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Archaeological Field Evaluation

On behalf of

Balfours LLP

Concerning

Land at Wormbridge
Whitfield Estate
Herefordshire

July 2019

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1 Non-Technical Summary

Border Archaeology was instructed by Balfours LLP to carry out a programme of Archaeological Field Evaluation in connection with the proposed commercial and residential development on land to the northeast, northwest and west of Wormbridge Court Herefordshire forming part of the Whitfield Estate (centred on NGR 342695.377 2308857.806).

Twenty-five trenches were laid out, predominantly on arable or pasture farmland containing remains of medieval settlement activity; however, a combination of restricted access and overhead cabling precluded excavation or relocation of three of these trenches.

No features or deposits directly associated with the deserted medieval settlement were encountered and evidence of historic land-use overall was limited. Trench 007, Trench 008, Trench 009 and Trench 017 revealed buried soil horizons possibly relating to ploughed-out earthworks which contained material consistent with domestic waste used to fertilise farmland.

Trench 009 was exceptional in producing a diverse assemblage of well-preserved snail shell pointing to a more specific use of this part of the site, possibly associated with water management.

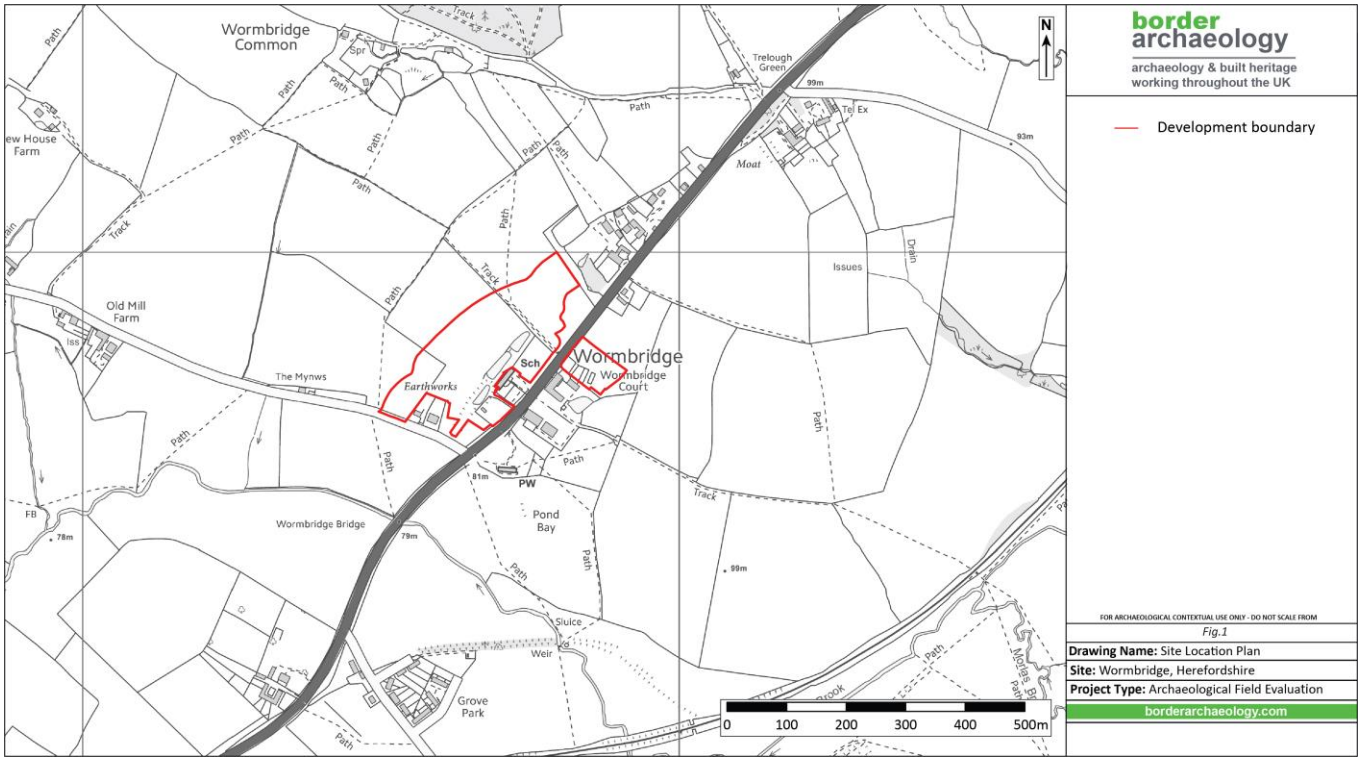
A post-medieval culvert identified running between Trench 012 and Trench 015 appeared to be still partially active while a substantial made-ground deposit incorporating redeposited 13th Century pottery was encountered in Trench 024.

The remaining trenches contained no features or deposits of archaeological significance.

2 Introduction

Border Archaeology (BA) was instructed by Balfours LLP to undertaken Archaeological Field Evaluation (AFE) in connection with the proposed commercial and residential development of land to the NE, NW and W of Wormbridge Court Herefordshire forming part of the Whitfield Estate (centred on NGR 342695.377 230857.806) (*Fig. 1*).

Fieldwork was carried out between October 8th and October 15th 2018.



3 Site Description

The site comprised two areas in the village of Wormbridge to the SE and NW of the A465 *c*.13km SW of Hereford (*fig. 1*).

Commercial development (*c*.1.7ha) comprising 'artisan-style' small-scale units is proposed for an irregularly-shaped pasture field adjacent to the current Wormbridge Court Business Centre to the SE of the A465.

New housing is proposed on *c*.10.2ha of rising ground to the NW of the A465 encompassing the site of the former Wormbridge School and three fields under pasture and arable cultivation extending NE to the grounds of Wormbridge House and SW to an unclassified road to Abbey Dore, adjacent to which are recorded earthworks.

3.1 Soils & Geology

Typical argillic brown earths of the BROMYARD (571b) series predominate, these being well-drained reddish fine silty soils over shale and siltstone, with some well-drained coarse loamy soils over sandstone. The underlying geology is Devonian reddish silty shale, siltstone and sandstone.

Typical alluvial gley soils of the HOLLINGTON (811c) series immediately to the SW where the land slopes down towards the Worm Brook consist of deep stoneless reddish fine silty and clayey soils variably affected by groundwater overlying reddish river alluvium (SSEW 1983).

4 Aims

The aims were consistent with those discussed in the approved *Written Scheme of Investigation* (WSI) (BA2018b, 2-3) and reflect the regional research priorities set out in *The Archaeology of the West Midlands: A Framework for Research* (Watt 2011).

5 Historical & Archaeological Background

Reference should be made to the Heritage and Archaeology Assessment (BA 2018a) submitted by BA in connection with this proposal.

In summary, little potential was identified for the discovery of remains of prehistoric date or for evidence for Romano-British activity.

Conversely, aerial photography show earthworks to the NW and SE of the A465 that appear to represent evidence of house platforms, holloways, enclosures, cultivation and water management features associated with medieval settlement. A series of three elongated pond features shown immediately to the NW of the school are likely to represent the remains of medieval fishponds. Whilst some of these earthworks have disappeared, having either been infilled or ploughed out in the late 20th Century, other features remain clearly visible above ground, particularly to the S and W of the school building and to the N of Wormbridge Court.

Similarly, for the post-medieval period subsurface features likely to be present associated with the demolished 17th -18th Century mansion of Wormbridge House, including remains of the house and associated outbuildings and formal gardens. The existing school house appears to incorporate the remains of a former outbuilding attached to the mansion.

A site visit noted two low rectilinear earthworks in the pasture field to the SE of the A465 suggesting possible house platforms whilst further to the E and SE were a series of shallow banks and hollows thought potentially to be relict field boundaries and cultivation features shown on an aerial photograph of 1966.

Fields to the NW of the A465 contained relatively few features, the most noteworthy visible features being the elongated fishponds and associated dam features to the NW of the schoolhouse and the raised earthwork to the SW of the school playground, bordering the fishponds, possibly associated with the demolished 17th-18th Century Wormbridge House.

