

ASSESSMENT OF  
ENVIRONMENTAL REMAINS  
FROM A BOREHOLE SURVEY AT  
BLACKGREVES FARM,  
WYTHALL, WORCESTERSHIRE

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With contributions by Nick Watson (ARCA)

Illustrated by Carolyn Hunt

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# Contents

<b>1. Summary</b>	<b>1</b>
<b>2. Background</b>	<b>1</b>
2.1 Reasons for the project	1
2.2 Project parameters	1
2.3 Aims	2
<b>3. Methods</b>	<b>2</b>
3.1 Fieldwork and sampling policy	2
3.2 Structural analysis	2
3.3 Geoaerchaeology methodology, by Nick Watson	2
<b>4. Topographical and archaeological context</b>	<b>3</b>
4.1 Geology and soils, by Nicholas Daffern and Nick Watson	3
4.2 Historical background and monument description	3
<b>5. Results</b>	<b>4</b>
5.1 Geoaerchaeology, by Nick Watson	4
5.1.1 Stratigraphy	4
5.1.2 Assessment	4
5.2 Archaeological recording of Borehole 3	5
5.3 Environmental remains	5
<b>6. Discussion</b>	<b>5</b>
<b>7. Significance</b>	<b>6</b>
<b>8. Recommendations</b>	<b>6</b>
<b>9. The archive</b>	<b>6</b>
<b>10. Acknowledgements</b>	<b>7</b>
<b>11. Bibliography</b>	<b>7</b>



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# Assessment of environmental remains from a borehole survey at Blackgreves Farm, Wythall, Worcestershire

Nicholas Daffern

With contributions by Nick Watson (ARCA)

## 1. Summary

*An archaeological borehole survey was undertaken at Blackgreves Farm, Wythall, Worcestershire (NGR SP 0658 7547). The borehole survey and subsequent environmental assessment were undertaken on behalf of David Symonds Associates representing Bournville Village Trust in response to potential intrusive works occurring on the site. The site is a scheduled monument (SM 30013) scheduled under the Ancient Monuments and Archaeological Areas Act 1979 considered to include a heritage asset with archaeological interest (HA 1017804).*

*Three pairs of boreholes were sunk for geotechnical and archaeological purposes; the latter remained sealed and were taken off site for geoarchaeological and environmental assessment.*

*No significant remains of archaeological, palaeoenvironmental or geoarchaeological significance were identified during the fieldwork or the subsequent assessment. Strata from the borehole cores comprise almost in their entirety weathered and reworked Triassic strata deposited during the Pleistocene as an alluvial fan.*

*The sole potential archaeological feature identified during the works was a possible bank deposit in Borehole 1 although the ceramic building material recovered from this deposit suggests that the deposit is of post-medieval origin or has been disturbed by later intrusive activity.*

## 2. Background

### 2.1 Reasons for the project

An archaeological borehole survey was undertaken at Blackgreves Farm, Wythall, Worcestershire (NGR SP 0658 7547). The borehole survey and subsequent environmental assessment were undertaken on behalf of David Symonds Associates representing Bournville Village Trust in response to potential intrusive works occurring on the site. The site is a scheduled monument (SM 30013) scheduled under the Ancient Monuments and Archaeological Areas Act 1979 considered to include a heritage asset with archaeological interest (HA 1017804). Scheduled monument consent for the works reported here has been issued (English Heritage reference S00021979, 14 November 2011).

### 2.2 Project parameters

The project conforms to relevant sections of the *Standard and guidance for an archaeological watching brief* (IfA 2008) and the *Manual of Service practice: fieldwork recording manual* (CAS 1995).

In addition, the recording, sampling, geoarchaeology and environmental assessment conform to relevant sections of *The Description and Analysis of Quaternary Stratigraphic Field Sections* (Jones *et al* 1999), *Sedimentary Rocks in the Field: A Colour Guide* (Stow 2005), *Sedimentary Rocks in the Field: A Practical Guide* (Tucker 2011), *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage 2011), *Geoarchaeology: Using earth sciences to*

*understand the archaeological record* (English Heritage 2007) and *Environmental archaeology and archaeological evaluations* (AEA 1995).

