Heslington East
Area A3 (Fields 8 and 9)

Assessment Report
Volume 1

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Volume 1

Volume 2

Appendices

Abstract

This report is primarily concerned with the chronological development of the archaeological site at Heslington East in Fields 8 and 9 (SE643510), as determined by survey and excavation work by the Department of Archaeology, University of York from 2008 – 2011. There is variation in the character, tempo and chronology of activity between these two zones.

The earliest activity occurred in Field 8, taking the form of dispersed Bronze Age features. The site then saw settlement from the Iron Age into the early Roman period, including a series of roundhouses with associated hearths and metalworking areas in Field 9, and ephemeral enclosures and an early track in Field 8. In the third and fourth century AD there was substantial reorganisation of Field 8, focussed on the northern part of the site. This saw the creation of more substantial enclosures, the laying out of a metalled track way and erection of two buildings, one of which was masonry and had a hypocaust system. Significant boundary ditches were installed at this time and, towards the east of the masonry building, access into the area controlled through a gateway/entrance. There was also monumentalisation of the western entrance into the complex by the insertion of a rectangular tower, later substantially rebuilt, which articulated with two burials immediately to its east. In the very late Roman period, and potentially into the sub-Roman period, the landscape in the north of Field 8 was modified, with burials consolidating earlier features. New boundaries and terraces were established and we see the insertion of a kiln, a large rectangular timber-framed building and a four-metre deep, masonry-lined well.

The ancient construction technique known as *opus quadratum* was recognised in some of the dressed stone recovered from the site. This technique is rare in Britain, usually being found only in bridges in the military zone and in certain kinds of classical temple and mausoleum construction, or in public monuments in Roman London. Analysis of millstones and the animal bone assemblage suggests that settlement in the later Roman period was focussed on arable production, the discovery of the millstone group being of significance for York and its extra-mural area in this period. The analysis of metal residues suggests there was smithing and welding activity taking place on the site.

Across the site a range of human burial rites were represented by two prehistoric cremations, plus five adult inhumations and five perinatal inhumations of Roman date. Two of the Roman inhumations had significant pathology, including the most northerly recorded case of Roman spinal TB in the UK in one, and possible brucellosis lesions in the other. The two burials beside the tower had nails associated with each cranium and appear to have comparators only within a Mediterranean context.

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I. Introduction

The site forms part of the university campus development which was granted planning consent in 2007 following a public enquiry under the Town and Country Planning Act 1990. The relevant Planning authority is the City of York Council and the scheme of work was agreed with, John Oxley, Principal Archaeologist for the City of York Council. The research design (II), procedures and methodology (III) and context (IV) of the work is outlined below to aid understanding of the stratigraphic development of the site (V), the latter discussion being underpinned by a detailed report (Appendix 1) organised by group number. Specialist reports are summarised here (VI) (and presented in full in Appendices 2-13, but without the supporting tables if they were separate from the report: all of the latter are available in the archive). Recommendations by various specialists are finally listed (VII) as the basis for a discussion of future priorities for analysis.

All site work was directed by S. Roskams and managed by C. Neal across the four year period, with survey work directed by B. Gourley (2008/9) and H. Goodchild (2010/11). Excavation targets were identified by fieldwalking, geophysics and test pit excavation undertaken at Easter during 2008, 2009 and 2010. The majority of the full excavation work was then undertaken by undergraduate students supervised by experienced excavators during the annual Departmental training excavation during April and May, and then by a smaller community excavation team, in any given year. At the end of 2011 some outstanding work was concluded by a small team of commercial archaeologists from OnSite Archaeology (OSA) working under the direction of the Department of Archaeology.

II. Research design

Evaluation work included desk-based assessment, fieldwalking, geophysics and trial trenches and this was undertaken by York Archaeological Trust (YAT) between 2002 and 2004 (Macnab 2004). Three areas of primary archaeological significance were identified and named A1-A3 (Figure 1). YAT were responsible for excavating and evaluating areas A1 and A2 (Antoni *et al* 2009) with the University of York, Archaeology Department (UoY) responsible for A3 which includes the mid- to northern portion of Fields 8 and 9.

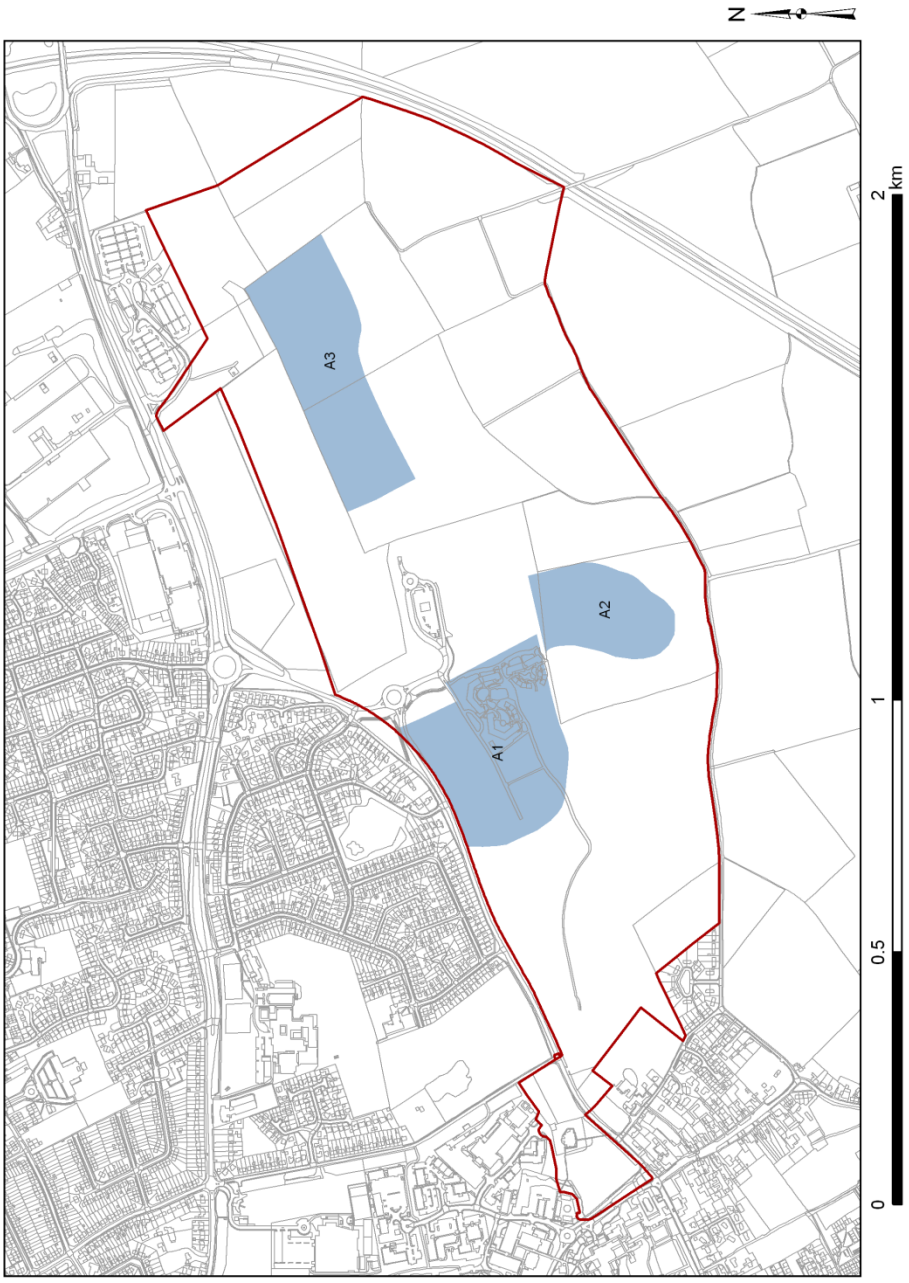

Fig. 1 Areas of archaeological importance A1 –A3

The site is situated on the east west running York moraine and the natural deposits are therefore characterised by glacial till; a combination of stiff orange and grey clay, gravel and sand. The solid geology here consists of Bunter sandstone and Kueper Marl.

The original ARMP for Heslington East identified four research topics as being of pivotal importance:

- landscape and environment in the Neolithic and Bronze Age periods
- the process of change between Iron Age and Roman periods
- the operation of cult and ritual in a rural context
- processes of change between the late- and post-Roman periods

Our own work in Fields 8 and 9 set out to explore specific spheres related to topics two and four, in particular:

- How quickly the impact of Roman conquest was felt and what form it took: sudden transformation or evolutionary change
- Whether these developments were concerned mainly with functional change, for example in relation to landscape boundaries or farming practices, or included ideological imperatives, for example in terms of mortuary practices (cf. topic three, above) or architectural forms
- Whether trajectories of change continued past the end of the conventional 'Roman period' (i.e. up to the end of the fifth century) into later times (the 'Anglian period')

The research design detailing the latter areas of interest is available upon request from cath.neal@york.ac.uk

III. Methodology

Topsoil was removed from all the excavation areas with a 360° tracked excavator, except during 2009 when the machine loaned by the developers was a 9-tonne wheeled excavator, which resulted in smaller and more irregular open areas. The features revealed were subsequently cleaned using mattocks, hoes and trowels, and the defined features then selectively excavated by hand to allow questions of purpose, process and chronology to be satisfactorily answered. The number of personnel involved required large open areas. Finds derived from cleaning at the base of the subsoil in each area were recorded by context-coded, 5m² grids. The definition of features, particularly during dry weather in 2008 and 2009, was made difficult because some were masked by subsequent deposits. In addition there was a similarity between some sand-based fills and the natural deposits that they cut. The use of the site for agriculture in more recent periods also complicated the picture, with medieval furrows truncating some features not always clearly identified in plan, and the site being subject to deep ploughing for a number of recent decades.

Finds assemblages were generally collected by context number but, where necessary, some items were recorded in three dimensions. The policy was for 100% collection of

artefacts/biological remains where encountered. Occasionally, however, features such as extensive spreads produced very fragmentary assemblages, for example small splinters of animal bone or scraps of CBM which were only partially retained. Where this is the case, the specifics of collection methods are detailed on individual context sheets. Most fills of cut features and spreads were sampled for general biological assessment by taking 1 × 10-litre tub, except where the need to take more was identified. The features identified and trench locations were recorded spatially by a combination of TST (total station theodolite) and/or Global Positioning System.

The recording system used on site, and to train the students, was based on the MoLAS handbook (1994) and included templates for hand texturing, the size and shape of inclusions and drawing conventions. The spatial recording took the form of 1:20 plans of individual features, where possible, and sections drawn at a scale of 1:10. An overall 'Harris' matrix recorded all of the proven stratigraphic relationships revealed for each area, with those of individual units also noted on the recording sheet. The physical characteristics of each deposit or intrusion were recorded textually on a systematic basis, the former comprising information about colour, soil matrix and inclusions, and the latter concerning shape in plan, profile, and other relevant characteristics.

Following excavation the features were defined as fitting one of four categories; cuts, fills, deposits and structures. The open cuts were either linear features (ditches, furrows, slots, curving ditches) or miscellaneous (irregularly shaped). The closed cuts were either pits (>0.5m), postholes/stakeholes (<0.5m) or graves. Deposits were defined as either plough soil, natural or spreads (including dumps and middens). Fills remained categorised predominantly as 'fills' but occasionally skeletal material or weathering deposits were included as a sub-division of this category. Structures were listed as hearths, pads, walls, well, and concentrations of cobbles (either linear or non-linear).

In this report, the spatial and stratigraphic information is presented in overall plans, text and groups matrices. The groups were assigned following the excavations on a season-by-season basis and were confined within the separate areas (Figure 2). For consistency in the discussion, where deposits or cuts overlie/cut earlier features, these are expressed by the spread or cut number, and not by any subsequent fills of the cut. Where there is inconsistency between the written and drawn record, particularly in respect of morphology and size, the drawn record has predominance. Where any discrepancy exists between deposit description (e.g. silty clay) and percentages by particle size (e.g. silt 40%/clay 60%), the percentages have been taken as more accurate. Due to the relative inexperience of many of the excavators, some of the records were amended at the end of each field season whilst relevant strata were still visible to produce a more accurate and consistent archive.

When detailed information on deposits and cuts is presented in the text, the original descriptions have been summarised in a consistent way and this basic information and its associated number italicised (with the latter also in bold). This has necessitated the removal of some additional information/modifiers to standardise data and to allow correlations to be made across areas and between teams. This set of data is followed by proven stratigraphic relationships, suggested relationships, likely functions and any more general interpretations. A list of the numbers of each stratigraphic unit allocated to each period is provided at the start of the relevant section of text, in the order in which they are then discussed.

The dating of features was informed by the spot dating list kindly provided by Ruth Leary, the scheme, summarised below, being devised to aid chronological understanding. This is utilised in the stratigraphic report, and some of the specialist reports also refer to it. This scheme is derived from the dated assemblages, aided by stratigraphic analysis. Allocation to a group therefore involves an element of interpretation, notably in deciding whether certain finds must be either residual or intrusive when their date does not fit the suggested overall chronological label.

Dating Group		
A	BA/PRIA	prehistoric
B	1st-2nd/E3	Roman
C	3/E4	Roman
D	L4/360+	Roman
E	5th-9th	early med
F	10th +	medieval
G	Post med	modern
ND	not dated	

The descriptive account within the text is of a minimal nature, providing enough information, in a systematic and useful way, to justify the suggested interpretations but also allowing for alternative views to be formulated, without simply reproducing the site record in its entirety (Appendix 1). This is accompanied by group matrices and by plans for cuts and structural items, but not for spreads or deposits. Thus, for some specialist needs, it will still be necessary to return to the primary data and records.

A total of 459 cut features were recorded. In addition to the textual records, 795 drawings were produced and 777 digital photographs were selected from the original photographic archive to form a digital archive (duplicates and non-informative shots removed). All

primary records are available in archive and are held, along with the assemblages (as of 2013), at the Department of Archaeology, University of York, King's Manor, York Y01 7EP. In February 2013 a digital archive comprising the two volume assessment report plus photographic archive and spatial data will be lodged with the Archaeology Data Service.