6 Methodology

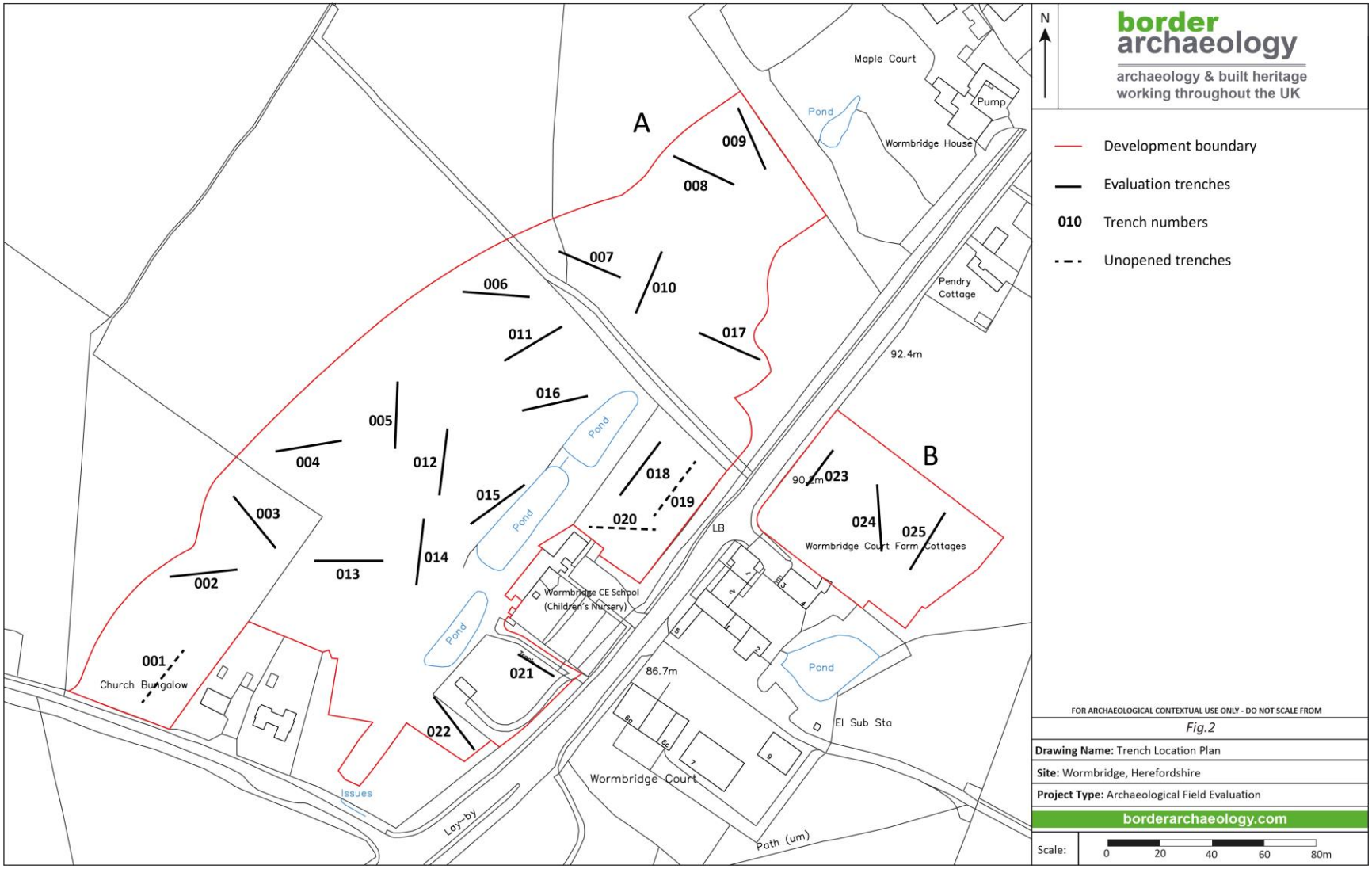
AFE was carried out in accordance with *Standard and guidance for archaeological field evaluation* (CIfA 2014b) and *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014c). BA adhered to the CIfA *Code of conduct* (2014a), *Management of Research Projects in the Historic Environment: The Project Managers' Guide* (Lee 2015), *Requirements for Archaeological Projects in Herefordshire* (Herefordshire Council 2017) and *Archaeology & Development: Supplementary Planning Document* (Herefordshire Council 2010).

Of the 25 trenches proposed, Trench 001, Trench 019 and Trench 020 could not be excavated due to overhead cabling and restricted access, the limited scope of the development area preventing their relocation.

Trenches measured *c*.30m × *c*.1.8m (*Fig. 2*) and were opened by machine and toothless bucket, with topsoil or recent overburden removed in level spits to the first significant archaeological horizon; thereafter, deposits were examined and trowelled by hand.

6.1 Recording

Written, drawn and photographic records were made in accordance with BA's *Archaeological Field Recording Manual* (2017) and *Written Scheme of Investigation* (BA 2018b).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Maple Court
Pump
Pond
Wormbridge House
Pendry Cottage
92.4m
90.4m
LB
Wormbridge Court Farm Cottages
Wormbridge CE School (Children's Nursery)
Church Bungalow
86.7m
El Sub Sta
Wormbridge Court
Issues
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border archaeology
archaeology & built heritage working throughout the UK
Development boundary
Evaluation trenches
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Unopened trenches
FOR ARCHAEOLOGICAL CONTEXTUAL USE ONLY - DO NOT SCALE FROM
Fig.2
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Site: Wormbridge, Herefordshire
Project Type: Archaeological Field Evaluation
borderarchaeology.com
Scale:
0 20 40 60 80m

7 Results

7.1 Introduction

Only those trenches containing features/deposits of archaeological significance are described in detail below. Full trench descriptions are set out in the Context Tables (Appendix 1).

7.2 Trenches 007, 008 & 009

These trenches were positioned over possible house platforms shown on an aerial photograph of 1966 (*Plates 1 & 2*) (BA 2018a).

Plate 1: Extract from 1966 aerial photograph showing features to the NW and S of the school and N of Wormbridge Court
(Reproduced by courtesy of the Cambridge University Centre for Aerial Photography)

Plate 2: Extract from 1966 aerial photograph showing earthworks to the NW and SE of the A465 at Wormbridge
(Reproduced by courtesy of the Cambridge University Centre for Aerial Photography)

7.2.1 Trench 007

Trench 007 was orientated WNW-ESE and targeted an area which aerial photography and LiDAR had indicated were of probable archaeological interest. Buried soils (007004), (007005) and (007006) were sealed beneath subsoil (007002) at depths of *c*.0.40m, *c.*0.70m and *c*.0.92m below ground level (bgl), respectively, and were seen only at the ESE end of the trench, extending *c*.7.80m WNW. The natural substrate lay *c*.0.46m-*c*.1.10m bgl (*Plate 3*).

Palaeoenvironmental analysis of buried soil (007005) revealed frequent ceramic building material (CBM), occasional slag and coal/coke, moderate quantities of charcoal and very occasional glass and heat-affected stone, which was probably the result of manuring in the vicinity of habitation (Paterson & Putland 2019, Appendix 6).

Plate 3: NNE-facing section of Trench 007, showing buried soils (007004), (007005) & (007006)

7.2.2 Trench 008

Trench 008 ran WNW-ESE in the location of a possible house platform shown on an aerial photograph of 1966. Buried soil (008003) was encountered *c*.0.65m bgl beneath subsoil (008002), extending roughly 12.30m from the WNW end of the trench. The natural substrate (008004) was revealed *c*.0.85m bgl *(Plate 4*).

An irregular piece of smithing hearth bottom from (008003) was considered to indicate only that a smithy is likely to have been located somewhere in the wider vicinity; had it been close by, small fragments of smithing slag, hearth-lining and fuel would also be anticipated (McDonnell 2018, Appendix 5). The palaeoenvironmental profile was comparable to that from buried soil (007005) and was again suggestive of manuring (Paterson & Putland 2019, Appendix 6).

Plate 4: SSW-facing section of Trench 008, showing buried soil (008003)

7.2.3 Trench 009

Trench 009 was orientated NNW-SSE. A buried soil (009003) encountered beneath subsoil (009002) at a depth of *c*.0.75m bgl, extended *c*.5.80m from the NNW end of the trench (*Plate 5*). The natural substrate (009004) occurred at *c*.0.85m bgl at the NNW end and at *c*.0.30m bgl at the SSE end.

Buried soil (009003) produced only a single piece of CBM but an abundance of exceptionally well-preserved snail shell enabled taxonomic identification to family level or lower in many cases. *Vallonia* was the most numerous snail species but other open-country and grass-loving taxa were also well-attested, as were those with a preference for shade and others favouring marshy environments (Paterson & Putland 2019, Appendix 6).

Plate 5: WSW-facing section of Trench 009, showing buried soil (009003)

7.3 Trench 012 & Trench 015

These two trenches were placed in the large field immediately NW of the medieval fishponds (*Plates 1 & 2*), formerly under orchard, where aerial photography shows a line of roughly rectangular ditched plots flanking the N side of a holloway running NW-SE and interpreted as relict 'tofts' or homestead plots (BA 2018a).

7.3.1 Trench 012

Trench 012 was orientated NNE-SSW and revealed a masonry culvert (012005) aligned NW-SE beneath subsoil (012002) (*Plate 6; Fig. 3*). This was constructed of locally-sourced laid stone slabs measuring *c.*480mm × *c.*400mm × *c.*60mm beneath two parallel mortared brick uprights, the brickwork comprising two courses of reused and mixed brick, each measuring *c.*100mm × *c.*260mm × *c.*50mm, and topped by similar stone slabs.

It appeared to have been constructed within a trench [012006], which had been backfilled following construction (012003). A deposit (012004) had formed within the culvert but water was observed draining through it.

Plate 6: View SE of culvert [012005] within Trench 012

The culvert appeared likely to be a continuation of another encountered in Trench 015.