The project also conforms to a project proposal (including detailed specification) (WA 2011).

### 2.3 **Aims**

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

More specifically the following aims have been identified.

- To examine for evidence of mounding up of the interior moat platform and spreading of moat material outside of the moated enclosure, specifically the presence of a pre-moat ancient buried soil, and;
- To assess the survival, preservation and condition of waterlogged deposits in the moat in the context of similar sites.

## 3. **Methods**

### 3.1 **Fieldwork and sampling policy**

The fieldwork was undertaken between 23 – 25 January 2012. The site reference number and site code is WSM 46453.

In total, six window sample boreholes were sunk in pairs at three locations (Figure 2), one for geotechnical purposes and one for archaeological purposes at each location (BH1, BH2 and BH3). The latter remained sealed and were taken off site for archaeological recording and sampling. Due to the potential for modern services, the top 1.20m of BH3 was excavated by hand. All intrusive works were monitored by staff of the Service.

The window samples were sunk using a mini-tracked percussive auger rig to recover continuous cores of c100-80mm 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. Where possible, the boreholes were cased to ensure contamination was prevented.

### 3.2 **Structural analysis**

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

### 3.3 **Geoarchaeology methodology, by Nick Watson**

Worcestershire Archaeology passed the cores to ARCA in March 2012 and they were then examined between the 13 and 15 March 2012. In the laboratory the plastic sleeves containing the cores 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; Munsell Color 2000).

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## 4. **Topographical and archaeological context**

### 4.1 **Geology and soils, by Nicholas Daffern and Nick Watson**

The site sits upon soils of the 711c Brockhurst 2 soil association described as "slowly permeable seasonally waterlogged, reddish, fine loamy over clayey soils. Some similar soils with slowly permeable subsoils and slight seasonal waterlogging" (Soil Survey of England and Wales). British Geological Survey (BGS) mapping shows that the site lies upon alluvium of the north – south flowing River Cole.

These superficial deposits are underlain by drift geology consisting of alluvial fan deposits of Pleistocene age although there are also mid-late Pleistocene till deposits located within close proximity. These drift deposits are underlain by mudstone of the Triassic Mercia Mudstone Group.

The geomorphology of the present landscape around Blackgreves Farm is therefore the result of glacial and sub-glacial modification of Triassic features during the second half of the Pleistocene.

### 4.2 **Historical background and monument description**

The following archaeological background and monument description is taken from the English Heritage brief for the present works (Fleming 2011) and the monument reports for the primary moated site (WSM01870) and the hypothesised secondary moat (WSM09672) held by the Worcestershire HER.

The moated site at Blackgreves Farm is a well-preserved example of a simple moat typical of many found in the area. The site is well-documented, providing an insight into the occupational history of the site. The water-filled moat shows little evidence of recent disturbance, and archaeological and environmental deposits relating to the construction of the monument may survive here. The locations of five other moated sites are known within a 6km radius of the monument and this association will provide the opportunity to consider the relationships between high status settlement in the region during the medieval period.

In 1189-99, records refer to Richard I granting the tenement to Reginald De Barres, who sold it to Fulk Wythworth when he went on crusade and subsequently Fulk gave half the tenement to Emma de Alvechurch. In 1237-8 the king recovered land from Emma and in 1252 Henry III is said to have recovered land from Hugh de Belne and granted land to William de Belne (son of Hugh), whose family retained the property until modern times despite its recorded ruin following the Black Death (Page 1913).

The sub rectangular moat makes a complete circuit of the moat island except for a solid, stone lined causeway across the middle of its southern arm. The moated site is orientated north to south and is approximately 80m square. The island, which measures approximately 40m by 50m, is partly occupied by an 18<sup>th</sup> and 19<sup>th</sup> century farmhouse which is excluded from the scheduling, although the ground beneath it is included. The surface of the island is generally raised 0.5m above the surrounding ground level.

