buckle	1	10	1600	2000	AD 1600 - 2000
19000	iron	iron object	1	12	1066	1900	
		non object	1	139	1600	2000	
		nail	2	81	1066	1900	
20000	copper	decorative fitting	1	28	1800	2000	AD 1920
	alloy	mechanical timer	1	46	1920	1980	- 2000
			3	79	1600	1800	
		not	1	2	1795	1830	
	ceramic	pot	1	3	1820	1950	
21000	Ceramic		1	78	1800	2000	AD 1820 - 2000
		roof tile	2	133	1200	1700	
		roor tile	1	31	1700	1900	
	iron	nail	1	38	1066	1900	
22000	ceramic	clay pipe	1	1	1600	1910	AD 1800
22000	ceramic	pot	2	5	1720	1770	- 1910

Context	Material	Object type	Count	Weight (g)	Start date	End date	TPQ date range	
			2	20	1600	1800		
			1	6	1800	1850		
			1	2	1760	1820		
23001	ceramic	pot	1	9	1200	1400	AD 1200 - 1400	
24000	ceramic	roof tile	1	55	1200	1630	AD 1200 - 1630	
			clay pipe	2	4	1600	1910	
			1	10	1600	1800		
			1	3	1760	1820		
25000	ceramic	pot	2	6	1800	2000	AD 1800 - 2000	
			1	6	1720	1770		
			1	1	1770	1900		
			saggar	1	18	1750	1900	
26000	copper alloy	copper alloy fragment	1	7			Undated	

Table 3: Summary of context dating based on artefacts

6.1.7 Significance

Nature of the archaeological interest in the site

Prehistoric activity is attested by the presence of very small quantities of Iron Age material within a pit. Slight traces of Roman activity suggest that some form of 'roadside' activity associated with or close to the Roman Road may have taken place. The artefacts suggest a typical pattern of medieval and post-medieval activity, with incorporation of debris from nearby settlements into the site through agricultural activities such as manuring.

Relative importance of the archaeological interest in the site

The presence of potentially *in-situ* Roman oven material in the vicinity of the Roman Road is potentially of interest: recent research (Evans et al 2017) suggests that ceramic ovens were associated with small-scale street-sellers or field kitchens for provisioning workers or travellers.

Physical extent of the archaeological interest in the site

Although outside of the area of the registered Civil War battlefield, the presence of a lead bullet consistent with a 17th century date suggests that evidence of that conflict may survive within the site area, and that this may be ephemeral and concentrated within the agricultural soils.

6.1.8 Recommendations

Further analysis and reporting

The following recommendations are made for consideration when designing any further archaeological project for this site.

 Metal-detecting of the spoilheaps yielded useful information in this phase, and should be repeated for further phases of work

The following recommendations are made with regard to further work on the artefacts considered as part of this report.

• If further work is to be undertaken on the site, it would be beneficial to include the finds from archaeological features in any subsequent full analysis.

Discard and retention

It is recommended that Iron Age, Roman, and medieval components of the assemblage be retained, along with the post-medieval lead bullet. The remainder of the assemblage is not considered worthy of retention, although the final decision rest with Museums Worcestershire.

7 Environmental evidence by Elizabeth Pearson

7.1.1 Project parameters

The environmental project conforms to guidance by ClfA (2014) on archaeological excavation/watching brief/evaluation and guidance by English Heritage (2011) and Association for Environmental Archaeology (1995).

7.1.2 Aims

The aims of the assessment were to determine the state of preservation, type, and quantity of environmental remains recovered, from the samples and information provided. This information will be used to assess the importance of the environmental remains.

7.1.3 Methods

Sampling policy

Samples were taken according to standard Worcestershire Archaeology practice (2012). A total of five samples (each of between 10 to 20 litres), of which two (undated pits) were assessed (Table 4).

Context	Sample	Feature type	Fill of	Period	Sample volume (L)	Volume processed (L)	Residue assessed	Flot assessed
7007	1	Pit	7006	Undated	10	10	Yes	Yes
9009	5	Pit	9007		20	10	Yes	Yes

Table 4: List of bulk samples

Processing and analysis

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

The residues were scanned by eye and the abundance of each category of environmental remains estimated. A magnet was also used to test for the presence of hammerscale. The flots were scanned using a low power MEIJI stereo light microscope and plant remains identified using modern reference collections maintained by Worcestershire Archaeology, and a seed identification manual (Cappers et

al 2012). Nomenclature for the plant remains follows the New Flora of the British Isles, 3rd edition (Stace 2010).

Animal bone was quantified according to weight and count (g) and tabulated by context.

Charcoal was examined under a low power MEIJI stereo light microscope in order to determine the presence of oak and non-oak charcoal.

7.1.4 Discard policy

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

7.1.5 Report

Hand-collected animal bone

A small assemblage of animal bone (112g, 11 fragments) was hand-collected during fieldwork. As was a very small assemblage of poorly preserved bone, consisting of mainly split large domestic mammal limb shaft fragments, no further work was carried out on this material.

Context	Material class	Material subtype	Count	Weight (g)	Feature type	Period
3003	bone	Animal bone	1	3	Furrow	Late medieval to post-medieval
7010	bone	animal bone	3	8	Ditch	undated
15000	bone	animal bone	7	101	Topsoil	Post-medieval
Totals			11	112		

Table 5: hand-collected animal bone

Plant macrofossil remains

Results are summarised in Tables 6 and 7.

Unusually large fragments of heartwood oak were recovered from both fills (7007 and 9007) of pits [7006 and 9007]. In both pits, the growth rings of the oak were uniformly very narrow with a pronounced ring-porous growth pattern. This may reflect crowded growing conditions, perhaps in coppiced woodland, rather than environmental factors such as drought or a late spring, which can also restrict annual growth. It is assumed that environmental factors which relate to temperature and rainfall are more likely to vary from year to year and produce variable size growth rings rather than restrict growth for several years in a more uniform way.

The association of large charcoal fragments with burnt clay and sticks in (9007) suggests a fire pit, in which charcoal fuel may either derive from a charcoal clamp in another location, or may have been produced *in situ*. The pits at Taylor's Lane may be similar to charcoal pit kilns of early and high medieval date in central Belgium (Deforce *et al* 2018). Alternatively, they may be pot clamps used for

pottery or loomweight production (Derek Hurst pers comm), or the remains of prefabricated ovens (Section 6.1.6 above).

The artefactual dating suggested that (7007) was of possible prehistoric date, whilst (9009) is of Roman date. However, the similarity in the charcoal in both pits [7006 and 9007], and the distinctive growth ring pattern of the oak suggests that they are contemporary. The pits, moreover are likely to relate to industrial activity which required a concentrated source of charcoal fuel.

As the charcoal source is heartwood oak, radiocarbon dating of this material is likely to be affected by old wood effect because of the long lifespan of oak, and is, therefore, unlikely to be useful in refining the date of the pottery in pits (7007 and 9009).

Context	Sample	Charcoal	Artefacts
7007	1	Abt	occ fired clay
9009	5	Abt	abt fired clay, occ glass slag(?)

Table 6: Summary of environmental samples; abt = abundant

Context	Sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
7007	1	ch	Quercus robur/petraea wood	Misc	+++/low	Large fragments of oak with narrow growth rings
9009	5	ch	Quercus robur/petraea wood	Misc	+++/low	Very large fragments oak with narrow growth rings

Table 7: Plant remains from bulk samples

Key:

Preservation	Quantity
ch = charred	+++ = 51 - 100

7.1.6 Significance

The assessment of environmental remains has demonstrated the presence of well-preserved large charcoal fragments which are of local significance. They could have originally been produced in a pot or charcoal clamp, or within a prefabricated oven, and then used as a fuel for industrial activity on the site.

8 Radiocarbon dating by Elizabeth Pearson

8.1 Sample selection

As the date of the pits containing charcoal (interpreted as clamps) was uncertain, charcoal was selected from fill (9009) for radiocarbon dating. Only oak was available which is not normally considered suitable for radiocarbon dating for dating because it is a long-lived tree (potentially up to 900 years). If the fragment came from the centre of the heartwood, the long lifespan could result in a large old wood effect. However, as the date was so uncertain it was considered beneficial to submit oak charcoal for radiocarbon dating.