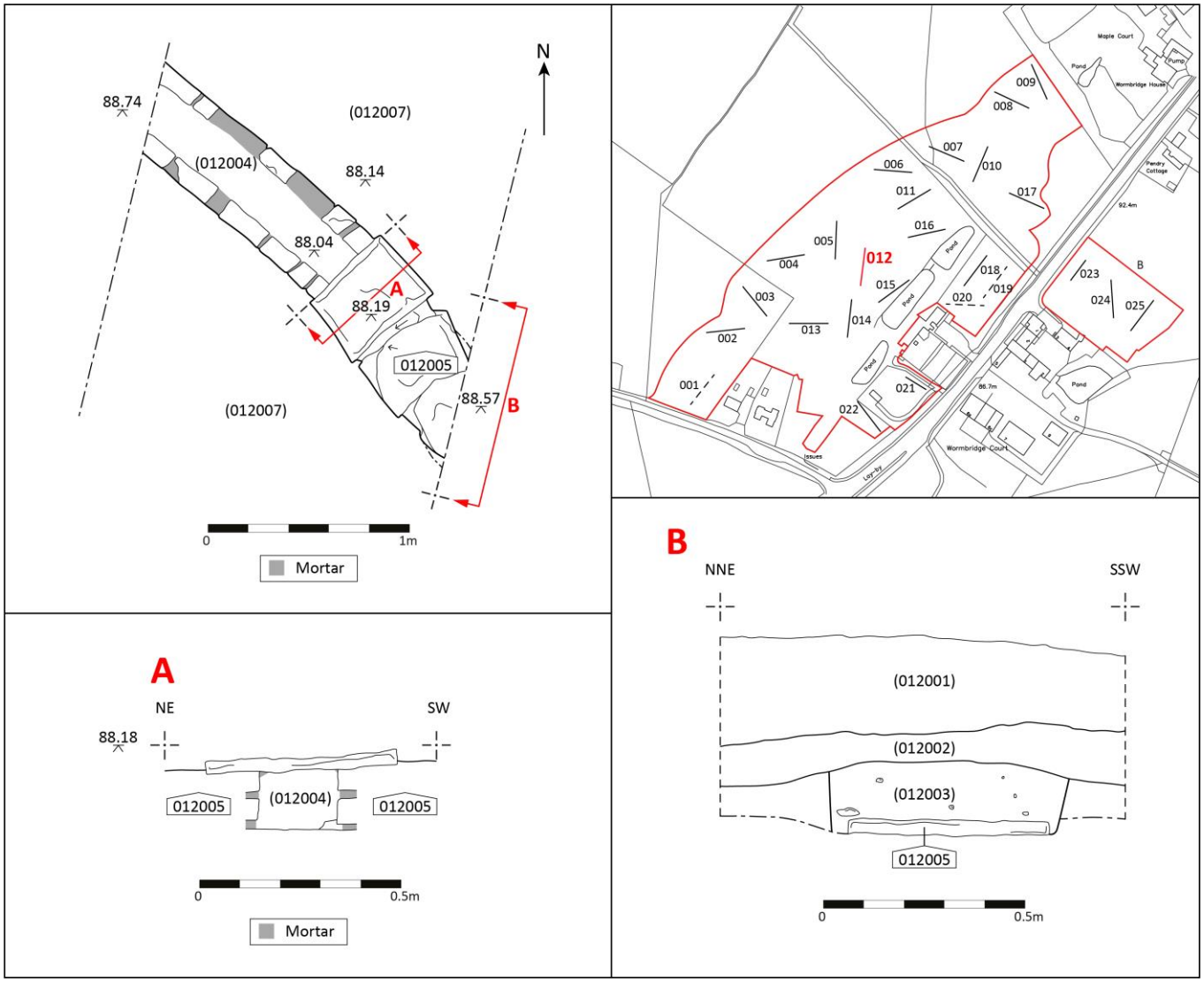

Fig. 3: Composite plan showing location of culvert (012005) and details of construction

7.3.2 Trench 015

Trench 015 was orientated NE-SW and revealed what appeared to be a continuation (015005) of culvert (012005) recorded in (Trench 012).

Running beneath subsoil (015002) on the same NW-SE alignment as (012005), the culvert exhibited a very similar stone-and-brick construction (*Fig. 4*).

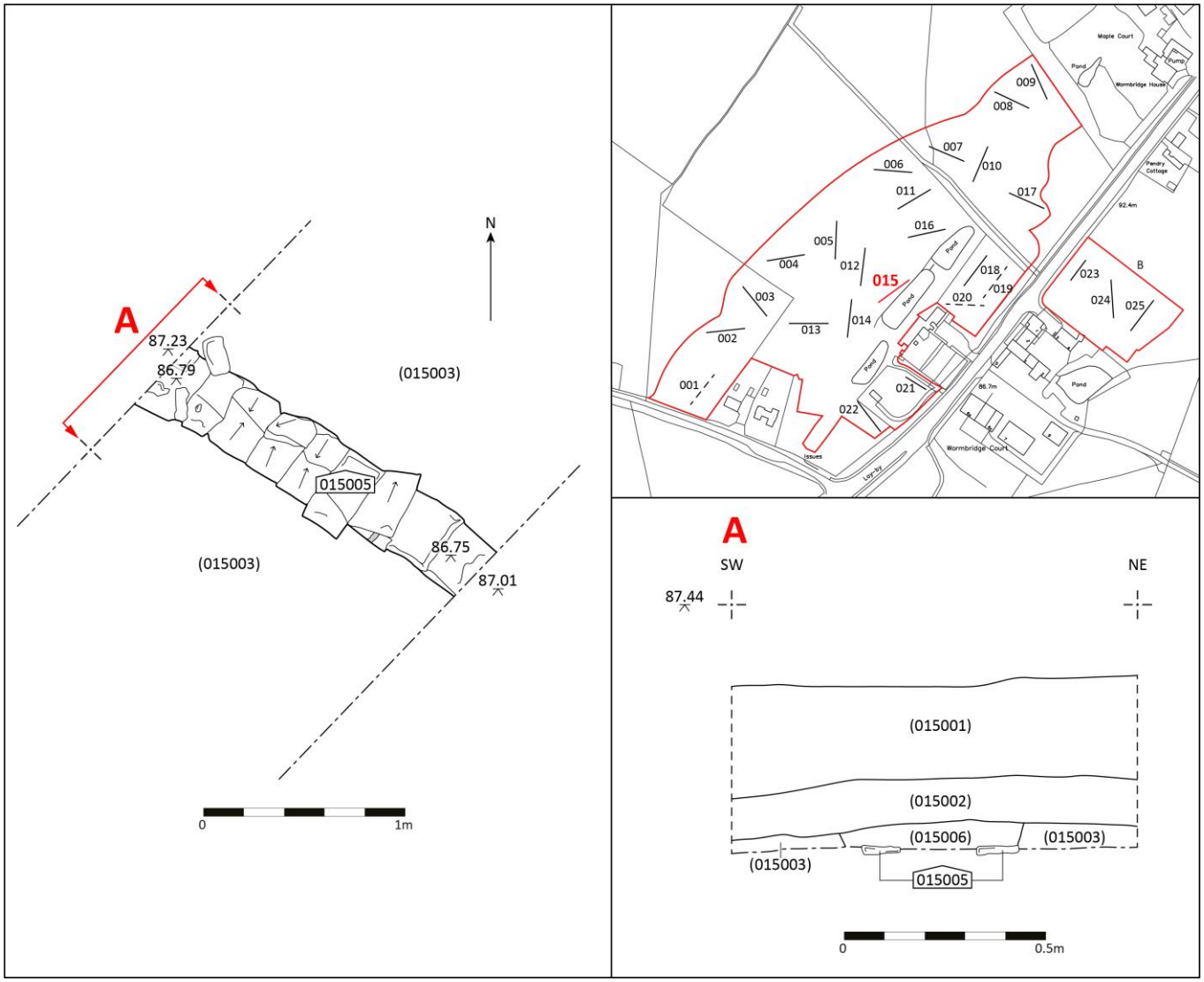

Fig. 4: Composite plan showing location and construction of culvert (015005)

7.4 Trench 017

The trench was aligned WNW-ESE (*Fig. 2*) and contained buried soils (017004) and (017005) underlying subsoil (017002) at depths of *c*.0.44m bgl and *c*.0.72m bgl, respectively, the natural being encountered at a depth of *c*.0.32m-*c*.0.84m bgl (*Plate 7*). The deposits were seen only at the WNW end of the trench and extended *c*.12.10m to the ESE.

In common with similar deposits found in Trenches 007 and 008, the palaeoenvironmental signature of (017005) was typical of domestic refuse incorporated in field manure, containing charcoal and CBM, with very occasional heat-affected stone and unburnt mammal bone and traces of slag (Paterson & Putland 2019, Appendix 6).

Plate 7: SSW-facing section of Trench 017, showing buried soils (017004) & (017005)

7.5 Trench 024

This trench was orientated NNW-SSE over a hollow in the field to the S of the A465 which LiDAR and aerial photographic evidence indicates probably represented a partially infilled section of a relict field boundary of probable medieval date (BA 2018a) (*Fig. 2*).

A substantial homogenous deposit more than *c*.0.80m thick (024003) was recorded beneath subsoil (024002) overlying the natural at a depth of *c*.0.34m bgl throughout the trench (*Plate 8*). Fragments of jars and cooking pots of 12th-13th Century date were found in (024003), in addition to medieval glazed roof tile in a local fabric (Crooks 2018, Appendix 2).

However, the presence of frogged brick shows this to have been a mixed deposit, probably forming part of an area of made-ground, which also included fragments of horse tibia (Faine 2018, Appendix 3) and a partially formed hearth bottom which, like that found in Trench 008, represented, at most, only a background scatter of smithing slag (McDonnell 2018, Appendix 5).

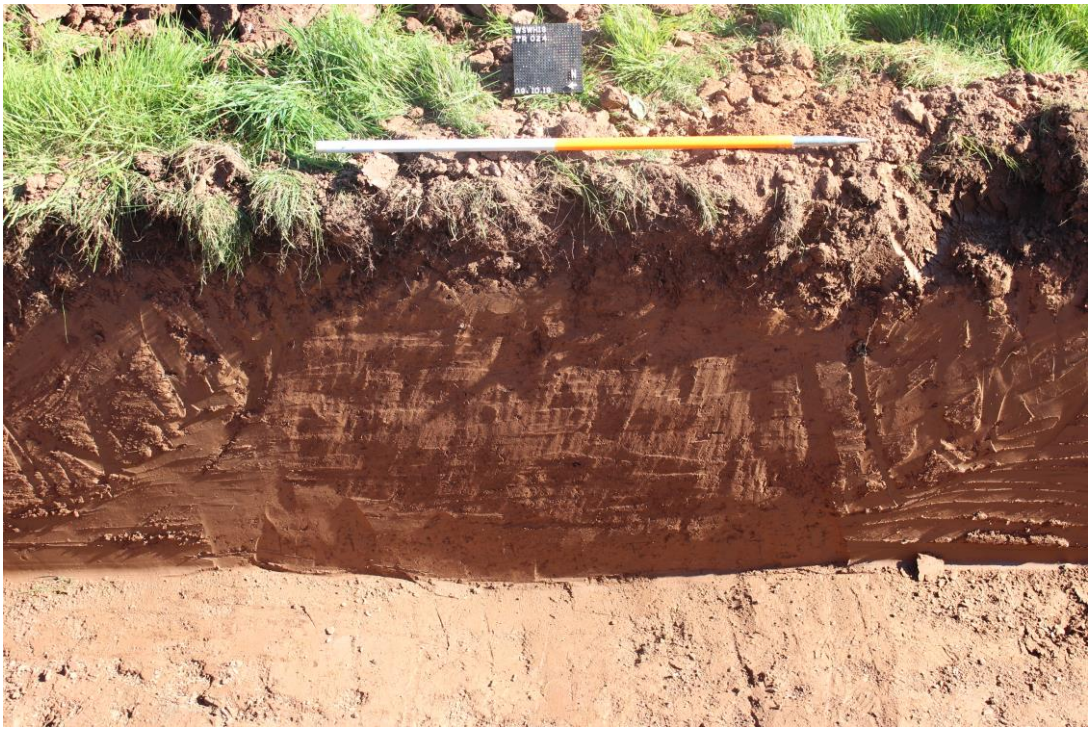

Plate 8: WSW-facing section of Trench 024, showing made-ground (024003)

8 Discussion of Results

Trenches 008 and Trench 009 were located at the NE extent of the site and targeted a rectangular earthwork shown on earlier editions of the Ordnance Survey and on aerial photography but subsequently ploughed-out. Both trenches revealed buried soil horizons, (008003), (009003), likely to be contemporary with this feature, with (009003) considered to be directly related.

