ARCHAEOLOGICAL BOREHOLE ASSESSMENT AND TRIAL TRENCHING AT THE PROPOSED WORCESTERSHIRE PARKWAY STATION, NORTON, WORCESTERSHIRE

Worcestershire Archaeology
Archive and Archaeology Service
The Hive, Sawmill Walk,
The Butts, Worcester
WR1 3PD

Date: 8th July 2014
Author: Nick Daffern and Andrew Walsh
Illustrator: Carolyn Hunt
Project reference: P4149
Report reference: 2129
HER reference: WSM49799 (Boreholes), WSM57533 (Evaluation)

Contents

Archaeological borehole assessment and trial trenching at the proposed Worcestershire Parkway Station, Norton, Worcestershire

Nicholas Daffern and Andrew Walsh

Summary

An archaeological borehole assessment and evaluation by trial trenching was undertaken at land off the B4084, Norton, Worcestershire (National Grid Reference SO 8930 5096), as the site has been proposed as the location of a new Worcestershire Parkway railway station. It was commissioned by Integrated Planning, Worcestershire County Council (the Client).

Six boreholes were sunk to a maximum depth of 5.00m below ground surface with no *in situ* archaeological or palaeoenvironmental remains or deposits being encountered. The sole material of archaeological interest were post-medieval artefacts including ceramic building material, glass, glazed pottery and clay pipe which lay disturbed upon the surface of the ploughed field. Overall, the sequence was very shallow, with the natural Lias clay being encountered on average less than a metre below ground surface across the site.

Twenty two evaluation trenches were subsequently excavated across the proposed development site. No archaeological features, deposits or finds were identified during the evaluation. It is likely that the site, which is low lying, was typically wet and subject to regular flooding events, and not suitable for any form of occupation. A holloway or trackway recorded as crossing the site on the Historic Environment Record was not encountered.

Report

1 Background

1.1 Reasons for the project

An archaeological borehole assessment and evaluation by trial trenching was undertaken at land off the B4084, Norton, Worcestershire (National Grid Reference SO 8930 5096), as the site has been proposed as the location of a new Worcestershire Parkway railway station. It was commissioned by Integrated Planning, Worcestershire County Council (the Client).

The proposed development site is crossed the route of a possible medieval or post-medieval hollow-way and there is also potential for the presence of organic deposits preserving palaeoenvironmental remains.

The project conforms to a brief prepared by Mike Glyde (Worcestershire County Council; WAAS 2013) and for which a written scheme of investigation was produced (WA 2013). It also conforms to the *Standard and guidance for archaeological field evaluation* (IfA 2009) and the *Standards and guidelines for archaeological projects in Worcestershire* (WCC 2010). The event references, issued by the Historic Environment Record are WSM49799 (boreholes) and WSM57533 (evaluation).

2 Aims

The aims of the archaeological works are:

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

3 Methods

3.1 Personnel

The borehole assessment was undertaken by Nicholas Daffern BA MSc. The evaluation was undertaken by Andrew Walsh BSc MSc AIfA FSA Scot, assisted by Graham Arnold BA MSc and Tom Rogers BA MSc. The project manager responsible for the quality of the project was Tom Rogers. Illustrations were prepared by Carolyn Hunt BSc PG Cert MIfA.

3.2 Documentary research

Prior to fieldwork commencing a search was made of the Historic Environment Record (HER), the report of which (Cornah 2013) can be provided to the client upon submission of this report.

3.3 List of sources consulted

Cartographic sources

- 1885 Ordnance Survey 1:2500 map, Worcestershire
- 1886–1892 Ordnance Survey 1:10,560 map, Worcestershire
- 1904 Ordnance Survey 1:2500 map, Worcestershire
- 1905 Ordnance Survey 1:10,560 map, Worcestershire
- 1938 Ordnance Survey 1:10,560 map, Worcestershire
- 1954–1955 Ordnance Survey 1:10,560 map, Worcestershire

Documentary sources

Published and grey literature sources are listed in the bibliography.

3.4 Fieldwork strategy

A detailed specification has been prepared by Worcestershire Archaeology (WA 2013).

3.4.1 Borehole assessment

The borehole fieldwork was undertaken on 26 September 2013, the reference number and site code is WSM49799. Six boreholes were sunk under the supervision of a Senior Environmental Archaeologist (Figure 2), and using a Competitor mini-tracked percussive auger rig (Plate 1) to recover continuous/windowless cores of *c* 100-80mm in diameter and 1m length, with the aim of sampling alluvial and/or organic deposits that could be assessed for environmental remains and their potential for geoarchaeological analysis. The location and surface height above Ordnance Datum (aOD) of each borehole was recorded using a Leica Viva NetRover (Table 1).

Borehole Number	Easting	Northing	Height (m aOD)	Achieved?
1	389200.188	250874.142	36.50	×
2	389236.020	250905.034	36.40	×
3	389275.602	250930.307	36.12	✓
4	389313.842	250958.373	36.04	✓
5	389347.208	250979.659	35.82	✓
6	389387.622	251004.157	35.84	×
7	389242.996	251080.439	38.74	×
8	389262.244	251043.880	37.29	×
9	389292.387	251001.935	36.27	×
10	389348.667	250915.934	36.12	×
11	389368.826	250881.658	36.54	×
12	389323.474	251018.970	36.36	✓
13	389355.389	250926.402	35.90	✓
14	389414.557	250999.143	36.14	✓

Table 1: Borehole locations and aOD height

3.4.2 Evaluation by trial trenching

Twenty two trenches, amounting to around 1980m² in area, were excavated over the site area of 6.3ha, representing a sample of over 3%. The location of the evaluation trenches is indicated in Figure 3. The evaluation was undertaken between 16th and 25th July 2014. The evaluation reference number and site code is WSM57533.