The moat is water-filled and quite uniform measuring 12m to 17m across the top of the banks. There is an inlet providing surface drainage water in the north western corner of the moat and an outlet in the south western corner. An external bank rises 1m above the ground level on all sides

A large L shaped pond is recorded on the 1840s tithe map, located to the south west of the south western angle of the moat. The faint traces of this feature were surveyed in 1986, and the remnants can still be distinguished, although they are considerably degraded and are not

included in the scheduling. This feature has been interpreted as the corner of either an earlier moated site or as a second moated island contemporary with the extant moated site. The offset location of this pond does not support the view that the moated site once took the form of a double island.

## 5. Results

### 5.1 Geoarchaeology, by Nick Watson

#### 5.1.1 Stratigraphy

Strata from the borehole cores comprise almost in their entirety weathered and reworked Triassic strata deposited as the alluvial fan strata discussed above. In the text below the stratigraphy is reviewed in stratigraphic order from bottom to top while the lithological data are listed in tabular form in Appendix 1.

##### *Alluvial Fan Deposits*

Redeposited Triassic deposits transported to the site in the alluvial fans discussed above are found from 0.86m below ground level (BGL). The strata are best represented in BH1 where they outcrop from 165.96m OD and extend to the end of the borehole at 162.82m OD as a reddish brown, matrix-supported, clay-rich gravel interbedded with thick lenses of well sorted, coarse sands. The gravel is made up of sub rounded to very well rounded quartzite clasts varying in size from granule to cobble. The material is unconsolidated and is the result of high energy, episodic, fluvial transport. The fan gravels are recorded in BH3 from 165.77m OD to 163.77m OD and in BH2 from 165.60m OD.

##### *Possible Bank Deposits*

Bank deposits might be represented in BH1 in which a large fragment of red brick was recovered along with charcoal fragments between 166.44m OD and 166.25m OD of the same borehole which also contained charcoal and extended to 0.86m BGL might be a further bank stratum. Although BH3 was drilled in a location where bank material might have been expected, the uppermost 1.20m core of the borehole was not present due to hand excavation of the upper deposits for health and safety reasons.

##### *Moat Deposits*

0.12m of organic sediment/soil was recovered from BH2 (although given that the top 0.14m of core contains no sediment this stratum is likely to have been compressed during the drilling operations), including a large quantity of unhumified reeds, leaves and roots, all of modern appearance. The underlying stratum has a grey (5 Y 5/1) colour as a result of reduction of iron minerals during waterlogging, but otherwise consists of the compact, clayey, matrix-supported gravels that are typical of the alluvial fan deposits. The stratum continues to the end of the borehole at 163.36m OD. It would therefore seem that the moat is infilled by at most 0.26m of sediment at the point sampled by BH2, although percolating water from the moat has had the effect of diagenetically modifying (reducing) iron minerals in the underlying alluvial fan strata. The paucity of infilling sediment might indicate that the moat was dredged, but it might also be a result of the borehole location which was in close proximity to both the causeway and the outer bank

#### 5.1.2 Assessment

The alluvial fan deposits have LOW archaeological and palaeoenvironmental potential on account of their mode of formation; artefacts or biological remains contained within are likely to have been reworked.



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The bank deposits are of a probable post-medieval date, but on the basis of the borehole data alone they have an UNCERTAIN archaeological potential. The bank deposits are also assessed as having a LOW palaeoenvironmental potential as even were biological material that present, its derivation is uncertain.

The moat deposits are assessed as having a LOW palaeoenvironmental potential on account of their thinness (0.26m) and proximity to the ground surface (meaning that they will have been affected by recent bioturbation). Their archaeological potential is UNCERTAIN on the basis of the borehole evidence report here.

## 5.2 **Archaeological recording of Borehole 3**

Due to the potential presence of services in the location of the borehole, the top 1.20m of BH3 was excavated by hand and recorded archaeologically following standard Service recording methods (CAS 1995) with the results being presented in Appendix 2.

During the excavation, no archaeological deposits or features of archaeological significance were encountered in plan or section and the sole artefactual remains were occasional to rare fragments of post-medieval/modern ceramic building material which became absent below 0.30m.

## 5.3 **Environmental remains**

No deposits suitable for the recovery of palaeoenvironmental remains were identified during the initial fieldwork or during the subsequent geoarchaeological assessment. The plant remains encountered in the upper moat deposits (165.72m OD – 165.60m OD) in BH2 were un-humified and modern with root channels from the surface vegetation being clearly present therefore anything within this deposit could not be reliably assessed due to the highly disturbed and contaminated nature of the deposit.

