SWILLINGTON BRICK WORKS

(SE 385 318)

Archaeological Trench Evaluation

NETWORK ARCHAEOLOGY LTD

for

HANSON BUILDING PRODUCTS LTD

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1 NON-TECHNICAL SUMMARY

Trench evaluation was carried out at Swillington Brickworks, in the Leeds District of West Yorkshire, in advance of the proposed extension of the clay quarry.

Of the features recorded, the most notable was an oval pit, containing heat-affected clay and stones. The upper fills of this feature produced sherds from four pottery vessels of Anglo-Scandinavian and early medieval date. Pottery of this date is rare and these finds are considered to be of regional significance.

The thirty-six excavated trenches also recorded the ditches of two overlapping field systems, the earlier one probably of Roman date and the later medieval or post-medieval. A complex linear feature consisting of a re-cut double ditch with two flanking ditches was interpreted as a track or drove-way associated with the later field system.

A roughly circular enclosure, marked by two roughly concentric curvilinear ditches, produced a small quantity of medieval pottery.

Undated features included a number of other linear features and two pits with charcoal-rich fills.

Some parts of the evaluation site, especially the south and west sides and the north-east corner, were shown to be of low archaeological potential.

Overall, the evaluation trenches located the features seen on the geophysical survey, and indicated that this survey had been successful in identifying the linear features, though not the discrete pits. The features exposed in the evaluation trenches have been partly characterised, and unresolved questions relating to their form, function and dating have been identified.

Recommendations for further work are included in this report. These include the provision for investigations to be carried out prior to any future earth-moving activities on the site. The investigations are expected to include two strip-and-map areas, together covering approximately 2 hectares and encompassing the areas of higher archaeological potential. This should be followed by sample excavation of the features in the stripped area to characterise fully those already identified in this evaluation and any other features which may be revealed.

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2 INTRODUCTION

At the end of November 2006 Network Archaeology Ltd was commissioned to undertake a scheme of archaeological evaluation trenching. The evaluation site covered an area of 11.2 hectares of land that has been scheduled for quarry extraction.

2.1 Commissioning bodies

The evaluation was commissioned by Geoplan Limited, on behalf of Hanson Building Products limited. The evaluation was carried by Network Archaeology Ltd (NAL) according to a method statement (NAL, 2006), and followed the specification drafted by West Yorkshire Archaeological Advisory Service (WYAAS, 2006).

2.2 The development

The site is within the historic township of Swillington in the District of Leeds, 7km east of the city centre. It is situated just to the east of the M1 motorway, immediately north-west of the existing brickworks and quarry (fig. 1). Two adjoining areas were evaluated, a large area of 9.4 hectares (Area A, centred on SE 3850 3183) on the north-west side of the quarry and a smaller area of 2.8 hectares (Area B, centred on SE 3872 3182) to the north-east (fig. 2).

An Environmental Impact Statement for the extension of the quarry had been previously submitted by the developers in response to a request for a scoping opinion from Leeds City Council. On the advice of WYAAS, provision for archaeological investigation was included in the Environmental Impact Assessment for this site, as information held in the Sites and Monuments Record (SMR) indicated that the proposed development site lies within an area of archaeological interest. A desk-based assessment was not considered necessary as existing records allowed the archaeological potential of the site to be assessed, but a stipulation was made for a programme of field evaluation, including geophysical survey and evaluation trenching.

2.3 Previous work

Prior to the evaluation trenching, a geophysical magnetic gradiometer survey was undertaken by Pre-Construct Geophysics recording data at 0.5m intervals on 1.0m spaced traverses. The survey was carried out on the whole of the 11.2 hectare area (PCG, 2006). The results indicated several strong linear magnetic anomalies on roughly south-west to north-east alignments in both areas indicating field systems (fig. 3). There was an area of enhanced activity, including curvilinear features, towards the eastern side of area A indicating an enclosure and possible pits. Areas of possible disturbance were indicated at the south end of area A and to the north-east of area B. Both areas had an overall linear pattern presumed to be furrows of medieval or post-medieval date.

On the basis of these results, an array of evaluation trenches was designed, in consultation with the client, consultant and WYAAS, to sample the areas with

geophysical anomalies and other areas suspected of having archaeological potential, and covering 4% of the total area of the site (NAL, 2006).

2.4 Aims

The overall purpose of the trench evaluation was to gather sufficient information to establish the extent, condition, character and date of the archaeological remains, as far as circumstances permitted. This will enable WYAAS to make a reasonable and informed decision about future mitigation proposals: whether archaeological deposits should be preserved *in situ*, or might be more appropriately recorded archaeologically prior to destruction, either by summary record from a salvage excavation or watching brief, or by a detailed record from open area excavation.

The specific evaluation objectives were to:

- sample excavate and record the visible archaeological remains;
- locate, sample excavate and record any other archaeological remains exposed by the evaluation;
- locate, recover, identify, and conserve, as appropriate, any archaeological artefacts;
- locate, recover, assess and analyse, as appropriate, any palaeo-environmental, palaeo-economic and organic remains;
- recommend measures for preservation in situ of archaeological, palaeo-environmental, palaeo-economic and organic remains, where feasible and desirable;
- compile an appropriate report and to publish the findings if warranted.
- produce a paper and digital archive to be deposited with the Leeds museum.

2.5 Terms of reference

This report has been produced for the consultant Geoplan Ltd and the client Hanson Building Products Ltd. Copies will also be distributed to WYAAS for review and approval.

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3 PROCEDURES

3.1 Standards

The evaluation was conducted according to the specification drawn up by WYAAS.

All works conformed to the code of conduct of the Institute of Field Archaeologists (IFA, 2000), and the IFA's *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* (1990, Revised September 2000), *Standard and Guidance for Archaeological Evaluation*, (1994, Revised September 2001), and *Standard and Guidance for Archaeological Excavation* (1994, Revised September 2001). The work was managed in accordance with the methods and practice described in *The Management of Archaeological Projects, second edition* (English Heritage, 1991).

3.2 Resourcing

The Project Manager for the archaeological investigations was Stuart Noon. The fieldwork was carried out between 29th of November 2006 and 12th of January 2007 by a project officer and a team of seven project archaeologists. Artefact processing was carried out by the finds department at NAL's Lincoln office.

3.3 Evaluation trenches

Forty-nine evaluation trenches, numbered prior to the commencement of the evaluation, were targeted for excavation, as shown in figure 3 and detailed in table 1 below.

Table 1: Summary of trench details

Trench No.	NGR	Dimensions of trenches	Suspected archaeological features targeted
1	438535 432066	40m x 2m	Linear features: probably ridge and furrow.
2	438502432049	40m x 2m	Linear features: probably ridge and furrow.
3	438479 432049	40m x 2m	Curvilinear feature; ridge and furrow.
4	438517 432008	40m x 2m	Curvilinear feature.
5	438538 432022	40m x 2m	Curvilinear feature.
6	438560 431987	40m x 2m	Furrows; curvilinear gully, and pit
7	438579 431978	40m x 2m	Series of archaeological features.
8	438614 431963	40m x 2m	Series of archaeological features.
9	438633 431923	60m x 2m	Series of archaeological features.
10	438616 431899	80m x 2m	Four linear features.
11	438570 431909	40m x 2m	Continuation of a linear feature.
12	438523 431940	40m x 2m	Pit; ditch, and gully.