Deposits considered not to be significant were removed using a 360º tracked/wheeled excavator, employing a toothless bucket and under archaeological supervision. 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). The trench location and surface height aOD was recorded using a Leica Viva NetRover. On completion of excavation and recording damaged field drains were repaired and the trenches were reinstated by replacing the excavated material.

3.5 Structural analysis

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

3.6 Geoarchaeology methodology

The plastic sleeves containing the cores from the boreholes were slit open and the retained sediments cleaned to expose a fresh face, photographed and then described according to standard geological criteria (Tucker 1982, Jones *et al* 1999).

Core recovery, overall, was very good with an average recovery of 95%. Despite this, recovery was not possible below 5 metres due to the strength of the clay and the softness of the ground surface resulting in the front of the rig sinking when it attempted to pull/retrieve the cores.

3.6.1 Discard policy

The samples will be discarded after a period of six months after the submission of this report, unless there is a specific request to retain them.

3.7 Artefact methodology

3.7.1 Recovery policy

The artefact recovery policy conformed to standard WA practice (WA 2012). In the event, no finds were recovered.

3.8 Environmental archaeology methodology

3.8.1 Sampling policy

The sampling policy conformed to standard WA practice (WA 2012). In the event no deposits were revealed which were considered to be suitable for environmental analysis.

3.9 Statement of confidence in the methods and results

Having undertaken the project the following comments may be made with regard to the methods adopted. The inaccessibility of multiple boreholes due to the fields being ploughed (Plates 2-5) was unfortunate, as several outlier boreholes (Boreholes 1, 2, 6, 7, 8, 10, 11) could not be sunk and a complete spatial distribution could not, therefore, be achieved, although attempts to mitigate for this were made by sinking Boreholes 12, 13 and 14.

Despite this deviation from the original sampling strategy, the author feels that a good moderate–high degree of confidence can be maintained that the aims of the project were achieved. The focus of the investigation was the stream flowing through the centre of the site and the potential for palaeoenvironmental preservation in this wetter location. Given that four boreholes were sunk along this course over a relatively wide area with two perpendicular boreholes to establish the nature of the deposits peripheral to the stream, it is possible to make firm statements regarding the underlying stratigraphy of the site and the potential for the presence of palaeoenvironmental remains.

Excavation of the upper one metre of deposits was undertaken by the geotechnical contactor using a post hole digger to avoid damage to land drains at the request of the landowner. This caused recording to be somewhat problematic as deposits were disturbed and not in-situ making exact depth difficult to record. Despite this, the overall stratigraphic sequence was recorded and the results can be relied upon when designing further works and discussing the potential for archaeological or palaeoenvironmental remains.

4 The application site

4.1 Topography, geology and Soils

The proposed site is located near the head of a shallow valley, along which a small un-named stream traverses. The evaluated area is triangular in shape and bound by the B4084 to the north-east, the Oxford to Worcester railway line to the south, and the Birmingham to Bristol railway line to the north-west. The stream, which has been straightened, crosses the proposed site from south-

west to north-east. Within the site the base of the valley is at approximately 36m above Ordnance Datum (aOD) with the land gently rising up to 37m aOD in the south-east corner of the site and 39m aOD to the north.

The underlying geology of the site is complex, with four different members/formations being present; from north to south these are the Westbury Formation (200–204 million years old (Ma)), the Cotham Member (200–204 Ma), the Wilmcote Limestone Member (197–204 Ma) and the Saltford Shale Member (197–204 Ma). The cause of this complex geology is that this area marks the boundary between the Triassic Mercia Mudstone Group to the north and west and the younger, Jurassic Lias Group to the south and east. The four members/formations identified on this site all belong to the Lias Group and represent inundation of the Triassic basin associated with a marine transgression during the Jurassic due to global sea level rise.

The Soil Survey of England and Wales (1983) mapped the site as having soils of the 411b EVESHAM 2 soil association characterised as follows: 'Slowly permeable calcareous clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey and fine loamy or fine silty over clayey soils. Landslips and associated irregular terrain locally'. The superficial deposits of the site are mapped by the British Geological Survey as being alluvium (ie clay, silt, sand and gravel, deposited by the stream crossing the site, presumably of Holocene age).

4.2 Archaeological context

Field-name evidence from the tithe map suggests an area of ground that historically has always been wet, as it is today. The main field, according to the tithe map is called Slade Meadow, 'slade' meaning 'land in a marshy valley' (WAAS 2013).

There are no designated heritage assets within the proposed site, although a hollow-way is recorded on the Worcestershire HER (WSM41483) crossing the site along a north to south alignment. It is thought to date between the late 11th and 19th centuries (Cornah 2013).

Medieval ridge and furrow is abundant generally in the wider vicinity of the site (WSM07747, WSM07748, WSM23264, WSM39134, WSM39135, WSM39136 and WSM48068) although there is no indication of this within the development site, probably due to the wet nature of the site (Cornah 2013).

The Portable Antiquities Scheme (PAS) has 22 records of finds from the parish of Drakes Broughton and Wadborough (WSM38621) (Cornah 2013) ranging from the Neolithic to the medieval, including a Neolithic awl, a Bronze Age socketed axe, Roman pottery, coins and brooches and medieval coins, jewellery and horse trappings. No PAS finds have been identified on the proposed site.