8.2 Methods

The result from oak charcoal from fill (9009) of pit [9007] (Section 8.3) is a conventional radiocarbon age (Stuiver and Polach 1977) and is listed in Table 8. The calibrated date range for the sample has been calculated using the maximum intercept method (Stuiver and Reimer 1986), and is quoted with end points rounded outwards to ten years. The probability distribution of the calibrated date, calculated using the probability method (Stuiver and Reimer 1993) is shown in Appendix 2 (the Beta Analytic report). It has been calculated using OxCal v4.2 (Bronk Ramsey 2009) and the current internationally-agreed atmospheric calibration dataset for the northern hemisphere, IntCal13 (Reimer et al 2013).

8.3 Results

Laboratory code	Context number	Material	δ ¹³ C (‰)	Conventional Age	OxCal calibrated age (95.4% probability or 2 sigma)
Beta- 512499	9009	Charcoal (oak)	-24.8 ‰	1230 +/- 30 BP	cal AD 680 - 890

Table 8: Radiocarbon dating results

Considering the potential for an old wood effect from the oak, a wide date range has to be considered. If the average lifespan of 200 years for oak is accepted for an old wood effect, the date could range from c. cal AD 680 at the earliest to c. cal AD 1090 at the latest. This is the most likely range. If a rare lifespan of 1000 years is taken into account for old wood effect, the charcoal could date from c. cal AD 680 at the earliest and c. cal AD 1890 at the latest. The radiocarbon date effectively rules out the likelihood of the feature dating from before c. cal AD 680.

The charcoal in fills (7007) and (9009) in pits [7006] and [9007] respectively are very similar and likely to represent one phase of activity. The date of pottery in (7007) and a feature in close proximity to (9009) range in date between the late Iron Age to the Roman period. This would be not consistent with a radiocarbon date with an old wood effect as described above.

9 Discussion

This evaluation has established that, while no significant archaeological features were recorded over the majority of the site, a number of more interesting features were found in an area in the southern part of the site, within Trenches 7, 9 and 14. The majority of archaeological features were found at 0.37m-0.60m below current ground surface. The features do not correlate well with the results of geophysics survey undertaken in the area [Roseveare and Roseveare, 2011: DWG 22], except for the deepest ditches.

9.1 Iron Age

The only Iron Age finds came from fill (7007) in pit [7006] in Trench 7. The environmental remains in this pit was dominated by large fragments of charcoal very similar to the fill of pit [9007] in Trench 9, so much so that they were thought to represent similar, if not contemporary, activities. The much later date (Post 680 AD) of pit [9007] however makes this questionable. The date of this feature is therefore also debatable, it may be Iron Age as the pottery suggests or may be Saxon/medieval if, as

thought, it is contemporary with pit [9007], assuming that the very small pottery fragments are intrusive.

The feature itself is not remarkable and although it contains significant quantities of charcoal, there was no evidence of *in-situ* burning and is likely just the base of a small rubbish pit.

9.2 Roman

Roman finds were retrieved from a number of features across the site. In Trench 9: fill (9006) of ditch [9005] yielded a distinctive fragment of Roman Malvernian oven plate, usually dating to the 3rd/4th centuries A.D. but sometimes occurring in earlier deposits. Whilst these plates are linked above (Section 6.1.6 above) with prefabricated ovens and, by association, with fired clay, large quantities of which were found in fills (9009) and (9010) of pit [9007] immediately to the north of [9005], the radiocarbon date obtained from the charcoal retrieved from fill (9009) of cal AD 680 – 890 does not support a Roman date for pit [9007]. In light of this, pit [9007] has been argued to possibly to be a charcoal pit kiln, or pot clamp used for pottery or loomweight production, although there was no evidence of *in-situ* burning, so it may be more likely to be a rubbish pit containing the waste associated with production rather than the primary site of production itself.

Fill (16004) of ditch [16003] contained 1st/2nd century organic tempered Severn Valley, but the fill also contained a small fragment of undiagnostic tile/plate material, with a possible medieval date. Accordingly, this feature cannot be securely dated as Roman.

Small quantities of abraded Roman pottery were found within the topsoil of trenches 12 and 14: these are typical of a background scatter reflecting nearby Roman activity.

9.3 Saxon / Medieval

As noted above, (Sections 9.1 and 9.2), both pits [7007] and [9007] could possibly be of Saxon/Medieval date. However, given that the old wood effect and a possible life span of 1,000 years for oak push the range of potential radiocarbon dates to 680 cal AD to 1890 cal AD, it is not possible to conclude categorically on a Saxon or Medieval date for these features. Notwithstanding this, the presence of other Medieval activity in the immediate vicinity, e,g, moat around Upper Broomhall Farm (WSM02130) and a potential deserted Medieval settlement next to the farm (WSM32555) would suggest that a medieval date is the most likely.

Also, as noted above, (9.2) finds indicate a possible Medieval date for the fill (16004) of ditch [16003], It appears likely that [16003] and ditch [17003] are the same field boundary, and therefore contemporary. These ditches run parallel to the furrows seen in Field 2, and to plough furrows within trench 16, which would support a Medieval date, if not later, for this field boundary, but again it is not possible to securely date this feature to this period.

9.4 Post-medieval

Post-medieval dated artefacts were recovered from the upper fill (7012) associated with ditch [7005], one of two ditches [7004] and [7005] within trench 7 which seem to be related to the pond immediately to the north, and may have possibly formed overflow or drainage ditches. However, no dating material was recovered from the lower fills. Accordingly, the original date of ditch [7005] is uncertain.

9.5 Undated

Undated ditches present in Field 4 to the east, in Trenches 22, 23 and 24 are likely to be old field boundaries and or drainage ditches. This field in particular was much wetter than those to the west and contained numerous ceramic land drains indicating that groundwater has continually been an issue in this part of the site. The lack of cultural material or habitation waste such as charcoal in any of these features would also indicate that no occupation sites are located in their vicinity.

The linear features within trenches 6, 9 and 14, [6003], [9005] and [14003], appear to be small ditches, which seem likely to have been field boundaries, in particular ditch [14003] which runs parallel to Taylors Lane.

Field 3 contained extant ridge and furrow [MWR8789] and apple trees, together with furrows in the ground. The furrows within Trench 15 were on a slightly different alignment to the extant furrows, and whilst the furrows in Trench 15 were approximately 7m apart, the distance between the extant furrows was approximately 5m apart. This suggests that although some earthwork features may relate to the earlier ploughing use of the area, it is likely that the area was re-landscaped to straighten the furrows to match the outline of the field. This is consistent with speculation that the ridge and furrow to the south of Upper Broomhall Farm [MWR8790] may not be composed of features relating to Medieval agriculture and could relate to the planting of an orchard in the 1920's to 1930's [Waterman, 2017: 4].

In addition, as the extant apple trees were observed to be on every second extant ridge, it would appear that the orchard was set up on the re-landscaped ridges, and the intervening ridges were used for intercropping. This is a known form of land use in Worcestershire [Mindykowski, A – pers comm].

10 Significance

For the majority of the site, the furrows and other features are of negligible significance, all being products of probable medieval, post-medieval and modern agriculture. The artefacts recovered reflect this activity.

However, the area around Trench 7 and Trench 9 has some potential to provide additional information in respect of potentially industrial activities in the area close to the Roman road mentioned at 2.3 above, and is accordingly considered to be of local significance.

The presence of a lead bullet consistent with a 17th century date, though a single find might suggest that, although it falls outside the registered Civil War battle site, the site area may have seen some action during the battle and that evidence of that conflict may survive within the site area though likely only a thin scatter of artefacts.

11 Impacts

The evaluation has identified limited archaeological deposits or features present on site. The nature of these features with the exceptions of those features in trenches 7, 9 and 14, appear to be agricultural, e.g. drainage ditches or field boundaries. Accordingly the proposed development will have limited impact on significant archaeological features over the majority of the site.