Trench No.	NGR	Dimensions of trenches	Suspected archaeological features targeted
13	438478 431945	40m x 2m	Continuation of a prominent linear feature.
14	438431 431908	100m x 2m	Investigation of two large potential linear features.
15	438425 431863	60m x 2m	Linear feature.
16	438499 431869	40m x 2m	Continuation of feature in trenches 9, 10, 11, 17 and 16.
17	438555 431870	60m x 2m	Area of high archaeological potential.
18	438573 431834	60m x 2m	Area of high archaeological potential.
19	438555 431800	40m x 2m	Possible terminus of a large curvilinear feature.
20	438522 431770	40m x 2m	At least two linear features.
21	438499 431770	80m x 2m	Continuation of the curvilinear ditch in trench 19.
22	438539 431857	40m x 2m	Two prominent linear features.
23	438492 431841	40m x 2m	Possible continuation of a prominent linear feature running south-west.
24	438464 431817	40m x 2m	Continuation of a prominent linear feature.
25	438450 431793	60m x 2m	Determining if the feature in trenches 22, 23 and 24 continued further south than trench 24.
26	438512 431743	60m x 2m	Field boundary and furrows.
27	438495 431687	40m x 2m	Furrows and geological changes.
28	438460 431703	40m x 2m	Periphery of area of disturbed ground.
29	438451 431749	60m x 2m	Area to south of trenches 25 and 26.
30	438376 431783	40m x 2m	Western edge of area A.
31	438403 431733	40m x 2m	Furrows and geological change.
32	438349 431702	50m x 2m	Geological shift.
33	438428 431699	50m x 2m	Area that the geophysics suggests is geologically complex and contains no archaeology.
34	438427 431650	40m x 2m	Area that the geophysics suggests is geologically complex and contains no archaeology.
35	438496 431653	40m x 2m	Area that the geophysics suggests is geologically complex and contains no archaeology.
36	438457 431598	40m x 2m	Area that the geophysics suggests is geologically complex and contains no archaeology.
37	438413 431608	40m x 2m	Area that the geophysics suggests is geologically complex and contains no archaeology.
38	438377 431624	40m x 2m	Area that the geophysics suggests is geologically complex and contains no archaeology.
39	438359 431645	40m x 2m	Area that the geophysics suggests is geologically complex and contains no archaeology.
40	438678 431869	40m x 2m	Continuation of a linear feature running east to west.
41	438731 431832	40m x 2m	Large feature running north-east to south-west.

Trench No.	NGR	Dimensions of trenches	Suspected archaeological features targeted
42	438741 431818	40m x 2m	Furrows.
43	438806 431799	40m x 2m	Furrows.
44	438808 431771	40m x 2m	Furrows and possible feature.
45	438791 431750	40m x 2m	Furrows.
46	438697 431770	40m x 2m	Apparently blank area in geophysical survey.
47	438677 431784	40m x 2m	Area west of trench 46 and south of trench 40.
48	438598 431813	40m x 2m	Ridge and furrow.
49	438652 431845	40m x 2m	Furrows.

3.3.1 Surveying

The evaluation trenches were accurately set out to sub-millimetre accuracy using differential Global Positioning Satellite (dGPS) technology. The points at the centre of the two ends of each trench defined a baseline, which was used for planning the archaeological features within the trench.

3.3.2 Machine excavation

The trenches were all opened using a 360° tracked excavator, with 2m-wide ditching bucket, under the supervision of a suitably experienced archaeologist. The topsoil was stacked adjacent to the trench. There was little or no depth of subsoil and no special procedures needed to be employed for its storage and stacking.

Two of the trenches, as originally proposed, were extended during the course of the evaluation in order to investigate specific features. The eastern side of trench 18 was extended to the east by excavating a 3m by 5.5m box to expose more of a possible kiln that had only been partly revealed within the trench, and the eastern end of trench 22 was extended to the north, also by 3m by 5.5m, to investigate the relationship of a curvilinear ditch and a linear feature.

Thirty-six trenches out of the forty-nine trenches originally targeted were excavated. In consultation with WYAAS, it was agreed that several trenches could be left unexcavated. Excavation of trenches 34, 35 and 37 indicated that the southern part of area A had little archaeological potential, the geophysics anomalies being caused by areas of large shale lenses within the natural substrate. Consequently, trenches 30, 31, 32, 33, 36, 38, 39 were left unexcavated. Trenches 24 and 25 were not excavated because the feature that they had been positioned to locate had already been investigated and characterised in several other trenches. Trenches 42, 44, 45, 46 in area B were not excavated as they were positioned on ground that appeared to be disturbed by the construction of the screening mounds around the site.

3.3.3 Excavation of archaeological deposits

After initial machining, all archaeological remains were excavated by hand. Detailed specifications for the work carried out can be found in the WYAAS evaluation brief and the method statement (NAL, 2005).

3.4 Field Records

3.4.1 Project code and context numbers

The project code is SWI 06. Contexts were numbered with the trench number as a prefix followed by a three digit identifier.

3.4.2 Written records

Record sheets, in a format acceptable to the IFA, were used for on-site recording. Multi-context recording was used.

3.4.3 Drawings

Drawings were identified by a three digit number, with sections and plans listed together on an overall drawing register. Each sheet containing sections or plans was also allocated a sheet number from a sequence starting at 1.

Drawings included:

- Ordnance Survey background mapping, at 1:2500 scale, showing the location of excavated areas;
- excavation area plans, at 1:50 scale, detailing all natural and archaeological features;
- section drawings at 1:20 scale of all excavated features and deposits, including long sections of all of the excavated trenches.

3.4.4 Photographs

Monochrome and colour slide photographs were taken in 35mm format. These included pre-excavation shots, shots of excavated features in section, general plan shots of the site and working shots of staff and plant engaged in excavation. A full written record was made of all photographs taken. The feature context number, appropriate scales, and a north arrow, if appropriate, appeared in all photographs whenever possible. Digital photography was also used for working shots.

3.5 Archive preparation

3.5.1 Consolidation of the site records

The written, drawn and photographic archive has been consolidated in accordance with the standards set out in Appendix 3 of the Management of Archaeological Projects (MAP 2, Stage 2).

In addition to the artefacts listed in Appendix A, the archive contains:

- 10 context index sheets (A4 paper);
- 326 context sheets (A4 paper);
- 36 trench record sheets (A4 paper);
- 12 photograph index sheets (A4 paper);
- 10 films (5 monochrome negatives and contact sheets, 5 sets of colour slides;
- 4 drawing index sheets (A4 paper);
- 114 drawings (on 54 sheets of polyester drafting film: 30 A1, 13 A2, 11 A3);
- 6 sample index sheets (A4 paper);
- 79 sample record sheets (A4 paper).

The project archive is currently housed at the Lincoln office of Network Archaeology Ltd. On acceptance of this report it will be deposited with Leeds Museum following their specific guidelines for archive deposition.

3.5.2 Finds processing

General

All artefacts were retained for processing except unstratified twentieth-century material which was noted and discarded. Spoil heaps were searched for unstratified finds.

Metal detecting

Spoil heaps were scanned for ferrous and non-ferrous metal artefacts using a metal detector capable of making this discrimination, operated by an experienced metal detector user. Modern artefacts were noted but not retained; nineteenth-century and earlier material was retained.

Environmental sampling policy

Bulk soil samples, normally of 30 litres, were taken of all significant archaeological deposits. Sample methods followed the guidance of the Association of Environmental

Archaeology (1995) and English Heritage (2002). The collected samples have been assessed for their potential and subsequent study.

Artefact handling

All retained artefacts have been cleaned, marked, packaged and stored in accordance with current IFA guidelines. The long-term conservation and storage needs of the artefacts were assessed and allowance has been made for preliminary conservation and stabilisation of all objects.