Several non-designated assets related to World War II activity are also present in the vicinity, such as a pillbox to the east (WSM27388), the Morgan Crucible shadow factory to the north (WSM33284) and the Littleworth relief landing ground (WSM24739) to the south (Cornah 2013).

4.3 Current land-use

The proposed development site is located on farmland which had recently been ploughed, although it was not being cultivated during the works. Aerial photographs indicate that the site has previously been used for livestock grazing.

5 Results

5.1 Borehole assessment

The detailed results are presented in Appendix 1. Core recovery (Plates 6-13) was overall very good with an average recovery of 95%. Despite this, recovery was not possible below 5 metres due to the strength of the clay and the softness of the ground surface resulting in the front of the rig sinking when it attempted to pull/retrieve the cores. Recording of the upper metre was difficult, as this had to be hand-dug with a posthole digger by the geotechnical contractor to avoid damage to any existing land drains.

5.1.1 Phase 1: Natural

The natural deposits consisted of very firm, light bluish grey to mid grey clay representing the Lias Group. Typically the upper margins of this deposit contain yellow/orange mottling and fragments of the Jurassic–Cretaceous mollusc *Gryphaea* were sporadically present. These were encountered between 35.46m aOD (BH12) and 34.54m aOD (BH14).

5.1.2 Phase 2: Undated

The sand and gravel encountered in Boreholes 12 and 14 remains undated as it cannot be stated with any certainty what their origin is. They consist of rounded–sub-rounded gravel supported in a matrix of coarse orange sand. Given that they unconformably overlay the Lias group and exhibit no indications of bioturbation or 'recent' inclusions, they may be patchy relicts of late Devensian gravel, yet given their sporadic distribution, this must remain uncertain.

The subsoil, a firm, mid to light brown clay with occasional rounded and sub rounded pebbles with occasional bioturbation was encountered in all boreholes to a maximum depth of 34.83m aOD in Borehole 14. No artefacts or archaeological features were identified; therefore, no date can be assigned to this deposit.

5.1.3 Phase 3: Post-medieval/modern

The sole deposit that could be assigned this date was the topsoil. This consisted of firm/pliable, mid–light brown clay with occasional rounded and sub-rounded pebbles with frequent bioturbation. Occasional artefacts were recovered from the ploughed surface during the fieldwork. These included ceramic building material (indeterminate brick/tile fragments), glass, glazed pottery and clay pipe, and all were preliminary assigned post-17th century to modern dates (Laura Griffin, pers comm).

5.2 Evaluation by trial trenching

The trench locations are illustrated in Figure 3. The detailed results are presented in Appendix 2 and a summary of the archive in Appendix 3.

5.2.1 Phase 1: Natural

The natural deposits typically consisted of a firm bluish grey clay, which often contained veins and/or patches of brownish red clayey silt, and patches of dark brown grey clay (Plate 14). Irregular deposits of gravel overlying the clay were also noted in trenches located near the stream crossing the site (Trenches 8-12 and 15-20; Plate 15)

5.2.2 Phase 2: Undated

A soft, light to mid reddish or orangey brown silty clay overlaid the natural strata in all trenches. This measured between 0.1m (Trench 4) and 0.35m (Trench 15) in depth. No finds were recovered from this deposit and as archaeological features were not identified no date can be assigned to this deposit.

5.2.3 Phase 3: Post-medieval/modern

The subsoil was overlaid in all trenches by a greyish brown clay silt, measuring between 0.2m (Trench 21) and 0.36m (Trench 19) in depth.

6 Synthesis

The site is located in the base of a shallow valley and crossed by a small stream. Historically the ground was wet and has probably always been unsuitable for occupation. No *in situ* archaeological or palaeoenvironmental remains were identified during the fieldwork, and the sole material of archaeological interest were disturbed post-medieval/modern artefacts which were recovered from the surface of the ploughed field. Overall, the soil sequence was very shallow, with the natural Lias clay being encountered on average less than a metre below ground surface across the site, and this tends to confirm that there has been little or no build-up of deposits to the site as a result of human activity.

No evidence of the hollow-way (WSM41483) was identified during the works. It appears likely that any remains associated with this feature have been ploughed out or levelled.

6.1 Research frameworks

No archaeological remains were encountered during the works and, therefore, the deposits encountered during these works cannot contribute towards the local and regional research frameworks.

7 Significance

Due to the absence of archaeological or palaeoenvironmental remains encountered both during the fieldwork and the subsequent assessment, the site can be stated to have a **low** archaeological potential and **low** archaeological significance.

8 Recommendations

No further archaeological work is recommended upon the cores.

9 Publication summary

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

An archaeological borehole assessment and evaluation by trial trenching was undertaken at land off the B4084, Norton, Worcestershire (National Grid Reference SO 8930 5096), as the site has been proposed as the location of a new Worcestershire Parkway railway station. It was commissioned by Integrated Planning, Worcestershire County Council (the Client).

Six boreholes were sunk to a maximum depth of 5.00m below ground surface with no in situ archaeological or palaeoenvironmental remains or deposits being encountered. The sole material of archaeological interest were post-medieval artefacts including ceramic building material, glass, glazed pottery and clay pipe which lay disturbed upon the surface of the ploughed field. Overall, the sequence was very shallow, with the natural Lias clay being encountered on average less than a metre below ground surface across the site.

Twenty two evaluation trenches were subsequently excavated across the proposed development site. No archaeological features, deposits or finds were identified during the evaluation. It is likely that the site, which is low lying, was typically wet and subject to regular flooding events, and not suitable for any form of occupation. A holloway or trackway recorded as crossing the site on the Historic Environment Record was not encountered.