Both deposits produced palaeoenvironmental evidence of former land-use, the composition of (008003) being consistent with a spread of domestic ash associated with manuring. Of greater interest were the results from (009003), which revealed an exceptional assemblage of well-preserved snail shell representing both terrestrial and wetland species and which is thought to signal an environment of seasonally-flooded meadow and pasture within a flood zone around the Worm Brook, a tributary of the River Dore about 150m to the SW (Paterson & Putland 2019, Appendix 6).

Whether this explanation adequately accounts for the very specific composition of (009003) is questionable on the basis that the richness and diversity of this snail assemblage is not replicated in any of the other trenches, also within the flood zone, suggesting a more localised influence, possibly relating to the square embanked feature shown in this location on the aerial photograph of 1966. The very different palaeoenvironmental signature of (008003) suggests this trench lay outside the embanked feature.

Identified as a 'cockpit' associated with the former mansion, its form differs from other recorded examples, which more often survive as a circular or slightly oval mound with a deep central depression where the cockfight took place. This feature on the other hand is square and relatively shallow and evidence that it periodically held water is wholly inconsistent with its use as a cockfighting arena. A more plausible interpretation, based on its proximity to a series of pond features aligned on what appears from both the aerial photographic and LiDAR evidence to be a relict feeder stream, suggests an association with water management and, although no specific function could be determined, it may possibly represent some form of holding or sorting tank.

It is additionally worth noting in connection with (009003) that no other instance of the snail species *Succinella oblonga* and *Quickella arenaria* has been recorded in Herefordshire but in other parts of lowland England these tend to be associated with glacial deposits or with Romano-British deforestation (Paterson & Putland; Appendix 6), although evidence of Romano-British activity in the wider surrounding area is sparse (BA 2018a).

Trench 007 and Trench 017 to the SW of Trench 008 and Trench 009 in the same field contained buried soil horizons devoid of finds but which appeared to reflect the original contours of the field seen in the 1966 aerial photographs. Material recovered from the palaeoenvironmental samples taken from these buried soils was shown to be consistent with manuring (Paterson & Putland; Appendix 6).

A partially active culvert of brick-and-stone construction was recorded running NW-SE between Trench 012 and Trench 015 and was the only structure encountered during the course of the fieldwork. No dating evidence was recovered but its construction, possibly incorporating material from Wormbridge House, demolished in 1798, suggests a post-medieval origin.

Restricted access precluded the opening of Trench 019 and Trench 020 to the NE of the school but Trench 018 in the same field revealed natural siltstone *c*.0.30m below topsoil and suggests the field had been landscaped. Trench 021 and Trench 022 in the field to the SW revealed similarly limited archaeological deposits. Both contained demolition rubble within the subsoil and Trench 022 was situated over a large modern refuse pit.

Trenches 023 and Trench 025 targeting presumed house platforms and part of a relict field system, respectively, were excavated to the geological horizon without revealing any features or deposits. Trench 024 was located between them over a relict field boundary shown on LiDAR and aerial photography, which, although still visible as an undulation in the landscape, appeared to have been partially infilled. A substantial made-ground deposit (024003) was encountered containing medieval pottery and roof-tile, frogged brick and a partially formed hearth bottom, the relatively small but closely dated ceramic assemblage suggesting that this backfill incorporated all or part of a single dump of domestic waste (Crooks 2018, Appendix 2), such as a rubbish pit or midden.

9 Conclusion

Little now remains above ground of the well-preserved medieval settlement earthworks shown on the 1966 aerial survey and which the trenching confirms survive only as buried soil horizons.

No features or deposits directly associated with the deserted medieval settlement were encountered and evidence of historic land-use overall was limited, the buried soils recorded in several trenches containing domestic waste consistent with manuring. Trench 009 was exceptional in producing a diverse assemblage of well-preserved snail shell pointing to a more specific use of this part of the site, possibly associated with water management.

10 Copyright

11 References

Border Archaeology, 2017, *Archaeological Field Recording Manual*.

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12 Appendix 1: Tabulated Context Information

12.1 Trench 001

Trench 001 was not excavated due to site constraints.

12.2 Trench 002

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
002001	Deposit	Loosely compacted dark brown-red clayey silt; infrequent stones. *c.*30m × *c.*0.34m.	Topsoil	-	-	-	-	-	-
002002	Deposit	Firmly compacted light brown-red silty clay; infrequent stones. *c.*30m × *c.*0.30m.	Subsoil	-	-	-	-	-	-
002003	Deposit	Firmly compacted pink-orange silty clay & green-pink-orange stony clayey silt.	Natural	-	-	-	-	-	-

12.3 Trench 003

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
003001	Deposit	Loosely compacted dark grey-red-brown clayey silt; infrequent stones. *c.*29.75m × *c.*0.36m.	Topsoil	-	-	-	-	-	-
003002	Deposit	Firmly compacted light brown-red silty clay; infrequent stones. *c.*29.75m × *c.*0.35m.	Subsoil	-	-	-	-	-	-
003003	Deposit	Firmly compacted pink-orange silty clay & green pink orange stony clayey silt.	Natural	-	-	-	-	-	-

12.4 Trench 004

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
004001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*28.70m × *c.*0.24m.	Topsoil	-	-	-	-	-	-
004002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*28.70m × *c.*0.20m.	Subsoil	-	-	-	-	-	-
004003	Deposit	Firmly compacted pink-orange silty clay; frequent manganese & infrequent stones.	Natural	-	-	-	-	-	-

12.5 Trench 005

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
005001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*29.85m × *c.*0.31m.	Topsoil	-	-	-	-	-	-
005002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*29.85m × *c.*0.11m.	Subsoil	-	-	-	-	-	-
005003	Deposit	Firmly compacted pink-orange silty clay; frequent manganese, infrequent stones.	Natural	-	-	-	-	-	-

12.6 Trench 006

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
006001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*29m × *c.*0.27m.	Topsoil	-	-	-	-	-	-
006002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*29m × *c.*0.13m.	Subsoil	-	-	-	-	-	-
006003	Deposit	Firmly compacted dark brown green siltstone & pink-orange silty clay.	Natural	-	-	-	-	-	-

12.7 Trench 007

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
007001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*30m × *c.*0.44m.	Topsoil	-	-	-	-	-	-
007002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*30m × *c.*0.20m.	Subsoil	-	-	-	-	-	-
007003	Deposit	Firmly compacted pink-brown stony silty clay.	Natural	-	-	-	-	-	-
007004	Deposit	Firmly compacted light brown-red silty clay; rare stones. *c.*7.80m × *c.*0.35m.	Buried soil	-	-	-	-	-	-
007005	Deposit	Firmly compacted mid-grey-brown silty clay; rare stones. *c.*7.80m × c.0.36m.	Buried soil	-	-	✓	✓	<001>	CBM, Glass, Slag
007006	Deposit	Firmly compacted mid-brown-red silty clay; rare stones. *c.*7.80m × *c.*0.30m.	Buried soil	-	-	-	-	-	-
007007	Cut	Linear in plan; orientated NE-SW; break of slope top sharp, sides vertical, base not excavated. >1.80m × *c.*0.38m × *c.*0.54m. Cuts (007004), (007005) & (007006). Filled by (007008).	Cut of field drain	-	-	-	-	-	-
007008	Fill	Loosely compacted dark brown-red silty clay; rare stones & ceramic drainage pipe. >1.80m × *c.*0.38m × *c.*0.54m. Fill of [007007].	Fill of field drain	-	-	-	-	-	-

12.8 Trench 008

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
008001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*29.79m × *c.*0.36m.	Topsoil	-	-	-	-	-	-

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
008002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*30m × *c.*0.33m.	Subsoil	-	-	-	-	-	-
008003	Deposit	Very firmly compacted light red-brown silty clay; frequent manganese, infrequent stones. *c.*12.30m × *c.*0.21m.	Buried soil	-	✓	-	✓	<002>	Glass, Slag.
008004	Deposit	Very firmly compacted pink-brown-green stony silty clay.	Natural	-	-	-	-	-	-

12.9 Trench 009

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
009001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*29.9m × c.0.33m.	Topsoil	-	-	-	-	-	-
009002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*29.90m × *c.*0.46m.	Subsoil	-	-	-	-	-	-
009003	Deposit	Loosely compacted dark grey-brown stony clayey silt; frequent stones. *c.*5.80m × *c.*0.11m.	Buried soil	-	-	-	✓	<003>	CBM, Slag
009004	Deposit	Very firmly compacted pink-brown-green stony silty clay.	Natural	-	-	-	-	-	-