However, the area to the southeast of field 1 and the southwest of field 2, trenches 7 and 9, contained archaeological features of more interest, where groundworks associated with development has the potential to have a harmful impact on the survival of heritage assets.

12 Conclusions

This evaluation of 26 trenches has identified only one area with the potential for archaeological features of some importance, being the area surrounding trenches 7 and 9. This area of the site has

the potential to contribute further information on activities in the vicinity of the nearby Roman road. None of the archaeological features identified have been securely dated.

The methods adopted allow a high degree of confidence that the aims of the project have been achieved. Conditions were suitable in all of the trenches to identify the presence or absence of archaeological features. It is considered that the nature, density and distribution of archaeological features provides an accurate characterisation of the development site as a whole.

13 Project personnel

The fieldwork was led by Andrew Mann, assisted by Jem Brewer.

The project was managed by Tom Rogers. The report was produced and collated by Jem Brewer. Specialist contributions and individual sections of the report are attributed to the relevant authors throughout the text.

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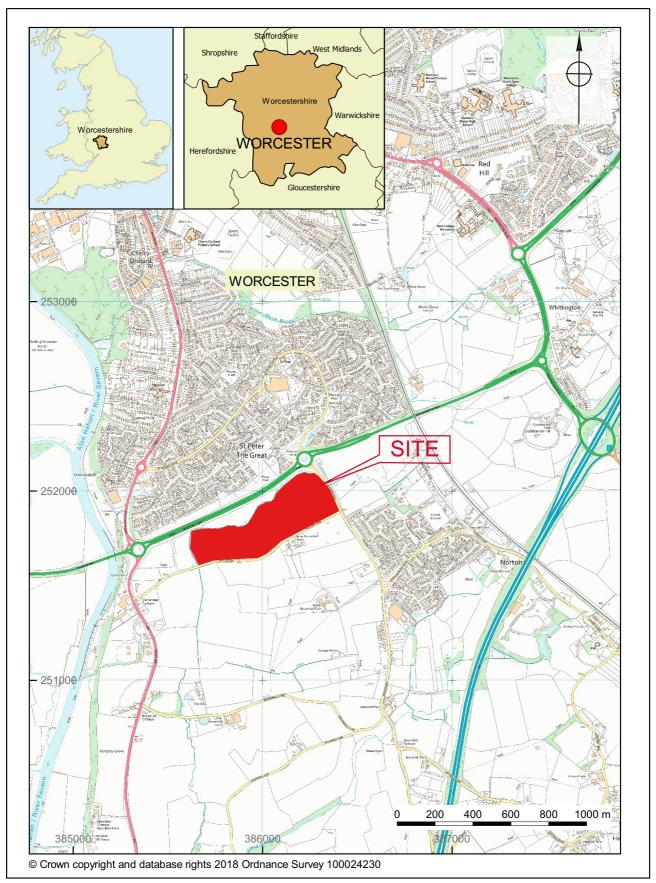
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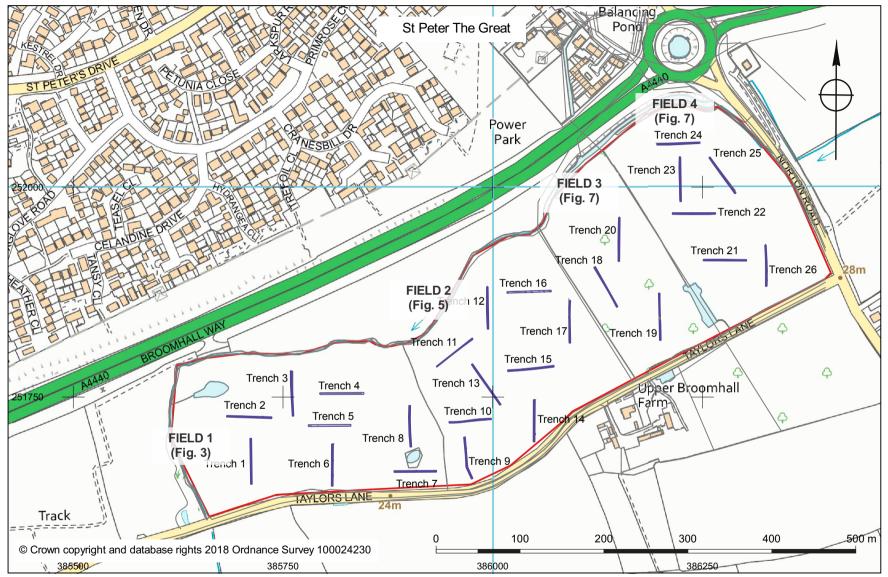
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Figures