## 6. **Discussion**

The investigation has shown that the archaeological and palaeoenvironmental remains present across the transect are of low archaeological potential due to the likely post-medieval or modern date of the deposits and the significant levels of disturbance and mixing. The majority of the deposits represent reworked alluvial fan material of Pleistocene date.

The absence of artefactual remains aside from rare fragments of post-medieval/modern ceramic building material fragments in Borehole 1 and Borehole 3 was not surprising given the limited scale of the investigative works and the window sample method being more relevant to the recovery of environmental rather than artefactual evidence. It is not clear if the ceramic building material that was recovered from the two boreholes has become incorporated into the deposit via later intrusive activity or whether these are in-situ stratified deposits.

The lack of palaeoenvironmental remains from within the moat was somewhat surprising given the well preserved nature of the feature. The solitary organic deposit encountered contained large quantities of unhumified plant remains indicative of a modern origin.

The geoarchaeological assessment has provided two possibilities that may account for this. The first is that the moat has been dredged at some unknown time to maintain water flow. The present tenants of Blackgreaves Farm kindly showed the author images of the moat in the early – mid 20<sup>th</sup> century which showed the moat to have a much more open water character than is presently the case and therefore there is the possibility that regular clearance/dredging to maintain this character occurred historically.

The second possibility is that the location of Borehole 2 was too close to the causeway and the edge of the moat and has subsequently limited the collection of deposits of palaeoenvironmental significance. The closeness to the causeway and the bank are regrettable but the former was determined by the planned location of future works whilst the latter was determined by the scaffolding platform and the resulting health and safety for access. Avoiding applying excessive force whilst sinking and withdrawing the borehole and avoiding structural supports were major considerations in this decision.

Recommendations are made below for a possible methodology to obtain an improved statement of significance but it should be noted that if dredging has occurred, there is no guarantee of survival and any recovery of archaeologically significant remains may occur through luck rather than judgement.

## 7. **Significance**

Due to the absence of archaeological or palaeoenvironmental remains encountered during the works and the subsequent assessment, no meaningful statement regarding significance can be made. It is clear from the scale and the preservation of the monument as a whole however that the potential for the survival of significant archaeological remains cannot be discounted based solely on the results of this limited investigation.

## 8. **Recommendations**

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

- Despite the absence of archaeological remains from the present works, a watching brief should be considered in the event of further intrusive works. The footprint of the area investigated by this assessment was so small (approximately 0.40m<sup>2</sup> at Borehole 3, 0.10m<sup>2</sup> at Boreholes 1 and 2) in relation to the size of the monument that any significant remains may remain unidentified and may be disturbed by future works with a larger intrusive footprint.
- If further works were to occur on the site, locating the borehole(s) more centrally in the moat and further from the causeway would be the most obvious method for improving recovery. This method may be combined with the survey of the moat created by Demidowicz and Price (1986) which indicates that the northern and southern arms of the moat may be in excess of 1m deep although discussion with the tenant suggested that the eastern arm may be the deepest and least disturbed of all locations

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

- No further geoarchaeological or palaeoenvironmental works are recommended on the cores reported in this document.

## 9. **The archive**

The archive consists of:

2	Field progress report AS2
3	Augerhole Record Sheets AS26
1	Photographic records AS3
1	Levels Record AS 19

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## 10. Acknowledgements

The Service would like to thank the following for their assistance in the conclusion of this project: Jonathan Symonds (David Symonds Associates), Julian Hughes and his drilling team (GIP Ltd), Keith Wilkinson and Nick Watson (ARCA), the tenants of Blackgreves Farm for their memories and access to private photographs, Tony Fleming and Lisa Moffett (English Heritage) and Richard Bradley for editing this report.