12.10 Trench 010

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
010001	Deposit	Loosely compacted very dark brown red clayey sandy silt; infrequent stones. *c.*30m × *c.*0.23m.	Topsoil	-	-	-	-	-	-
010002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*30m × *c.*0.18m.	Subsoil	-	-	-	-	-	-
010003	Deposit	Very firmly compacted mid-pink-brown stony silty clay.	Natural	-	-	-	-	-	-

12.11 Trench 011

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
011001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*29.70m × *c.*0.30m.	Topsoil	-	-	-	-	-	-
011002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*29.70m × *c.*0.14m.	Subsoil	-	-	-	-	-	-
011003	Deposit	Very firmly compacted pink-orange silty clay; frequent manganese & infrequent stones.	Natural	-	-	-	-	-	-

12.12 Trench 012

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
012001	Deposit	Loosely compacted dark brown-red clayey sandy silt; infrequent stones. *c.*30m × c.0.27m.	Topsoil	-	-	-	-	-	-
012002	Deposit	Firmly compacted dark grey-brown red silty clay; infrequent stones. *c.*30m × *c.*0.12m.	Subsoil	-	-	-	-	-	-
012003	Fill	Firmly compacted light pink-grey silty clay; infrequent small stones. *c.*0.59m × *c.*0.16m. Fill of [012006].	Fill of culvert trench	-	-	-	-	-	-
012004	Fill	Firmly compacted red-brown silty clay; rare small stones. *c.*0.19m × *c.*0.15m. Fill of [012005].	Fill within culvert	-	-	-	-	-	-
012005	Structure	Linear in plan; orientated NW-SE; stone slab base *c.*480mm × *c.*400mm × *c.*60mm, two uprights of reused mortared brick c.100mm × *c.*260mm × *c.*50mm each of two courses, capped with the same stone slabs. Fill of [012006].	Culvert	-	-	-	-	-	-
012006	Cut	Linear in plan; orientated NW-SE; break of slope top sharp, sides steep, base not excavated. >1.80m × *c.*0.59m × *c.*0.16m. Cuts (012007). Filled by (012003), (012005).	Foundation trench for culvert	-	-	-	-	-	-
012007	Deposit	Very firmly compacted green-pink-orange stony silty clay; frequent stones & manganese.	Natural	-	-	-	-	-	-

12.13 Trench 013

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
013001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*30.85m × *c.*0.34m.	Topsoil	-	-	-	-	-	-
013002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*30.85m × *c.*0.17m.	Subsoil	-	-	-	-	-	-
013003	Deposit	Very firmly compacted green-pink silty clay; frequent manganese & stones.	Natural	-	-	-	-	-	-

12.14 Trench 014

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
014001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*27.10m × *c.*0.26m.	Topsoil	-	-	-	-	-	-
014002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*27.10m × *c.*0.21m.	Subsoil	-	-	-	-	-	-
014003	Deposit	Very firmly compacted light brown clayey silts & green-pink stony clays; frequent manganese.	Natural	-	-	-	-	-	-

12.15 Trench 015

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
015001	Deposit	Loosely compacted dark brown-red clayey sandy silt; infrequent stones. *c.*30m × *c.*0.28m	Topsoil	-	-	-	-	-	-
015002	Deposit	Firmly compacted dark grey-brown red silty clay; infrequent stones. *c.*30m × *c.*0.12m	Subsoil	-	-	-	-	-	-
015003	Deposit	Firmly compacted light pink-orange silty clay & dark red-brown siltstone bedrock.	Natural	-	-	-	-	-	-
015004	Cut	Linear in plan; orientated NW-SE; break of slope top sharp, sides steep, base not excavated. >1.80m × *c.*0.44m × *c.*0.07m. Cuts (015003). Filled by (015005), (015006).	Foundation trench for culvert	-	-	-	-	-	-
015005	Structure	Linear in plan; orientated NW-SE; stone slabs *c.*400mm × *c.*240mm × *c.*50mm, two uprights of reused mortared brick *c.*100mm × *c.*260mm × *c.*50mm. Fill of [015004].	Culvert	-	-	-	-	-	-
015006	Fill	Firmly compacted dark red-brown silt clay; infrequent small stones. *c.*0.45m × *c.*0.07m. Fill of [015004].	Fill of culvert trench	-	-	-	-	-	-

12.16 Trench 016

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
016001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*30m × *c.*0.29m.	Topsoil	-	-	-	-	-	-
016002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*30m × *c.*0.23m.	Subsoil	-	-	-	-	-	-
016003	Deposit	Very firmly compacted mid pink-brown-green stony silty clay.	Natural	-	-	-	-	-	-

12.17 Trench 017

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
017001	Deposit	Firmly compacted mid-grey-brown sandy clay; occasional stones. *c.*28m × *c.*0.54m.	Topsoil	-	-	-	-	-	-
017002	Deposit	Firmly compacted light grey-brown silty sandy clay. *c.*28m × *c.*0.14m.	Subsoil	-	-	-	-	-	-
017003	Deposit	Firmly compacted light pink-brown silty stony clay.	Natural	-	-	-	-	-	-
017004	Deposit	Firmly compacted mid-pink-brown silty clay; infrequent stones. *c.*12.10m × *c.*0.40m.	Buried soil	-	-	-	-	-	-
017005	Deposit	Firmly compacted mid grey-brown silty sandy clay; rare stones. *c.*12.10m × *c.*0.16m.	Buried soil	-	-	✓	✓	<004>	CBM

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
017006	Cut	Linear in plan; orientated NE-SW; break of slope top sharp, sides vertical, base not excavated. >1.80m × *c.*0.32m × *c.*0.52m. Cuts (017004) & (017005). Filled by (017007).	Cut of field drain	-	-	-	-	-	-
017007	Fill	Loosely compacted grey mixed gravel. >1.80m × *c.*0.32m × *c.*0.52m. Fill of [017006].	Fill of field drain	-	-	-	-	-	-

12.18 Trench 018

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
018001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*30m × *c.*0.28m.	Topsoil	-	-	-	-	-	-
018002	Deposit	Very firmly compacted mid green-pink stony clay and siltstone.	Natural	-	-	-	-	-	-

12.19 Trench 019

Trench 019 was not excavated due to site constraints.

12.20 Trench 020

Trench 020 was not excavated due to site constraints.

12.21 Trench 021

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
021001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*18m × *c.*0.25m.	Topsoil	-	-	-	-	-	-
021002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones & demolition rubble. *c.*18m × *c.*0.09m.	Subsoil	-	-	-	-	-	-
021003	Deposit	Firmly compacted green-pink silty clay; infrequent stones.	Natural	-	-	-	-	-	-

12.22 Trench 022

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
022001	Deposit	Loosely compacted dark red-brown clayey sandy silt; infrequent stones. *c.*25m × *c.*0.30m.	Topsoil	-	-	-	-	-	-
022002	Deposit	Very firmly compacted dark brown silt stone & red-green-orange silty clay; frequent manganese and infrequent stones.	Natural	-	-	-	-	-	-

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
022003	Deposit	Firmly compacted light red-brown clayey silt; infrequent stones & lenses of demolition. *c.*25m × *c.*0.21m.	Subsoil	-	-	-	-	-	-
022004	Deposit	Firmly compacted layered dark grey-brown clayey silt sand and demolition waste. *c.*11.30m × *c.*0.80m.	Modern pit fill/landfill						
022005	Cut	Break of slope top gradual, gentle sides, base not excavated. >1.80m × *c.*11.30m × *c.*0.80m. Cuts (015003). Filled by (022004).	Landfill pit						

12.23 Trench 023

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
023001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*19.80m × *c.*0.25m.	Topsoil	-	-	-	-	-	-
023002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*19.80m × *c.*0.36m.	Subsoil	-	-	-	-	-	-
023003	Deposit	Very firmly compacted dark brown-red stony silty clay.	Natural	-	-	-	-	-	-

12.24 Trench 024

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
024001	Deposit	Loosely compacted very dark red clayey sandy silt; infrequent stones. *c.*29.30m × *c.*0.28m.	Topsoil	-	-	-	✓	-	CBM
024002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*29.30m × c.0.11m.	Subsoil	-	-	-	-	-	
024003	Deposit	Very firmly compacted light red-brown clayey silt; very frequent charcoal, rare stones. *c.*29.30m × *c.*0.81m.	Made ground	-	✓	-	✓	-	C13 pottery, CBM, slag & modern brick
024004	Deposit	Very firmly compacted dark brown-red stony silty clay.	Natural	-	-	-	-	-	-

12.25 Trench 025

Context	Type	Description	Interpretation	Finds					Comments
				Small Find	Pot	Bone	Misc.	Sample No.	
025001	Deposit	Loosely compacted very dark brown-red clayey sandy silt; infrequent stones. *c.*30m × *c.*0.24m.	Topsoil	-	-	-	-	-	-
025002	Deposit	Firmly compacted dark brown-red silty clay; infrequent stones. *c.*30m × *c.*0.21m.	Subsoil	-	-	-	✓	-	Modern masonry iron wedge/spike
025003	Deposit	Very firmly compacted dark-brown-green-red clayey silt; infrequent stones.	Natural	-	-	-	-	-	-

13 Appendix 2: Assessment of medieval pottery & CBM

K. H. Crooks
Border Archaeology

13.1 Summary

A total of 13 sherds of medieval pottery (173.9g) and nine fragments (246.5g) of medieval CBM were recovered.

All were from Trench 024 (024003) and thought to be redeposited, although their close dating suggests that they probably originated from a single deposit. The pottery dates to the 13th Century and the roof tile to the middle of that century onwards. All the pottery was fairly locally produced in Herefordshire or surrounding area and reflects fabrics found in Hereford during the 13th Century.