Certain categories of artefact, such as modern and post-medieval pottery, undiagnostic tile or brick, glass, and animal bone, may be selected for disposal with agreement with the museum that will hold the site archive.

3.6 Assessment

All of the finds and samples that required specialist assessment were sent to one of the following specialists:

- Alan Vince (independent, Lincoln): Pottery;
- Val Fryer (independent, Norfolk): Palaeo-environmental analysis;
- Tania Holmes (independent, York): Flint artefact studies;
- Roderick Mackenzie (independent, Sheffield): Metal-working slag and other industrial residues;
- Jenny Mann (Post-excavation team, City of Lincoln Archaeology Unit): Metalwork and other small finds.

Reports on each artefact category, to MAP2 assessment level, were prepared and have been included in Appendix C.

3.7 Analysis

Specific recommendations for thin-section and chemical analysis of the pottery associated with pit 18/107 were made as a result of the artefact assessments, as well as reconstruction and illustration of these vessels. This work has been carried out: the results are included as Appendix E to this report and are available at: http://www.avac.uklinux.net/potcat/pdfs/avac2007068.pdf

4 DESCRIPTION OF THE EVALUATION AREA

4.1 Topography and land use

The site occupies an exposed area of high ground and slopes gradually down to the south. The southern end of area A was at a height of approximately 81m above Ordnance Datum (OD) and the northern part of the site was at 86.30m OD. Area B was relatively flat at around 86m OD throughout. Area A was arable land, with a germinating crop at the time that the evaluation was carried out, while area B appeared to be permanent pasture.

4.2 Archaeological background

The most striking archaeological feature in the vicinity of the site is Grim's Ditch (PRN 5006, 5007 etc), a 7km-long earthwork consisting of a bank, surviving to a height of 2.4m, and a ditch to the west of the bank, 9 to 12m wide and over 2m deep (Wheelhouse and Burgess 2001, 125). At its closest point it is just under 1km to the west of the site, running alongside Bullerthorpe Lane beyond the M1 motorway. Construction of this part of the motorway, linking the existing M1 to the A1(M) allowed a section of the monument to be investigated, revealing that the monument was probably constructed in the early to middle Iron Age, and may have been renewed in the Roman period (Wheelhouse and Burgess 2001, 131).

Close to junction 46 of the motorway approximately 1.5km north-west of the site, three Bronze Age barrows previously known from air photographs (PRN 1346) were excavated in 2003 (PRN 7372). Other remains of a similar age have also been found further west, in the Colton Common area (PRN 7542).

The area to the north of Swillington village has a high density of cropmark sites. For the most part, these are described as rectangular enclosures, rectilinear field systems or linear features. These are generally thought to have originated in the Roman period, on the basis of their typology (e.g. PRN 66) or because of associated stray finds. Excavations carried out on cropmark sites on the route of the M1-A1 link (PRN 621, 617) also suggested an origin in the Roman period, although this was not unequivocally proved.

Limited excavation of the cropmark complex immediately south of the existing brickworks and quarry (PRN 637), carried out as part of the York Environs project, confirmed the presence of a regionally significant Roman period settlement with associated roundhouses. Abutting the evaluation site itself, the fields to the south (PRN 636) and west (PRN 6718) both show cropmarks of ditched enclosures and field systems, with some features appearing to continue towards the evaluation site.

Overall, the recorded evidence suggests that a Bronze Age ritual landscape developed to the north-west of the site, following a relatively low level of earlier activity which produced sporadic scatters of flint. The line of a major land division, established in the

Iron Age, may well have been influenced by surviving funerary monuments. Whatever the significance of the border marked by Grim's Ditch, its presence would have affected the area to the north of present-day Swillington, perhaps making it politically marginal or strategically important.

By the Roman period, the cropmarks and the limited excavation evidence suggest that the area was quite densely settled and intensively managed for agriculture. The cropmarks almost certainly include features of the medieval and post-medieval landscape, but away from present areas of settlement, these have, in general, not been separately identified. Despite the growth of local communities since the industrialisation of the West Riding, the brickworks and its quarry would have been constructed in a landscape that preserved its essentially agricultural aspect.

5 RESULTS

The results of the evaluations are discussed below trench by trench. Locations of the trenches are shown in figure 3 and the recorded features in figure 4. Because of the weather conditions, trenches 17 and 26 could only be planned for part of their lengths. The most significant findings were in trench 18 where a large oval pit contained pottery from four Anglo-Scandinavian or early medieval vessels. The pit also produced evidence of possible metal-working. Elsewhere, the trenches successfully located and characterised the linear features detected on the geophysical survey, including the complex of linear features running diagonally across the northern part of area A and the sub-circular enclosure to the east of it.

The topsoil was similar on all of area A. It was grey brown firm silt clay with occasional inclusions of post-medieval pottery, clay pipe and charcoal. The thickness of the topsoil was consistently 0.3m across the area. The topsoil in area B was mid-brown, very soft silty clay with modern pottery inclusions. The topsoil in area B seemed to have been disturbed, probably during the construction of the screening mounds to the north of the area. After the topsoil had been moved to create the screening mounds, imported topsoil was deposited. This would account for the different characteristics from the topsoil in area A, including the presence of modern finds.

The natural glacial drift geology remained consistent across most of both areas A and B. It was characterised as pale, mottled orange yellow, sticky clay. This was occasionally interrupted by seams of dark brown laminated shale.

5.1.1 Trench 1

Topsoil removal revealed a pale orange-grey clay natural geology. Five shallow furrows, oriented north- north-east to south-south-west, were visible in the stripped surface. These aligned with the existing field boundaries. Three field drains oriented in the same direction were also observed.

5.1.2 Trench 2

Four furrows and four field drains were observed on the same orientation as the furrows and drains in trench 1.

5.1.3 Trench 3

The geophysical survey indicated that a prominent feature might have been present in this trench. Once cleaned, several features were visible, including a narrow ditch and a geological seam in the sedimentary rock, as well as five furrows and a field drain. The geological feature was a 2m-wide seam of well-bedded laminated shale. The Geological Survey map shows a complex series of faults in the Middle Coal Measures underlying the Swillington area (BGS, 1998). The ditch appeared to be curvilinear [03/188] and excavation revealed that it was 0.25m in depth and 0.30m wide. No

datable material was recovered from the feature. The geological seam appeared to fit the dimensions of the feature visible in the geophysical report.

5.1.4 Trench 4

The only features that were revealed in the trench were five furrows, five field drains and the continuation of the natural shale seam. No evidence of the ditch [03/188] that was recorded in trench 3 was observed as continuing through trench 4. This tends to confirm that the feature giving rise to the linear anomaly on the geophysical survey was the rock seam, rather than the ditch.

5.1.5 Trench 5

The trench yielded three furrows, five field drains and the continuation of the natural sedimentary stone seam.

5.1.6 Trench 6

A series of cut features were observed as well as four field drains and a furrow [06/158]. A pit or post hole [06/146] was partly revealed along the east side of the trench. The feature was sub-circular, 0.42m wide and 0.16m in depth. This posthole could have been the terminal of a 1.4m long, 0.4m wide and 0.2m deep curvilinear gully excavated to the north, but poor definition of the cut meant that it was not possible to find any intervening section which may have been present between the two recorded features. Three other linear features [06/142] [06/150] [06/156], all oriented on a common north-east to south-west alignment, were excavated. Feature [06/156] had a furrow [06/158] cutting into it and a field drain cutting through the furrow. Feature [06/150] also has another linear feature [06/153] cutting into it. No datable material was recovered from any of these features.