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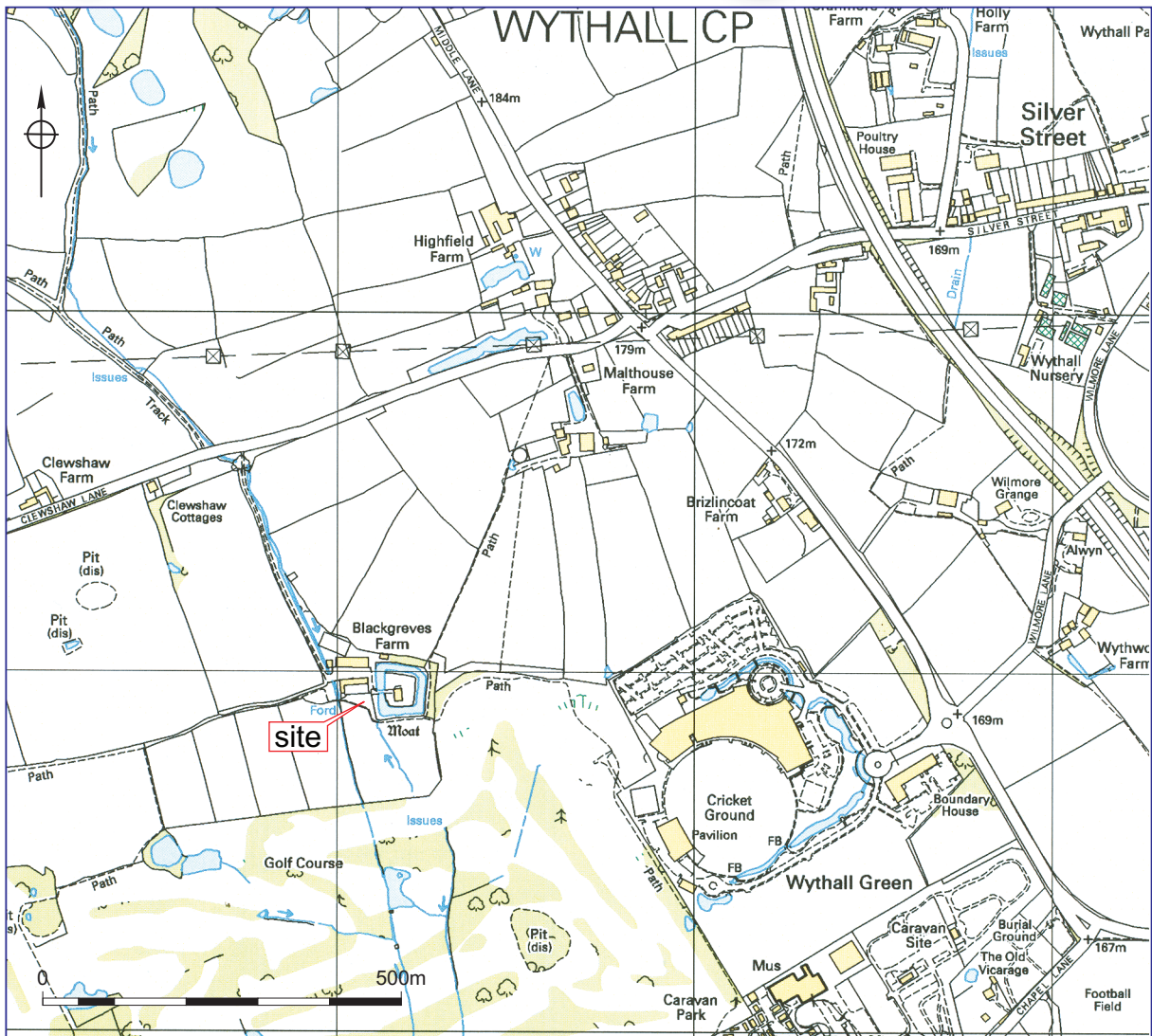