10 Acknowledgements

Worcestershire Archaeology would like to thank the following for their kind assistance in the successful conclusion of this project: Tom Delaney, Peter Blackley, Mike Glyde (Worcestershire County Council), Peter Brymer (Network Rail), and Graham Hartwright (landowner).

11 Bibliography

BGS 2014 *Geology of Britain Viewer*, http://mapapps.bgs.ac.uk/geologyofbritain/home.html, British Geological Survey, accessed 23 September 2013

Cornah, T, 2013 *Historic Environment Record Search – Worcestershire Parkway, Norton, Worcestershire, WSM49799*, dated 3 October 2013

IfA 2009 *Standard and guidance for archaeological field evaluation*, Institute for Archaeologists

Jones, A P, Tucker, M E, and Hart, J K, 1999 Guidelines and recommendations, in A P Jones, M E Tucker and J K Hart (eds), *The description and analysis of Quaternary stratigraphic field sections*, London: Quaternary Research Association technical guide **7**, 27–76

Soil Survey of England and Wales 1983 *Soils of England and Wales: Sheet 3 Midland and Western England*

Tucker, M E, 1982 *Sedimentary rocks in the field*. Chichester: Wiley

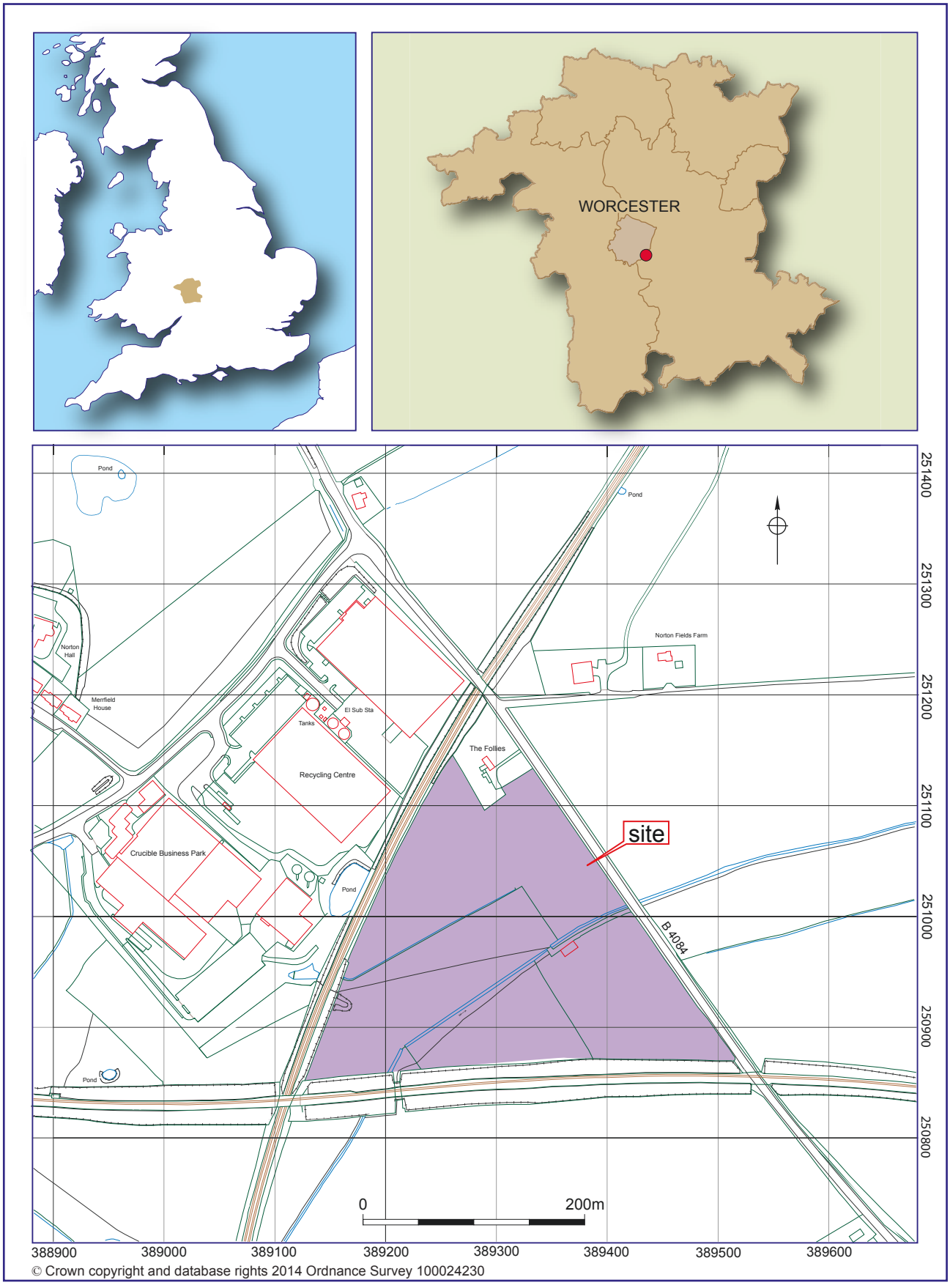
WA 2012 *Manual of service practice, recording manual*, Worcestershire Archaeology, Worcestershire County Council, report **1842**

WA 2013 *Proposal for an archaeological walkover and environment assessment at the proposed Worcestershire Parkway station, Norton, Worcestershire*, Worcestershire Archive & Archaeology Service, unpublished document dated 30 August 2013, P4149