IV. Context

In 2008 as a result of the field walking and geophysics work, in conjunction with the YAT evaluation report and two test pit excavations, three excavation areas were defined, all lying in Field 8. The first area (Area A) measured 1152m² and was selected to investigate further a previously identified Roman masonry building (Macnab 2004). In this location, field walking and test pit excavation had also revealed a high proportion of Roman ceramics and brick/tile. This area is represented in the appended textual report by Groups 1-10. North of Area A, just south of the field boundary which marks the break of slope from the top of Kimberlow Hill, Area B encompassed 224m². This area was selected due to a number of linear geophysical anomalies augmented by a test pit excavation which revealed a number of cut features. Area B has features represented in Groups 11-15. At an intermediate height and to the west of Areas A and B was Area C. This area was selected for excavation purely on the basis of resistance survey evidence which indicated a distinctive and clear rectangular (east-west) feature. This area was 204m² and encompassed Groups 16-19.

During 2009 seven separate areas were excavated in Field 8, the location of each intervention being based primarily on the geophysical survey results which had been subsequently ground-truthed by selective test pit excavation during April 2009. Area A was 157m² and included Groups 20-28. Immediately south was Area B, 216m² in size and contained by Groups 29-33. Area C was 384m² and contained Groups 34-41. Groups A, B and C were therefore aligned north-south running down the hill slope in an interrupted fashion. This allowed us to see clearly the variation in the depth of overburden, predominantly plough soil but possibly also unidentified colluviums, which was striking in 2009: Area A had 0.3m of deposit onto archaeological features in the north but in the south this had deepened to 0.5m; Area B had 0.8m onto features in the north reducing to 0.5m to the south; and Area C had 0.6m of deposit overlying features to the north reducing to 0.3m in the south. Area D was close to a field boundary in the east and was 482m² in size and contained 42-51. Area E was 207m² and was immediately south of Area D, it contained Groups 52-55. To the west of Area B a small area (F, 98m²) was opened in an area stripped the previous year. This contained Groups 56-58. South of Area F was Area G, a test pit stripped by machine to reveal a change in drift geology across the centre of the trench, corresponding with an extensive and distinctive anomaly evident in the geophysical survey which now appears to represent the spring line. This measured 35m² and contained Groups 59-60. This trench was waterlogged and was not fully excavated, being completed by OSA in 2011.

In 2010 the investigation was directed to Field 9, where 12 test pits investigated a range of geophysical anomalies. However, in the majority of cases these were found to be the result of geological signals. Area A was chosen due to the findings of the YAT evaluation trench (56) located here and following the excavation of two test pits. After topsoil stripping, a number of possible excavation targets in this area were found to be remnants of plough soil filling an undulating natural surface. The area was 1791m² and encompassed Groups 61-67. Area B was also selected from the findings of a YAT evaluation trench (60), augmented by the results of two test pit excavations. The area was 1508m² in size and included Groups 68-84. During the field school there was a problem with consistency and accuracy in the records for one of the student groups which affected the records produced for groups 77-84. A site visit was undertaken and the records were revised and amended retrospectively to rectify the deficiencies, the original student record being kept on file as part of the archive. Discussion of features here is derived predominantly from the post-excavation amendments which constitute the corrected archive. Many of the features discussed in Group 77 were not fully excavated due to water-logging and worked timbers and were subsequently investigated by OSA in 2011 as part of a new scheme of work. Finally, a third area, D, was excavated during 2010 in Field 8 as an extension to Area A (from 2009), which sought to explore emerging features to the west. This area continued to be excavated in 2011 and so the records and descriptions for 2010 are discussed in groups with material completed in 2011.

In 2011 Area A was selected for excavation as the work immediately south (by OSA) had identified a concentration of features. This was 296m² and encompassed Groups 85- 92. North of this, Area B was 1159m² (Groups 93 -100) and sought to re-examine the tower structure which was revealed in 2008 (Group 16 and 17) in light of new evidence from specialist reports on building stone and also to investigate further the area lying between features revealed by the UoY in 2008 and by OSA in 2011. As discussed above, the excavation of Area D continued from 2010, being 1172m² in size and included Groups 101-117. This area was technically demanding to complete due to the presence of a 4m-deep stone-lined well. This feature required re-machining and extending on four successive occasions to achieve a safe working area around it, and also needed regular pumping out of water from springs. Area E was selected for excavation due to earlier excavations in the surrounding vicinity and the concentration of features identified to the immediate west in 2009. This was 1293m² in size and includes Groups 118-128. During the excavation season Area F (29m²) was opened, to try and elucidate the continuation of several east-west linear features in Areas B and D. It includes Groups 129-34.

The excavated trenches are summarised here, and with Figure 2 for spatial arrangement.

Year	Name	Area	Groups
2008	A	1152m²	1-10
	B	224m²	11- 15
	C	204m²	16- 19
2009	A	157m²	20 - 28
	B	216m²	29- 33
	C	384m²	34 -41
	D	482m²	42 -51
	E	207m²	52 - 55
	F	98m²	56 - 58
	G	35m²	59 -60
2010	A	1791m²	61 - 67
	B	1508m²	68 - 84
2011	A	296m²	85 - 90
	B	1159m²	91 - 100
	D	1172m²	101 - 117
	E	1293m²	118 - 128
	F	29m²	129 - 134

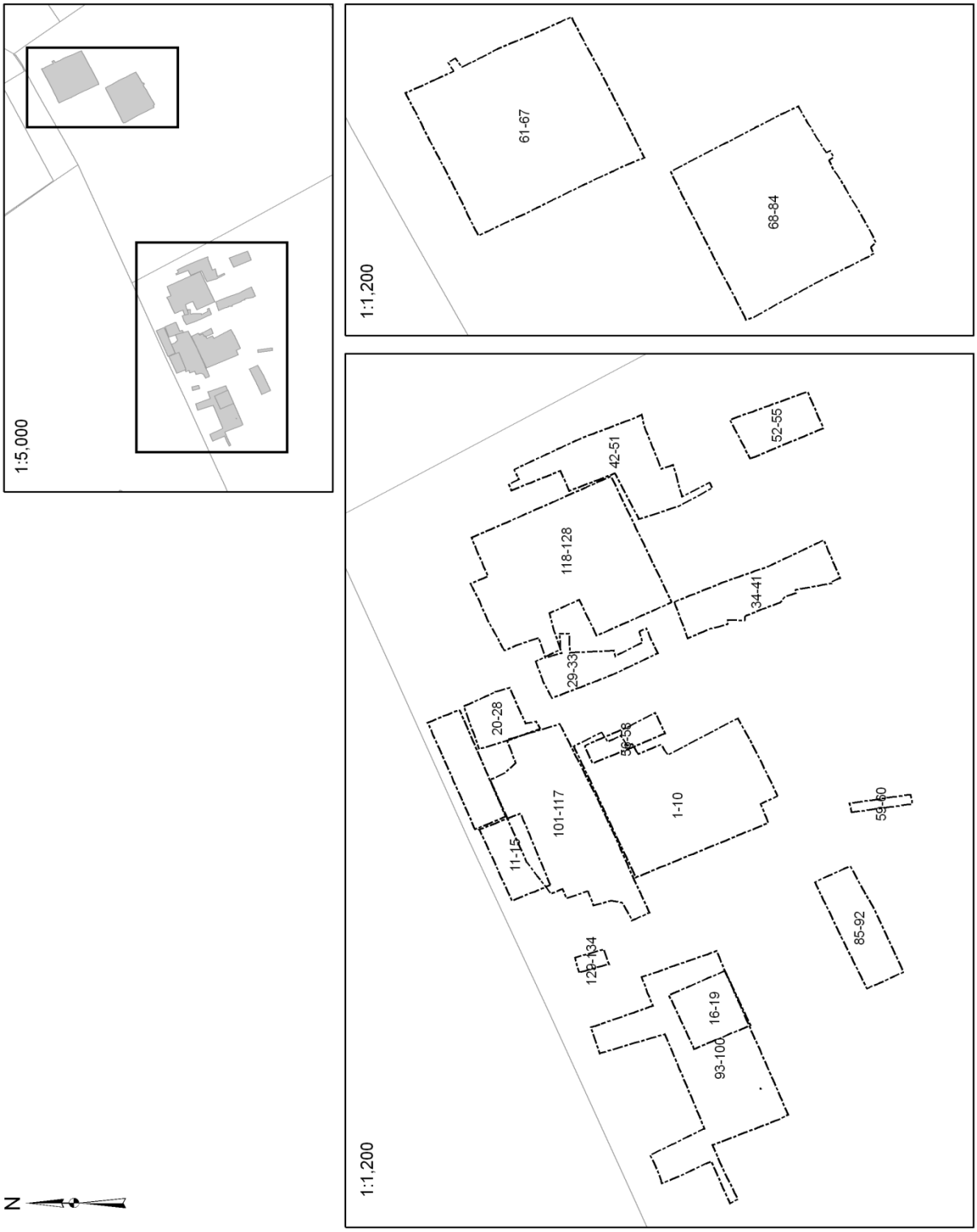

Fig. 2 Department of Archaeology excavation areas by group number

V. Site development (See Appendix 1) (Figure 3)

Summary of Prehistoric Activity in Field 8

Indications of prehistoric activity in this area are widely dispersed and fragmentary, taking place, as far as is known, in an unclosed landscape setting and probably at somewhat different periods of time. In the southeast of the area a curvilinear feature was evident, cutting into natural deposits (*Group 34*). Running roughly east-west, it comprised a ditch up to 1.4m across and 0.38m deep continuing for 5m across the whole width of the trench. Unlike the majority of other features in the vicinity, it contained no Roman material but did yield a worked flint. This lack of later finds, together with its distinctive fill, alignment and early position in the sequence, serve to mark the ditch out from other nearby features. Thus it is best interpreted as the southern part of a circular feature of prehistoric date, the majority of which lay beyond the excavation area to the south.

To the northwest, at the opposite end of the excavation area, three further features also intruded into natural deposits on the higher hillside slope (*Group 98*). Two contiguous features (Figure 4) comprised first an irregular, roughly circular cut 0.36m in diameter containing an early Bronze Age collared urn. That part of the vessel which survived later disturbance was 0.26m deep and 0.18m in diameter, and had 10mm thick walls. Subsequent analysis confirmed that it held cremated human remains (Appendix 12).

Approximately 0.2m north of the above burial lay a further sub-circular cut with a diameter of 0.56m. This was filled with charcoal-flecked silty sand, also including lumps/concretions of burnt bone particularly concentrated on the south-western edge of the intrusion. This fill was shown to contain fragmented human remains and thus must constitute a second Bronze Age burial. Although the two could not be related stratigraphically, their proximity suggests that one was inserted when the position of the other was still known. Investigation of the vicinity failed to locate any contemporary ditches within a 10m radius, suggesting that they were not buried under any form of barrow or in an enclosed zone whose limits were defined by digging into the ground surface. Radiocarbon dating of both cremations places them at the end of the Early Bronze Age period, circa 1500BC.

Some 35m to the north-east of these cremations, a sub-circular feature 0.7m across and 0.47m deep cutting natural hillside layers was filled with two deposits, the second of which yielded, well below the top of the intrusion, half of a broken Bronze Age polished battle axe with grooved shaft. The feature was otherwise devoid of artefactual evidence and, although it was unlikely to have been dug specifically for disposal of the weapon, must be broadly contemporary with the cremations to its west.

Summary of Early Roman Development in Field 8

The activity described below as belonging to the Early Roman period, conventionally defined as the first and second centuries AD, was concentrated in the south of the excavated area, and especially in the south east. That chronological division should be regarded with caution, however, in that further work may show that some of these activities continued into the next century. It is, nonetheless, employed as a convenient category because, as

argued in detail below, the ways in which the landscape in this area was organised initially in the Roman period was qualitatively different from what happened afterwards. It is important to allow this sea-change to structure this discussion, whatever the exact cut off point in terms of absolute dates.

The earliest activity evident in the southeast area was recorded near the eastern limit of excavation and comprised localised modification/differential truncation of the underlying glacial till, here comprising natural deposits pebbly clays, to create two undulating areas (*Group 42*). The wider implications of this activity remain unclear.

In an adjacent area, the earliest distinct feature comprised an irregular, 6m long feature running north-south. Apparently narrow, perhaps only 0.70m wide, it turned east at its northern end to continue as a 0.40m wide slot beyond the limit of excavation, and perhaps did similarly at its southern end (*Group 43*). The relationship between this feature and the disturbed natural clays to its south, noted above, could not be defined but the ditch seems to be the western side of a small (6m wide) enclosure most of which fell beyond the excavation area.

Finally, to the west, were further signs of early, fragmentary activity in the form of three pits and two insubstantial east-west ditches, all cutting natural deposits of the area (*Group 35* – some of these features are better stratified than others, so later analysis may show that not all belong to this early period). The pits comprised very shallow, generally irregular features up to 1.5m across, all of which were truncated by later features and none of which could be allocated a function on the basis of their morphology or position, or from the character of their fills and their contents. The two gullies, one of which bounded the pits in the south and the other dug just south of the northernmost pit, comprised respectively: a 4m long intrusion up to 1.6m wide, becoming shallower as it approached its eastern terminal; and a 1.2m wide feature running the full, 9.5m width of the trench here. It is not clear whether the ditches represent boundary markers or some other activity in the vicinity, nor did they have any relationship with the pits.

A series of loose, sandy spreads (*Group 44*) sealed both of the disturbed natural clay and proposed enclosure to the east (some of the dating within Group 44 deposits is rather later than expected with these stratigraphic relationships, but the character of this horizon makes a certain amount of intrusion a distinct possibility). These spreads were themselves cut in turn for the insertion of east-west cobbled surfacing, at least 1.3m across (subject to later truncation and probably rather wider originally), banked up towards its centre (*Group 45*). This new surface corresponds to an even more disturbed area of pebble surfacing to the west, with an incomplete linear feature at its centre (*Group 37* – the latter element, as an intrusive feature, could be much later than the underlying cobbles themselves). Together they form an early track way running along the hillside for at least 37m, the first attempt at landscape organisation here on any scale.