13.2 Methodology

Pottery and CBM were washed and sorted by form and fabric according to work by Vince (1985, 2002).

13.3 The pottery

The majority of the medieval pottery (nine sherds) was from jars or cooking pots in Herefordshire fabric A2, tempered with of limestone, sandstone and quartz sand (Vince 1984, 37). Two were joining sherds and a number of the other sherds in this fabric appeared likely to have been from the same vessel. The remaining sherd of fabric A2 was much abraded but came from the rim of a curfew (Vince 2002, 77 *fig. 7.1,* 6).

A single sherd in fabric A7B, probably from a jug, had glaze bubbled onto a broken surface. It is possible the sherd was a waster but it may be that the glaze had flowed into a crack in the fabric of the vessel. However, the sherd did appear to be overfired and the possibility that it was kiln waste remains.

The remaining two sherds of pottery were from the rim of a cooking pot in Herefordshire fabric A8, which Vince states is commonly found in SW Herefordshire but is not common in the city itself (1985, 45). It is thought to originate from a number of sources.

Context	Fabric	No. Sh	Wt. (g)	Comments
024003	A2	9	105.1	Most of limestone inclusions leached away. Jar. LC12-C13.
024003	A2	1	32.9	LC12-C13. c.4% of rim of curfew. 42cm diameter
024003	A7B	1	17.7	Ext dark green/black gl. Highly fired. Glaze on break suggesting waster. C13-C15.
024003	A8	2	18.2	Joining sherds. Everted rim. C13. 22cm diameter. 8%.

Table 1: Summary of the medieval pottery from the site

13.4 The CBM

Nine fragments of roof tile were recovered, a number of which were joining fragments. All were of the same fabric (Herefordshire A7) dating to the middle of the 13th-15th Century. Glaze or traces of glaze were present on all examples. Two joining sherds from a ridge tile with a glossy green glaze had a scar on the upper surface suggesting a decorative crest had originally been present. The roof tile suggests a fairly 'high-status' building in the vicinity.

Context	Fabric	No. Frags	Wt. g	Comments
024003	A7	2	106.6	Ridge tile. Joining fragments. Green glaze upper & crest probably broken away. C13-C15.
024003	A7	1	58	Green glaze upper. Probable ridge tile. C13-C15.
024003	A7	5	39.0	Four joining sherds. All have spots clear glaze. C13-C15.
024003	A7	1	42.9	Incompletely-fluxed glaze on upper. Flat tile. C13-C15.

Table 2: Summary of the medieval CBM from the site

13.5 Discussion

Although this small assemblage was thought to be the result of secondary deposition, it was reasonably closely dated and probably originally came from one deposit. Vince (2002, 77) states that fabric A2 was produced to the SW of Hereford and that these vessels seem to have remained in use in this area after they had ceased to be supplied to the city. This would agree with the date usually assigned to A7B pottery of mid-13th Century onwards. The limestone inclusions had leached out of the A2 jar sherds suggesting either acid soil conditions or that the vessel had been used to store an acidic liquid. A large, much-abraded sherd in this fabric is from the rim of a curfew, used to cover a domestic fire at night.

While the single sherd of A7B may have been a 'second', with glaze running into a crack in the vessel surface, the possibility that it is production waste cannot be ruled out, particularly as the sherd is somewhat overfired. It is thought likely that a number of kilns producing this fabric were present in the county (Vince 1985, 43).

Although the assemblage is very small, the predominance of unglazed wares indicates a date prior to the end of the 13th Century, with the proportion of cooking pots declining throughout the 14th Century (Bryant, 2004, 335).

13.6 Recommendations

The pottery should be retained as part of the site archive. Should further pottery be recovered from the site this material should be incorporated into the report.

13.7 References

Bryant, V., 2004, 'The Medieval and early post-medieval pottery', in Dalwood, H., & Evans, R., *Excavations at Deansway, Worcester, 1988-9: Romano-British small town to late medieval city*, CBA Research Report 139.

Vince, A. G., 1985, 'The ceramic finds', in Shoesmith, R., *Hereford City Excavations Vol 3: The Finds*, CBA.

Vince, A. G., 2002, 'The Pottery', in Thomas, A., & Boucher, A., *Hereford City Excavations Vol 4: Further Sites & Evolving Interpretations*, Hereford City & County Archaeological Trust Ltd.

14 Appendix 3: Assessment of faunal remains

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Border Archaeology

Seven fragments (125g) of faunal material were recovered from the evaluation at Wormbridge.

The bones were washed and bagged by context and are stored at the Border Archaeology Office Milton Keynes.

All fragments were recovered from context (024003) and comprised a single adult distal horse tibia.

No further work is required.

15 Appendix 4: Assessment of metalwork

Chris Faine
Border Archaeology

15.1.1 (025002)

Rectangular profile Iron wedge/spike. Post-Medieval/Modern. L: 165mm D: 32mm.

16 Appendix 5: Assessment of slags

Gerry McDonnell
Gerry McDonnell Archaeometals

16.1 Introduction

This assessment report describes the material classified as slag recovered from the evaluation excavation. A detailed description and quantification of the material is provided. The significance of the material is discussed and recommendations made if further archaeological investigation is undertaken on the site. The assessment report follows the guidelines issued by English Heritage (Dungworth 2015, 13-14).

The area investigated is within or close to the medieval settlement of Wormbridge and the demolished post-medieval mansion of Wormbridge House (Children 2018). The village and the mansion could have had a blacksmiths forge within each complex. In the case of medieval villages there is a striking lack of data concerning smithies within them, a noted exception was the excavation of Burton Dassett (Warwickshire Palmer, in press) which revealed a smithy (McDonnell 1992; Mills & McDonnell 1992). The importance of rural smithies was discussed in the synthesis volume on Wharram Percy East Yorkshire (McDonnell *et al*. 2012).

16.2 Slag classification

The slags were visually examined and classification is based solely on morphology.

The debris associated with metalworking, or submitted in the understanding that they are associated with metalworking, can be divided into two broad groups:

Residues diagnostic of a particular metallurgical process or non-diagnostic residues that may have derived from any pyro-technological process (McDonnell 2001). The diagnostic ferrous debris can be attributed to a particular ironworking process; these comprise ores and the ironworking slags, i.e. the macro-, hand-recovered smelting and smithing slags and the micro-residues, such as hammerscale and slag fragments recovered from sieving programmes.

The second group are the diagnostic non-ferrous metalworking debris, e.g. crucibles and moulds.

Thirdly, there are the non-diagnostic slags, which could have been generated by a number of different processes but show no diagnostic characteristic that can identify the process. In many cases, the non-diagnostic residues, e.g. hearth or furnace lining, may be ascribed to a particular process through archaeological association. The residue classifications used in the report are defined below.

16.3 Diagnostic ferrous slags and residues

- Hearth Bottom: A plano-convex accumulation of iron silicate slag formed in the smithing hearth. The range of dimensions of the hearth bottoms are recorded;
- Smithing Slag: Randomly-shaped pieces of iron silicate slag generated by the smithing process. In general, slag is described as smithing slag unless there is good evidence to indicate that it derived from the smelting process.

16.4 Results

The excavation recovered two pieces of slag. An irregularly-shaped smithing hearth bottom was recovered from Trench 008 (008003) (*Table 1*). A single piece of smithing slag, probably a proto-hearth bottom, i.e. a partially formed hearth bottom, was recovered from Trench 024 (024003).

Trench	Context	HB Weight	D1	D2	DP
008	008003	798	102	101	62

Table 1: Dimensions of the hearth bottom recovered from (008003), (wt. in grams); D1- major diameter (mm); D2 - minor diameter (mm); DP -depth (mm)

16.5 Significance & Recommendations

The assemblage is very small and the presence of two pieces of smithing slag is considered a background scatter of slag recovered from many settlement sites of all periods. They are indicative of smithing activity, of unknown date, in the vicinity. The absence of small fragments of smithing slag, hearth-lining and fuel indicates that the smithy is some distance (tens of metres) away. If further excavation is undertaken, it is possible that a smithy could be encountered and suitable steps taken to ensure the maximum recovery of data.

No further work is required on the assemblage. For archiving purposes, the assemblage should be retained.

16.6 References

Dungworth D. (Ed.), 2015, *Archaeometallurgy Guidelines for Best Practice*, Historic England (www.HistoricEngland.org.uk/advice/).

McDonnell J. G., 1992, *The Identification and Analysis of the Slags from Burton Dassett, Warwickshire*, English Heritage Ancient Monuments Laboratory Report 1992/46.

McDonnell J. G., 2001 'Pyrotechnology', in Brothwell, D. & Pollard A. M. P. (Eds.), *Handbook of Archaeological Sciences*, John Wiley & Sons, London, pp 493-506.

McDonnell, G., Blakelock, E.S., Rubinson, S.R., Chabot, N., Daoust, A.B. & Castagnino, V., 2012, 'The iron economy of Saxon Wharram Percy: Modelling the Saxon ironworking landscape. Wharram. A study of Settlement on the Yorkshire Wolds, XIII', *A History of Wharram Percy and its Neighbours*, York University Archaeological Publications.

Mills, A. & McDonnell, J. G., 1992, *The identification and analysis of the hammerscale from Burton Dassett, Warwickshire*,English Heritage Ancient Monuments Laboratory Report 1992/47.

Palmer, N., (forthcoming), *Burton Dassett Southend, Warwickshire: A Medieval Market Village*, Medieval Archaeology Monograph Series.

17 Appendix 6: Palaeoenvironmental assessment

Ryan Patterson & Robin Putland
Border Archaeology

This report has been prepared by the BA Palaeoenvironmental Department to facilitate and elucidate the palaeoenvironmental, palaeoeconomic and palaeodietary interpretations of a sequence of features discovered.