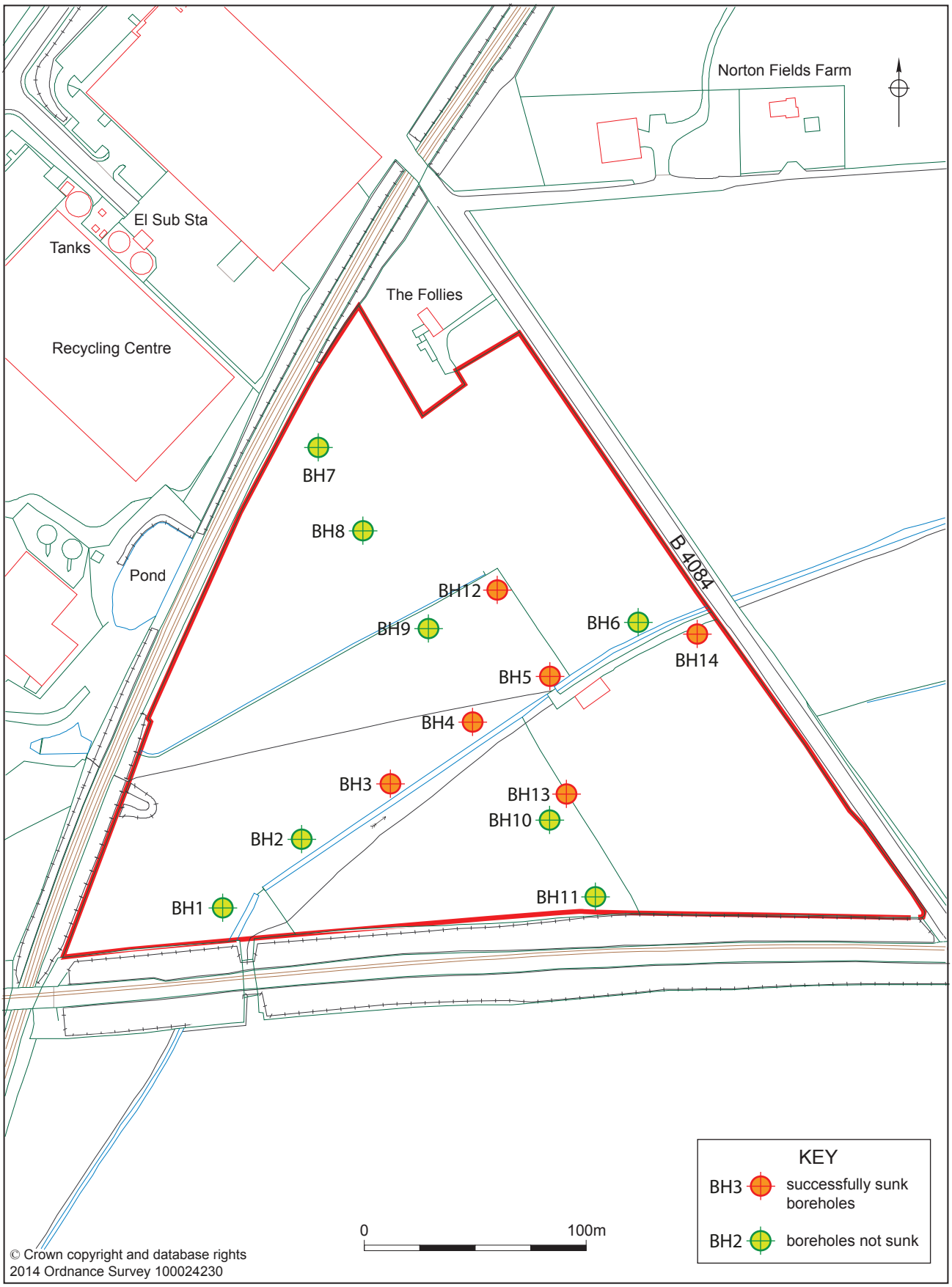
WAAS 2013 *Requirements for an archaeological evaluation at land of B4084, Norton, Worcestershire*, unpublished document dated 6 June 2013, pre-application consultation CWR9609

WCC 2010 *Standards and guidelines for archaeological projects in Worcestershire*, Planning Advisory Section, Worcestershire Archive and Archaeology Service, Worcestershire County Council unpublished report **604**, amended July 2012