Three major ditches appear to have been laid out at about the same time as track, one to its south and two to its north. The first, 26m to its south, comprised a parallel, east-west ditch up to a 2m wide and subject to considerable truncation, being this far south (*Group 52,* part of *Group 39)*, forming a landscape division at least 48m long. Similarly, c.10m north of the

track, an east-west ditch up to 2.4m wide (*Group 36* and *Group 46*) ran for at least 58m and was re-cut on at least one occasion towards its eastern end. A subsidiary linear feature which lay between this ditch and the track way, inserted after the latter, represented a further, more local division of the area (also *Group 46*).

Interestingly, the main boundary ran just north of the line of the early enclosure at the eastern limit of the site, even though the latter had apparently been sealed by sand accumulations which the new ditch cut. Either this was a coincidence, or the initial enclosure continued to influence subsequent development of the area, even after its associated ditches had filled up. Material from both Group 36 and Group 46 deposits had a very long date range, perhaps suggesting that this boundary was retained for an extended period of time. However, it seems unlikely that it kept a role in the organisation of the area when cut away by a major north-south boundary ditch (Group 38, below). This apparently late date thus remains a problem.

Thirdly, c.32m north of the track way, an east west ditch up to 3.5m in width, though more usually 2m (*Group 29* and *part of Group 123*) defined a landscape division at least 48m long, with two subsidiary, less substantial divisions to its south (also part of *Group 123*). The former, large ditch also yielded some very late material from its uppermost fills, but this is likely to be a product of later activity in the area disturbing the top of the feature or drifting into it as lower fills consolidated. Certainly, as with the parallel boundary to its south, it is difficult to imagine that this ditch was important in the spatial organisation of the area once a major, north-south boundary had been cut through it (see Group 38).

Finally, in the southwest corner of the area investigated in this field, two early features intruding into natural deposits, one a possible quarry, the other of unknown function (*Group 85*) were themselves cut by an east-west, 1m wide ditch (*Group 86*). This ran along the northern limit of excavation before turning north at its eastern end to suggest the position of an enclosure at least 12m wide, most of which lay beyond the excavated area. Given the character of this feature, its position towards the south of Field 8 and the fact that it was completely ignored by ditches linked to the late Roman development of the area, it is tempting to see this as another example of an early Roman enclosure.

The only possible activity in the north of the area at this point comprised a shallow north-south ditch, dug into the higher ground and running south from its rounded northern terminal for at least 21m (*Group 101*). This followed the natural slope of the hillside and may be contemporary with an east-west ditch which just survived later truncation to its east, presumably once forming a division along the hillside. To the west of this new north-south ditch, a series of scooped intrusions seem likely to be evidence of more ephemeral divisions of the area, for example fence lines running up to it. All were subsequently sealed by a horizon of deposits accumulating with the slope of the hillside here (*Group 102*). Their general character and limited artefactual content suggest that they were mainly a product of natural formation processes, and thus perhaps represent a gap in the occupation sequence here.

At some point, two infants were buried on the hillside to the north of these activities (*Group 104*), one carefully laid out, the other either less so or subsequently disturbed. Such

apparently conscientious behaviour, plus their number, might suggest something more than opportunism, although they do not seem part of a formal burial ground either. As they were inserted just north of the terminal of the initial ditch in the area, it may be that the latter defined a limit to occupation in the first instance, and that the more marginal land to its north was then used to dispose of these young children. However, they could have also been inserted at a rather later date, when more intensive occupation was taking place to their south.

Looked at in the round, therefore, Roman activity across this area is clearly concentrated in the south, and especially in the east, where an initial series of ephemeral and seemingly haphazard activities, including pits, gullies and re-deposition of natural clays and gravels, gave way to the laying out of three major east-west ditches, together with a parallel cobbled track way. Smaller ditches laid out within these boundaries, most also aligned east-west, suggest subdivisions within the overall scheme, whilst an early enclosure was evident towards the east, mostly lying outside the excavated area, which also articulated with the main boundaries. A second possible enclosure far to the west could be a counterpart of the latter, although its relationship, if any, with the aforementioned east-west boundaries could not be defined. Ceramic dating evidence for the groups in this phase is predominantly second and third century, whist they also include a single third century coin.

At the northern limit of the site, in its centre, ditches were also inserted on the hillside, perhaps defining a controlled area to the south, with infants then buried in the accompanying, more marginal zone beyond this to the north. The radiocarbon dating of two perinatal burials suggests that they are broadly contemporary and places them in the early third century (220±25/ 214±25).

Summary of Late Roman Development in Field 8

In the course of the third and early fourth centuries, the whole of the excavation area underwent substantial and sustained reorganisation, with activities now particularly concentrated in the north. Although some of these differences could be due to differential truncation removing later evidence more thoroughly in the south, it still seems to represent a real change of focus in activities on the site

The first sign of these changes took the form of inserting a major new north-south boundary in the eastern third of the area, comprised of a ditch up to 4m wide and at least 1.55m deep, running for a distance of at least 70m down the hillside (*Group 30* and *Group 38*). It completely overrode the east-west divisions dated to the early Roman period and clearly marks a new form of landscape organisation here. As befits such a major feature, it has a long history of development, including indications of the weathering of its sides, interspersed with general silting and less diagnostic accumulations at other stages, plus burnt deposits dumped into it at the end of its life.

To the south, a second, smaller ditch inserted 6m east of the main ditch, only 0.75 wide, implies that subsidiary divisions were set up beside it at this time, as do a number of other north-south ditches to the south and east (*Group 53*), which were cut into, and ignored, the east-west divisions laid out here in the early Roman period (Group 52, above) To the north of this new main ditch, the first

sign of activity comprised a series of linear features (*Group 20*). Most were subject to subsequent truncation, so defining true alignments was problematic, still less actual functions: these meandering, shallow features seem more likely to be naturally-cut water channels than true boundary markers. Nearby spreads (*Group 21*) also seem to have occurred early in the development of the area (a coin of AD348 found in one deposit here is assumed to be intrusive, given that the area was extensively cut by much later features). 2.5m north of the northern terminal of the Group 38 ditch, both of these last two groups were cut by a second major north-south feature (*Group 22* and the remaining part of *Group 30*). Up to 4.2m wide in places, though often only half that, and up to 0.86m deep, this new ditch continued the alignment of the major southern ditch northwards for at least 25m, to beyond the limit of excavation. The fills of this feature also presented a complex history of backfilling, including a possible hearth inserted at its very surface, perhaps located there after the demise of the boundary in a convenient hollow, and a re-cutting of the original ditch line at some point. Various subsidiary divisions were also set up c.15m west of this northern extension (also *Group 22* – see Group 103 below for how the latter ditches relate to the process of site development still further west).

In the 2.5m gap between the termini of the two new ditches, two large postholes (also *Group 30*) evidence the position of some sort of installation set up between them, which might suggest a gateway controlling movement between the zones to east and west: the considerable depth and width of the main north-south features would have presented a considerable barrier to traffic in this locality. Patches of cobbling just survived later disturbance here, implying that the resulting movement zone between the termini was metalled. In addition, just to the north, a large but shallower east west ditch, at least 2.2m wide, ran east from the line of the northern ditch, presumably inserted to define a northern boundary to east-west traffic.

Finally, immediately to the east, the cobbled track way survived much better. Initial activity in the latter area comprised the probable positions of two former trees and two oval features produced by other natural processes, all undated (*Group 118*), together with some early north-south features (*Group 119* and *Group 121*), some less carefully aligned counterparts (*Group 120*) and general accumulations (*Group 122*). However, all of this activity was then cut by a 3.75m wide feature which included in its make-up tile fragments alongside the majority cobbles, the former perhaps localised dumps beside the road rather than make-up proper (*Group 124*). The resulting surface, seen only in fragmented form to the west, here comprised a proper track way. Various sub-circular features were cut into this metalling, perhaps installations associated with it, whilst an east-west linear feature to the north (*Group 126*) may be part of this same development at a very late date.

The east-west ditch which flanked this track to its north also continued across this eastern area (*Group 123*), with various associated features running north from it, possibly indicating structural development beside the thoroughfare at this point. It is clear, therefore, that the metalling and northern ditch allowing access across the new boundary continued for at least 44m to the east, before going beyond the limit of excavation

Cobble spreads above the possible flanking structures (*Group 125*) did, however, eventually mark its demise, perhaps deposited at the time when other, midden-like material containing

bone, ceramics and CBM (*Group 31*) sealed the terminal of the southern ditch to the west. Similarly, to the south, a pit and sinuous, associated gullies (remainder of *Group 39*) imply ephemeral activities in the vicinity after the main ditch had been filled, but perhaps while it still continued to influence the use of the area as an institutionalised division.

Finally, further east of this major north-south ditch lay several broadly contemporary features. First were a group of anomalous millstone grit fragments, some set in a slight scoop, plus a concentration of brick and tile fragments (*Group 48*). They are difficult to interpret, not least because their configuration seems to preclude any structural function. Yet dating evidence suggests that they were inserted here once the main ditch had been put in place.

To their north, a series of small, irregular features (*Group 49*) cut into early sandy accumulations, were later replaced by a new enclosure measuring c.15m north-south and continuing east beyond the limits of excavation (*Group 50*). Although the latter had a common western limit with the enclosure to the south of Early Roman date, both this new feature and the elements which it cut yielded dating evidence showing that they were put in place when the major boundary ditch to their west was set out. Finally, at the eastern limit of excavation, a cobble foundation (*Group 47*) overlay the main early Roman ditch after it had become backfilled, being constructed at a diagonal angle and therefore seemingly part of an entirely new development.
At the opposite, western end of the excavated area in Field 8, a second major north-south ditch (*Group 94* and *Group 87*) was created at the same time as the 70m long feature described above (see Groups 30 and 38). Up to 3.8m wide and at least 0.86m deep, it ran for at least 75m before going beyond both limits of excavation to form a major, continuous boundary down the hillside, some 87m in distance from its eastern counterpart.

Subsidiary divisions were evident on both sides of this new boundary. In the south, these comprised a series of fragmentary, small-scale features to its east and, to the west, rough metallings (*Group 91*: none could be related to it stratigraphically but they are likely to be broadly contemporary with its use, given the datable material that they contained).

Further north, another feature lay 3m east of its line, with a second to its west being offset by some 9m: in short, this new, major boundary was reinforced by subsidiary elements to both sides from the start. Further west than this, however, it is noticeable that the area yielded evidence of only amorphous, sinuous intrusions (*Group 93*) largely devoid of any artefactual contents and some seemingly a product of natural agencies such as weathering, water erosion or tree growth. Thus the new boundary clearly had an impact on the character of subsequent occupation here for a considerable time, presumably throughout the remainder of the Roman period: the intensive activity seen to its east was not matched on the other side.

At a stage when the main, north-south ditch had been partially filled, two east-west ditches set 5m apart were inserted against its east side (*Group 96* and *Group 18* - although deposits in the latter group were not recognised as being fills of linear features when encountered initially). Their position, if projected eastwards perpendicular to the line of the two main ditches, corresponds with the proposed gateway at its eastern boundary. It seems likely,

therefore, that an access route continued along the whole of the hillside, ditches marking its two sides.

Just south of the point where the southernmost ditch met the boundary, a major cobble foundation was inserted (*Group 16*), forming a rectangular tower-like structure measuring 7m north-south by perhaps c.5m east-west (Figure 5a). Its thick walls suggest it was designed for a substantial superstructure**.** The monument was subsequently reconstructed (*Group 17*), involving a complete rebuilding of its western side, extending it by c.3m in that direction. The magnitude of these changes suggests that most of its superstructure must have been dismantled to allow for the remodelling.

Although the tower was set on top of the pre-existing ditches here, it is also clear that it was positioned with those boundaries still in mind. Indeed, the main ditch may have been dug out and consolidated to form the base for the foundation, whilst a smaller ditch running parallel with it to the east seems to have been re-dug at this point to allow it to continue in use to the south. Thus the creation of the tower served to reinforce the boundary here, not to ignore or transcend, it. It cannot be a coincidence that the monument itself is positioned at the southern edge of what can be interpreted, on independent grounds, to be the main access into the enclosed area to the east. It is not clear whether such an access was in existence before that point: the ditch itself was originally continuous across the line of east-west access, but this could have been dug as an uninterrupted intrusion initially, then backfilled at this point immediately afterwards. Alternatively, the crossing point may have been instituted only at a later stage. Either way, the tower itself is obviously acting as a boundary marker.

Just to the east of the tower, but not related to it stratigraphically, were two east-west burials (*Group 95*). Each contained a badly preserved, east-west adult skeleton, head to west, each with a collection of iron nails clustered around its skull (Figure 5b). Which was buried first is unclear but, after both had been backfilled, a slot was inserted along the eastern edge of the graves, perhaps some sort of surface-level marker.

A critical issue concerns the relationship between these inhumations and the monument immediately to their west. Unfortunately, it cannot be decided whether they were set up against that tower, as an appropriate place to be buried, or preceded it as an earlier commemoration of the access point. The fact that there were burials in its vicinity, however, raises the distinct possibility that the tower itself was also a mausoleum structure. AMS dating of both burials was unsuccessful due to the poor preservation of the bone structure/collagen.

Well to the south of the tower, an east-west ditch with western terminal just west of the main north-south boundary (*Group 88*) continued for at least 22m to the east. Although only 0.65m wide and 0.45m deep, and so less substantial than its forerunners, it implies a new boundary here, even if this would not have been a real barrier to movement. The fact that it cut the latest fills of the main ditch, yet continued only for a short distance beyond its line, might imply that the latter was still in use at this point, at least as an institutionalised boundary if not a physical barrier.

An early feature still further to the south, only investigated in cursory fashion, comprised the edge of an east-west, organic-filled depression (*Group 59*). Material in its upper fills suggests that it was falling out of use at the same time as the later Roman activities to its north were occurring, although the use of such a wet area could have taken place over an extended period of time and started much earlier (see discussion of Groups 6, 7 and 8 below for a possible corresponding situation).