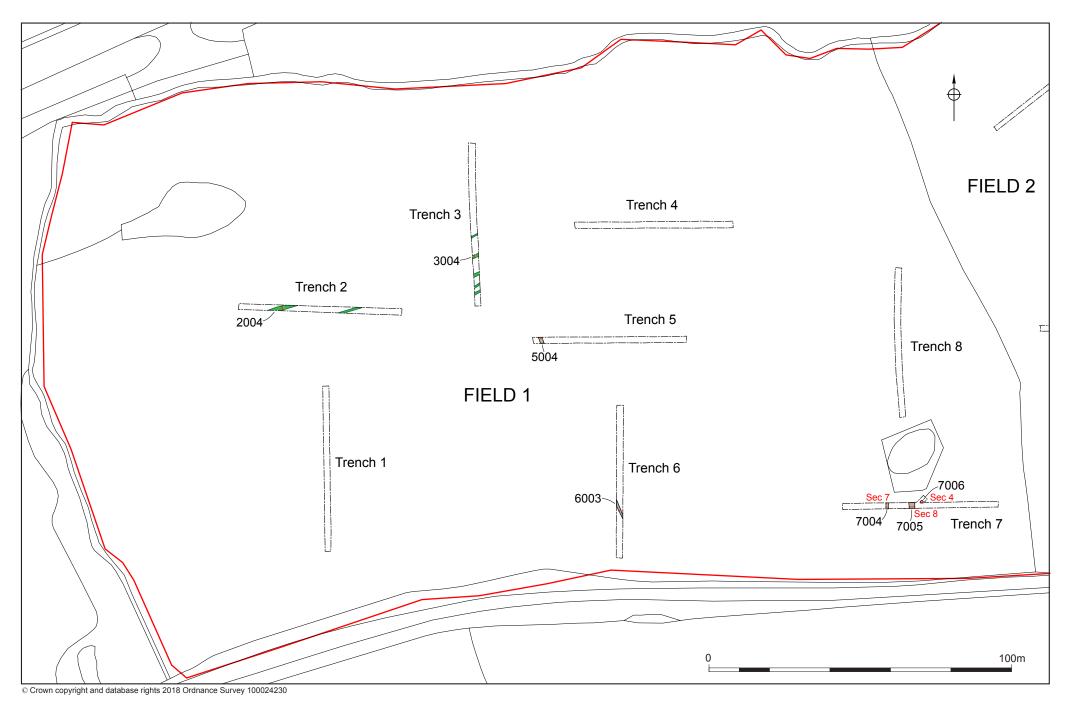


Location of the site

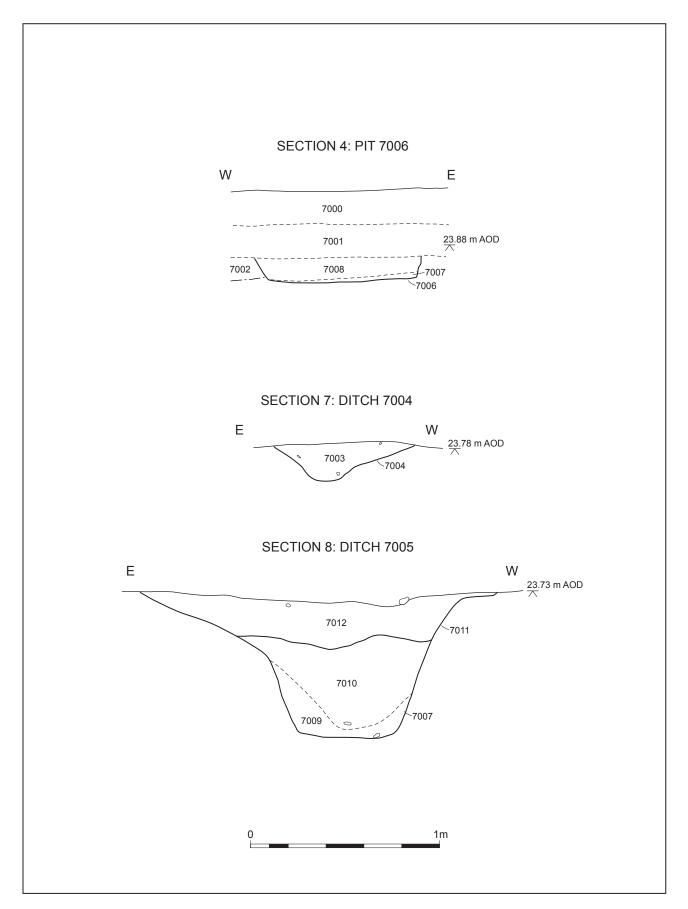
Figure 1



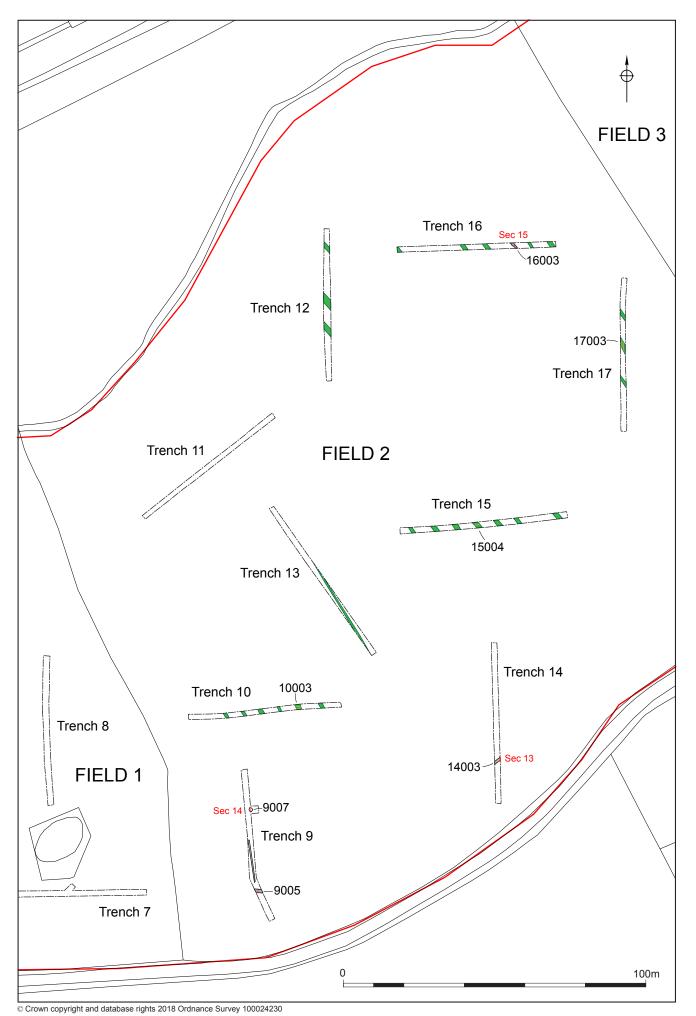
Trench Plan Figure 2



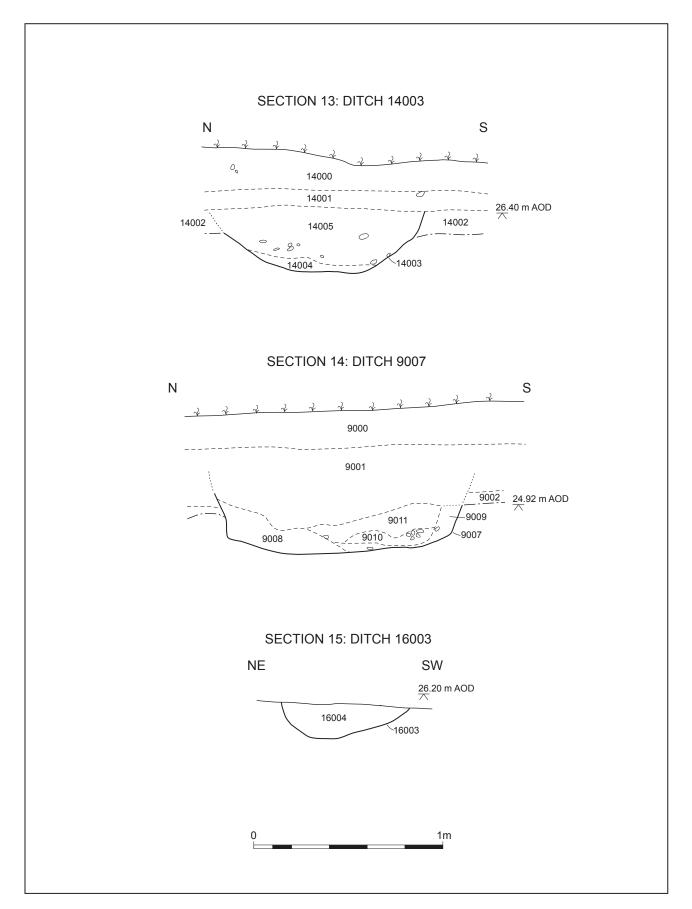
Plan of Field 1 Figure 3



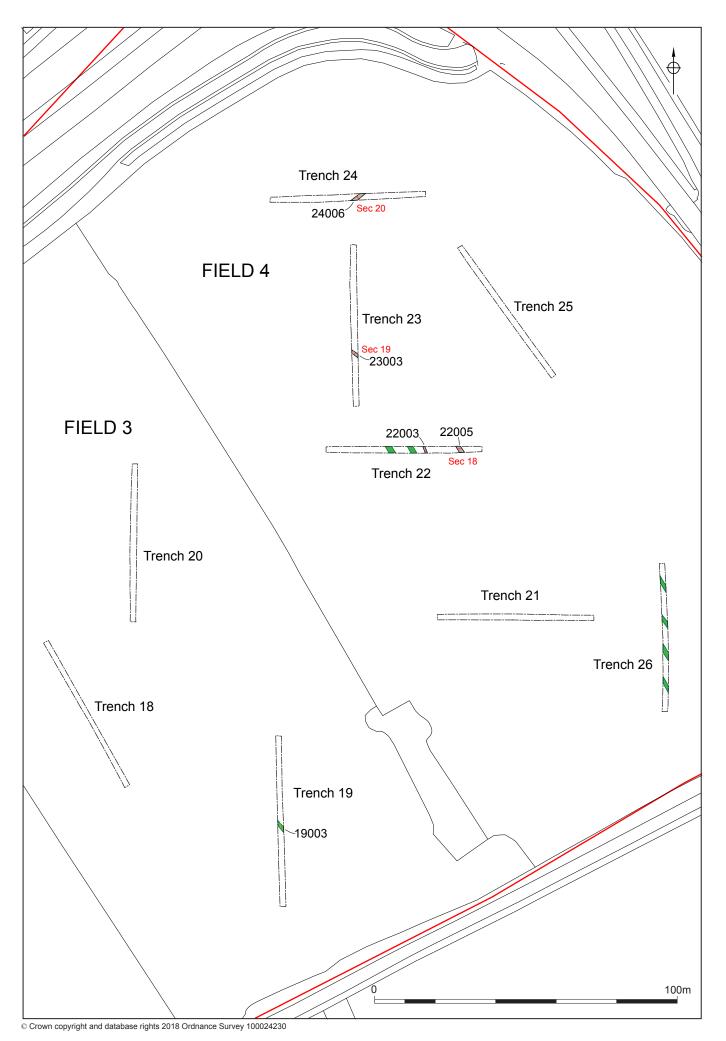
Field 3 sections

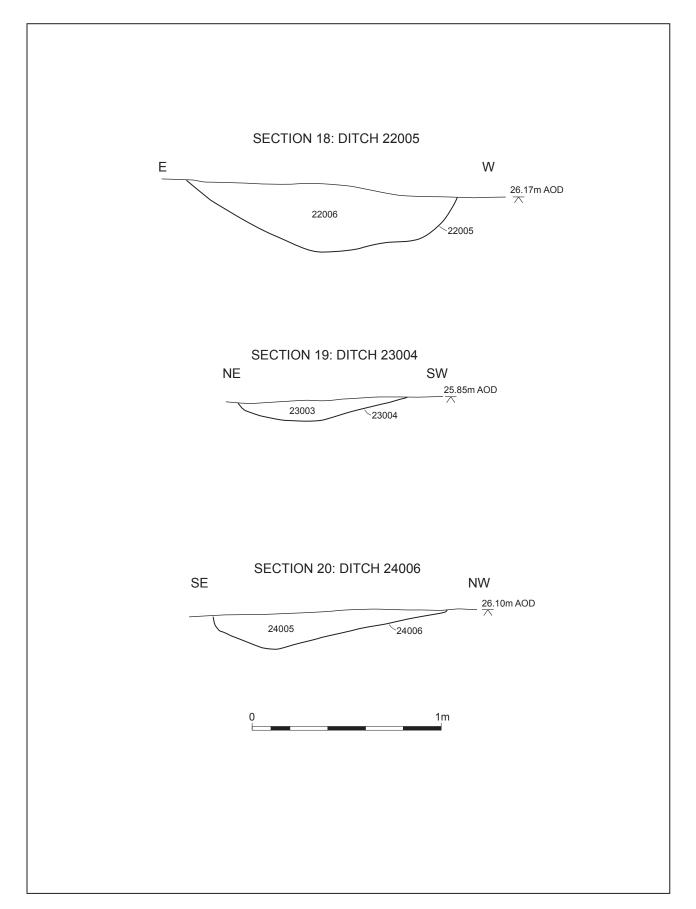


Plan of Field 2



Field 2 sections





Field 4 sections

Plates



Plate 1: Trench 6, ditch 6003, view NW, 0.5m scale



Plate 2: Trench 7, ditch 7005, view S, 1m scale



Plate 3: Trench 7, pit 7006, view N, 0.5m scale



Plate 4: Trench 9, ditch 9005, view W, 1m scale



Plate 5: Trench 9, pit 9007 in section, view E, 1m scale



Plate 6: Trench 9, pit 9007 fully excavated, view E, 1m scale



Plate 7: Trench 14, ditch 14003, view E, 1m scale



Plate 8: Trench 16, ditch 16003, view SE, 0.5m scale



Plate 9: Trench 22, ditch 22003, view SE, 0.5m scale



Plate 10: Trench22, ditch 22005, view N, 1m scale



Plate 11: Trench 23, ditch 23004, view SE, 1m scale



Plate 12: Trench 24, ditch 24006, view SW, 1m scale



Plate 13: Tr 1, topsoil 1000, lead bullet, 3cm scale



Plate 14: Tr 4, topsoil 4000, lead seal, 6cm scale

Appendix 1: Trench descriptions

Main deposit descriptions

Trench 1

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.56m

Orientation: N-S

Context	Context Type	Feature Type	Description	Interpretation	Depth
1000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.26m
1001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.23m
1002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	

Trench 2

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.59m

Context	Context Type	Feature Type	Description	Interpretation	Depth
2000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.28m
2001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.24m
2002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	
2003	Fill	Gully	Compact light orangey- brown clay silt, occasional small rounded pebbles, occasional charcoal flecks, occasional CBM.	Sterile fill of gully [2004].	0.09m
2004	Cut	Gully		Cut of shallow and wide gully /ditch aligned E-W, with shallow concave sides and concave base. Probable furrow.	0.09m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.63m

Orientation: N-S

Context	Context Type	Feature Type	Description	Interpretation	Depth
3000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.25m
3001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.24m
3002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	
3003	Fill	Gully	Moderately compact light orangey-brown clay silt, occasional small rounded pebbles, rare charcoal flecks, occasional CBM.	Sterile fill of gully [3004].	0.09m
3004	Cut	Gully		Cut of shallow and wide gully /ditch aligned NE-SW, with shallow concave sides and concave base. Probable furrow.	0.09m

Trench 4

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.53m

Orientation: E-W

Context	Context Type	Feature Type	Description	Interpretation	Depth
4000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.22m
4001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.24m
4002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	

Trench 5

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.68m

Context	Context Type	Feature Type	Description	Interpretation	Depth
5000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.22m
5001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.34m