5.1.7 Trench 7

The geophysical data seemed to indicate that features present in trench 6 continued into trench 7. However, once the topsoil had been removed from the trench and the natural geology had been cleaned, it was revealed that field drains, a furrow and a plough scar were the only features visible in this trench.

5.1.8 Trench 8

This trench contained three drains and a single furrow as well as two ditches [08/226] and [08/228]. One of the ditches [08/226] was oriented north to south and was 2.5m wide and 0.4m deep. It was cut by a field drain. The other ditch [08/228] was 1.1m in width and 0.15m deep and runs north-west to south-east. The alignment of the two ditches was such that they converged approximately one metre beyond the north baulk of the trench, assuming that they both continued on the same alignment.

5.1.9 Trench 9

The only evidence of activity was a series of furrows and drains. Because of the relatively good preservation of the remains, all of the furrows and drains in this trench were excavated and given context numbers [09/003] [09/005] [09/015] [09/027] [09/024] [09/022] [09/020]. This data provided a representative overview of the profiles of the cut features and the depositional processes of these features.

5.1.10 Trench 10

The data presented by the geophysical survey indicated that trench 10 had a series of large ditches running through it (figs. 3, 4 and 5). The evaluation trench located a ditch at its eastern end that can be seen on the geophysical plot to run down the eastern side of area A. In section this feature [10/029] was 1.5m wide and 0.5m deep, and its profile seemed to be characteristic of a field boundary ditch. This feature has been designated the 'eastern boundary'. The next linear feature excavated in trench 10 [10/049] was north-west of [10/029] and on the same alignment. Ditch 10/049 appears to have a parallel ditch [10/051], probably contemporary with it forming a double ditch feature. These two ditches [10/049] [10/051] had been disturbed by a pair of later, wider ditches [10/050] [10/048]. The later ditches were not placed directly on top of the earlier pair and were on a slightly different alignment, suggesting that the boundary had gone out of use and been re-instated. The top fill out of ditch 10/050 was a grey brown silt clay (10/063) and produced a piece of slag. The slag unfortunately has no metalliferous residues attached, and was therefore impossible to determine if it relates to metal production (Mackenzie, Appendix C).

Another ditch to the north-west on the same alignment [10/040] was excavated, revealing an irregular feature with concave edges and a concave base (fig. 6). The basal deposit (10/055) in the feature contained post-medieval pottery. The ditch had been re-cut [10/054], and the re-cut also contained a piece of post-medieval pottery. This ditch, designated the 'western boundary', is also characteristic of a boundary ditch. The western and eastern boundary and the double ditch together formed a major linear component of the landscape and may have defined a drove-way or trackway.

Another ditch [10/044] excavated in this trench was unlike the other linear features. It was oriented east to west across the trench rather than north-east to south-west and in profile had a flat base and irregular edges. This feature, the 'northern boundary', produced no datable material in this trench. The only other features in this trench were field drains and remnants of furrows. Medieval pottery was recovered from the topsoil.

5.1.11 Trench 11

The only features that were detected during the cleaning were four furrows and two field drains.

5.1.12 Trench 12

Trench 12 contained three cut features. The first feature excavated [12/133] was a pit 0.6m wide and 0.17m deep. The pit does not have any other features associated with it and no finds were recovered from it. The second feature investigated [12/135] (fig. 8) was a ditch running east to west and corresponds with the northern boundary recorded in trench 10. The geophysics results indicated that it continued between the two trenches. In profile, the top of the sides sloped down at 45°, then became vertical before breaking to a flat base. This profile is different from that of its continuation [10/044] in trench 10, although there are similarities, especially at the base of the features. It may be that the feature had been truncated by deeper ploughing over trench 10 in comparison to trench 12. Ditch 12/135 was cut into by a shallow gully [12/137] measuring 0.7m wide and 0.25m deep.

5.1.13 Trench 13

Several very irregular ephemeral features were detected. Contexts 13/192, 13/193, 13/195, 13/200, 13/210, 13/206 all appeared to be areas of root disturbance or tree-throw pits, perhaps the remnant of a former hedge line. Soil samples from these features produced macrofossil remains: pits 13/192, 13/196 and 13/209 all contained small quantities of wheat grains and pit 13/192 contained undifferentiated cereal grains. All three features also contained charcoal and pit 13/195 contained charred root and stem. Black porous material, mineralised concretions and a black tarry material were also recorded.

A narrow and shallow gully [13/204] 0.6m wide and 0.05m deep and another curvilinear gully or ditch [13/208] 0.7m wide and 0.1m deep were excavated. A second section [13/211] was also excavated through gully 13/208. This curvilinear feature may have been part of a sub-circular enclosure ditch, but it seems more likely that these gullies are the remains of a hedgerow, particularly considering their proximity to the probable tree root pits.

5.1.14 Trench 14

Trench 14 was the longest trench in the evaluation. It revealed the base of a heavily truncated pit [14/214], 0.39m wide and 0.06m deep. No finds were associated with this feature. A linear feature [14/215] at the north end of the trench was also excavated, revealing a linear feature 1.3m wide. Comparison with the geophysics results suggests that ditch 14/215 is the northern boundary ditch that can be seen running through trenches 14, 12, 10 and 40. The profile through the excavated linear feature revealed that it has similarities in shape and fill with the profile through ditch 12/135, also implying that it was a continuation of the same feature; this has been assumed in compiling the site matrix. Pottery dating to the early second century AD was retrieved from the basal deposit (14/219) of ditch 14/215. The same style of pottery was found in a surface fill inside the feature. At the south end of the trench there is a shallow gully [14/231] that is visible on the geophysics results as a linear feature running north-west to south-east.

5.1.15 Trench 15

Two furrows and a field drain were located, as well as a possible field boundary 8m from the northern end of the trench [15/236], and possible fence line [15/269]. The profile of the boundary ditch is very similar to the shallow gully at the southern end of trench 14 [14/231]. The geophysics results also suggest that this is the same feature continuing through both the trenches. The possible fence line consisted of a very irregular linear feature with uneven sides and base.

5.1.16 Trench 16

The geophysical report suggested that the feature detected in trench 9 and 10 should be detected in trench 16 and 17. A linear feature [16/251] and [16/253] with the same orientation as the feature observed in the geophysics report was excavated. The similarity of the profile to the western boundary [10/040] recorded in trench 10 confirmed that this was almost certainly the same feature. Another linear feature [16/236], oriented east-south-east by west-north-west, was excavated and produced early second-century AD pottery in the single fill, similar to the pottery found in trench 14. This feature could not be equated with any of the geophysics anomalies. However, if it continued in the same orientation it would have connected with the Roman northern boundary, although the profile of the ditch did not share any similarities with the profiles recorded in trenches 14 or 10. The two recorded ditches in this trench would have either converged or crossed under the eastern baulk of the trench. The trench also contained two furrows and three field drains.

5.1.17 Trench 17

Trench 17 was placed over many of the same features as trench 10, and it confirmed the continuation of the features recorded in trenches 10, 16 and 18 (fig. 9). The western boundary was excavated as ditch 17/169, corresponding to ditches 16/251, 16/253 and 10/040. A group of inter-cutting features [17/163], [17/165], [17/161], [17/167] correspond to the double ditch investigated in trench 10 [10/051], [10/050], [10/048], [10/049]. The sections excavated through this group of features revealed that ditches 17/163 and 17/165 had been cut by ditches 17/161 and 17/167.