About 20m to the north of the tower, another east-west ditch was dug up to the main western boundary (*Group 96*), picked up again c.14m to the east (*Group 130*) in an area with a little evidence of undated, pre-existing activity in the form of small, ephemeral pits of unknown function (*Group 129*). The main ditch in the latter zone, although only 0.45m deep, was 1.9m wide (and may anyway have been subject to later truncation), so would have created a substantial boundary. Subsequent development in its vicinity here included the possible creation of an 'L-shaped' enclosure to its north (*Group 131*), subsequently modified (*Group 132*).

The same east-west alignment was also evident in an area of complex development some 25m to the east of the above trench. Here, early accumulations were cut for the insertion of a set of boundaries to the north and west, perhaps open in the other two directions (*Group 103*), with further north-south divisions within the area thus defined to the east (these are the equivalent of the features noted above under Group 22). A series of cobbled zones were then laid around the northwest corner of the area thus delineated, either the base for a foundation or a cobbled working area. There is some evidence of *in situ* burning associated with this cobbling. At its northern limit, another east-west boundary seems to have come into existence after the use of an early pit in the vicinity (*Group 12*)

To the east of the new ditch were further pits, most hardly surviving later truncation, eventually cut by a major north-south ditch up to 2.6m wide and c.1.15m deep (*Group 103*). It is clear that this ditch was inserted at the same time as the main eastern boundary described at the start of this discussion. Thus, after a short initial period here when more fragmentary activity took place, the same scheme of landscape organisation was influencing activities across the whole of the northern zone by this time.

At about the same point a building was set out to the south (*Group 106*). This had masonry foundation as its northern wall line, perhaps the base for timber framing, with a substantial post base along its eastern limit. Within that structure in the east was a hearth and associated gully and, in the west, a complex arrangement of hearth(s) and channels, suggesting concerted processing of some sort, perhaps in successive phases. This may have taken place in a covered or an external area. The zone to the south east of the building was certainly external, with good quality metallings (*Group 2*) being laid here.

The latter surfaces seem to have been cut by terracing for the construction of another structure to the south (*Group 1*). Creating this terrace involved a considerable truncation of the hillside, the material removed being used to establish a level area further south. A high quality building was then set-up here, comprising masonry foundations for a timber superstructure in the north surrounding an *opus signinum* flooring (Figure 6), then post pad foundations to the south, suggesting open-sided development. At some point, whether

initially or later, a hypocaust system was set up in the northern room. An anomalous human burial (*Group 4*) was placed in a shallow scoop immediately to the west of this structure, comprising a male skeleton in a flexed positioned, laid on the right side of the body with the right arm extended above the rest of the skeleton. Presumably this was inserted when the building was in use or soon after its demise.

A well-defined east-west ditch, up to 1m wide and 0.50m deep (*Group 3*), was laid out to the north of this hypocausted building. Its fills contained material which seems to be derived from the demise of that structure, but it could have been inserted when the latter was originally constructed. To the west, this ditch co-aligns with the southern ditch running up to the monumental tower, implying that the main access route along the hillside was retained in use when the new hypocaust building was created to its south. Indeed, it is possible that both it and the tower and were built in a single process of development on the south flank of that thoroughfare (see previous discussion of whether the tower was built immediately after the boundary ditch there was laid out, or in a second phase of activity).

To the south of this building, patches of stones, disturbed dumps and truncated cobbled surfaces (*Group 7*) in the west include some elements interpreted as post pads on a north-south alignment, possibly a boundary, with stone blocks to the west hinting at structural activity here. They were not coherent enough, however, to imply that this sector was roofed. At the centre of this zone, a series of sandy accumulations formed in channels in the natural clays and gravels (*Group 8*), indicating the existence of a spring line just to the north. Finally, to the east of this proposed spring, co-aligned slots and postholes (*Group 6*) formed the western and northern limits of an enclosed area, whether roofed or not, with indications of a hearth set up within it. Presumably this whole sector was occupied when the good-quality structure with hypocaust was created near the road to its north. The nature of activities near the contact spring suggest, however, that this zone could have been used for an extended period of time.

The majority of the groups in this phase belong to the third through to late fourth century. The late fourth century ceramic forms are primarily distinguished from earlier types by the recovery of Huntcliffe jar fragments but also from other diagnostic indicators including flanged dishes and wall-sided mortaria. Most of the coins from this phase date to the fourth century, the latest being post-AD 364

Summary of Very Late- or Sub-Roman Development in Field 8

The central zone in the very north of the excavation area underwent some substantial changes in the second half of the 4th century or later. They are described here in a separate section although, as is argued below, other parts of the landscape may have continued as before. Thus it cannot be assumed that this constituted the only very late Roman activity, only that this was the one zone which saw substantial, qualitative change in the organisation of the landscape at this late stage.

The changes here started with the creation of a new north-south boundary running directly down the hillside, together with subsidiary east-west ditches to its west and east (*Groups*

105, 11 and 3) which imply the formation of three terrace levels. A second set of ditches seems to form an eastern limit to this terracing (*Group 24*), two inhumation burials (radiocarbon dated to the mid-third century AD) being inserted along the line of one of them to reinforce the claims on the landscape that these new boundaries represented (Figure 7). To the south of this, an oblique cut seen only in a limited area and minimally investigated (*Groups 56* and *57*) may constitute evidence for where this new alignment met the earlier east-west track, as it contained a very late coin of AD 364. The terraces and ditches described above ran at an oblique angle to their late-Roman forerunners, and suggest an entirely new organisation of space here.

A substantial kiln (Figure 8) was set up in the northwest of this newly defined area, with good quality masonry superstructure, a stoke hole to its east and, presumably, domed roof to the west (*Group 107*). It was clearly in use for an extended period of time, with modification of its stoke hole on at least one, and possibly successive, occasions. To its east, on the opposite side of the new north-south division, several pits and other installations were evident (*Group 108*), the former perhaps dug for the extract of natural sands and gravels, the latter perhaps comprising further, more ephemeral hearths and associated working areas. Finally, a series of spreads (*Group 109*) then accumulated above both these features and the now-disused kiln to their west, continuing to the south to seal the structure beside the roadway (Group 106). It is not clear whether the newly-inserted ditch system and associated terraces went out of use at this time, but the latter boundaries were certainly now filled.

Clay and cobble foundations set out above the latest accumulations (*Group 112*) formed the basis for a rectangular, framed building, probably roofed to the west (ridge could be either north-south or east-west) but perhaps open-sided to the east for the final two-thirds of its length. This represents the final structural development of the area, and is associated, at its northeast corner, with the insertion of a substantial, masonry-lined well (*Group 111*) dug down to a depth of over 4.5m on the hillside to allow access to the water table (Figure 9a). Such a large investment implies that considerable quantities of water were required in the immediate vicinity, as more accessible contact springs would have been available further down the hillside.

The construction of this well employed, in the main, newly quarried stone but also involved the reuse of masonry derived either from the superstructure of the monumental tower to the west or from an earlier stone roofed building. Either way, substantial structures must have been dismantled to allow for such recycling (e.g. a finial incorporated into its wall: Figure 9b). The fills within the well suggest that it was used for an extended period of time, perhaps kept clean initially, followed by periods of dumping and collapse, the later parts of which would definitely have rendered the feature unusable. This process included the deposition of complete pots and a profusion of tiles, then later a concentration of animal skulls, all perhaps suggestive of structured deposition, interleaved with times when stagnant water seems to have been in evidence. Its final collapse (*Group 26*) was followed by deposits which were not so much dumped in the feature proper as accumulated in the hollow where it had once been, and thus may date to well after its initial use. As noted previously, it is not clear whether site boundaries existed when building and well were in use.

To the north, cobbled features (*Group 110*) suggest the position of working areas and hearths, some of which seem to obey the lines of earlier ditches, albeit backfilled, others not. A final set of accumulations (*Group 113*) formed a horizon covering the site of the well and the associated post pad building and nearly all areas beyond. It represents a combination of occupation debris from those features and overlying dumping, though was cut by a final hearth and probable stokehole (*Group 114 and Group 23*) to the east. A nearby area of cobbles plus associated occupation deposits (*Group 25*) could relate to this final feature, although the latter also incorporated accumulations which, given their depth, might have included an element of later colluvium derived from the adjacent hillside.

Lastly, spreads of material plus a possible cess pit (*Group 13*) formed the latest activity to the north of these arrangements, the latter cut feature clearly marking the final demise of the latest boundary ditch and its associated terracing. The groups in this phase are almost exclusively dated to the late fourth century based on diagnostic ceramic assemblages, the coins ranging from the third to fourth centuries. One of the groups, however, appears to be medieval in date and another probably Anglian.

Summary of Post-Roman Development in Field 8

Following the above changes, medieval furrows were evident in most parts of the excavated area (*Groups 5, 14, 54, 89, 97, 115 and 127*). In addition, broadly contemporary colluvium (*Group 133*) was seen near the northern margins of one area. Subsequently, a number of modern features (*Groups 9, 27, 32, 40, 90, 99 and 116*) were inserted into earlier strata, either YAT evaluation trenches or machine-dug geotechnical pits aiming to find clay deposits for exploitation in the forthcoming development. Topsoil (*Groups 10, 15, 19, 28, 33, 41, 51, 55, 58, 60, 92, 100, 117, 128 and 134*) covered all of the above features.

Fig. 3 Schematic of chronological activity in Field 8

Fig. 4 Bronze Age cremations

Figure 5 Tower Foundation (a) and Skull with nails (b)

Fig.6 Hypocaust building

Fig. 7 Burial 726

Fig. 8 Kiln

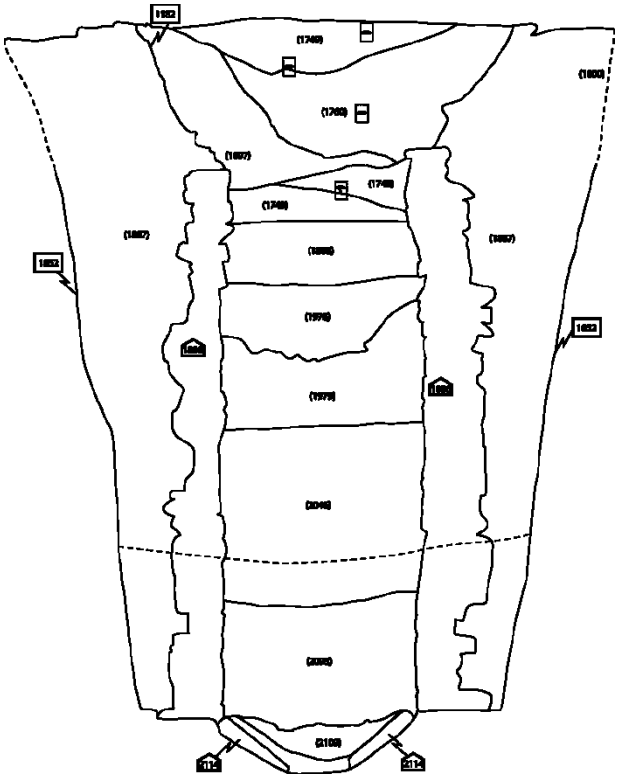

Fig. 9 a) Well under excavation, section and base detail b) Finial incorporated into its construction

Summary of Late Prehistoric/Early Roman Development in Field 9 (Figure 10)

The excavations in the northeast corner of Field 9 revealed an occupation sequence very different in character, and rather different in chronological emphasis, from that investigated in Field 8. It is divided here into two broad chronological bands: an early process of development, perhaps starting in late prehistory but clearly running through into the Roman period (immediately below) and a later, more limited period of activity belonging to the last two centuries of the Roman period (following section).

The earliest sign of activity within this area appears to be represented by the insertion of a roundhouse (*Group 68*), of which only the northeast element survived extensive later truncation. This was then replaced by a much better preserved structure (*Group 69*) comprising a 10m-circumference gully, with a 1m wide entrance on its west side and hints at hearth activity in the immediate vicinity of this access point. A number of discreet episodes are evident within the internal area of each roundhouse (*Group 70*), including a pit with associated cobble surface and some postholes concentrated towards the entrance of the later roundhouse, perhaps situated to maximise access to daylight, and pits, post pad and probable hearth deeper within the structure. Stratigraphically, all of these elements must belong to one or the other roundhouse, although it is difficult to decide which.

Outside the later structure, a curvilinear feature running away from its entrance (*Group 71*) seems to be inserted to control movement into that area. A set of features further to the southwest (*Group 72*), although much disturbed by later activity, suggests the position of a third roundhouse with an internal hearth, abutting that of the second structure. One must have been inserted when the other was in place, although which came first could not be determined. Finally, in the area between the second and third structures and outside the second roundhouse to the west, were various installations, including a pit and associated surface and a hearth (*Groups 73 and 74*).

These features clearly have a resonance with Iron Age housing, yet provably Roman material culture was found in association with them. Either these finds date the demise of some features originally occupied in the late Iron Age or, more likely, this housing form continued to be used in the area into the opening centuries of the Roman period. An extensive accumulation which sealed these structures (*Group 75*) contained a profusion of early Roman material, but some belonging to later centuries. It is not clear whether this shows that the circular structures continued to be occupied until well into the formal Roman period, or that material of a later date was dumped above their former site at a much later stage, becoming mixed with underlying, earlier occupation debris.

To the west of these roundhouses, a sub-rectangular intrusion comprising a regular element in the north, perhaps lined or even roofed, and a subsidiary channel along its southern edge (*Group 76*) suggests the position of either a small, sunken-floored building or a covered working area, seemingly of early Roman date and thus quite possibly in use with the nearby roundhouses.

To the northeast of the excavation area described above, early activity comprised a number of naturally formed features, an early ditch and posthole plus an isolated hearth, all spread

across the area (*Group 61*). None is properly dated. Elsewhere, however, a number of mainly shallow ditches were evident running both north-south and east west (*Group 62*), some of which run perpendicular to each other and clearly represent a more organised approach to site development. It was not clear whether their common line was due to coherent planning, or simply because the slope of the hillside led to the adoption of similar alignments at different times.