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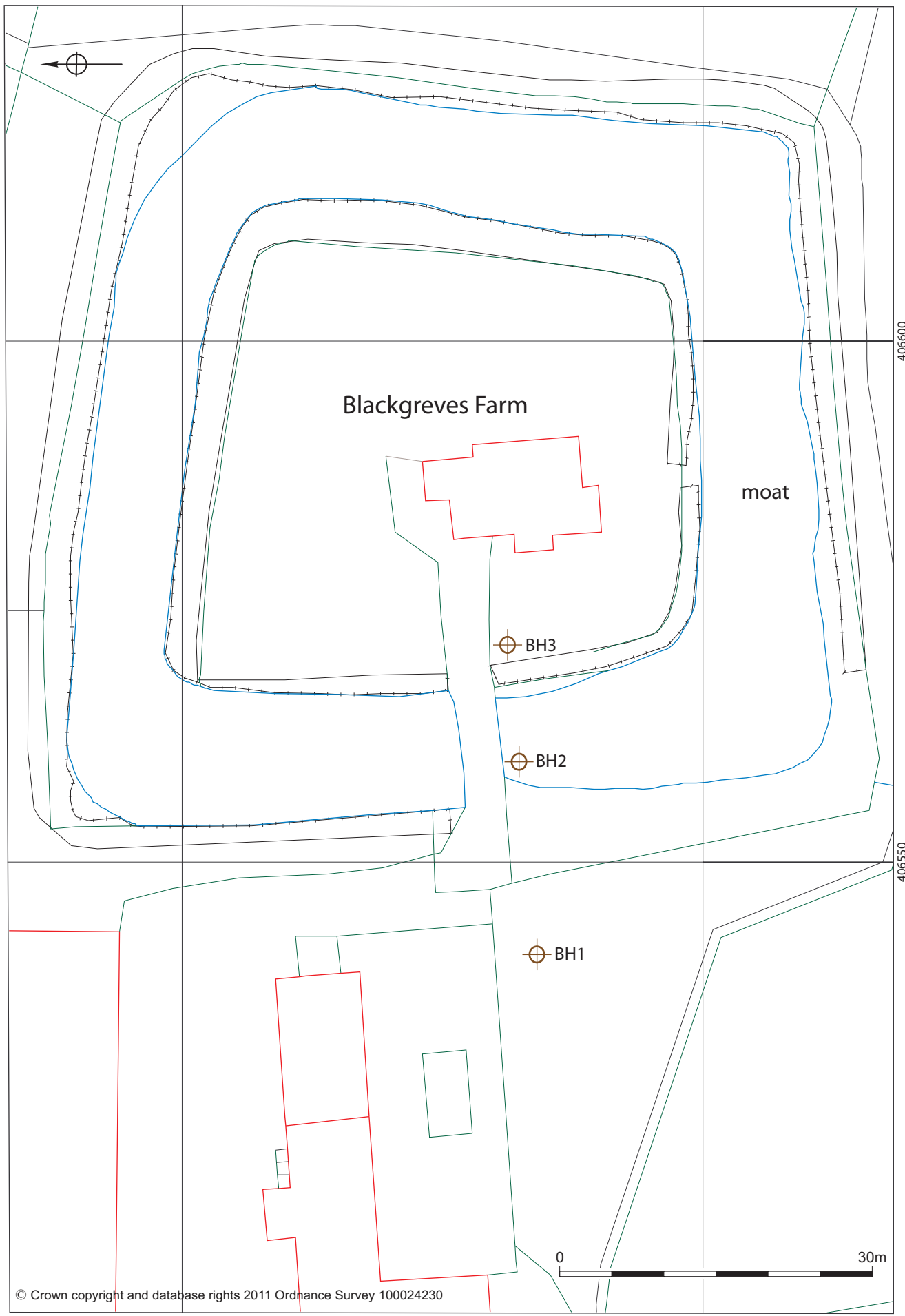
## Figures