Ditch 17/121 was oriented in a direction similar to the rest of the features in the trench and corresponded in shape, and on the geophysics, with the eastern boundary [10/029]. A small drainage gully [17/172], 0.65m wide and 0.16m deep, ran parallel to the west of ditch 17/122. Excavation of it produced no finds.

Flotation of bulk soil samples from the fills of ditches 17/160, 17/167 and 17/172 produced a small number of cereal grains. These were probably wheat, although of an atypical form, probably a variety of spelt wheat. This, together with their abraded appearance, suggests that they were of Roman origin and residual in the ditch fills. The samples also contained small quantities of charcoal and unidentified black porous material thought to be related to coal, which probably occurred naturally in the soil.

5.1.18 Trench 18

During the cleaning of trench 18, a large pit [18/107] was half exposed (fig. 10). A 5.5m-long portion in the centre of the trench was extended 3m to the east to reveal the whole feature for excavation.

Overall, the pit was oval in plan, 4.1m long and 2.4m wide with its longest axis oriented north to south. Quarter-sectioning (fig. 11; plates 1 to 3) showed it to be up to 0.70m deep in the north-east quadrant, but rather shallower to the south-west. The east and west sides sloped at up to 45°, with a slightly convex profile, while to the south the slope was more gentle. The breaks of slope at the top of the sides became very gradual; this, together with the smearing of the fills and the underlying natural clay, gave the pit a very irregular and ill-defined edge.

The north side was steep at the base, but began to flatten out some way below the top, to give a shallow apron on this side of the feature. The fill (18/108) of this part of the feature contained a high proportion of heat-reddened stones. This deposit produced sherds of Anglo-Scandinavian and early medieval pottery, together with two pieces of slag. Morphological analysis of the slag suggests that it is a by-product of medieval smithing rather than smelting (Mackenzie, Appendix C).

The pottery from fill 18/108 includes two smashed vessels (figs. 13 and 14), one of which can be closely paralleled in a mid tenth-century context in York. The other can also be broadly dated to the late ninth to early eleventh centuries (Vince, Appendices C and E).

There was also a sherd of York Gritty ware in the same context. This might suggest that the deposit dates from the mid-eleventh-century, perhaps indicating that production of York Gritty ware was underway at an earlier date than is currently believed. However, the forms of York Gritty jars have Norman parallels, suggesting that the latter explanation is less likely. This ware was known to have been in use in York in the late eleventh century and production continued through the twelfth and into the thirteenth centuries.

The main part of the feature had a rather heterogeneous upper fill (18/102) of mixed grey brown silty clay, with occasional charcoal flecks and heat-affected stones. This was little different from the topsoil above the feature (18/101). A distinct band of dark brown to black of charcoal-rich fill (18/110) separated the upper fill from a paler grey lower fill (18/109) with an ashy texture. The interfaces between these three fills were, however, not clearly defined. The lower fill was recorded as being stratigraphically above the burnt stone-rich fill on the northern lip of the pit, but again this relationship was not certain.

A large sherd of a large, sagging-based jar of Anglo-Saxon or early medieval date was recovered from the upper fill (18/102), and two other re-fitting sherds were found in the topsoil (18/101) over the feature (fig. 12). This vessel could be a large urn of early to mid Anglo-Saxon date, and, if so, more likely to date from the earlier rather than the later part of this period, since such large vessels are rare in mid-Saxon York (Vince,

Appendix C). Early and mid-Anglo-Saxon pottery is very rare in West Yorkshire. Another possible explanation is that the vessel is an eleventh- to thirteenth-century handmade jar, made in a tradition which was introduced to northern England after the Norman conquest but which appears to be absent in West Yorkshire. If the stratigraphic relationships as recorded were correct, then it comes from a later context than the two Anglo-Scandinavian vessels from fill 18/108, making the later interpretation more likely. As such it extends the range of such vessels which are known in Lincolnshire and East Yorkshire but not West Yorkshire. Handmade wares, including glazed vessels, were produced in South Yorkshire, at Doncaster Market Place, probably in the mid twelfth century.

Thin section analysis of sherds from all four of the vessels recovered from the feature was carried out (Vince, Appendix E). The two York A ware vessels have similar inclusions to each other, but have a variation in the groundmass. Although these differences occur, the make up of the pottery and the inclusions can both be compared to pottery types from Thorner village, south of Swillington. The York gritty ware has a similar groundmass to one of the York A wares. This suggests that the gritty ware has its origins in the same locality as the York A ware.

Chemical analysis by inductively coupled plasma spectroscopy was performed on the four vessels. The analysis provided evidence that high levels of potassium, magnesium, copper, chromium, barium and lithium exist within samples from all of the York ware vessels. This is an expected chemical trace exhibited by previously analysed samples of York gritty ware but not York A ware. This chemically places the York A ware in the same category as the York gritty ware. Conversely, the York A ware has an iron and chromium signature associated with pottery samples from contexts within York A wares and kilns from the village of Thorner. This places the York A ware in an intermediate group between both Thorner types and York gritty ware. Although the York A ware shares compositional similarities between both pottery types, more similarities to the York gritty ware than the Thorner examples can be found.

The composition of the clays and inclusions used in the production of the York gritty ware appears to be from a village located south of Thorner called Potterton, which has a history of pottery production dating to the eleventh century. Fragments of York gritty ware have been found within Potterton and due to the compositional similarities between York gritty ware and York A ware, it appears that they both have their origins in Potterton rather than Thorner. This places the York A as some of the earliest pottery to have been produced at Potterton.

The thin section analysis of the fourth vessel, from contexts 18/101 and 18/102, showed that the fabric bore little resemblance to either of the York wares. The early medieval handmade pottery appeared very much like early to mid-Anglo-Saxon pottery produced from fluvioglacial silt clays around the Vale of York and found a few miles to the east of Swillington.

The chemical analysis used other samples of early to mid-Anglo-Saxon pottery to find similarities in the groundmass. Various samples from York, Boston and Otley were

analysed. All shared similarities in groundmass to the Swillington pottery. Due to the overlapping of the fluvioglacial geology, a precise result could not be obtained, but the closest match was with LFS pottery from Lincolnshire dating to the tenth to eleventh centuries.

Plant macrofossil remains recovered from context 18/110 by flotation include members of the goosefoot family, of which orache could be positively identified, wheat, charcoal and charred root. Other remains include mineralised concretions. The remains were in a poor state of preservation, possibly because they were exposed to high temperatures during the activities associated with the feature. The evidence from flotation suggests that the primary fuels used in the pit were charcoal or wood and possibly dried plant matter used as kindling.

Elsewhere in trench 18, a shallow curvilinear ditch [18/113] was excavated. This feature did not appear to have any association with any of the other features in this trench; no datable material was recovered from it. Two furrow bases [18/091], [18/099] were also recorded.

The northern end of the trench encroached on the same group of intercutting double ditches that were observed in trenches 10, 17 and 16. The two earlier ditches [18/116] and [18/118] were cut by two later features [18/119] and [18/117]. The single fill of ditch 18/116 (18/123) contained a single piece of York gritty ware pottery and a piece of slag. Ditch 18/118 contained late eighteenth-century pottery.

5.1.19 Trench 19

The trench intercepted one arm of the near circular curvilinear feature visible on the geophysics plot. The feature [19/056] (fig. 15a) had steep edges, and was 1.3m wide and 0.65m deep. No other features were recorded and no finds were recovered.