Finally, in the extreme northeast of the area, a series of less substantial, more sinuous features, also including pits or large postholes (*Group 63*) cut across the line of the earliest linear ditches. These new features were associated with signs of burning and related activity and may represent some sort of artisanal production here, dated to the second century AD.

This phase contains groups dated from the first through to early-fourth century but, as intimated above, it is possible that later material was mixed with earlier features or that use was long-lived. Group 62 contained fragments of possible early amphorae and several of the groups contained small quantities of South Gaulish Samian ware, indicating a possible starting date in the Flavian period.

Summary of Late Roman Development in Field 9 (Figure 10)

In the southeast corner of the northern excavation area lay an area of disturbance containing two large millstone grit blocks, one of which showed evidence for a socket for a vertical member (*Group 64*). The sheer size of the boulders here, one being well over 2m across, suggest substantial structural activity in the vicinity, though what the latter comprised and where it took place was not clear. To the northwest of these discarded stones, lay an amorphous, stony spread (also *Group 64*). Artefactual evidence from both dates their deposition to the later Roman period.

At some point, the area to the southwest surrounding the roundhouses was enclosed by the insertion of a major ditch system to their south and west (*Group 77*). This comprised a fairly shallow, north-south element in the west up to c.1.6m across, running for a length of c.30m before its turned east. Two substantial postholes were evident on this bend, perhaps to strengthen that corner. From here it continued eastwards, at a width of c.1.9m, for a total of at least 30m. The sides and base of the ditch here were reinforced with structural timbers, the whole feature terminated, or perhaps extended, by further structural elements (*Group 78*) towards the southeast corner of the excavation, before a series of accumulations (*Group 79*) covered it

This enclosing ditch, possibly related to a water source at its eastern end, contained material of early- and late-Roman date, implying that it was in use for an extended period of time. It may therefore have been created when the roundhouses were in use, but seems to have outlived them. Overall, this phase is dated to the third through to late fourth century by diagnostic ceramic elements.

Summary of Post-Roman Development in Field 9

Following the above changes, a medieval drain (*Group 80*) and furrows (*Group 81*) were evident in one excavated area. Subsequently, a number of modern features (*Groups 65, 66, 82 and 83*) were inserted into earlier strata, either YAT evaluation trenches or machine-dug geotechnical pits. Topsoil (*Groups 67 and 84*) covered all of the above features.

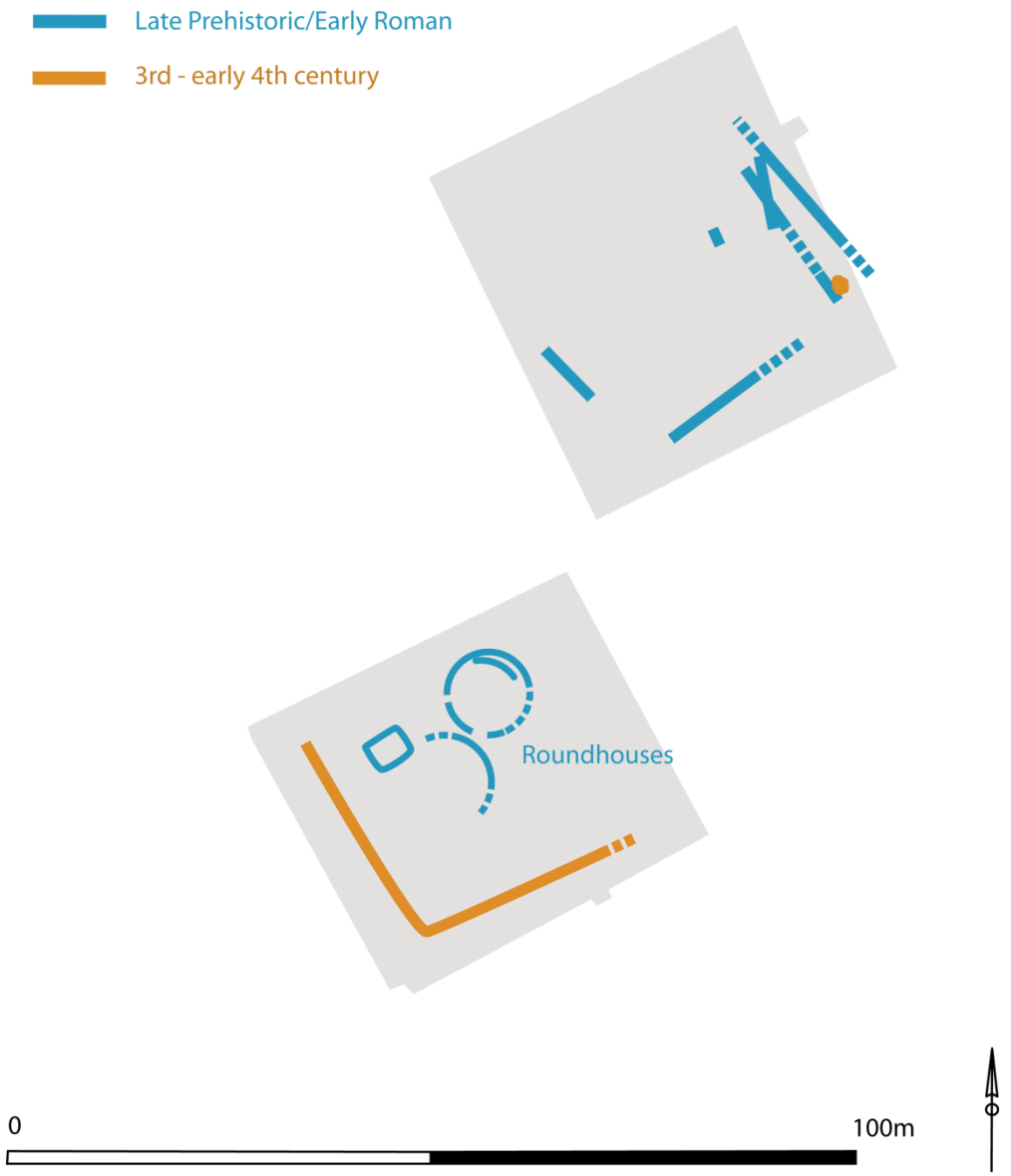

Fig. 10 Scheme of chronological activity in Field 9

VI. Summary of specialist reports

All specialist reports are included in Appendices 2-13. The mortaria and a single oil lamp fragment were seen as part of an overall ceramic assessment (Ruth Leary) but await more detailed analysis. The following summaries were abstracted selectively from the specialist reports. Some of the reports, e.g. querns and handmade pottery, discuss a collection which comprises both the University of York assemblages and those from OSA.

Ceramic building material

The examination of 583.654kg of ceramic building material (henceforth CBM) was undertaken by **Jane McComish** (see Appendix 2). The overwhelming bulk of the collection was of Roman date, although a small quantity of medieval, post-medieval and modern forms was also present. The collection is of exceptional interest as it includes a number of complete or largely complete tiles, an unusual occurrence within York itself or its environs, largely because the bulk of the CBM has been recovered from deeply stratified urban excavations and takes the form of highly fragmented, frequently residual, sherds. In addition, the site has yielded a number of structural features of interest from a CBM point of view, including the remains of an *in situ* hypocaust, which is a rare find in the York area, together with the remains of a collapsed Roman roof made of stone and ceramic roofing tiles, plus an unusual collection of flue tiles associated with a kiln structure.

The 228 tegulae seen at Heslington East seem to be at the smaller end of the size spectrum for the York area, and there seems to be some variation in thickness dependent upon fabric type. The 402 imbrices from the site are clearly significantly smaller than any other imbrices observed in York to date, which may suggest a different source of supply or specially commissioned tiles.

The collection is of interest not only for what was found, but also for what is absent. Despite the presence of a hypocaust, indicative of a high status building, there are no CBM tesserae for a mosaic floor, nor is there any evidence of *opus spicatum* flooring. The nature of the flooring above the hypocaust is therefore uncertain, although the *opus signinum* bedding beneath it might suggest that there was a similar floor above the hypocaust originally. The small number of bricks, which seem to have been used in flooring, and of stone floor tiles would suggest that neither brick nor stone flooring was extensively used at the site, raising the question of how the various buildings on site were floored.

Quern stones

The assemblage was assessed by **John Cruse** and **David Heslop** (with lithological advice on some from **Geoff Gaunt**) and has three certain millstones, two probable millstones/large

hand querns, ten disc querns of which seven are represented by lava fragments, one beehive quern and two saddle querns (see Appendix 3). They represent an important group which has the potential to provide information on the date and character of the excavated settlement. Of particular importance is the evidence for mechanical mills.

There are five Roman millstones from the site, three of which are well worn, indicating a significant use of cereal processing equipment on the site. With no obvious stream of water in the vicinity, they were presumably powered by either animals or slaves. If driven solely by such means, these millstones would presumably only rotate at relatively low speeds. However, if a system of wooden gears was in use, their output would be improved. The subsequent inspection of the millstone 1125 by Graham Taylor (Potted History Ltd.) led him to suggest that the perforations and wear pattern on the quern were possibly caused by its reuse as a kick wheel for potting (a recent example for this type of reuse is from the Roman pottery kiln site at Stibbington: Upex 2008).

Although millstones are fairly common finds on late Roman sites on the Permian Limestone, some 20-30 km west of York, no comparable concentrations of Roman cereal processing equipment have been reported from York or its extramural area. The material justifies publication in full, in the form of a tabulated summary with illustrations of the significant examples, a brief catalogue and a discussion of the significance of the assemblage.

Architectural building stone

Building stone reused to consolidate the tops of wells (excavated by OnSite Archaeology) and lying in subsoil were assessed by **Nick Hodgson** (see Appendix 4). Amongst the stones there are clearly two groups that derive from earlier structures demolished to allow their recycling in the structure of the well. One is the group of three gritstone voussoirs, all of crude workmanship and from the same geological source but not all of identical size. The constant thickness of 0.40m suggests that they could all have come from one arch, the voussoirs making a span of about 1.75m. This need not have been part of particularly elaborate or exceptionally large structure: a round-headed doorway with double leaves in an aisled structure barn or other agricultural building might make use of an arch of this order. Conceivably the voussoirs could have been used in a series of ribs or arches making up a vault.

The second group suggests a more elaborate and unusual structure. The dressed blocks probably belong to an ancient construction technique, sometimes known as *opus quadratum*, where rectangular blocks are laid in horizontal courses without the use of mortar, being bound together with iron clamps set in lead or by other means. They demonstrate the use of clamps and exhibit slots for the crowbars commonly used to achieve a tight connection between the stones. Recurrent dimensions show that these three stones

are likely to be related and from the same structure. The technique is rare in Britain, usually being found only in bridges (and then only in the military zone) or in certain unusual kinds of classical temple and mausoleum construction such as the temple of Sulis Minerva at Bath and the mausoleum at Shorden Brae at Corbridge. It also occurs in public monuments in Roman London. There seems no particular reason why the fragments at Heslington must have been brought from the fortress or *colonia*, although their proximity may in some way explain the use of this technique in such an unusual, rural context.

Both the gritstone voussoirs and the blocks were presumably taken from nearby structures that had ceased to be maintained by the time the well was built or repaired. It is a remarkable coincidence that close to the findspot of the blocks there was a deeply-layered, cobble foundation some 5m square, with sides some 1.5m wide containing an interior space some 2m square. This resembles (at smaller scale) the foundation of the tower-tomb mausoleum at Shorden Brae, and it is worth considering whether the blocks at Heslington might have come from a small tower tomb or other monument set upon the foundation and dismantled in the later-Roman period.

In 2011 additional architectural fragments were recovered. Very little can be said about these three stone blocks except that they do not match either of the main categories of architectural stonework already identified on the site (voussoirs and sandstone architectural blocks), indicating that there may have been a wide range of applications of high status stonework at the Heslington site. The finial is very probably associated with the large quantities of lozenge-shaped stone roof slates found in the same excavations at Heslington and suggests a combination of stone finials and roof slates that is most commonly attested in south-west Britain. At first sight this finial does not fit any of the known categories and no close parallel has been found. However, whilst it lacks the classic four-way arch openings, it shares features with the south-western examples, for example in its style of seating and the clear similarity between its pyramidal upper part and the pitched upper part of the tower type. The Llantwit Major example is again very close, finishing with an uppermost knobbed projection which could well indicate what has broken away from the Heslington stone.

Thus, although it is of simple and rather crudely executed design, the Heslington stone seems to be in the general tradition of roof decoration of high-status buildings, most often villas or temples, more familiar from south-west Britain and, on present knowledge, alien to the military north. The lozenge shaped stone roofing slates at Heslington fit comfortably into the same tradition. The occurrence of the finial at its northern findspot is of interest, and the lack of local parallels striking. At present there seems to be no clear indication of which building the finial comes from. The association with a roof ridge makes it unlikely that the finial should be associated with whatever tower-like monument stood on the square foundation found in the vicinity. A high-status building is indicated, and the findspot of the roofing slates may offer a clue.

Flint

The flint from site included 213 struck pieces which arose from stratified, unstratified and fieldwalking contexts. The entire assemblage was assessed by **Peter Makey** (see Appendix 5). Rather than the presence of particular material, the assemblage is notable for the absence of many typological forms and an unusually small proportion of cores from both excavations and field walking. Very few of the flints can be related to features and there is no apparent pattern to the artefact distribution. The assemblage is thus different from that recovered by York Archaeological Trust on the western half of the Heslington site. The latter material appeared to show a relatively low level of flint scattering but had been sealed in discreet archaeological horizons. This Heslington East assemblage appears to have been completely dispersed from its original contexts. The material is notable for containing a proportionally large degree of Mesolithic and /or early Neolithic material. Another peculiarity is that, although most of the excavated features only produced one or two pieces of flint, these tend to be quite period specific: the overall, . multi-period admixture still allows discreet elements to be separated here. A final notable peculiarity of both the excavated and field walked assemblages is the high proportion of light olive brown (Munsell 2.5Y 5/4), brownish yellow (Munsell 10YR 6/8) and strong brown (Munsell 5.7YR 4/6) coloured flint.