Figures

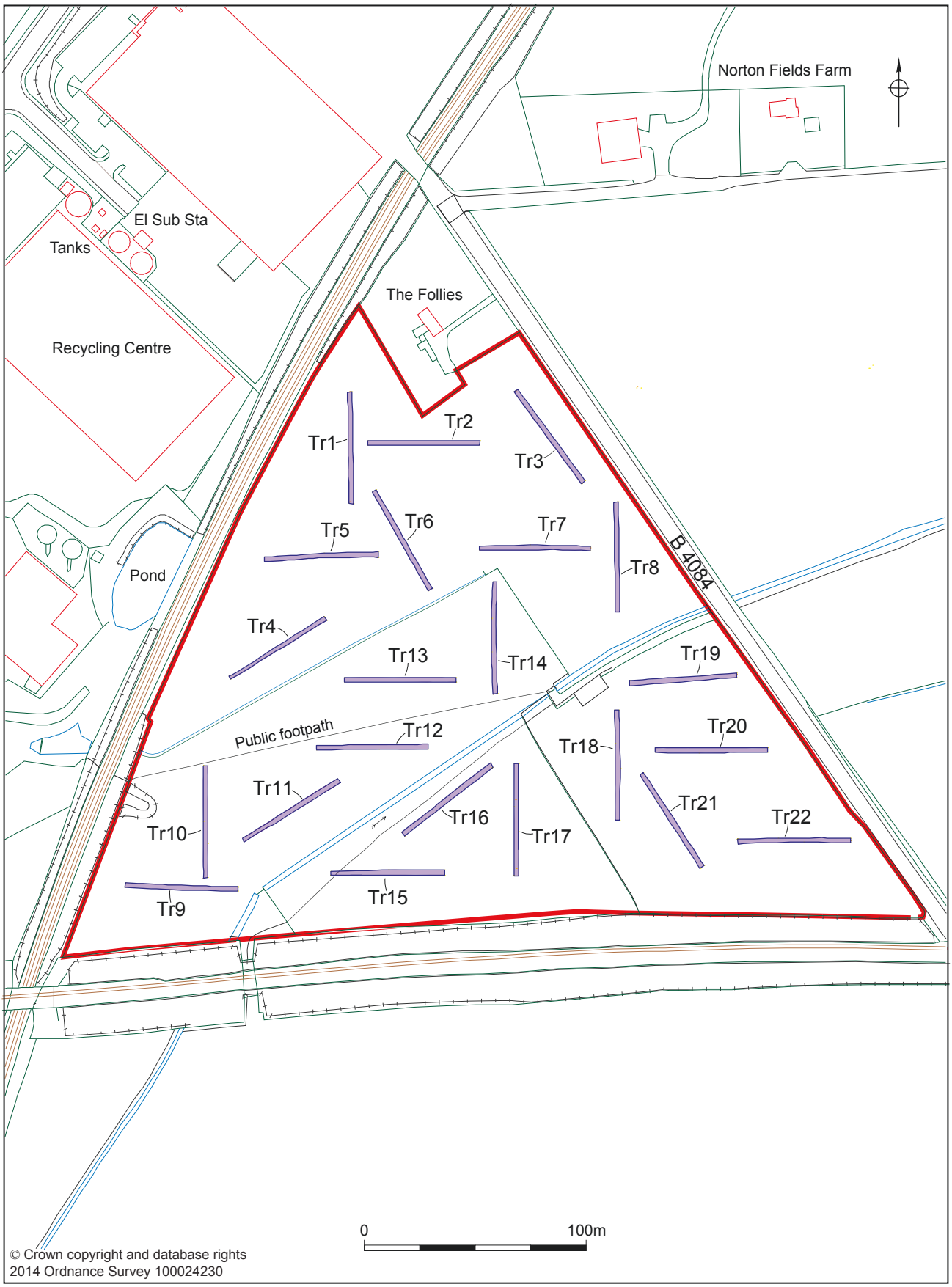


Location of the site *Figure 1*



Borehole locations

Figure 2



Trench location plan *Figure 3*

Plates

Plate 1: Borehole rig in operation at Borehole 3

Plate 2: Site overview, looking east

Plate 3: Site overview, looking south

Plate 4: Surface conditions as a result of ploughing which limited the access of the borehole rig

Plate 5: Surface conditions as a result of ploughing which limited the access of the borehole rig

Plate 6: Typical sequence: BH5 1–2m Top

Plate 7: Typical sequence: BH5 1–2m Bottom

Plate 8: Typical sequence: BH5 2–3m Top

Plate 9: Typical sequence: BH5 2–3m Bottom

Plate 10: Typical sequence: BH5 3–4m Top

Plate 11: Typical sequence: BH5 3–4m Bottom

Plate 12: Typical sequence: BH5 4–4.73m Top

Plate 13: Typical sequence: BH5 4–4.73m Bottom

Plate 14: Trench 13 from the east

Plate 15: Trench 17 from the south

Appendix 1 Borehole data

Borehole 3

B.G.S depth	Height OD	Lithology	Geoarchaeological description
0.00m – 0.25m	36.12m – 35.87m	Topsoil	Firm–pliable, mid–light brown clay with occasional rounded–sub rounded pebbles with frequent bioturbation and occasional post-medieval artefacts
0.25m – 0.80m	35.87m – 35.32m	Subsoil	Firm, mid–light brown clay with occasional rounded–sub rounded pebbles with occasional bioturbation
0.80m – 1.17m	35.32m – 34.95m	Natural Lias Clay	Firm, light bluish grey with frequent yellow/orange mottles and occasional molluscan (*Gryphaea*) fragments
1.17m 2.65m	34.95m – 33.47m	Natural Lias Clay	Firm, light bluish grey with rare/occasional yellow/orange mottles and rare molluscan (*Gryphaea*) fragments Mottles decrease with depth
2.65m – 5.00m	33.47m – 31.12m	Natural Lias Clay	Firm, mid grey clay
5.00m +	31.12m +	REFUSAL	

Borehole 4

B.G.S depth	Height OD	Lithology	Geoarchaeological description
0.00m – 0.25m	36.04m – 35.79m	Topsoil	Firm–pliable, mid–light brown clay with occasional rounded–sub rounded pebbles with frequent bioturbation and occasional post-medieval artefacts
0.25m – 0.80m	35.79m – 35.24m	Subsoil	Firm, mid–light brown clay with occasional rounded–sub rounded pebbles with occasional bioturbation
0.80m – 1.35m	35.24m – 34.69m	Natural Lias Clay	Firm, light bluish grey with frequent light yellow/ orange mottles
1.35m – 1.55m	34.69m – 34.49m	Natural Lias Clay	Firm, light bluish grey with frequent yellow/ orange mottles and occasional molluscan (*Gryphaea*) fragments
1.55m – 2.31m	34.49m – 33.73m	Natural Lias Clay	Firm, light bluish grey with frequent light yellow/ orange mottles with rare molluscan (*Gryphaea*) fragments
2.31m – 4.76m	33.73m – 31.28m	Natural Lias Clay	Firm, mid grey clay
4.76m +	31.28m +	REFUSAL	