5002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	
5003	Fill	Gully	Moderately compact and cohesive mid orangey-brown clay silt,	Sterile fill of gully [5004].	0.08m
5004	Cut	Gully		Cut of shallow and wide gully /ditch aligned NW - SE, with shallow concave sides and concave base. Probable furrow.	0.08m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.59m

Context	Context Type	Feature Type	Description	Interpretation	Depth
6000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.31m
6001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.24m
6002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	
6003	Cut	Gully		Cut of shallow and wide gully /ditch aligned NW - SE, with shallow concave sides and concave base. Probable furrow.	0.06m
6004	Fill	Gully	Moderately compact mid orangey-brown silty clay, frequent charcoal flecks, occasional limestone flecks	Sterile fill of gully [6003].	0.06m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.52m

Context	Context Type	Feature Type	Description	Interpretation	Depth
7000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.22m
7001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.21m
7002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	
7003	Fill	Ditch	Moderately compact light greyish-brown clay silt, occasional very small charcoal flecks, rare small rounded stones.	Fill of ditch [7004]	0.20m
7004	Cut	Ditch		Cut of N-S aligned ditch / gully, with a flat base, and steep sides. Probable post medieval drainage ditch associated with nearby pond.	0.20m
7005	Cut	Ditch		Primary cut of N-S aligned ditch / gully, with a flat base and steep sides. Probable post medieval drainage ditch associated with the pond to the north, possible overflow ditch.	0.72m
7006	Cut	Pit		Sub-oval pit cut aligned E-W, extending under northern bank of trench 7. Heavily truncated by machine as natural is very blocky in this area. Sides are steep and base is flat. Possible prehistoric pit cut.	0.13m
7007	Fill	Pit	Thin layer of black comminuted charcoal, with occasional medium sized charcoal lumps.	Fill of pit [7006]. Dump of fire debris into the pit. No evidence of in-situ burning.	0.03m
7008	Fill	Pit	Firm and cohesive light greyish brown silty clay, forming blocky pods. Moderate small charcoal flecks.	Upper fill of pit [7006]. Backfilling event over fire debris (7007).	0.12m
7009	Fill	Ditch	Moderately compact mid reddish brown silty clay,	Lower fill of ditch [7005]. Formed by stabilisation of the	0.26m

			occasional sub angular pebbles, occasional charcoal flecks, rare sub rounded cobbles.	edge over a period of time.	
7010	Fill	Ditch	Compact, mid brownish grey silty clay, occasional charcoal flecks, rare sub angular pebbles, rare limestone flakes, animal bone.	Upper fill of ditch [7005]. Fill is slightly more grey blue coloured to the base, suggesting that this has been waterlogged for some time. Formed by natural silting processes.	0.44m
7011	Cut	Ditch		Linear feature aligned N-S. Recut in top of the fills of ditch [7005], possibly broadening width in plan of the ditch. Contained post medieval tile so probable drainage ditch.	0.29m
7012	Fill	Ditch	Hard, mid reddish brown silty clay, occasional sub angular and sub rounded pebbles, occasional charcoal flecks, rare sub rounded cobbles, and tile.	Fill of ditch recut [7011]. Possibly redeposited natural to deliberately infill the ditch.	0.29m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.56m