Ceramics

The ceramic reports (Appendix 6) are summarised below in chronological order.

i Prehistoric pottery

The probable prehistoric handmade material was rapidly assessed, at very short notice, by **Peter Didsbury**. Having, after consultation with other period specialists, excluded the Bronze Age and Anglian periods from consideration, literature search for form parallels was concentrated exclusively on the regional Iron Age, specifically the Later Iron Age, since there was no sign of the angularity, decorative techniques and softer fabric types which might have been expected at various periods before the fourth century BC.

It is beyond the scope of the present brief assessment to consider individual context assemblages in any detail. The vast majority of the handmade material is, in any case, residual or re-deposited. It is appropriate, however, to consider such dating evidence as may be suggested by certain recurring vessel forms and thereby to judge more closely the period or periods of site activity within the Iron Age which may have contributed to the de-stratified assemblages. The material was commonly well-fired, well-potted and tempered with relatively fine material in the 1-3mm range. A small number of coarser vessels, in terms of temper size, were present, but there was nothing to indicate that any of these might not be contemporary with the finer products. Several of the vessel forms find close

parallels in the later Iron Age and early Romano-British assemblages form Hawling Road, Market Weighton. Other types also tend to suggest a date on the cusp of the Iron Age and Romano-British periods, among which may be mentioned varieties of small bead-rim and wedge-rim globular jars in contexts 928 and 1190. In Rigby's schema for Iron Age pottery from the Yorkshire Wolds, these are attributed to "Typological Grouping h, 100BC - AD100".

The presence of a sub-group of highly burnished wares displaying a very high degree of potting skill is notable, constituting a "truly remarkable" group of Late Iron Age vessels (T. G. Manby, pers. comm.). They are probably best considered as reflecting some of the improvements in kiln technology and developments in potting styles and techniques taking place in the later Iron Age in parts of southern England. Occasional fineware vessels indicative of these more southerly traditions are, if not common, at least not unusual in Late Iron Age assemblages in south-east Yorkshire andt probably the result of cross-Humber contact. These consist, most often, of cordoned vessels in the Aylesford-Swarling tradition of the kinds prevalent at Dragonby, yet the Heslington vessels are rather different in that they tend to be highly burnished and skilfully potted versions of forms which would otherwise not seem remarkable in the local tradition. The two main forms which occur are S-shaped jars, distinguished by their sinuous profile, and barrel jars of various types, including the lid-seated variety.

The first of these types is discussed by Challis and Harding as being among the most common of their ordinary La Tène III forms: varieties of barrel jar also occur widely at this period but are much longer lived, appearing throughout much of the first millennium BC. The S-shaped jar is best represented at Heslington by a remarkable example from context 1193, the best parallels for which are from Saltshouse School, conventionally dated to the first century AD. A third type, represented by a single vessel from 1002, appears to be a fineware version of the Hawling Road form G29-J06, a first-century AD form.

The handmade pottery discussed above almost certainly belongs principally to the Later Iron Age. Both finewares and coarsewares consistently find their best published parallels at this period, more specifically to a very late horizon within it, perhaps the first centuries BC and AD. It would therefore seem that it was site activity of that period which contributed much of this class of material to the site assemblage. Some of it may be post Iron Age *sensu stricto*, and contemporary with some of the earliest wheel-thrown Roman wares from the site (e.g. the Rusticated Ware). The assemblage, particularly the finewares, constitutes a body of material of the first regional, and possibly national, importance, one which should be brought to full publication at a later stage. Work towards such a publication would necessitate a much more detailed fabric characterization, with the comparative literature search necessary to do it discursive justice. There is also scope for C14 determinations on the carbonized residues present on some of the pots.

ii Romano-British pottery

The whole ceramic assemblage was initially inspected and partially catalogued by **Ruth Leary** who then reported on the Romano-British element of the assemblage. Subsequent work on the pottery from the well (group 111) is included as an Excel spreadsheet at the end of appendix 6ii. The evidence for activity in the Flavian-Trajanic period was somewhat meagre, only two sherds of rusticated ware being present. Contemporary with these were a handful of Ebor Ware everted rim jars and reeded rim bowls of the late first-early second century. Some groups with handmade pottery and Samian or undiagnostic sherds of Ebor Ware and amphora probably also belong to this phase. Other groups with only handmade sherds could also date to the early Roman period, since these wares continued to be used throughout the Roman occupation of the region.

Activity in the Hadrianic–Antonine period is indicated by the presence of the key indicators identified at York, namely Ebor hemi-spherical bowls, including some painted, grey Ebor BB1 jar copies with everted rims and acute lattice burnish, grey ware lids and York region flanged mortaria. Also dating to this period were some Ebor tazze, whilst Monaghan dates the arrival of Nene Valley colour-coated ware to the Antonine period. Specialist study of the Samian will further elucidate this period.

Types dating from the mid/late second century to the mid-third century were very common and include a wide variety of grey burnished copies of BB1 and BB2 derived types of bowls, dishes and jars, including jars with splayed rims and obtuse lattice and grooved flat rim bowls, Nene Valley colour-coated beakers, Dales and Knapton type jars and imported back slip wares from Trier and Central Gaul. During this period the types made at Malton and Holme-on-Spalding Moor appear in a variety of grey ware fabrics and, during the third century, become the dominant coarse ware group. There are very few “African” types, seeming to confirm Monaghan’s hypothesis that the Ebor African repertoire was not used on civilian sites to any degree. It is notable that butt jars were also rare on the site.

Later third century activity is indicated by the proliferation of the classic grey ware types - flanged bowls, lugged jars and Throlam type wide-mouthed jars, along with the gradual appearance of Crambeck ware and calcite-gritted wares in pre-Huntcliff forms. The fourth century is marked by an increase in Crambeck and calcite-gritted wares and by c. AD 360 the appearance of Huntcliff type jars, handmade so-called Signal station forms and late Crambeck types, including parchment wares after c. AD 370.

These broad chronological groups suggest occupation was continuous, albeit with fluctuations in the quantities of ceramic material from each group. Further study of the assemblages will undoubtedly result in greater precision as regards the chronology and,

coupled with more detailed stratigraphic phasing, should allow a more detailed chronology of the site to emerge.

iii Amphora

The amphorae were examined by **David Williams.** Nearly all such material recovered from the site consist of small abraded bodysherds, a few of them burnt: out of the 329 examples, there was only one rim, one near complete unstamped handle and one complete base. The majority belong to the globular-shaped, commonly found Dressel 20, which carried olive-oil from Baetica in southern Spain. The extant rim [*HE 10 1002*] and near complete handle [*HE 11 1045*] belong to this form. On typological grounds, the rim can be approximately dated by comparison with Martin-Kilcher's stratigraphical classification of Dressel 20 rims from the well-dated Swiss forts of Augst and Kaiseraugst. This suggests the period *c*. AD 210-280, while the shape of the handle appears to be slightly earlier and is probably Antonine in date. The remainder of the Dressel 20 sherds, mostly undistinguished bodysherds, are difficult to date closely and could belong anywhere from the Conquest to the second half of the third century AD.

The vast majority of the non-Dressel 20 sherds have been grouped as "Gallic" and are made up of material representing the series of flat-bottomed amphora that were made in Gaul and which predominantly carried wine. They amount to 129 sherds, only just behind Dressel 20 in numbers. However, in terms of weight they only represent a fifth of the Dressel 20 total. This is because the Gallic group consists mainly of thin-walled bodysherds, some of them quite small, compared to the thicker-walled bodysherds of the much heavier Dressel 20 vessels. There are also a few small fragments of Gallic handle and a complete flat base. It is likely that most, perhaps even all, of this material belongs to the Gauloise 4 type, which was mostly made in *Narbonnensis* and which, in Britain, dates from the second half of the first century AD to the end of the third century. This was the commonest wine amphora imported into Roman Britain during the second and third centuries AD.

Also present are three plain bodysherds which may come from the Dressel 2-4 amphora form, though it is difficult to be sure. This type normally carried wine and was produced in many different regions of the empire. The main thrust of exports in this form was in the first centuries BC and AD, though Italian production did continue on a small scale until at least the early third century AD. A small plain bodysherd may possibly be from a Southern Spanish amphora form, though it is difficult to be certain or indeed to attempt to identify the particular form involved. According to *tituli picti* associated with the general type, these amphorae predominantly carried fish-based products such as *muria*, *liquamen* and *garum* and were produced in several different places around the coastal areas of southern Spain. The date range varies according to the particular form, though as a class they span from the late first century BC to the mid second century AD.

iv Samian pottery

A total of 241 sherds of Samian ware were recovered from various excavations between 2008 and 2011 in Heslington East and submitted for assessment to **Gwladys Monteil**. The fabric of each sherd was examined, after taking a small fresh break, under a x20 binocular microscope and catalogued by context number.

The Samian group from Heslington East contains a range of fabrics and forms that suggests occupation on site from the late 1st c. AD to the mid-3rd century AD. The evidence for 1st and early 2nd century is however limited and will need to be assessed against the stratigraphic evidence and the rest of the Roman pottery. There is a clear peak in quantities of discarded Samian from the mid-2nd century AD, with a relatively high number of late Central Gaulish and East Gaulish vessels. This pattern fits with the evidence from York, especially from the extra-mural areas (Dickinson 1997, 945) but will need further analysis to be fully appreciated. The functional profile of the 2nd century AD Samian group, albeit based temporarily on sherd count, suggests a pattern close to the smaller civil centres average for this group, with dish forms dominating, decorated bowls at around 20% and cups in third place. Further phased analysis of the functional Samian categories might refine this pattern.

v Anglian pottery

All handmade pottery was rapidly assessed by **Ailsa Mainman** and possible Anglian material extracted and then assessed. The latter types were identified by characteristic forms, typical styles and execution of incised decoration and, in two cases, distinctive stamp decoration. Its identification as Anglo-Saxon in date is supported by the presence on the site of Anglo-Saxon metal and bone artefacts. Due to timing and geographical distance, it has not been possible for the pre-historic, Roman, and post-Roman specialists to see and discuss the complete assemblage from Heslington East. This report is based on material which was extracted by the Roman specialists as being handmade, and therefore non-Roman, and was selected during an initial viewing on the basis of what might be Anglo-Saxon in date.

The challenge, however, lies in the fact that the site had previously been occupied by Bronze Age, Iron Age, Roman and Roman-British peoples, all who used ceramics, at least some of which are made from the same raw materials, using similar technologies and finishing techniques. There is, therefore, the very real prospect of confusion between pottery groups when only body sherds without form or detail are present, especially as AM is unfamiliar with Iron Age pottery in the region, and an understanding of the range of Anglian pottery fabrics in the area is still in its infancy.

Amongst the assemblage are characteristic Anglian forms, wide-mouthed, globular jars being the most common but also straight side vessels and large forms. Rims are flat topped,

irregular, clubbed, everted and occasionally flanged. No vessels were complete but, in one or two cases, profiles would be reconstructable. Some vessels are thin-walled (3-5mm) while others have walls of up to 14mm thick. The assemblage is domestic in character, with forms and sizes presumably relating to differing functions. Very little of the pottery is decorated (6 sherds) and this includes typical Anglian incised-line decoration arranged in vertical, horizontal and chevron patterns on the upper body below horizontal neck grooves. Two sherds are stamped.

The presence of decorated sherds supports the 5th/6th century date proposed by the metalwork and bone comb (see further below). Although there is nothing to support a date beyond the end of the 6th century, however, the characteristics of 7th century pottery in York has yet to be established. On first assessment, there are no middle Anglian forms and almost nothing which belongs to the Anglo-Scandinavian period.

vi Medieval and Post-medieval pottery

The medieval ceramics were mainly derived from unstratified contexts and, even where arising from apparently stratified deposits, were frequently deemed to be intrusive. The only clear exceptions to this were a small group of shallow scoops in Group 13 which may be medieval intrusive cuts, a medieval stony field drain and the medieval furrows, the last of which were widespread across the site. Because of the original depositional context, and more recent agricultural processes, the fragments were, on the whole, very small and often heavily abraded, the smallest measuring c. 3×4mm.

Ailsa Mainman kindly undertook a rapid visual inspection to allow **Cath Neal** to create a basic catalogue for 709 sherds which recorded context and number of fragments by recognisable wares. The medieval wares included green glazed (including Brandsby/ Hambleton/ Humber), purple glazed ware, Cistercian ware and black ware. Approximately 300 fragments were of post-medieval date, including tin-glazed ware, slipware and transfer printed wares. A further c.180 sherds were either unknown/abraded. This category frequently included fragments that had a worn outer surface, so that any treatments or finishes were not apparent. Context 227 has many more medieval/post-medieval fragments than any other feature because this 5m² of plough soil was hand excavated to assess the baseline ceramic distribution.

As highlighted by Ailsa Mainman, the assemblage represents a good body evidence for the period from the 15th century onwards with some purple glazed and Cistercian ware. However, despite some Anglian /Anglo-Scandinavian material on the site, there is negligible evidence for the period from the 10th to the 13th centuries. There are 5 tentative sherds of gritty ware but an absence of Torksey or splash ware.

vii Clay pipe

A total of 182 clay pipe fragments were recovered during excavation from stratified and unstratified contexts and catalogued with reference to White *et al* 2004 by **Cath Neal**. They were all considered intrusive where found in relation to excavated features.

The vast majority (154 fragments) were stems, with 16 bowl fragments and 12 heels. Unsurprisingly, given the mode of deposition and the history of deep ploughing, there is a single plain intact bowl and most elements are highly fragmentary. One fragment [23] had a stamped makers mark 'GC' in relief, with a flower beneath the initial, and set within a heart shaped motif on a flat heel. With reference to the MOL online archive[1] this may relate to makers George Cole or George Crosse of London, which gives a date of manufacture between 1615 and 1638.

Metalwork, small finds, conservation assessment and residues

Metalwork and small finds

The small finds and metalwork from the site were x-rayed by the YAT Conservation Lab and then assessed by **Nicky Rogers** (see Appendix 7 - due to the large volume of unstratified iron work, a decision was made to submit for x-ray and inspection only the iron finds which derived from stratified contexts. Thus the discussion in the appended report about the percentage of material from phased/unphased contexts is misguided).