Borehole 5

B.G.S depth	Height OD	Lithology	Geoarchaeological description
0.00m – 0.25m	35.82m – 35.57m	Topsoil	Firm–pliable, mid–light brown clay with occasional rounded–sub rounded pebbles with frequent bioturbation and occasional post-medieval artefacts
0.25m – 0.80m	35.57m – 35.02m	Subsoil	Firm, mid–light brown clay with occasional rounded–sub-rounded pebbles with occasional bioturbation

B.G.S depth	Height OD	Lithology	Geoarchaeological description
0.80m – 1.77m	35.02m – 34.05m	Natural Lias Clay	Firm, light bluish grey with frequent mid yellow/orange mottles with rare molluscan (*Gryphaea*) fragments
1.77m – 2.43m	34.05m – 33.39m	Natural Lias Clay	Firm, mid grey with frequent mid yellow/orange mottles with rare molluscan (*Gryphaea*) fragments
2.43m – 2.82m	33.39m – 33.00m	Natural Lias Clay	Firm, mid grey with frequent mid yellow/orange mottles with occasional/frequent pockets of light bluish grey clay with frequent mid yellow/ orange mottles and rare molluscan (*Gryphaea*) fragments
2.82m – 3.43m	33.00m – 32.39m	Natural Lias Clay	Firm, mid grey with frequent mid yellow/ orange mottles with rare molluscan (*Gryphaea*) fragments
3.43m – 4.73m	32.39m – 31.09m	Natural Lias Clay	Firm, dark–mid grey clay
4.73m +	31.09m +	REFUSAL	

Borehole 12

B.G.S depth	Height OD	Lithology	Geoarchaeological description
0.00m – 0.25m	36.36m – 36.11m	Topsoil	Firm–pliable, mid–light brown clay with occasional rounded–sub-rounded pebbles with frequent bioturbation and occasional post-medieval artefacts
0.25m – 0.80m	36.11m – 35.56m	Subsoil	Firm, mid–light brown clay with occasional rounded–sub-rounded pebbles with occasional bioturbation
0.80m – 0.90m	35.56m – 35.46m	Gravel	Friable yet firm, coarse sand and gravel Gravel is rounded–sub rounded
0.90m – 2.31m	35.46m – 34.05m	Natural Lias Clay	Firm, light blue grey clay with frequent yellow/ orange mottles
2.31m – 2.66m	34.05m – 33.70m	Natural Lias Clay	Mid–dark grey
2.66m +	33.70m +	BOREHOLE LINER SHREDDED REFUSAL	

Borehole 13

B.G.S depth	Height OD	Lithology	Geoarchaeological description
0.00m – 0.25m	35.90m – 35.65m	Topsoil	Firm–pliable, mid–light brown clay with occasional rounded–sub-rounded pebbles with frequent bioturbation and occasional post-medieval artefacts
0.25m – 0.80m	35.65m – 35.10m	Subsoil	Firm, mid–light brown clay with occasional rounded–sub rounded pebbles with occasional bioturbation
0.80m – 1.60m	35.10m – 34.30m	Natural Lias Clay	Firm, light bluish grey with frequent mid yellow/ orange mottles
1.60m –	34.30m –	Natural Lias Clay	Firm, mid grey with frequent light yellowish brown mottles

B.G.S depth	Height OD	Lithology	Geoarchaeological description
1.90m	34.00m		
1.90m – 2.00m	34.00m – 33.90m	VOID	
2.00m – 2.36m	33.90m – 33.54m	Natural Lias Clay	Firm, mid grey clay with frequent light grey mottles
2.36m – 3.84m	33.54m – 32.06m	Natural Lias Clay	Firm, dark–mid grey clay
3.84m – 4.00m	32.06m – 31.90m	Natural Lias Clay	Firm, dark grey clay
4.00m +	31.90m +	REFUSAL	

Borehole 14

B.G.S depth	Height OD	Lithology	Geoarchaeological description
0.00m – 0.25m	36.14m – 35.89m	Topsoil	Firm–pliable, mid–light brown clay with occasional rounded–subrounded pebbles with frequent bioturbation and occasional post-medieval artefacts
0.25m – 1.22m	35.89m – 35.34m	Subsoil	Firm, mid-light brown clay with occasional rounded–sub-rounded pebbles with occasional bioturbation
1.22m – 1.31m	34.92m – 34.83m	Subsoil	Firm, dark brownish grey with occasional mid orange mottles with rare–occasional rounded–sub-angular pebbles
1.31m – 1.60m	34.83m – 34.54m	Gravel	Friable yet firm, mid orangish red, mid sandy clay with occasional/frequent rounded–sub-angular pebbles
1.60 – 2.61m	34.54m – 33.53m	Natural Lias Clay	Firm, light blue grey clay with occasional mid yellow orange mottles with a single rounded cobble lithorelict
2.61m – 3.30m	33.53m – 32.84m	Natural Lias Clay	Firm, mid blue grey clay with occasional mid yellow orange mottles with a single rounded cobble lithorelict
3.30m – 4.00m	32.84m – 32.14m	Natural Lias Clay	Mid–dark grey clay
4.00m +	32.14m +	REFUSAL	

Appendix 2 Evaluation trench data

Trench 1

Length: 50m Width: 1.8m Orientation: North to south

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
100	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.25	
101	2	Subsoil	Layer	Soft light reddish brown silty clay	0.20	
102	1	Natural	Layer	Firm mid bluish grey clay		