Four samples comprising 160ℓ of material were processed by flotation having originated from buried soils, possibly relating to ploughed-out medieval earthworks.

The buried soils were likely sealed by the associated earthworks at the time of their deposition and therefore reveal the environment of the locality at time of their burial. Environmental evidence was primarily restricted to terrestrial snail shells. The molluscan fauna recovered was broadly consistent with the fauna encountered in seasonally wet meadows and pastures and in meadow orchards on intermediate soils, suggesting the prevailing ecological site conditions during the medieval period were similar to the present.

17.1 Introduction

This report details the results derived from four samples constituting 160ℓ of soil retrieved from buried soil horizons in a probable medieval landscape.

In accordance with BA procedures (BA 2018), at least 40ℓ or 100% of the deposits were sampled and this resulted in four samples comprising 160ℓ of material being received by the Palaeoenvironmental Department, with the resultant archaeological and archaeobotanical material sorted and identified.

The samples were processed by means of flotation and any potential archaeobotanical remains from both the floating element and the heavier residue/retent were sorted and visually identified. The nature and interpretative significance of the recovered remains is detailed in Section 17.3.1 below.

The four samples were taken in multiples of 10ℓ sample buckets and derived from four distinct deposits, from which 40ℓ each was taken. The results are presented by context in Section 17.4 below.

17.1.1 Site Description

The site comprised two distinct areas situated to the SE and NW of the A465 Hereford-Abergavenny road. The former, proposed for commercial development, comprised *c*.1.7ha of land within an irregularly-shaped pasture field bordered by two residential properties to the NE, open field to the E and the curtilage of Wormbridge Court to the SW. The latter, proposed for residential development, covered *c*.10.2ha of rising ground to the NW of the A465. The proposed residential development included the site of the former Wormbridge school and three fields under pasture and arable cultivation.

17.1.2 Soils and Geology

Soils within the site are typical argillic brown earths of the BROMYARD (571b) series, consisting of well-drained reddish fine silty soils overlying shale and siltstone, with some well-drained coarse loamy soils over sandstone (SSEW 1983). The underlying geology consists of Devonian reddish silty shale, siltstone and sandstone. This would result in limited taphonomic biases on the palaeoenvironmental material.

17.2 Methodology

17.2.1 Objectives of analysis

The purpose of the palaeoenvironmental sampling strategy implemented during archaeological evaluation is the retrieval of non-specific palaeoenvironmental remains and the further characterisation of features that cannot be fully investigated due to the confines of the evaluation parameters. An additional purpose to palaeoenvironmental reporting in the case of archaeological evaluations is the recommendation of further, potentially specific palaeoenvironmental sampling in further archaeological mitigation.

17.2.2 Sampling methodology

Sampling methodology followed the Palaeoenvironmental Department Manual (BA 2017) for environmental sampling and processing and with reference to Historic England guidance (Campbell *et al.*, 2011). On site, the samples were collected in sample buckets and identified by context and sample number. Following receipt into the Palaeoenvironmental Department, they were assigned bucket numbers for tracking purpose. The samples were not subject to sub-sampling and their entirety was processed by means of flotation.

Flotation was undertaken in Siraf-style tanks (Williams 1973) with a 500µm retent mesh and 250µm flot sieve. No refloating was required for these samples. Retents were initially scanned by magnet to retrieve any archaeometallurgical debris and a sieve bank was used to facilitate visual sorting, with the smaller fractions sorted by means of magnifying lamp and/or illuminated stereo zoom microscopy (≤×10). The flots were sorted entirely by means of illuminated stereo zoom microscopy (≤×10). The results of this analysis are reported with the flot and retent data recombined due to limited to no variance in the species being reported.

17.2.3 Personnel

Flotation and primary analysis were undertaken by staff within BA's Palaeoenvironmental Department managed by Robin Putland BSc MSc. The department consists of a minimum of 10 members of staff, predominantly with post-graduate palaeoenvironmental qualifications. This work was further assisted by BA's field staff as part of a programme of Continuing Professional Development (CPD). Analysis and identification were only undertaken by the palaeoenvironmental department under the guidance of Robin Putland BSc MSc and Amy Bunce BSc MA ACI*f*A.

External and internal specialists were consulted for all archaeological finds and faunal material recovered from palaeoenvironmental samples. Archaeological, archaeometallurgical and archaeozoological assemblages from the palaeoenvironmental material were recombined with the full site assemblages to ensure unbiased and broader specialist reporting on those materials.

17.3 Description of Results

17.3.1 Description & implications of materials recovered

Detailed below are the general implications of the discovery of certain materials within the palaeoenvironmental samples. Section 17.4 details such information by context. Of particular note is the abundance of terrestrial snails in Trench 009.

17.3.1.1 Finds

Archaeological finds within palaeoenvironmental samples are fairly common and help confirm that the sampling of the material was not biased in any manner.

In this case, finds included pottery, CBM, glass, heat-affected stone and coal/coke.

17.3.1.2 Bone

Both burnt and unburnt bone may be present within palaeoenvironmental samples with taphonomic conditions occasionally proportionately affecting their preservation. Burnt bone is reasonably conclusively of anthropogenic origin, deriving from domestic activities, as well as some industrial and funerial practices. Unburnt bone may additionally have become incorporated due to animal death in the vicinity of the context while it was forming and therefore cannot always be used as an indicator of human activity. Incidences of the inadvertent inclusion of unburnt bone from decomposed individuals, especially of small mammals and reptiles, can highlight specific ecological niches. However, it is by no means the case that all unburnt bone derives from such cases and unburnt bone from large mammals is a good indicator of nearby settlement and potential butchery.

Very occasional unburnt mammal bone or unburnt small mammal bone was present. This almost certainly represents inadvertent inclusion of deceased individuals.

17.3.1.3 Shell

Terrestrial shell comprises that from snails that may have been present in the area during deposition of the fills. Identification of the species represented highlights any ecological niches preferred by certain species in the environments they inhabited.

Archaeomalacological identification is undertaken in-house by Ryan Paterson BSc MSc and Robin Putland BSc MSc, additionally utilising reference texts (Cameron 2008; Evans 1972; Kerney & Cameron 1979; Welter-Schultes 2012). Environmental interpretations were based upon a combined autecological and synecological approach, as advised by Davies (Davies 2008), using ecological groups for terrestrial and freshwater species, as designated by Evans (Evans 1972) and Sparks (Sparks 1961), respectively. The ecological preferences of each species were inferred by reference to Kerney and Cameron (Kerney & Cameron 1979) and the molluscs were identified on the basis of apical and other diagnostic fragments according to nomenclature by Welter-Schultes (Welter-Schultes 2012).

Interpretations of palaeoenvironments using mollusca are limited by taphonomic uncertainty due to the effects of gravity, bioturbation and re-deposition by hydrological processes affecting the distribution of shells within sediments, processes which are understood only superficially (Lowe & Walker 1997). Additionally, only well-preserved shells are suitable for identification; therefore, the recovered fauna may not be representative of the true fauna. Limitations of autecology and synecology, relating to uniformitarianist assumptions, the poorly understood factors influencing the distribution of a particular species, the broad ranges of environments inhabited by many molluscan species (Davies 2008), unknown associations between past molluscan fauna (Bush 1988) and the lack of applicable modern analogues for past environments limit the extent with which palaeoenvironments can be reconstructed using this method.

Deposit (009003) displayed excellent preservation of molluscan shell (n=803). Taxonomic identification to the family level or lower was possible for 686 (85.43%) of these specimens, further illustrating the exceptional preservation of the snails in this assemblage.

The taxa present in the assemblage display a range of different ecological preferences. The open-country and grass-loving *Vallonia* snail, represented by *Vallonia excentrica* and *Vallonia pulchella*, formed the primary component (n=465) of the assemblage. Also present in notable quantities were other open-country taxa, including *Vertigo pygmaea* (n=50); shade-loving taxa, represented by *Cochlicopa lubricella* (n=30) and Trochulus hispidus (n=57); and marsh taxa, primarily represented by multiple species within *Succineidae* (n=53).

To assess the species diversity of this context's assemblage, Shannon (H') and Simpson's Reciprocal (1/D) diversity indices were calculated. The Shannon index has been shown to be a reliable indicator of richness and abundance in random samples with an infinite population and Simpson's reciprocal index gauges evenness of a community (Law 2017). The Shannon index for this assemblage was 1.3004, a moderate value suggesting moderate to low species richness. Simpson's reciprocal index was 2.4529 highlighting the dominance of *V. excentrica* within a somewhat speciose assemblage (61.07% of specimens identified at the genus level or lower).

The character of this faunal assemblage agrees quite closely with the restricted faunas commonly encountered in wet-meadows (Davies 2008). For example, Martin and Sommer (2004) found meadows and meadow orchards on intermediate soils yielded assemblages dominated by *V. excentrica* and *V. pulchella* with *Cochlicopa lubrica*, *V. pygmaea* and *Succinea oblonga* recurrent. All of these taxa were recovered, excepting *C. lubrica*, as the closely-related and superficially similar *C. lubricella* was found in its stead. Similar faunas are recovered from meadow pitfall catches, groundwater-enhanced meadows and floodplain pastures (Robinson 1988) (Davies *et al*. 1996; Martin & Sommer 2004), although these faunas commonly extend to include additional shade-loving and marsh-

loving taxa not recovered. The addition of a freshwater taxon – *Galba truncatula* (n=2) – and a shade-loving species – *Discus rotundatus* (n=1) – albeit in limited quantities, are further suggestive of the mixed nature of this assemblage, emblematic of pastures and meadows experiencing seasonal extremes of wetness and dryness (Davies 2008). Furthermore, several of the taxa recovered prefer base-rich soils, including *C. lubricella*, *V. pygmaea*, *T. hispida*, *V. pulchella* and members of the *Succineidae* (Kerney 1999).