Over 75% of the iron finds comprised nails and/or nail fragments – these are undatable and, apart from those found in graves and possibly relating to grave furniture, are unlikely to merit further analysis. One further burial-related object made of iron is a possible hinge. Hob nails (context number 726) also derived from a grave. Tools included six finds of blades or blade fragments, an incomplete knife, and two possible knives. Personal items from ferrous material comprised 17 finds totalling 40 hob nails from Roman footwear, a buckle, a complete penannular brooch and two brooch pins.

Almost 50% of the copper alloy and silver objects represent personal items such as jewellery or dress accessories. Nine of these are brooches, of which eight are Roman forms, with the ninth appearing to be an early Anglo-Saxon cruciform long brooch. Amongst the six finger rings, one of silver has lost its intaglio, whilst two of copper alloy appear to retain their glass or stone settings/intaglios, possible key finger rings. A copper alloy bangle fragment was found in context 38, and a silver dress pin from context 107. In addition to the cruciform

1 http://www.museumoflondon.org.uk/claypipes/pages/pipe.asp?sitecode=GM160&context=0&acc_no=23&form=AO5

brooch, there are two wrist clasps which must date to the early Anglo-Saxon period. All the buckles appear to be medieval or post–medieval in date. Other medieval dress fittings include unfinished strap guides and a pendant mount. A decorated silver mount was also found.

Over a third of the 41 lead alloy items recovered represent waste from the working of lead, primarily in the form of molten spillages and offcuts. Nine objects appear to be weights, whilst other finds include lead shot, net sinkers, cloth seal fragment and a dry point. A total of 106 finds of glass were recorded, approximately two-fifths appearing to be of Roman date, and two-fifths to be of post medieval or modern date: the dates of the remainder are uncertain. Most of the objects are vessel glass fragments, one of which came from a Roman grave and could be related to burial ritual. Two beads of uncertain dates were also found. A pin beater used in weaving was recovered, along with two further possible pin beater fragments. Hair pin shank fragments, plus the remains of two combs which may be made of antler were also found. A single find of jet/shale appears to be an incomplete, probably penannular, bangle or armlet.

For the Roman material a comprehensive functional analysis of the assemblage has not been carried out at this stage, but it seems clear that the copper alloy, silver, bone, antler and jet/shale elements of the assemblage are overwhelmingly of a personal nature, i.e. dress accessories and jewellery. The lead alloy material comprises largely working waste, whilst the ironwork is predominantly composed of structural fittings, with a few tools, and also some hob nails. Glass finds are predominantly of vessels. Evidence of craft activity, apart from lead working, is almost non-existent. The majority of this material derives from spreads and ditch fills.

The small group of Anglian objects is made up entirely of personal objects. Of the later objects, the medieval unfinished strap guides suggest the possibility of the casting of non-ferrous objects in the area. Other artefacts of this period seem again to be mostly of a personal nature. Post medieval material is largely represented by vessel glass.

Subsequently, the Anglian metal work was assessed by **Tania Dickinson**. The cruciform brooch from context 2125 is a Mortimer's Type A2, but it has lost its separately attached side knobs (Mortimer 1990). There is no evidence of the iron pin, perhaps indicating that this is a casual loss rather than from a recently disturbed inhumation. It probably dates from the mid- to second half of the fifth century. In Kent and Southern England early cruciform brooches are much more commonly found as stray finds than in burials (McClean and Richardson 2010), though it is less certain that this is the case in Anglian areas of England. The two sleeve clasps from 1018 and 1758 are hook-halves from separate pairs. Each is cast in one piece and belongs to Hines' Group B20 (Hines 1993, 64-5). Their edge decorations

differ, but B20 encompasses a wide range of decorative detail. They can date anytime between the late fifth century and c. 560/570. In England clasps were worn by women on the sleeves of under dresses. It is unclear whether these finds, along with the stamped pottery, represent Anglian material culture from burials or from occupation.

The two sets of bone comb fragments were assessed by **Steve Ashby**.
Context 1173:
This comb consists of 14 fragments of connecting plate, toothplates and endplates from a probable Type 1a comb. Such combs are triangular, single-sided composite forms, and are frequent finds from cemeteries and settlement excavations across northern Europe, where they are usually assigned a Late Antique or early Anglo-Saxon date (e.g. Roes 1963; MacGregor 1985, 83; West 1985, 126-7): for further classification the classic work is by Böhme 1974).

This example is decorated with incised-line ornament and triangular triads of dots. The tooth gauge is coarse (c.4 teeth per cm), and there is evidence of wear in the form of striations and light beading on the tooth bases. The plates are fixed with iron rivets, as is usual for this form of comb, and the raw material is antler. The connecting plates are of very shallow-to-flat section, and the endplate features an elaborate, outswept terminal. A date in the 5th or 6th century is most likely, though examples are known from the 4th, and elements of the form (including pointed connecting plates and outswept terminals) are preserved in various combinations in later types.

Context 1002:
This single toothplate from a composite single-sided comb is made of antler, with an iron rivet on one edge, and staining on the other, suggesting that it may have been connected using the 'every edge' technique. Though the teeth are mostly lost, tooth bases show that it has a coarse gauge (c.4 per cm), and there is evidence of wear-beading on the two remaining teeth. The back edge of the toothplate is sharply angled, suggesting that it came from a comb with a steeply arched or triangular back. A date in the early-medieval period is very likely.

Conservation

In addition to the 19 items identified by **Nicky Rogers**, which need investigative conservation, a further 31 items were identified by **Patrick Ottaway** as warranting closer inspection and possible conservation, taking the total to 50 items. The coroner was notified about the silver ring with missing intaglio (context 1481) as per Treasure Act. In addition some leather fragments and a wooden bucket (context 2093) will need radiography and consolidation at YAT conservation lab before formal reporting.

Metal residues

Thirty items of hand collected metalworking debris and the magnetic residue from 134 samples were subject to visual assessment by **Rachel Cubitt**. The assemblage provides evidence for iron smithing taking place at Heslington East. There are two key forms of smithing slag, both of which are represented in this assemblage. One smithing hearth bottom (shb) was recorded. These are formed from droplets of slag that accumulate in the hottest part of the hearth whilst an object is being worked and are easily recognised by their plano-convex shape. The hot zone in a hearth is near the air inlet and the dished upper surface of a smithing hearth bottom results from the force of this air on the surface. Furnace bottoms would have been removed from the hearth and discarded perhaps at the end of each smithing campaign or at least when they build up sufficiently to impede operation of the hearth.

The second form of diagnostic smithing evidence is hammerscale of which there are two types. Flake hammerscale derives from the thin layer of slag on the surface of an object in the hearth which becomes detached as the object is hammered by a smith. Spheroidal hammerscale is liquid slag that escapes from inside pieces of iron as they are welded at high temperatures. Hammerscale is particularly important for interpreting the location of features such as the anvil on smithing sites as it tends to remain where it falls, whereas bulkier slags are often cleared away from the working area. Of the samples and finds bags combined, there were 74 occurrences of flake and four of spheroidal hammerscale. Thirty one samples contained both types and 27 had neither.

A third category of evidence for ironworking was also encountered. 493g of non-diagnostic ironworking slag was recorded. It is not possible to determine through visual analysis whether this material derives from the smelting of iron ore in a furnace or the smithing of objects in a hearth. As diagnostic smelting evidence is lacking from the assemblage, the non-diagnostic material is most likely to have been produced by the smithing activity detailed above.

A small quantity of material derived from the superstructure of a hearth or furnace was recovered. Although common to both features, this material probably derives from a hearth in this case because of the nature of the ironworking activity thought to have been taking place. This material can also be produced as a result of other industrial processes as well as high temperature domestic activities, so this material cannot be conclusively linked to ironworking without looking at contextual information.

Evidence for fuel encountered in the excavation was tabulated by **Neal** who recorded 53 fragment of coal, 33 of charcoal and 23 items described as cinder – the term used in this instance to describe fuel ash. Fragments of slagged shale, often the product of burning poor quality coal, were encountered amongst the slag. Much of the fuel evidence is unstratified and so cannot be conclusively linked to metalworking activity.

On the basis of the evidence seen in this assessment it is apparent that iron smithing was taking place at the Heslington East site in the third and fourth centuries AD. The exact duration and intensity, and whether or not smithing was a continuous activity, cannot be commented on. There is evidence for both general smithing activity and welding in the form of both flake and spheroidal hammerscale, and a smithing hearth bottom. There are no other indications of what the products of the activity might have been. Given the vast array of iron artefacts know to have been used by the Romans, it could have been any number of items

Coins

A number of coins were recovered from our work on the site (see Appendix 8). Thirty seven of these derived from excavation and a remaining 61 from a combination of metal detecting and field walking. The assemblage was examined by **Craig Barclay** who found that the assemblage overall is generally unremarkable. The stratified material generally comprised issues of the 3rd and 4th centuries AD, the earliest piece being a denarius of Elagabalus (struck post AD 218). The remainder were post-AD 350 radiate issues (both official and barbarous). A single *nummus* of Galerius (post-AD 307) was recovered, but the majority of the stratified 4th century coins were issues of the Houses of Constantine and Valentinian, with the latest issues being struck in the 360s. The unstratified Roman material was similarly dominated by the common issues of the 3rd and 4th centuries AD. The latest Roman issues were two *minims* of Valentinian III, struck post-AD 388, although a pierced *centenionalis* of Magnentius may offer some evidence of the re-use of Roman coinage in the Saxon period. The only medieval coin of note was an unworn Edinburgh mint Scottish halfpenny of Robert II, whilst the modern material was dominated by heavily worn coppers of later 17th and 18th century date.

Animal bone

In total 16,587 fragments of bone were recorded and analysed by **Jane Richardson** (see Appendix 9). Of these, 3,384 bone fragments (20%) were identified as having diagnostic zones (definitions of the zones used and details of the Access database are held with the site archive). Currently only sufficient diagnostic zones from late Roman deposits are available for detailed analysis based on a minimum reliable sample size of around 500.

Most bones were recovered during the hand excavation of deposits, which is known to bias most severely against the smaller bones of the smaller taxa. Fortunately bulk soil samples were also routinely taken and processed, with 113 of these producing c. 2000 fragments of bone, of which 355 warranted further recording. As expected, a significant proportion of the smaller taxa, in particular the voles, shrews, other small mammals and the frog/toad bones,

were recovered in this way. In addition, all three fish bones were retrieved from the bulk samples.

In an attempt to determine how deposits were formed, bone preservation, surface erosion and gnawing were assessed and articulated bones were noted. Undisturbed, so-called primary deposits are most clearly indicated by articulated parts. These were most commonly recorded from the late Roman well (Group 111) where partial sub-adult red deer, juvenile cattle and puppy skeletons were noted. A partial dog skeleton was also recovered from a late Roman ditch (Group 3), a pig skeleton came from a later Roman pit (Group 38) and a sheep/goat skeleton was associated with a spread (Group 24 - undated at the time of analysis but now known to be Late/Very late Roman).

In contrast, the disarticulated assemblage is more likely to have been exposed to the effects of trampling and weathering prior to final disposal, and may also have been middened. Certainly the assemblage is highly fragmented and eroded bone surfaces are fairly commonplace. These will have influenced the poor recovery of metrical data and, potentially, the levels of butchery marks noted. In contrast, gnawing both by dogs and rodents, although present, appears to have had less of an impact on the surviving assemblage. Burnt bones were also relatively rare.

Cattle and cattle-sized bones dominate the Late Roman assemblage, with sheep and sheep/goat apparently contributing much less to the inhabitants' diet. Pigs may have contributed a similar quantity of meat as sheep, given their greater body size. Chickens and goats were rarely consumed and fish even less so, a pattern of consumption also seen in York itself. Given a Roman taboo on the consumption of horsemeat, it is unlikely that this animal was consumed, at least by the later Roman period. Despite this, 19 horse bones display butchery marks, some of which are indicative of dismembering. Of the 67 red deer bone fragments from Late Roman contexts, 54 came from the well, the majority associated with a single sub-adult animal that had been butchered. From the same feature a complete antler from a mature male was also recovered.

Cattle dental wear and eruption data from Late Roman deposits reveal similar slaughter patterns to those already observed from Roman York: relatively few juvenile and sub-adult animals and greater numbers of adult or old animals. It seems more likely that this producer site was focusing on dairy and traction cattle and was not engaged in raising animals specifically to supply the urban market. The cattle assemblage from the same phase contains 22 jaws, 28 loose third molars and four deciduous fourth premolars.

The animal bones from the site at Heslington East are predominantly associated with the later Roman period. These indicate a settlement that may have been focused on arable production with livestock providing valuable manure and, in the case of cattle and horses, important traction/pack capabilities. Prime meat from sheep and pigs, indicative of the inhabitants' wealth but perhaps also a reflection of the relative weakness of the city's market, was available for consumption. Following the analysis of the animal bone from On-

site Archaeology's excavations, and the finalising of the phasing, further data manipulation and interpretation of this assemblage will be required.

Environmental Assessment

Three hundred and ten bulk samples were taken from the site and processed by students under the supervision of Dr A. Hall. Subsequent analysis of the flots and residues **by Allan Hall and Harry Kenward** (see Appendix 10) revealed that plant remains were present in most samples in the form of small wood charcoal fragments. In many cases there were also small numbers of charred cereal grains, usually rather poorly preserved, very rarely a few fragments of glume wheat chaff, a few charred weeds seeds and fragments thought to be roots or basal twig fragments of heather, together with charred root/rhizome fragments of herbaceous plants and some material thought to be burnt peat. A few contexts, notably the fills of the large well, produced assemblages dominated by uncharred (waterlogged) plant remains, sometimes with modest concentrations of well-preserved insects.