Orientation: N-S

Context	Context Type	Feature Type	Description	Interpretation	Depth
8000	Layer	Topsoil	Soft and friable mid reddish brown clay silt	Topsoil	0.19m
8001	Layer	Subsoil	Moderately compact mid reddish brown silty clay	Subsoil	0.28m
8002	Layer	Natural	Moderately compact dark reddish brown silty clay	Natural	

Trench 9

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.43m

Context	Context Type	Feature Type	Description	Interpretation	Depth
9000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.23m
9001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.20m
9002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	
9003	Cut	Gully		Shallow gully aligned approximately N-S. On a slightly different alignment to the extant ridge and furrow. Undated	0.02m
9004	Fill	Gully	Firm and cohesive, mid brownish yellow silty clay, forming small blocky pods.	Sterile fill of gully [9003], very similar to subsoil (9001). Probable field boundary.	0.02m
9005	Cut	Ditch		Linear ditch aligned E-W with concave sides and base. On different alignment to ridge and furrow. Probably pre dating the ridge and furrow.	0.18m
9006	Fill	Ditch	Firm and cohesive mid brownish yellow silty clay, forming large blocky pods.	Fill of ditch [9005]. Natural infilling/ siltation of the ditch. Contained ?medieval tile. Probably predating ridge and furrow.	0.18m
9007	Cut	Pit		Sub circular cut of pit with steep concave sides and a concave base. Pit used to deposit burnt wood material and baked clay from elsewhere on site. Contained two large red veined quartz stones not found elsewhere on site.	0.28m
9008	Fill	Pit	Moderately compact mid orange brown silty clay mixed with orange clay material, containing occasional fired clay fragments and occasional	Lower fill of pit [9007]. Dump of material into the pit.	0.18m

			charcoal flecks.		
9009	Fill	Pit	Moderately compact dark blackish brown silty clay. Abundant charcoal fragments and flakes, rare sub angular pebbles.	Lower fill of pit [9007]. Dump of burnt material into the pit.	0.17m
9010	Fill	Pit	Compact but friable, light orange clay mixed with baked clay fragments, occasional charcoal flakes and flecks.	Mid fill of pit [9007]. Dump of baked clay material from a structure elsewhere.	0.09m
9011	Fill	Pit	Soft dark orange clay, rare charcoal flecks, rare sub rounded gravels.	Upper fill of pit [9007]. Dump of fired clay materials possibly from a structure elsewhere.	0.15m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.49m

Context	Context Type	Feature Type	Description	Interpretation	Depth
10000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.27m
10001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.22m
10002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	
10003	Cut	Gully		NW-SE aligned gully. Probably a furrow.	0.09
10004	Fill	Gully	Not recorded (photographed)		0.09

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.43m

Orientation: NE-SW

Context	Context Type	Feature Type	Description	Interpretation	Depth
11000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.25m
11001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.18m
11002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	

Trench 12

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.41m

Context	Context Type	Feature Type	Description	Interpretation	Depth
12000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.21m
12001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.20m
9002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.43m

Orientation: N-S

Context	Context Type	Feature Type	Description	Interpretation	Depth
13000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.25m
13001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.18m
13002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	

Trench 14

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.48m

Context	Context Type	Feature Type	Description	Interpretation	Depth
14000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.30m
14001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.18m
14002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	

14003	Cut	Ditch		Cut of ditch running NE-SW, concave sides and concave base. Runs parallel to Taylor's Lane itself, probably stock enclosure or field boundary ditch.	0.33m
14004	Fill	Ditch	Soft light reddish brown silty clay, rare sub rounded pebbles and gravels.	Basal fill of ditch [14003], probably resulting from in- wash of natural clay material as the ditch was initially open.	0.08m
14005	Fill	Ditch	Moderately compact light greyish brown silty clay, occasional sub rounded pebbles and gravels, rare charcoal flecks.	Upper fill of ditch [14003]. Appears to have formed over a period of time as part of natural silting.	0.30m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.50m

Context	Context Type	Feature Type	Description	Interpretation	Depth
15000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.32m
15001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.18m
15002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	
15003	Fill	Furrow	Not recorded (photographed)	Fill of furrow [15004]	
15004	Cut	Furrow		Shallow linear feature (in parallel with several others in the trench). Probably furrows	

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.50m

Orientation: E-W

Context	Context Type	Feature Type	Description	Interpretation	Depth
16000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.27m
16001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.23m
16002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	
16003	Cut	Ditch		Shallow linear ditch aligned NW-SE with concave sides and base. Contained Roman and ?medieval pot. Possibly stock enclosure or field boundary ditch.	0.18m
16004	Fill	Ditch	Moderately compact light yellowish brown clay silt, occasional limestone fleck, rare sub rounded gravels, rare charcoal and red clay fleck.	Fill of ditch [16003], mix of dumped material and natural material washed in.	0.18m

Trench 17

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.41m

Context	Context Type	Feature Type	Description	Interpretation	Depth
17000	Layer	Topsoil	Soft and friable mid greyish brown silty clay, frequent roots, occasional charcoal flecks, occasional small rounded stones.	Topsoil	0.21m

17001	Layer	Subsoil	Soft and cohesive mid yellowish brown silty clay, frequent very small gritty stone inclusions, occasional charcoal flecks.	Subsoil	0.20m
17002	Layer	Natural	Compact and blocky, pinkish red clay with moderate blueish grey and yellowish brown mottles, occasional small to medium sub rounded stones	Natural	

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.49m

Orientation: NW-SE

Context	Context Type	Feature Type	Description	Interpretation	Depth
18000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.32m
18001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	Subsoil	0.17m
18002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	

Trench 19

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.56m

Context	Context Type	Feature Type	Description	Interpretation	Depth
19000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.26m
19001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded	Subsoil	0.30m

			and sub angular pebbles, very rare charcoal flecks.		
19002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	
19003	Cut	Gully		Shallow linear NW-SE aligned gully with shallow concave sides and concave base. Probably a furrow.	0.06m
19004	Fill	Gully	Moderately compact light yellowish grey silty clay, rare sub rounded pebbles and gravels.	Fill of furrow [19003]	0.06m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.48m

Orientation: N-S

Context	Context Type	Feature Type	Description	Interpretation	Depth
20000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.23m
20001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	Subsoil	0.25m
20002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	

Trench 21

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.43m

Context	Context Type	Feature Type	Description	Interpretation	Depth
21000	Layer	Topsoil	Soft and friable dark brown	Topsoil	0.28m

			clay silt, frequent roots, occasional sub rounded and sub angular pebbles.		
21001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	Subsoil	0.15m
21002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	
21003	Fill	Gully / natural	Not recorded	Fill of cut [21004]	
21004	Cut	Gully / natural	Not recorded	Possible linear feature, but probably natural	

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.37m

Context	Context Type	Feature Type	Description	Interpretation	Depth
22000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.21m
22001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	Subsoil	0.16m
22002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	
22003	Cut	Ditch		Linear cut of ditch, aligned NNW-SSE, with concave sides and slightly concave base. Probable drainage ditch as many land drains in this area.	0.26m
22004	Fill	Ditch	Moderately compact light greyish yellow silty clay, rare sub rounded pebbles.	Fill of ditch [22003]	0.26m
22005	Cut	Ditch		Linear cut of ditch, aligned NW-SE, with concave sides	0.37m

				and base. Probable field boundary ditch.	
22006	Fill	Ditch	Moderately compact light yellowish grey silty clay, occasional charcoal flecks, occasional red clay flecks, rare sub rounded pebbles and gravels.	Fill of ditch [22005]	0.37m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.60m

Context	Context Type	Feature Type	Description	Interpretation	Depth
23000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.40m
23001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	Subsoil	0.20m
23002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	
23003	Fill	Ditch	Moderately compact light yellowish grey silty clay, occasional sub rounded gravels, occasional charcoal flakes, rare sub rounded pebbles.	Fill of ditch [23004]	0.11m
23004	Cut	Ditch		Linear cut of ditch, aligned NW-SE, with steep sides to NE and flat sides to SW. Base is slightly concave. Probably drainage ditch or furrow base (in line with other furrows at this end of the site).	0.11m