Comments related to mollusc zones and relative dating are limited. *Succinella oblonga* and *Quickella arenaria* currently display restricted distributions in England and are not known to occur near the vicinity of the site or Herefordshire more broadly. These two species have been identified from archaeological deposits in lowland England (Kerney 1999) but many of these are derived from glacial deposits or deposits related to Romano-British deforestation. *Discus rotundatus* is a post-glacial introduction (Evans 1972; Kerney 1999; Davies 2008).

17.3.1.4 Charcoal

Charcoal is ubiquitous in palaeoenvironmental samples, as it is used in domestic, funerary and industrial settings or may be present as a result of accidental firings. Identification of the wood species making up the charcoal assemblage can add valuable data as to wood selection for the varying purposes.

While often relied upon for dating, in particular ^{14}C, charcoal is not the best material to use. Charcoal is subject to the 'Old Wood problem', whereby wood is known to be frequently reused and charcoal redeposited. In addition, wood grows over many years and it is not possible to know precisely where within the tree a charcoal fragment has derived.

Anthracological analysis is undertaken in-house by Amy Bunce BSc MA ACI*f*A additionally utilising reference keys (Hather 2000; Schweingruber 1990; Schweingruber 1990). Anthracological analysis was generally undertaken at ×100 magnification, although higher magnifications to ×400 were used where necessary. Lighting was by incident lighting, with transmitted lighting where necessary. Charcoal was transversally sectioned with tangential or radial sectioning undertaken where required. Any waterlogged or otherwise preserved wood present would be presented in a separate Wood Identification and Technology report.

Growth-ring curvature and diameter size was classified by reference to Ludemann-Nelle (L-N) templates (Ludemann 2002; Nelle 2002), whereby classes I, II, III, IV & V represented diameters <20mm, 20-30mm, 30-50mm, 50-100mm and >100mm, respectively. Growth-ring curvature was additionally classified by reference to Marguerie-Hunot (M-H) test cards (Marguerie & Hunot 2007), whereby weak, moderate and strong curvature were categorised 1, 2 and 3, respectively.

Charcoal was found in significant quantities but was not statistically viable for ID.

17.3.1.5 Slag

Archaeometallurgical debris may be present in the form of unspecific slag fragments, diagnostic slag fragments, vitrified structures and, more commonly for environmental samples, as hammerscale of the spheroidical or flake variety. Slag may be retrieved from both the flot and retent; this apparent contradiction, in that slag would normally be too heavy to float, is due to vesicles containing air in the spheroidical hammerscale and the smaller fragments of slag. Droplets of slag become spheroidical if they cool while travelling through the air after having been propelled during ironworking.

Slag was present in limited but consistent quantities. Some fragments of slag are frequently the result of medieval and post-medieval field-spreading so their occurrence is not anomalous.

17.4 Description of palaeoenvironmental remains by selected context

Detailed below are the palaeoenvironmental remains from each context, an assessment of the localised palaeoenvironment reconstruction is attempted. Results for all contexts can be observed in the tables in Section 17.5 below.

17.4.1 (007005)

(007005) represents the middle layer of three buried soil horizons that were encountered beneath the subsoil in Trench 007. Frequent CBM, very occasional glass, very occasional heat-affected stone and occasional coal/coke are highly suggestive of field-spreading, which is further supported by occasional slag. The inclusion of very occasional small mammal bone is likely the result of the death of an individual. Moderate quantities of charcoal confirm a general proximity to habitation and further supports the field-spreading of domestic ashes. The buried soil horizon (007005) was likely sealed by the production of the extant earthworks and may reflect the original contours of the field.

17.4.2 (008003)

(008003) represents a singular buried soil horizon sealed beneath the subsoil in Trench 008. It contained very occasional pottery, occasional glass, occasional heat-affected stone and occasional slag that, as an assemblage, is indicative of field-spreading. Frequent charcoal suggests a proximity to habitation and likely became incorporated as a result of field-spreading of domestic ashes.

17.4.3 (009003)

(009003) represents a singular buried soil in Trench 009 encountered *c*.0.74m beneath the subsoil (009002) and overlying the natural substrata, which began at *c*.0.83m. Buried soil horizon (009003) may be associated with the production of the earthworks that were observed on aerial photography and of possibly medieval origin. As (009002) was sealed by the earthworks, it can elucidate the environment at the time of burial.

Environmental evidence in the present was primarily restricted to terrestrial snail shells and charcoal, the former of which reveals the conditions in the immediate vicinity of the buried soils. The molluscan assemblage (*see 17.3.1.3*) is broadly consistent with fauna recovered from meadows and pastures experiencing seasonal extremes of dryness and wetness (Davies 2008). A flood zone is well-developed around Worm Brook, in the vicinity of the site, indicating a high likelihood for seasonal extremes of dryness and wetness.

Buried soil (009003) differed from the other three deposits from the site in that it contained substantial molluscan evidence. However, it also differed in that it contained limited charcoal, slag and no archaeological finds.

17.4.4 (017005)

(017005) represents a buried soil underlying a buried soil in Trench 017. It contained moderate quantities of CBM, very occasional heat-affected stone, very occasional unburnt mammal bone and occasional slag, as well as moderate-to-frequent charcoal. (017005) was sealed by the same earthworks associated with other deposits and, like (007005), may reflect the original contours of the field. Equally, the assemblage may reflect field-spreading activity.

17.5 Table of results

The first table records the identity and abundance of molluscan fauna recovered from (009003).

The second table details the abundance results from both the archaeobotanical material and the archaeological finds. Weight and quantity have been recorded but are not presented here due to the variation between materials.

Taxon	**N**
Cochlicopa sp.	5
Cochlicopa lubricella	30
Discus rotundatus	1
Galba truncatula	2
Oxyloma elegans / Succinea putris	22
Succinella oblonga / Quickella arenaria	6
Succineidae spp.	25
Trochulus hispidus	57
Terrestrial snail shell indet.	117
Vallonia sp.	188
Vallonia excentrica	273
Vallonia pulchella	4
Vertigo alpestris	2
Vertigo sp.	21
Vertigo pygmaea	50
Total	803

Abundance key: + = rare; ++ = occasional; +++ = common; ++++ = abundant.

		Context no.	007005				008003				009003				017005			
		Sample no.	001				002				003				004			
		Sample part	1/4	2/4	3/4	4/4	1/4	2/4	3/4	4/4	1/4	2/4	3/4	4/4	1/4	2/4	3/4	4/4
		Bucket no.	E18803	E18804	E18805	E18806	E18807	E18808	E18809	E18810	E18811	E18812	E18813	E18814	E18815	E18816	E18817	E18818
		Sample vol. (m℄)	50	50	100	100	25	50	25	25	400	300	500	200	200	350	200	100
		% sample analysed	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
		Waterlogged?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
		Refloated?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Latin name	Common name	Plant part																
Charcoal																		
Indeterminate <2mm	Indeterminate	fragments	+++	+	+	+	+++	++	++	++	+	+	+	++	++	+++	+	+++
Indeterminate 2-4mm	Indeterminate	fragments	++	+		++	+++	++++	+++	++				+	++	+++	++	+++
Indeterminate >4mm	Indeterminate	fragments	++	+		+	++	++	++	++		+			++	++	+	+
Archaeometallurgical																		
Slag	-	-	+	+	+	+	+		+	+	+				+	+	+	+
Artefactual																		
Ceramic/pottery	-	-								+								
CBM	-	-	++++	+++	+	++++	+		++	+					+	+++	+	++
Glass	-	-				+												
Heat-affected stone	-	-				+	+		++									+
Coal/coke	-	-	+	+	+	+												
Faunal																		
Mammal (unburnt)	Indeterminate	-														+		
Small mammal (unburnt)	Indeterminate	-	+															
Molluscan																		
Cochlicopa sp.	Slippery snail	-									+			+				
Cochlicopa lubricella	Slippery snail	-										++	++	++				
Discus rotundatus	Rotund disc	-											+					
Galba truncatula	Pond snail	-											+	+				
Oxyloma elegans / Succinea putris	Amber snail	-									+	++	+	+				
Succinella oblonga / Quickella arenaria	Sandbowl snail	-										+	+					
Succineidae spp.	Amber snails (family)	-									+		+++	+				
Trochulus sp. (cf)	Hairy Snail	-									++	++	++	++				
Vallonia sp.	Grass snail	-									+++	++++	++++	+++				
Vallonia excentrica	Eccentric Vallonia	-									+++	++++	++++	+++				
Vallonia pulchella	Lovely Vallonia	-									+							
Vertigo alpestris	Mountain whorl snail	-									+							
Vertigo pygmaea	Crested vertigo										++	++	+++	+				
Vertigo sp.	Whorl snail	-									++	+	++	+				
Terrestrial	Indeterminate	-									++	++++	+++	++				

17.6 Conclusions & Recommendations

The intention of the non-specific palaeoenvironmental sampling allowed for the recovery of palaeoenvironmental and artefactual materials from representative samples from each archaeological context. While sampling was successful, limited survival and preservation of palaeoenvironmental remains, excepting molluscans, restrict interpretations related to the function of the encountered strata.

The general nature of buried soils and soil characteristics of the overlying strata suggest the buried soils are associated with the production of the earthworks visible from aerial photography. As the buried soils were sealed-in by overlying strata associated with the earthworks, the environmental evidence contained within may reveal environmental conditions at the time of burial. Preservation of molluscan shells was exceptional in one particular

buried soil (009003) and the identified fauna is suggestive of a meadow or pasture experiencing seasonal extremes of wetness and dryness.

17.6.1 Recommendations

Due to the nature of the materials recovered and full analysis undertaken, no further work is recommended.

Retention of the materials detailed above as an incorporation of the site archive for deposition with the museum is recommended.

17.7 Copyright

17.8 Bibliography

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