A total of 68 molluscs were recovered by a combination of hand collection and bulk sampling. They were identified with the use of a hand lens and with reference to Kerney (1999) and Cameron (2003) by **Cath Neal**. None of the samples produced statistically valid assemblage sizes and the species represented are predominantly widespread generalists. The common 'European flat' oyster are indicative of the Roman commercial interest in them as a foodstuff. The other species recorded (most commonly *Aegopinella pura, Cochlicopa lubrica, Vallonia pulchella and Cepea nemoralis*) in general terms prefer moderately moist, rather than wet habitats, often open fields but sometimes waste ground, woods or ditches.

Human remains

The human remains were assessed by **Malin Holst** (see Appendix 11). The earliest phase of burial comprised two cremation burials, one of which was interred in an inverted collared urn that is thought to date to the Early Bronze Age. The urn contained the remains of an infant, aged between birth and one year and an adolescent who was between fourteen and sixteen years old (1276). Adjacent to this burial was an unurned cremation burial that contained the remains of another adolescent (1437).

The remains of five perinates were found, two of whom had been interred in scoops (1757, 2139), while three were recovered from spreads or a sub-rectangular feature (1610, 1419, 1568). It is common to find perinates in domestic features in the Romano-British period and it is likely that these remains date therefore either to the Iron Age or Roman period. Despite the good preservation of all of these skeletons, none of the perinates exhibited any pathology.

Three Roman inhumations were excavated during 2008-2009 (229, 613, 726) and are considered along with two inhumations excavated later, both of which date to the Roman

period (1987, 2000). All of these individuals were adults, including two young middle adult males, an adult male, a mature adult male and a female. The living height of one male was established and was lower than the male Roman average. The skeletal preservation of these skeletons was poor and, as a result, only the two best preserved skeletons, a young middle adult male and the mature adult female, showed evidence for skeletal pathology. The male (229) had lesions indicative of infection or Vitamin B12 deficiency in childhood and had suffered muscular trauma to both fibulae. He also had inflammatory lesions on his shins that were healing at the time of death. Notably, lytic spinal lesions were recorded in the few surviving vertebrae, tentatively diagnosed as gastrointestinal tuberculosis. The mature adult female (726) had degenerative joint disease in a vertebra of the neck and in the right foot. She also had lesions in the hips that could be indicative of brucellosis, which is rarely seen in skeletons from archaeological contexts. However, the poor preservation of the remains, which led to destruction of the spine and erosion of the possible lytic lesions, means that this diagnosis must be regarded with caution.

Dental health was varied, with the males showing relatively good dental health, except for widespread dental plaque deposits that were much more prevalent than the Roman average. Otherwise, dental health tended to be better than the Roman norm, though the single female skeleton had numerous cavities, widespread ante-mortem tooth loss and abscesses.

Unusually, the skull of one young middle adult male (2000) was pinned to the ground with large nails. The only parallels for this derive from a Greek and Roman burials from a Mediterranean context.

Assessment of Bronze Age materials

The collared urn and battle axe were assessed by **Terry Manby** (see Appendix 12).

The pottery received comprised fragments of the upper profile of a collared urn, from rim down to shoulder, all in washed condition with small patches of sand incrustation adhering in places to the exterior. Collared urns are the most widely distributed of the designated Early Bronze Age ceramic types across the British Isles and are principally associated with cremation burial, either inverted over or containing the bone deposit. The present discovery, along with another from the University extension site, are the only finds of collared urns and contemporary burials from the whole lowland extent of the Vale of York.

The upper half of a battle axe of hard, medium-grained rock, was broken across the shaft hole at its mid-point, and was smooth and polished, with only three small residual scars on the butt facet. Its cylindrical shaft hole had closely-spaced, shallow ridges and grooves around its circumference left by the boring process. The inner edges of the lips were smooth. This axe fragment comprises half of a well-crafted artefact type, shaped by grinding

and finished by surface polishing, then perforated to create the shaft hole: all labour intensive processes. It could have originally accompanied a cremation burial disturbed by later activity, the axe then broken and scattered.

VII Recommendations

The following is a list of recommendations (largely by specialists) which acts as a basis for discussion about priorities in the next phase of work. The relevance, allocation and costing of these elements will need to be considered with the other organisations involved, as well as with the consultant, in order to make a formal proposal to the developer.

Relating to storage, packaging and archive

CBM

- It is recommended that prior to deposition with the recipient museum the fragments which have been selected for retention are individually marked. The fragments should then be re-bagged in labelled, mini-grip bags of appropriate size. Special packaging should be provided for the substantially complete imbrex from Context 1071. All the CBM should be re-boxed, in project and context order, in smaller, shallower, boxes than at present (YAT stores its CBM in boxes that are approximately 0.3m x 0.3m in area and 0.12m deep).

Samian pottery

- Full analysis and rubbings of the decorated pieces are recommended. Once mounted, the rubbings can be scanned for illustration purposes (guidelines can be provided by GM) and form part of the archives.

Metal/ small finds

- In order to write a full report on this material, it may be advisable to give every object in the assemblage a small find or registered number.
- All objects should also be correctly packaged to ensure long term survival.
- A total of 50 items needs investigative conservation, the Roman wooden bucket requires x-ray/ assessment and the leather fragments needing stabilisation/assessment.

Animal bone

- A decision as to whether the amphibian bones require further attention will be made once the integrity of the archaeological deposits from which they came has been determined.
- The pre-Roman and medieval assemblages are unlikely to be of sufficient size to warrant further investigation although, with the inclusion of the assemblage excavated by On-site Archaeology, this may be subject to change.

Environmental

- Process remaining well samples with paraffin (8 samples) and analyse.

General

- When the assemblages and records generated by all three organisations involved with the investigation of Heslington East can be seen as a whole, it will be possible to formulate common standards for their future storage and curation, together with a single discard strategy for those groups of material from less significant stratigraphic contexts.

Relating to further research

CBM

- It is recommended that the stone roofing tiles should be examined by a geologist in order to identify the precise source of the stone used.
- Brodribb lists various methods of calculating the number of tegulae required for buildings of known dimensions. If the full dimensions of any of the building at the Heslington East site are known, it would be worthwhile calculating the number of tiles required to roof it, to see if this bears any resemblance to the minimum possible number of roofing tiles seen at the site.
- If there are clear indications that the buildings on site belong to several distinct phases of activity, any associated CBM should be researched to determine if the forms, dimensions or fabrics used changed over time. In addition there is potential to analyse the geographical distribution of the fabrics and forms represented, as this may indicate how the various buildings on the site were roofed, together with the post-depositional history of the fragments.
- The tegulae flanges should all be drawn and compared in detail to fabric types to see if there is any correlation.
- The flue tiles are clearly an interesting collection and they merit further research. It would be beneficial to look for cross-matches between contexts. More research is also required into Roman kilns to determine how flue tiles were used in such structures and to find comparable examples for the tiles foundat Heslington East. The function of the kiln would also merit further research to try to determine precisely what it was used for, one possibility being metalworking given the number of iron nails associated with the flue tiles.

Querns

- The significance of the assemblage in terms of the interpretation of the function and status of the site requires further analysis.
- Regional parallels can be discussed briefly. Further, more comprehensive discussion would require another 1 day of research.

RB pottery

- Mortaria/oil lamp still to be analysed (in hand)

- Catalogue of 2011 material (in hand)
- Further work on the grey fabrics and sub-fabrics and full archive catalogue
- Correlation of the pottery data with the context groups and stratigraphic phasing
- Full pottery report comprising:
    - Summary of wares and types present
    - Discussion of chronological sequence
    - Transitions – discussion of transitions from Pre-Roman to Roman and Roman to post-Roman and also the effect of major changes at York on the settlement
    - Site status – changes over time
    - Functional areas- spatial and chronological differences
    - Trade and exchange – changes over time
    - Relationship with urban centre at York and comparison with other sites around York and around other Roman towns
    - Other aspects of the assemblage – evidence for ethnicity, industry, ritual, wells etc

Samian pottery

- The assemblage contains a number of decorated bowls that warrant further analysis. Though the number of decorated bowls is rather limited, a full analysis of the decorated Samian will hopefully better determine the dating of the South, Central and East Gaulish groups. This will also enable comparison of the Samian assemblage from Heslington East to published material from York (Dickinson and Hartley 1993, Dickinson 1997) and surrounding area. There are only two name stamps in the group, only one of which from a stratified layer. Further analysis of these stamps might provide more chronological information.
- The final report will include a section on decorated Samian and the stamps that will list the potters present and provide a finer chronological assessment of the group. The report will also include an assessment of the phased functional profile of the assemblage, further work on the significance of the group in a local, regional and national context.

Iron Age pottery

- Work towards such a publication would necessitate a much more detailed fabric characterization, with the comparative literature search necessary to do it discursive justice.
- There is scope for C14 determinations on carbonized residues present on some of the pots.

Anglian pottery

- Establishment of the forms present and representative drawings
- Establishment of fabric groups, and further analysis (including scientific analysis) to compare with the growing body of evidence from Heslington and elsewhere in York.

- Identification of the stamp types
- Full report and publication - this is a significant assemblage both in terms of its size but also its geographical position on the glacial moraine

Metal/small finds

- The Anglo-Saxon material is of interest and may require further analysis. The medieval material is unstratified and of less interest, and may not merit further analysis.
- A Roman small finds specialist should be asked to write a full report on the Roman material which forms the bulk of the assemblage
- Further analysis of the hearth, furnace, and kiln features might be useful. The nature of these hearths could be compared to Roman hearths known at other sites to determine whether they are metalworking features or from another high temperature process.
- It would be advisable to look at the distribution of these features and whether there is any correlation with the hammerscale distribution. The spatial distribution of the hammerscale should be investigated, taking into account the varying proportions recovered from the different contexts, the size of the contexts and volume of samples taken.

Animal bones

- Following final revision of the phasing, it is recommended that the Roman data are subject to further interrogation. The presentation of tabulated data for age, sex and represented body parts for the main taxa is required and graphs displaying slaughter curves for cattle and sheep are proposed.
- Assuming that the legion at York took an area, or territorium, under its control, a practice that occurred elsewhere in the empire surely local settlements such as Heslington East would have been subsumed? The implications of this for those living at Heslington East should be assessed, and hopefully with the addition of data from the On-site Archaeology excavations, the animal bone assemblage may facilitate such research.

Environmental

- A small proportion of the sampled deposits were sufficiently rich in wood charcoal to make the identification of a subsample worthwhile to establish the range of taxa present over the long period represented by the deposits (though taking care to avoid material from contexts where there is the likelihood of reworking or residuality). It may also be worth revisiting those samples with modest assemblages of charred cereal grains to establish more carefully the taxa present, though preservation was generally rather poor and it is likely that many grains will not be confidently assigned to one of the cereal taxa.

- The waterlogged deposits from the well yielded assemblages which offer some indication of the surroundings of the well at the time of deposition and/or represent remains present in sediments deliberately deposited into the well (and which may therefore include some material which is a little older). They deserve further consideration, as do the samples of ditch fills.

Bronze Age material

- The stone of the battleaxe requires determination by a petrological specialist to establish it source. Macroscopically the identity of the rock is uncertain: it is not a local rock although may be of a variety present in the local Devensian Age glacial tills.
- The preparation of a standard, academic report will be needed to provide description, typological status and discussion of regional and wider parallels and their significance, with draft outlines for the guidance of a publication illustrator requiring some two working days.

General

- There is the potential, with Mark Whyman, to devise a fabric series for handmade pottery at the site to tie in with the sub-Roman series from York
- Thin section analysis of 9 kubiena tins from the well and sand deposits nearby

Relating to integration across organisations/specialists

Flint

- The Heslington East assemblage needs considering in regard to previous excavations on the site, pulling all the reports together.

RB pottery

- Full report should be integrated with the results from other excavations on the site

Samian pottery

- The current assemblage should be integrated with the Samian assemblages previously excavated by York Archaeological Trust and with those excavated by On Site Archaeology.
- Once groups and phases are defined, the information should be integrated in the Samian database and functional and spatial analyses of the stratified Samian groups undertaken. Discussion with Ruth Leary about the nature of each group and phase will also be essential.

Anglian pottery

- The critical recommendation is that the pottery and the specialists should be brought together to clarify any possible confusion of types, especially between the prehistoric and the Anglian, but also with some of the handmade Romano-British wares. This will allow refinement of any pattering of the wares and an assessment of its significance.

General

- Integration of data/features with those excavated by OSA

Relating to illustration/publication

CBM

- The collection of CBM merits full publication, notably the stone roofing tiles and the imbrices which are rare finds for the York area, as this would add to the corpus of know examples.
- It is recommended that two of the Type 1 box flues, and one each of the Type 2 and 3 box flues and the substantially complete imbrex from Context 1071 should be reconstructed to enable full illustration. The collection contains a number of fragments (34) which should be published and therefore merit full illustration, this could be achieved either by conventional finds-illustration, or by professional standard photography, whichever was deemed the most appropriate for the final publication format.

Querns

- A total of four stones require illustration at 1:4 or 1:8 as appropriate.
- Publication quality photography is recommended for the upper surface of one millstone (1125/1071) for inclusion in the final report

Building Stone

- A total of 5 worked stones should be illustrated for publication (and several retained)

RB pottery

- Illustration of key groups and types. The number of illustrations needed cannot be determined until more work is done on the stratigraphy and stratigraphic phasing of the site but at least 208 different pottery forms were identified in the assemblage recovered from excavations in 2008-10, not including the Samian and mortaria. Given the nature of the site, it is recommended that key groups be illustrated and comparison with other publications suggests a total of c.300 pottery illustrations might be estimated for the coarse pottery not including the mortaria.

Iron Age pottery

- The assemblage, particularly the finewares, constitutes a body of material of the first regional, and possibly national, importance, one which should be brought to full publication at a later stage.

Animal bone

- Publication-quality photographs of the butchered cattle scapula and perhaps some of the pathological bones are recommended.

Bronze Age material

- The urn burial and battle-axe merit scientific publication with description with drawn illustrations; supported by specialist analysis of the cremated burial and for radio

carbon dating of a cremated bone sample be submitted to an appropriate dating laboratory.

VIII Bibliography

Where authors are mentioned in text by specialists the reference is in the relevant appendix.

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