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.55m

Orientation: E-W

Context	Context Type	Feature Type	Description	Interpretation	Depth
24000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.30m
24001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	Subsoil	0.25m
24002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	
24003	Fill	Natural	Not recorded	Fill of cut [24004]	
24004	Cut	Natural		Pond / shallow depression of gleyed material.	
24005	Fill	Ditch	Moderately compact light yellowish brown silty clay. Occasional sub angular and sub rounded pebbles.	Fill of ditch [24006]	0.19m
24006	Cut	Ditch		Shallow linear ditch running NE-SW, concave sides steeper to SE, concave base. Probable field boundary or drainage ditch.	0.19m

Trench 25

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.62m

Context	Context Type	Feature Type	Description	Interpretation	Depth
25000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.28m
25001	Layer	Subsoil	Soft and friable mid brown	Subsoil	0.25m

			silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	
25002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	

Maximum dimensions: Length: 50m Width: 1.8m Depth: 0.47m

Context	Context Type	Feature Type	Description	Interpretation	Depth
26000	Layer	Topsoil	Soft and friable dark brown clay silt, frequent roots, occasional sub rounded and sub angular pebbles.	Topsoil	0.23m
26001	Layer	Subsoil	Soft and friable mid brown silty clay, rare sub rounded and sub angular pebbles, very rare charcoal flecks.	Subsoil	0.14m
26002	Layer	Natural	Soft and blocky, mid pinkish red clay with occasional grey and blue mottling, rare sub rounded pebbles and gravels.	Natural	

Appendix 2: Radiocarbon dating report



Beta Analytic Inc

4985 SW 74 Court Miami, Florida 33155 Tel: 305-667-5167

Fax: 305-663-0964 info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

December 18, 2018

Ms. Elizabeth Pearson Worcestershire Archaeology The Hive, Sawmill Walk, The Butts Worcester, Worcester WRI 3PD United Kingdom

RE: Radiocarbon Dating Results

Dear Ms. Pearson,

Enclosed is the radiocarbon dating result for one sample recently sent to us. As usual, specifics of the analysis are listed on the report with the result and calibration data is provided where applicable. The Conventional Radiocarbon Age has been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

The reported result is accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 standards and all pretreatments and chemistry were performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 program participated in the analysis.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result. The reported d13C was measured separately in an IRMS (isotope ratio mass spectrometer). It is NOT the AMS d13C which would include fractionation effects from natural, chemistry and AMS induced sources.

When interpreting the result, please consider any communications you may have had with us regarding the sample. As always, your inquiries are most welcome. If you have any questions or would like further details of the analysis, please do not hesitate to contact us.

Our invoice has been sent separately. Thank you for your prior efforts in arranging payment. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,

Ronald E. Hatfield Director



Beta Analytic Inc

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info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Elizabeth Pearson Report Date: December 18, 2018

Worcestershire Archaeology Material Received: December 11, 2018

Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes

Laboratory Number Sample Code Number

Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)

Beta - 512499 P5403/9009/5 1230 +/- 30 BP IRMS δ13C; -24.8 ο/οο

(62.7%) 760 - 882 cal AD (1190 - 1068 cal BP) (32.7%) 688 - 751 cal AD (1262 - 1199 cal BP)

Submitter Material: Oak charcoal

Pretreatment: (charred material) acid/alkali/acid

Analyzed Material: Charred material

Analysis Service: AMS-PRIORITY delivery Percent Modern Carbon: 85.80 +/- 0.32 pMC

Fraction Modern Carbon: 0.8580 +/- 0.0032

D14C: -141.97 +/- 3.20 o/oo

Δ14C: -149.00 +/- 3.20 o/oo(1950:2,018.00)

Measured Radiocarbon Age: (without d13C correction): 1230 +/- 30 BP

Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

Calibration of Radiocarbon Age to Calendar Years

(highest probability ranges: INTCAL13)

(Variables: d13C = -24.8 o/oo)

Laboratory number Beta-512499

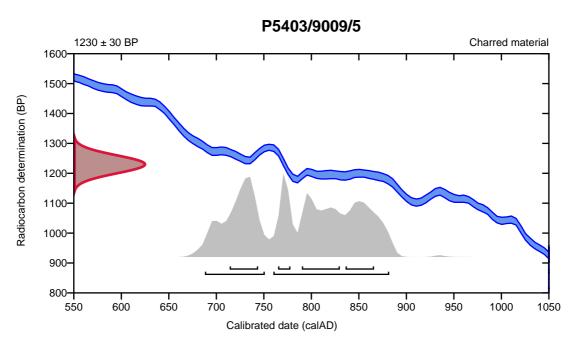
Conventional radiocarbon age 1230 ± 30 BP

95.4% probability

(62.7%)	760 - 882 cal AD	(1190 - 1068 cal BP)
(32.7%)	688 - 751 cal AD	(1262 - 1199 cal BP)

68.2% probability

(22%)	790 - 830 cal AD	(1160 - 1120 cal BP)
(20.5%)	714 - 744 cal AD	(1236 - 1206 cal BP)
(16.3%)	836 - 866 cal AD	(1114 - 1084 cal BP)
(9.5%)	765 - 778 cal AD	(1185 - 1172 cal BP)



Database used INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

Beta Analytic Radiocarbon Dating Laboratory



Beta Analytic Inc

4985 SW 74 Court Miami, Florida 33155 Tel: 305-667-5167 Fax: 305-663-0964 beta@radiocarbon.com **Mr. Darden Hood** President

Mr. Ronald Hatfield Mr. Christopher Patrick

Deputy Directors

ISO/IEC 2005:17025-Accredited Testing Laboratory

Quality Assurance Report

This report provides the results of reference materials used to validate radiocarbon analyses prior to reporting. Known-value reference materials were analyzed quasi-simultaneously with the unknowns. Results are reported as expected values vs measured values. Reported values are calculated relative to NIST SRM-4990B and corrected for isotopic fractionation. Results are reported using the direct analytical measure percent modern carbon (pMC) with one relative standard deviation. Agreement between expected and measured values is taken as being within 2 sigma agreement (error x 2) to account for total laboratory error.

Report Date: December 18, 2018
Submitter: Ms. Elizabeth Pearson

QA MEASUREMENTS

Reference 1

Expected Value: 129.41 +/- 0.06 pMC

Measured Value: 129.41 +/- 0.35 pMC

Agreement: Accepted

Reference 2

Expected Value: 96.69 +/- 0.50 pMC

Measured Value: 96.66 +/- 0.29 pMC

Agreement: Accepted

Reference 3

Expected Value: 0.51 +/-0.04

Measured Value: 0.48 +/- 0.03 pMC

Agreement: Accepted

COMMENT: All measurements passed acceptance tests.