5.1.20 Trench 20

An ambiguous irregular feature [20/290] had a profile with a very gradual edge to the south and a sharp break of slope to the north. The undulating base gave the impression that this feature consisted of two intersecting ditches. The geophysics results also suggested that there were two ditches converging at this point. The upper fill of the feature had a piece of medieval pottery. A piece of modern copper alloy was recovered from the topsoil. A furrow was recorded at the northern end of the trench.

5.1.21 Trench 21

The geophysics suggested that trench 21 would reveal part of the same curvilinear feature that was seen in trench 19. Feature 21/242 had a very similar sequence of depositional events and fills appear to those recorded for feature 19//056, and it can be assumed that they are indeed the same feature. No finds were recovered from the excavated section. The north-eastern end of the trench intercepted another similar feature [21/246] (fig. 15b), assumed to be the northern arc of the circular feature seen on the geophysics plot, the shape of the cut and the fills being very similar to those of

the ditches 19/056 and 21/242. It seems very likely that both the northern and southern arcs were contemporary. They may originally have been continuous and have since been truncated by ploughing, but it is more likely that together they defined a circular enclosure with two entrances.

There were no finds in any of the cut features; however a piece of late seventeenth-century pottery was found in the topsoil.

5.1.22 Trench 22

The western end of this trench crossed the group of intercutting ditches [22/083], [22/085], [22/087] previously observed in trenches 10, 17 and 18. No finds were recovered from any of these features. A truncated pit defined by a clearly defined cut [22/089] was also excavated. The cut was 1.1m long, 0.8m wide and 0.08m deep and contained no datable material.

A linear feature [22/076] that may be the continuation of a feature observed in trench 10, 18, and 17 was also excavated. This ditch was 0.9m wide and 0.46m deep, had two fills and contained no finds.

The eastern end of the trench was extended northwards, in a 3m by 5.5m box, to locate part of the curvilinear ditch that was recorded in the northern part of trench 21. A linear feature [22/095] located in the extended area had a similar profile and fills to those of the curvilinear ditches in trenches 21 and 19, implying that it was a continuation of ditch 21/246. A single piece of eleventh- to thirteenth-century pottery was retrieved from the upper fill (22/096) of this feature.

5.1.23 Trench 23

Two cut features and a furrow were recorded. The trench was aligned to intercept the group of intercutting ditches previously investigated in trenches 10, 18, 17 and 22. However, in this trench, only a single linear feature could be distinguished [23/279], with no visible remains of different cuts or interfaces between different contexts.

A narrow, shallow linear gully [23/271], which appeared to be very truncated, produced no finds.

5.1.24 Trench 24

Trench 24 was not excavated as the trench was positioned over a feature that had already been investigated at several other points in the evaluation.

5.1.25 Trench 25

Trench 25 was also not excavated as the trench was positioned over a feature that had already been investigated at several other points in the evaluation.

5.1.26 Trench 26

A ditch [26/275], 1.79m wide and 0.47m deep, may have been a continuation of the feature [20/290] detected in trench 20. No datable material was retrieved from the feature. This trench also revealed four furrows.

5.1.27 Trench 27

This trench had no significant archaeology within it. Two very ephemeral furrows were recorded in the centre of the trench.

5.1.28 Trench 28

Trench 28 also had no significant archaeology within it. Three very ephemeral furrows were found along the base of the trench.

5.1.29 Trench 29

Trench 29 also had no features of archaeological significance. Four furrows were observed in the base of this trench.

5.1.30 Trench 30

This trench was not excavated. Results from trenches excavated nearby, and from the geophysical survey results, indicated that there was unlikely to be any significant archaeological deposits in this area.

5.1.31 Trench 31

Trench 31 was not excavated or recorded after consultation with WYAAS.

5.1.32 Trench 32

Trench 32 was not excavated or recorded after consultation with WYAAS and following the excavation of trench 34 (see below), which had indicated that the strong geophysical anomalies in this area had been caused by variations in the geological deposits.

5.1.33 Trench 33

Trench 33 was not excavated or recorded after consultation with WYAAS.

5.1.34 Trench 34

No significant archaeological deposits were observed in this trench. The natural geology was mottled yellow to reddish orange silty clay with veins of shale. A 0.4m sondage in the south-east end of the trench confirmed that this material was natural and not redeposited clay from human activity. The shale veins provide a clear explanation for the strong geophysical anomalies in this part of the site.

5.1.35 Trench 35

The only evidence of activity observed in this trench was a single ephemeral furrow and a field drain. This trench also had a sondage excavated through it to determine the nature of the natural. The result was the same as trench 34 and confirmed that the clay material was natural geology.

5.1.36 Trench 36

Trench 36 was not excavated or recorded after consultation with WYAAS.

5.1.37 Trench 37

Trench 37 was excavated to confirm that the area of heterogeneous natural ground continued south as indicated by the geophysics. The trench confirmed this and that no archaeology existed in this part of the area.

5.1.38 Trench 38

Trench 38 was not excavated or recorded after consultation with WYAAS.

5.1.39 Trench 39

Trench 39 was not excavated or recorded after consultation with WYAAS.

5.1.40 Trench 40

Trench 40 had a single cut feature towards the northern end of the trench [40/302]. This linear feature was 1.35m wide and 0.63m deep with diffuse edges and two fills (fig. 8b). The profile of this ditch was very similar to the profiles of the 'northern boundary' ditch observed in trench 10 and the northern part of trench 14. No datable material was recovered from the feature although small pieces of modern pottery were found within the topsoil. Along with the other trenches in the northern half of Area B, trenches 41 to 44, it was noted that the subsoil surface had been disturbed and lowered in constructing the screening bund along the north perimeter of the site.

5.1.41 Trench 41

The geophysics result suggests that a feature ran north to south through the trench, but on excavation it was realised that the feature was a geological interface. The only other feature recorded was a field drain running the full length of the trench. Modern pottery was found in the topsoil associated with this trench.

5.1.42 Trench 42

Trench 41 was not excavated or recorded after consultation with WYAAS.

5.1.43 Trench 43

The only evidence of activity observed in the trench was two very ephemeral furrows and three field drains.

5.1.44 Trench 44

Trench 44 was not excavated or recorded after consultation with WYAAS.

5.1.45 Trench 45

Trench 45 was not excavated or recorded after consultation with WYAAS.

5.1.46 Trench 46

Trench 46 was not excavated or recorded after consultation with WYAAS.

5.1.47 Trench 47

Trench 47 appeared to be outside the area disturbed by construction of the screening bunds, implying that the southern part of Area B still holds archaeological potential. Five furrows and three field drains were located as well as a curvilinear ditch towards the eastern end of the trench (fig. 16a). The ditch [47/314] was 1.14m wide and 0.3m deep (fig. 16b). No datable material was recovered from the feature.

5.1.48 Trench 48

Trench 48 was opened and cleaned but only two furrows; two field drains and a natural hollow were found. No finds were located within the features.

5.1.49 Trench 49

Trench 49 revealed a series of furrows and two pits. The pits were unlike any of the other features found on site. The first pit [49/284] was circular, 0.9m diameter and 0.16m deep (fig. 17) and with a fill of burnt material and heat-affected stone. This is possibly the remnants of a fire pit or hearth. The horizon of the material was very clear and a sample was taken. The second pit [49/286] was sub-circular with a sloped base. It measured 1.1m in length, 0.8m in width and 0.6m deep. The pit did not appear to contain any burnt material, in contrast to pit 49/284, but burnt and vitrified materials were discovered in the samples during flotation.