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Location of the site

Figure 1



Borhole locations

Figure 2

## Plates



**Figure 1 Borehole 1 facing north**





**Figure 2 Borehole 2 facing northeast**



**Figure 3 Borehole 3 facing southwest**

## Appendix 1 - Borehole Descriptions

### BH1 - Surface elevation: 166.82m OD

Top (m)	Base (m)	Description
0.00	0.38	10 YR 3/1 Very dark grey, compact silt/clay with occasional coarse sand, granular to pebble-sized roots and frequent granular-sized sandstone fragments and rounded pebble-sized quartzite clasts. Rare granular-sized red unglazed ceramic fragment. Clasts are evenly distributed throughout. Weakly developed ped structure. (?Cultivated topsoil) Sharp boundary to:
0.38	0.57	10 YR 4/1 Dark grey, compact, clast- supported clay-rich gravel of pebble to cobble-sized well rounded quartzite clasts. Rare cobble-sized red brick fragments. Occasional small pebble-sized charcoal fragments. Poorly sorted (?Outer bank). Sharp boundary to:
0.57	0.86	10 YR 4/2 Dark greyish brown, compact silt/clay with frequent coarse sand and frequent granular to pebble-sized well rounded quartzite clasts. Rare pebble-sized charcoal fragments. (?Outer bank/weathered surface of Pleistocene substrate). Diffuse boundary to:
0.86	2.90	10 YR 5/3 Reddish brown, compact, matrix-supported gravel of coarse sandy clay and granular to cobble-sized well rounded quartzite clasts. Poorly sorted. Occasional lens of 10 YR 6/3 Pale brown coarse sand. (Alluvial fan gravels). Sharp boundary to:
2.90	3.61	5 YR 4/4 Reddish brown, well sorted coarse sand. (Sand facies within alluvial fan gravels) Unknown boundary to:
3.61	4.00	10 YR 5/3 Reddish brown, compact, matrix-supported gravel of coarse sandy clay and granular to cobble-sized well rounded quartzite clasts. Poorly sorted. Occasional lens of 10 YR 6/3 Pale brown coarse sand. (Alluvial fan gravels).

### BH2 - Surface elevation: 165.86m OD

Top (m)	Base (m)	Description
0.00	0.14	Void
0.14	0.26	2.5 Y 2.5/1 Black silt/clay with occasional medium sand. Frequent granular to pebble-sized unhumified plant remains (reed) and occasional fine pebble-sized well rounded quartzite clasts. (Soil forming within ditch deposit). Diffuse boundary to:
0.26	2.50	5 Y 5/1 Grey, compact, matrix- supported clay-rich gravel of granular to pebble-sized well rounded quartzite clasts. Poorly sorted. Humic mottles of 5 Y 3/2 Dark olive grey silt/clay within the matrix. Outer 5mm of matrix in the core oxidised to 7.5 YR 4/4 brown. (Diagenetically modified [reduction] alluvial fan gravel).

**BH3 - Surface elevation: 166.97m OD**

Top (m)	Base (m)	Description
0.00	1.20	Void due to hand excavation for safety reasons – See Appendix 2
1.20	1.60	10 YR 5/4 Yellowish brown, compact matrix-supported clay-rich gravel of granular to pebble-sized well rounded quartzite clasts. Poorly sorted. Matrix comprises coarse sand to silt/clays and is mottled light grey. (Alluvial fan). Diffuse boundary to:
1.60	2.20	10 YR 5/4 Yellowish brown to 7.5 YR 4/4 Brown, loose to compact clast-supported gravel of pebble to cobble-sized, angular to well-rounded quartzite and limestone clasts in a coarse sand-clay matrix. Poorly sorted. Occasional drill-shattered clasts. (Alluvial fan, but also collapse from higher in the borehole). Unknown boundary to:
2.20	3.20	7.5 YR 4/4 Brown grading to 5 YR 4/4 Reddish brown compact, clast-supported clay-rich gravel of granular to pebble sized well-rounded quartzite clasts. Poorly sorted. Coarse sandy silt/clay matrix. (Alluvial fan)

## Appendix 2 – Archaeological recording of Borehole 3

### BH3 - Surface elevation: 166.97m OD

Top (m)	Base (m)		Description
0.00	0.20	Topsoil	Friable, dark brown silty sand with frequent rounded – sub rounded pebbles and occasional post-medieval CBM
0.20	0.80	Subsoil and reworked alluvial fan	Pliable, mid brown clayey mod – coarse sand with very frequent rounded – sub rounded pebbles and cobbles (2 - 15cm) and rare CBM fragments (<2cm) becoming absent below 0.30m
0.80	1.10	Reworked alluvial fan	Pliable mid-light brownish grey coarse sandy clay with frequent rounded – angular pebbles with rare rounded – sub angular cobbles  Diffuse/unclear boundary to:
1.10	1.20	Alluvial fan	Pliable, yellowish brown rounded – sub angular pebble gravel in a matrix of yellowish grey coarse sandy clay