Validation: Date: December 18, 2018

Appendix 3: Summary of project archive (WSM70852)

TYPE	DETAILS*
Artefacts and Environmental	Animal bones, Ceramics, Environmental, Metal,
Paper	Context sheet, Diary (Field progress form), Drawing, Report, Section, Survey
Digital	Database, GIS, Geophysics, Images raster/digital photography , Survey,
*0.4.010 / / /	

^{*}OASIS terminology

Appendix 4: Summary of data for HER – WSM 70852

Artefactual

period	material class	object specific type	start date	end date	Count	weight(g)	specialist report? (note 2)	Key assemblage? (note 3)
Iron Age	ceramic	pot	-500	-100	8	3	Υ	N
early Roman	ceramic	pot	43	200	1	28	Υ	N
Roman	ceramic	fired clay	43	410	101	865	Υ	N
Roman	ceramic	pot	43	410	2	52	Υ	N
Roman	glass	glass slag	43	410	1	1	Υ	N
Roman/medieval	ceramic	oven plate	200	410	1	91	Υ	N
Roman/medieval	ceramic	unident	43	1500	2	66	Υ	N
medieval	ceramic	pot	1200	1400	1	9	Υ	N
medieval	ceramic	roof tile	1200	1500	1	82	Υ	N
medieval	metal	seal	1066	1540	1	6	Υ	N
medieval/early post- medieval	ceramic	pot	1200	1630	1	7	Υ	N
medieval/early post- medieval	ceramic	roof tile	1200	1630	1	55	Υ	N
medieval/early post- medieval	ceramic	roof tile	1200	1700	38	664	Υ	N
late med/early post-med	ceramic	pot	1500	1630	1	39	Υ	N
late med/early post-med	ceramic	pot	1500	1700	1	2	Υ	N
late med/early post-med	ceramic	roof tile	1475	1700	6	76	Υ	N
late med/early post-med	ceramic	roof tile	1500	1800	10	167	Υ	N
medieval/post-medieval	ceramic	brick/tile	1200	1800	9	61	N	N
medieval/post-medieval	metal	iron object	1066	1900	1	12	N	N
medieval/post-medieval	metal	nail	1066	1800	3	15	N	N
medieval/post-medieval	metal	nail	1066	1900	26	388	N	N
medieval/post-medieval	metal	window	1200	1900	1	2	N	N

period	material class	object specific type	start date	end date	Count	weight(g)	specialist report? (note 2)	Key assemblage? (note 3)
		came						
post-medieval	ceramic	brick	1600	1900	4	435	N	N
post-medieval	ceramic	brick/tile	1600	1900	1	2	N	N
post-medieval	ceramic	clay pipe	1600	1910	3	5	N	N
post-medieval	ceramic	pot	1820	1950	1	3	N	N
post-medieval	ceramic	pot	1770	1900	1	1	N	N
post-medieval	ceramic	pot	1795	1830	2	11	N	N
post-medieval	ceramic	pot	1775	1830	2	14	N	N
post-medieval	ceramic	pot	1760	1820	3	6	N	N
post-medieval	ceramic	pot	1720	1770	4	27	N	N
post-medieval	ceramic	pot	1700	1800	4	31	N	N
post-medieval	ceramic	pot	1600	1800	9	442	N	N
post-medieval	ceramic	roof tile	1700	1900	1	31	N	N
post-medieval	ceramic	roof tile	1600	1900	1	49	N	N
post-medieval	ceramic	roof tile	1600	1800	3	234	N	N
post-medieval	ceramic	roof tile	1550	1800	6	181	N	N
post-medieval	ceramic	saggar	1750	1900	1	18	Υ	N
post-medieval	glass	vessel	1780	1820	1	197	N	N
post-medieval	glass	vessel	1700	1800	2	72	N	N
post-medieval	metal	button	1600	1900	1	1	N	N
post-medieval	metal	lead bullet	1600	1800	1	28.5	Υ	N
post-medieval/modern	ceramic	pot	1800	1850	1	6	N	N
post-medieval/modern	ceramic	pot	1770	1950	1	10	N	N
post-medieval/modern	ceramic	pot	1850	1950	2	40	N	N
post-medieval/modern	ceramic	pot	1870	1950	3	71	N	N
post-medieval/modern	ceramic	pot	1820	2000	4	30	N	N

period	material class	object specific lype	start date	end date	Count	weight(g)	specialist report? (note 2)	Key assemblage? (note 3)
post-medieval/modern	ceramic	pot	1800	2000	20	268	N	N
post-medieval/modern	ceramic	pot waster	1750	1950	1	8	Υ	N
post-medieval/modern	glass	vessel	1850	1950	2	189	N	N
post-medieval/modern	metal	buckle	1600	2000	1	10	N	N
post-medieval/modern	metal	chain link	1800	2000	1	49	N	N
post-medieval/modern	metal	clasp	1600	2000	2	12	N	N
post-medieval/modern	metal	decorative fitting	1800	2000	1	28	N	N
post-medieval/modern	metal	handle	1600	2000	1	42	N	N
post-medieval/modern	metal	iron object	1600	2000	1	139	N	N
post-medieval/modern	metal	washer	1800	2000	1	53	N	N
modern	ceramic	glazed tile	1900	2000	1	39	N	N
modern	ceramic	pot	1900	2000	1	23	N	N
modern	glass	window	1900	2000	2	3	N	N
modern	metal	bolt	1900	2000	2	36	N	N
modern	metal	copper alloy fragment	1900	2000	1	9	N	N
modern	metal	drinks can	1950	2000	1	4	N	N
modern	metal	mechanical timer	1920	1980	1	46	N	N
modern	metal	window channel	1900	1980	1	16	N	N
undated	bone	burnt bone			1	3	N	N
undated	bone	mammal bone			10	109	N	N
undated	ceramic	fired clay			6	13	N	N
undated	metal	copper alloy fragment			2	9	N	N
undated	metal	iron object			34	1141	N	N

period	material class	object specific type	start date	end date	Count	weight(g)	specialist report? (note 2)	Key assemblage? (note 3)
undated	metal	unident			1	61	N	N
undated	organic	charcoal			2	1	N	N
undated	organic	oyster shell			1	2	N	Ν
undated	slag	copper alloy slag			1	24	N	N
undated	slag	unident			2	44	N	N

Notes

1) In some cases the date will be "Undated". In most cases, especially if there is not a specialist report, the information entered in the Date field will be a general period such as Neolithic, Roman, medieval etc (see below for a list of periods used in the Worcestershire HER). Very broad date ranges such as late Medieval to Post-medieval are acceptable for artefacts which can be hard to date for example roof tiles. If you have more specific dates, such as 13th to 14th century, please use these instead. Specific date ranges which cross general period boundaries can also be used, for example 15th to 17th century.

period	from	to
Palaeolithic	500000 BC	10001 BC
Mesolithic	10000 BC	4001 BC
Neolithic	4000 BC	2351 BC
Bronze Age	2350 BC	801 BC
Iron Age	800 BC	42 AD
Roman	43	409
Post-Roman	410	1065
Medieval	1066	1539
Post-medieval	1540	1900
Modern	1901	2050

period specific	from	to
Lower Palaeolithic	500000 BC	150001

Middle Palaeolithic	150000	40001
Upper Palaeolithic	40000	10001
Early Mesolithic	10000	7001
Late Mesolithic	7000	4001
Early Neolithic	4000	3501
Middle Neolithic	3500	2701
Late Neolithic	2700	2351
Early Bronze Age	2350	1601
Middle Bronze Age	1600	1001
Late Bronze Age	1000	801
Early Iron Age	800	401
Middle Iron Age	400	101
Late Iron Age	100 BC	42 AD
Roman 1st century AD	43	100
2nd century	101	200
3rd century	201	300
4th century	301	400
Roman 5th century	401	410
Post roman	411	849
Pre conquest	850	1065
Late 11th century	1066	1100
12th century	1101	1200
13th century	1201	1300
14th century	1301	1400
15th century	1401	1500
16th century	1501	1600
17th century	1601	1700
18th century	1701	1800
19th century	1801	1900

20th century	1901	2000
21st century	2001	

- 2. Not all evaluations of small excavation assemblages have specialist reports on all classes of objects. An identification (eg clay pipe) and a quantification is not a specialist report. A short discussion or a more detailed record identifying types and dates is a specialist report. This field is designed to point researchers to reports where they will find out more than merely the presence or absence of material of a particular type and date.
- 3. This field should be used with care. It is designed to point researchers to reports where they will be able to locate the most important assemblages for any given material for any given date.

Environmental

Methods of retrieval	Yes/No
Hand retrieval	Yes
Bulk sample	Yes
Spot sample	
Auger	
Monolith	
Observed	

Туре	Preservation	Date (note 1)	Specialist report? Y/N (note 2)	Key assemblage? Y/N (note 3)
Bone – large mammal	Not decayed	Late- medieval to post- medieval	yes	no
Bone- large mammal	Not decayed	Post- medieval	yes	no
Plant remains – wood	charred	undated	yes	Yes?