Table 2: Summary of evaluation results

Trench	Results	Topsoil Depth	Subsoil Depth
1	Furrows from ridge and furrow and field drains.	0.30m	N/A
2	Four furrows and four field drains. No further archaeology was detected.	0.35m	N/A
3	A feature that was later identified as a geological fault line.	0.30m	N/A

Trench	Results	Topsoil Depth	Subsoil Depth
4	The geological seam continues from trench 3 through this trench. A shallow curvilinear, five other furrows and drains also recorded.	0.45m	N/A
5	Further exposed the geological seam; furrows and drains continuing from the previous trenches.	0.35m	N/A
6	Small shallow pit and a small narrow gully. Also three linear features, three furrows and drains.	0.40m	0.10m
7	One furrow, drains and a plough scar.	0.40m	N/A
8	Two ditches that appear to converge under the baulk. Three drains and a furrow.	0.30m	N/A
9	Furrows and drains. Post-medieval pottery and clay pipe was recovered from this trench.	0.40m	N/A
10	Five ditches, including double ditch feature *(figs 5, 6)* with another double ditch later cut into it. Two linear features flanking the double ditch *(fig 6)* and a ditch on a 45° angle to the rest of the features. Post-medieval clay pipe and pottery were recovered from this trench.	0.32m	N/A
11	Four furrows and two drains.	0.30m	N/A
12	Two ditches and a pit.	0.34m	N/A
13	Several ephemeral features identified as old hedge lines and tree throws. The tree throws and other features produced plant macrofossil remains.	0.38m	N/A
14	A pit, ditch and shallow gully were identified. Medieval and Roman pottery was recovered.	0.38m	N/A
15	A ditch, a shallow gully and a two furrows	0.30m	N/A
16	Two linear features, possibly field boundaries. A single piece of Roman pottery was recovered.	0.25m	N/A
17	A double ditch, two flanking boundary ditches and a shallow drainage gully. Remains from sample flotation include cereal grains, charcoal, coal and mineralised concretions.	0.30m	N/A
18	A large pit with evidence of burning *(figs. 10, 11)* which produced Anglo-Scandinavian and early medieval pottery. Also the double ditch feature identified in other trenches, and a curvilinear ditch. Remains from the sample included orache seed, grains, charcoal, charred root and mineralised concretions.	0.38m	N/A
19	Curvilinear ditch.	0.35m	0.12m
20	An ambiguous feature identified as being two converging boundary ditches. Medieval pottery and an early modern copper alloy object found.	0.25m	N/A
21	Remains from both parts of a semi-circular enclosure *(fig. 15).*	0.30m	0.20m

Trench	Results	Topsoil Depth	Subsoil Depth
22	The double ditch feature, another boundary ditch and part of the northern semi-circular ditch. A truncated pit was also identified. Medieval pottery and a post-medieval ceramic object were recovered.	0.40m	0.20m
23	A large linear feature, a shallow gully and a furrow.	0.28m	N/A
24	Unexcavated.	N/A	N/A
25	Unexcavated	N/A	N/A
26	A linear ditch.	0.30m	N/A
27	Two very ephemeral furrows.	0.30m	N/A
28	Three very ephemeral furrows.	0.30m	N/A
29	Four very ephemeral furrows.	0.32m	N/A
30	Unexcavated.	N/A	N/A
31	Unexcavated.	N/A	N/A
32	Unexcavated.	N/A	N/A
33	Unexcavated.	N/A	N/A
34	No archaeological features; appears to be on disturbed ground.	0.32m	N/A
35	One furrow and geological features	0.30m	N/A
36	Unexcavated.	N/A	N/A
37	No archaeological features; appears to be on disturbed ground	0.33m	N/A
38	Unexcavated.	N/A	N/A
39	Unexcavated.	N/A	N/A
40	A boundary ditch. Small amounts of charcoal, legume seeds, charred root, coal, mineralised concretions and a porous cokey material found during flotation.	0.25m	N/A
41	A natural feature.	0.30m	N/A
42	Unexcavated.	N/A	N/A
43	Two ephemeral furrows and a field drain.	0.20m	0.20m
44	Unexcavated.	N/A	N/A
45	Unexcavated.	N/A	N/A
46	Unexcavated.	N/A	N/A
47	A curvilinear feature *(fig. 16)* identified in the north-eastern end of the trench.	0.40m	0.18m
48	Two field drains, two furrows and a natural hollow.	0.36m	0.10m
49	Two pits *(fig. 17).* A small amount of cereal grains, charcoal, vitrified material and coal from flotation of samples. Several drains and furrows.	0.30m	N/A

6 DISCUSSION

The evaluation trenches successfully located many of the features seen on the geophysical survey, showing that the survey generally gives a clear picture of the whole site (fig. 18). However, the geophysics failed to locate some of the smaller features, in particular the pits containing burnt material in area B.

The results indicate that the main area of archaeological potential is on the eastern side of the north and central parts of area A (fig. 19). This area, encompassing trenches 9 and 10 and 16 to 23, contained most of the more significant features recorded.

Pit 18/107

The Anglo-Scandinavian and early medieval pottery from the large sub-circular feature in trench 18 is considered to be of regional importance. The fill of this pit showed clear evidence of burning, probably in situ, suggesting that it could have been associated with some kind of industrial activity. The pieces of slag found within could have been produced during metal smithing, but the small quantities would suggest that this was not the primary function of the feature. It is more likely that the pit was on the periphery of an area of industrial activity and was used for disposal of waste, probably while it was still very hot. In this case, it could have been a purposely dug waste pit, or a re-use of a pit dug for some other purpose, such as clay or marl extraction. The pottery was recovered from the upper part of the fills, providing a *terminus ante quem* of the eleventh century for the feature.

Opposing quadrants of the pit were excavated, so that half of the fill is still in place. Any subsequent excavation of the site should be able to locate the backfilled feature, allowing the rest of the fill to be excavated, and any remaining finds to be recovered. The pit did not show clearly in the geophysical survey, demonstrating that there may be other similar features nearby. Excavation of a wider surrounding area could therefore contain more industrial remains that might help explain the use of this feature. A ditch located in southern part of trench 18 contained a further piece of early medieval pottery, also suggesting that other features contemporaneous with the pit might be revealed by further excavation.

Parallel linear features

Trenches 9, 10, 18, 17, 16, 22 and 23 all contained parts of one of the three linear features seen on the geophysics results. These three ditches all respect each other and are likely to have been broadly contemporary. Dating of these features is problematic. The earliest components of the double ditch appeared to be very similar and seem likely to have been of the same date. The section through these features in trench 18 produced pottery dating to the late eleventh century, but there was also late eighteenth-century pottery in one of the fills. It is quite conceivable that this pair of ditches was a feature in the landscape for seven centuries, but it is perhaps more likely that either the earlier pottery is residual or that the later material is intrusive, perhaps from an unrecognised

land drain. With such a limited level of datable material from the feature it seems difficult to judge which of these alternatives is more likely.

The two later component ditches of the double ditched feature follow the same orientation but do not appear to be directly re-cutting the two earlier ditches. This suggests that the original ditches had largely filled before being re-instated.

The two flanking ditches were presumably part of the same field system as the double ditch and they are on a parallel alignment. The western boundary appears to have had an original cut [10/040] with a smaller and later re-cut [10/054]. The primary fill of the earlier larger feature produced a piece of late nineteenth-century pottery and the fill of the later re-cut a single piece of late seventeenth-century pottery. One or both of these finds must be residual or intrusive, and they provide little help in dating the feature. The eastern boundary produced no datable finds.