Trench 2

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
200	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.28	
201	2	Subsoil	Layer	Soft light reddish brown silty clay	0.35	
202	1	Natural	Layer	Firm mid bluish grey clay		

Trench 3

Length: 50m Width: 1.8m Orientation: North-west to south-east

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
300	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.23	
301	2	Subsoil	Layer	Soft light reddish brown silty clay	0.20	
302	1	Natural	Layer	Firm mid bluish grey clay		

Trench 4

Length: 50m Width: 1.8m Orientation: North-east to south-west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
400	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.20	
401	2	Subsoil	Layer	Soft light reddish brown silty clay	0.10	
402	1	Natural	Layer	Firm mid bluish grey clay		

Trench 5

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
500	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.20	
501	2	Subsoil	Layer	Soft light reddish brown silty clay	0.22	
502	1	Natural	Layer	Firm mid bluish grey clay		

Trench 6

Length: 50m Width: 1.8m Orientation: North-west to south-east

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
600	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.25	
601	2	Subsoil	Layer	Soft light reddish brown silty clay	0.24	
602	1	Natural	Layer	Firm mid bluish grey clay		

Trench 7

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
700	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.22	
701	2	Subsoil	Layer	Soft light reddish brown silty clay	0.27	
702	1	Natural	Layer	Firm mid bluish grey clay		

Trench 8

Length: 50m Width: 1.8m Orientation: North to south

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
800	3	Topsoil	Layer	Soft mid brownish grey clay silt	0.20	
801	2	Subsoil	Layer	Soft light reddish brown silty clay	0.22	
802	1	Natural	Layer	Firm mid bluish grey clay		

Trench 9

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
900	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.23	
901	2	Subsoil	Layer	Soft light reddish brown silty clay	0.28	
902	1	Natural	Layer	Firm mid bluish grey clay		

Trench 10

Length: 50m Width: 1.8m Orientation: North to south

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1000	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.22	
1001	2	Subsoil	Layer	Soft light reddish brown silty clay	0.22	
1002	1	Natural	Layer	Firm mid bluish grey clay		

Trench 11

Length: 50m Width: 1.8m Orientation: North-east to south-west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1100	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.24	
1101	2	Subsoil	Layer	Soft light reddish brown silty clay	0.22	
1102	1	Natural	Layer	Firm mid bluish grey clay		

Trench 12

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1200	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.24	
1201	2	Subsoil	Layer	Soft light reddish brown silty clay	0.16	
1202	1	Natural	Layer	Firm mid bluish grey clay		

Trench 13

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1300	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.28	
1301	2	Subsoil	Layer	Soft light reddish brown silty clay	0.28	
1302	1	Natural	Layer	Firm mid bluish grey clay		

Trench 14

Length: 50m Width: 1.8m Orientation: North to south

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1400	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.20	
1401	2	Subsoil	Layer	Soft light reddish brown silty clay	0.18	
1402	1	Natural	Layer	Firm mid bluish grey clay		

Trench 15

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1500	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.30	
1501	2	Subsoil	Layer	Soft light reddish brown silty clay	0.35	
1502	1	Natural	Layer	Firm mid bluish grey clay		

Trench 16

Length: 50m Width: 1.8m Orientation: North-east to south-west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1600	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.25	
1601	2	Subsoil	Layer	Soft light reddish brown silty clay	0.50	
1602	1	Natural	Layer	Firm mid bluish grey clay		

Trench 17

Length: 50m Width: 1.8m Orientation: North to south

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1700	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.30	
1701	2	Subsoil	Layer	Soft light reddish brown silty clay	0.30	
1702	1	Natural	Layer	Firm mid bluish grey clay		

Trench 18

Length: 50m Width: 1.8m Orientation: North to south

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1800	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.30	
1801	2	Subsoil	Layer	Soft light reddish brown silty clay	0.30	
1802	1	Natural	Layer	Firm mid bluish grey clay		

Trench 19

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
1900	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.36	
1901	2	Subsoil	Layer	Soft light reddish brown silty clay	0.30	
1902	1	Natural	Layer	Firm mid bluish grey clay		

Trench 20

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
2000	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.30	
2001	2	Subsoil	Layer	Soft light reddish brown silty clay	0.25	
2002	1	Natural	Layer	Firm mid bluish grey clay		

Trench 21

Length: 50m Width: 1.8m Orientation: North-west to south-east

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
2100	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.20	
2101	2	Subsoil	Layer	Soft light reddish brown silty clay	0.30	
2102	1	Natural	Layer	Firm mid bluish grey clay		

Trench 22

Length: 50m Width: 1.8m Orientation: East to west

Context summary:

Context	Phase	Feature type	Context type	Description	Height/ depth	Interpretation
2200	3	Topsoil	Layer	Soft mid greyish brown clay silt	0.25	
2201	2	Subsoil	Layer	Soft light reddish brown silty clay	0.35	
2202	1	Natural	Layer	Firm mid bluish grey clay		

Appendix 3 Technical information

The archive (site code: WSM57533)

The archive consists of:

1	Field progress reports AS2
2	Photographic records AS3
106	Digital photographs
22	Trench record sheets AS41
1	CD-Rom/DVDs
1	Copy of this report (bound hard copy)

The project archive is intended to be placed at:

Worcestershire County Museum
Museums Worcestershire
Hartlebury Castle
Hartlebury
Near Kidderminster
Worcestershire DY11 7XZ
Tel Hartlebury (01299) 250416