The most likely interpretation for these features is that they were part of a shifting complex boundary, probably incorporating a drove-way or track. Extrapolating to the south-west, the features appear to align on the small settlement of Hollinthorpe on Swillington Lane. More speculatively, in the other direction they appear to head towards Garforth. Early Ordnance Survey maps show a field boundary crossing east-to-west across the centre of area A, probably one of the features located in trench 20. Perhaps significantly, this field boundary has a double right-angled kink at roughly the point where these linear features would have crossed, suggesting that the track was still surviving in the landscape at the time that this land was enclosed.

The sub-circular enclosure

The enclosure targeted by trenches 19, 21 and 22 was defined by two curvilinear ditches opposite each other. One of the excavated sections produced several pieces of eleventh- to thirteenth-century medieval pottery. The relative lack of finds perhaps indicates that the feature did not surround a domestic structure, and some other function, such as a stock management enclosure, is perhaps more likely.

The 'northern boundary'

The northern boundary, recorded in trenches 14, 12, 10 and 40, was on a different orientation from the other linear features on the site, and was clearly a component of a different system of land division. Roman pottery was retrieved from the basal and top fills of this feature in trench 14. The presence of this material in both of these deposits suggests that the feature was back-filled rapidly, rather than by a gradual process which could incorporate pottery from different periods. No pottery was found in the other excavated parts of the ditch, but the profile and deposition sequences in the other trenches were very similar. This would appear to confirm that it was a single feature continuing across the site, as indicated by the geophysics results

Area B

In area B, trenches 49 and 47 produced features that may have further potential. Trench 49 revealed two pits that had no datable material but were unlike any of the other

features on the site. Further excavation of this area may reveal similar features and help to throw light on their function and date. The excavation of trench 47 revealed a curvilinear feature that was not visible in the geophysical survey results.

Areas of lower potential

Elsewhere on the site, trenches 1 to 5 in the north-eastern part of area A had an absence of archaeological remains, apart from furrows from post-medieval ridge and furrow. Several gullies and ditches were recorded near the northern edge of the site in trenches 6 to 8. These features did not seem to extend across the width of the site as none were recorded in more than one trench. This implies that they were relatively insignificant features, probably largely ploughed out only leaving the fragmentary remains observed. None produced datable finds.

The excavated trenches in the southern part of area A, trenches 27 to 29, 32, 34 and 37, produced very few archaeological features. Outcropping shale rocks in this area gave the subsoil a very heterogeneous appearance, and accounted for the strong geophysical anomalies. The subsoil surface in the northern area of area B had been heavily truncated by the construction of the shielding bund alongside Leeds Lane, in the area of trenches 41 and 43.

Relationships with surrounding cropmark sites

In addition to providing information about the site of the proposed quarry extension, the results of the evaluation also assist, to some extent, in the interpretation of the cropmark sites surrounding the brickworks. The clearest example is the field immediately to the west of the evaluation area (PRN 6718), where a linear mark seen running obliquely across the centre of frame WY 271/21 (plate 4) seems to continue the alignment of the excavated 'northern boundary' ditch, thought to be of Roman date. The other cropmarks in this field, nearer to Swillington Lane, are on a different orientation, and perhaps align better with the presumed early post-medieval features.

The results strongly suggested that there were few surviving archaeological features, if any, in the southern part of the evaluation site, and that the strong magnetic anomalies seen on the geophysics result were of geological origin. This raises the possibility that at least some of the cropmarks in the field immediately to the south (PRN 636) may be the result of geological fault lines. However, the main polygonal marks are very regular and an archaeological origin remains much more likely (plate 5). The contrast between this field and the evaluation site suggests that they have been subject to different management regimes and that the boundary between them is a long-standing feature.

The other nearby cropmark sites, particularly PRN 637 and PRN 2553, are too remote from the evaluation site for individual marks to be equated with any of the excavated features. However, by highlighting the range of dates of features in the area, the evaluation trenching helps to define the possible provenances of these cropmarks. In particular, the previously unsuspected occurrence of Anglo-Scandinavian or early medieval remains may be of relevance to the interpretation of these sites.

7 RECOMMENDATIONS

The evaluations have demonstrated that the site has considerable archaeological potential, and have posed a number of unresolved questions about the nature, function and dating of the features detected.

Before any development of the quarry site, it is therefore strongly recommended that a programme of further archaeological mitigation is implemented. This programme should be specified in detail in a method statement drawn up by the archaeological contractor in consultation with the client and with WYAAS before the commencement of work. This will comply with any specifications from WYAAS but is expected to include the following elements:

- strip-and-map of the area, just under 2 hectares in total, outlined in figure 20,
- any features uncovered by the strip-and-map that have not previously been recorded to be excavated,
- unresolved stratigraphic relationships between features already seen in the evaluation trenches to be investigated,
- characterisation of the circular enclosure, with at least 20% of the length of the curvilinear ditches and terminals of the separate arcs to be excavated. If any evidence is found that it is related to domestic use, this will be increased to a 50% sample, and up to 100% if no dateable evidence is recovered,
- phosphate analysis of the interior of the circular enclosure to obtain evidence of any stock management function,
- full excavation of the pit in trench 18 to retrieve any further pottery that may be present, and to recover any evidence of the function of this feature,
- investigation of linear features recorded in trenches 19, 20, 26, 47 and 49, and the pits containing burnt material in trenches 47 and 49, to resolve questions of alignment, stratigraphic relationships, function and dating.

Summary publication of the findings of this investigation in an appropriate local journal is recommended. Uploading of this report, including the specialist appendices, will be carried out when the OASIS report is filed. The results of the pottery characterisation analyses have been made available online by Alan Vince.

It is expected that the results of this evaluation will be included in any publication that might be produced following the future stages of work recommended above.

8 CONCLUSION

The evaluation trenches revealed cultural material from Roman, Anglo-Saxon, medieval and post medieval contexts. There seems to have been some industrial use in the Anglo-Saxon or early medieval period, but otherwise there is no evidence for anything but agricultural use in the other periods. The field boundaries identified appear to have been used, gone out of use and then been re-instated. The limited quantities of finds retrieved from the trenches have made it difficult to phase and date the features confidently. However, the evaluation did confirm that the geophysics gave an accurate ground plan of the features. Those features have been fairly well characterised so there is a high degree of confidence about the interpretations.

Many questions remain about the nature and date of the remains detected and described in this report. The interpretation of the archaeological data is based on the evidence recorded within a restricted evaluative sample. Unpredictable, wet and windy weather during the period of the evaluations imposed further limitations on the quality and quantity of the recovered data.

However, the evaluations appear to have been very successful in defining the areas of archaeological potential within the development area. This information has allowed WYAAS to produce strip-and-map specifications around the areas of archaeological potential. This area includes trenches 16, 17, 18, 19, 20, 21, 22, 26, 47, 48, 49. The strip-and-map provision should permit the onsite archaeologist to observe any relationships between the features that were not recorded or observed during the evaluation. Any pertinent relationships observed during the strip-and-map should then be subjected to excavation to retrieve the maximum amount of information.

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10 STATEMENT OF INDEMNITY

Every effort has been taken in the preparation and submission of this report in order to provide as complete an assessment as possible within the terms of the brief, and all statements and opinions are offered in good faith. Network Archaeology Ltd cannot accept responsibility for errors of fact or opinion resulting from data supplied by any third party, or for any loss or other consequences arising from decisions or actions made upon the basis of facts or opinions expressed in this report and any supplementary papers, howsoever such facts and opinions may have been derived, or as a result of unforeseen and undiscovered sites or artefacts.

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FIGURES

PLATES

APPENDICES