Historic Environment and Archaeology Services

ARCHEOLOGICAL WORK AT ROTHERWAS INDUSTRIAL ESTATE, HEREFORDSHIRE (ROTHERWAS FUTURES)

Find out more online:
www.worcestershire.gov.uk/archaeology

worcestershire county council

ARCHAEOLOGICAL WORK AT ROTHERWAS INDUSTRIAL ESTATE, HEREFORDSHIRE (ROTHERWAS FUTURES)

Darren Miller

With contributions by Emily Beales, Nick Daffern, Robin Jackson, Hugo Lamdin-Whymark, Andy Mann, Elizabeth Pearson, Keith Wilkinson, and Dennis Williams

Illustrations by Steve Rigby and Carolyn Hunt

8 April 2011

Historic Environment and Archaeology Service,
Worcestershire County Council,
Woodbury Building,
University of Worcester,
Henwick Grove,
Worcester WR2 6AJ

Project P3299
Report 1837
HSM 48812

u:\u160 acs\u013 archaeology service\03 field section\projects\current\p3299 rotherwas futures 1&2\report\10-04-11\text 10-04-11.docx

Contents

Part 1 Project summary 1

Part 2 Introduction, background and methods

1. **Planning background** **3**
2. **Aims** **3**
3. **Methods** **3**
3.1 Fieldwork 3
3.1.1 Phase 2 area 3
3.1.2 Phase 1, Plot 9 4
3.2 Stratigraphic analysis 4
3.3 Radiocarbon dating 5
3.4 Artefact methodology 5
3.4.1 Artefacts: Recovery and processing 5
3.4.2 Artefacts: Method of analysis 5
3.5 Environmental archaeology methodology 6
3.5.1 Sampling policy and sample selection for analysis 6
3.5.2 Animal Bone (Emily Beales) 6
3.5.3 Plant macrofossils (Elizabeth Pearson) 6
3.5.4 Mollusc analysis (Andrew Mann) 7
3.5.5 Geoarchaeology (Keith Wilkinson and Nick Daffern) 7
3.5.6 Sample composition analysis (Elizabeth Pearson) 8
4. **Topographical context** **8**
5. **Archaeological context** **9**
5.1 Prehistoric 9
5.2 Roman 10
5.3 Medieval 10
5.4 Post-medieval 10
5.5 Modern 11

Part 3: Results **12**

6. **Radiocarbon dating (by Nick Daffern)** **12**
7. **Stratigraphy** **12**
7.1 Phase 2 area 12
7.1.1 Phase 1: Mesolithic to Late Neolithic/Early Bronze Age 12
7.1.2 Phase 2: Late Neolithic/Early Bronze Age 12
7.1.3 Phase 3: Late Neolithic/Early Bronze Age 12
7.1.4 Phase 4: Late Neolithic/Early Bronze Age 13
7.1.5 Phase 5: Late Neolithic/Early Bronze Age 13
7.1.6 Phase 6: Late Neolithic/Early Bronze Age 13
7.1.7 Phase 7: Middle Bronze Age 14
7.1.8 Phase 8: Early medieval 14
7.1.9 Phase 9: Post-medieval 15
7.1.10 Phase 10: Modern 15
7.2 Phase 1, Plot 9 15
8. **Artefact analysis** **16**
8.1 Introduction 16
8.2 The early prehistoric pottery (by Robin Jackson) 16
8.2.1 Analysis 16
8.2.2 Discussion 17
8.3 The worked flint (by Hugo Lamdin-Whymark) 18
8.3.1 Introduction 18
8.3.2 Methodology 18
8.3.3 Results 18
8.3.4 Discussion 19
8.3.5 Illustration catalogue (Fig 23) 20
8.4 Roman, medieval and post-medieval pottery (by Dennis Williams) 20
8.4.1 Roman pottery 20

8.4.2 Phase 9: Medieval and post-medieval pottery 22
8.5 The worked stone (by Hugo Lamdin-Whymark) 22
8.6 Metal finds (by Dennis Williams) 22
8.7 Slag (by Dennis Williams) 22
8.8 Other finds (by Dennis Williams) 22
8.9 Discussion of the Roman and later artefacts 22
9. Environmental analysis 23
9.1 The animal bone (by Emily Beales) 23
9.1.1 Introduction 23
9.1.2 Results 23
9.1.3 Discussion 24
9.2 Plant macrofossils (by Elizabeth Pearson) 24
9.2.1 Phase 1: Mesolithic to Late Neolithic alluvial soil 24
9.2.2 Phase 2: Late Neolithic/Early Bronze Age features 24
9.2.3 Phase 3: Late Neolithic/Early Bronze Age alluvial soil 24
9.2.4 Phase 4: Late Neolithic/Early Bronze Age features 25
9.2.5 Phase 5: Late Neolithic/Early Bronze Age alluvial soil 25
9.2.6 Phase 6: Late Neolithic/Early Bronze Age features and burnt mound 25
9.2.7 Phase 7: Middle Bronze Age features and burnt mound 25
9.2.8 Phase 8: Early medieval enclosure(s) 25
9.3 Molluscan analysis (Andrew Mann) 25
9.3.1 Results 25
9.3.2 Discussion 28
10. Geoarchaeology (Keith Wilkinson and Nick Daffern) 28
10.1 Stratigraphy 28
10.1.1 Unit 1 - Site Phase 1: Mesolithic to Late Neolithic/Early Bronze Age 28
10.1.2 Unit 2 - Site Phase 3: Late Neolithic/Early Bronze Age 28
10.1.3 Unit 3 – Site Phase 5: Later Neolithic. Early Bronze Age 28
10.1.4 Unit 4 – Site Phase 6: Late Neolithic/Early Bronze Age 29
10.1.5 Unit 5 – Site Phase 7: Bronze Age 29
10.1.6 Unit 6 – Site Phase 8: Early Medieval 29
10.1.7 Unit 7 – Site Phase 9: Late/post-medieval 29
10.1.8 Unit 8 and 9 – Site Phase 10: Modern 29
10.2 Discussion 29
11. Sample composition and clast analysis (Elizabeth Pearson) 30
11.1 Discussion 30
12. Overview of environmental evidence 31
13. Synthesis 32
13.1 Holocene alluviation and Mesolithic activity 32
13.2 Late Neolithic to Middle Bronze Age activity 32
13.3 Roman activity 33
13.4 Early medieval enclosure(s) 33
13.5 Medieval and post-medieval land-use 34
13.6 Modern sedimentation and development 34
14. Research frameworks 34
15. Acknowledgements 35
16. Personnel 35
17. Bibliography 35

Tables

1. Material submitted for AMS radiocarbon dating
2. Results of AMS radiocarbon dating
3. Quantification of artefact assemblage
4. Early prehisotirc pottery (by phase)
5. The flint assemblage from the evaluation (by trench)
6. The flint assemblage from the excavation (by phase)
7. Quantification of the later pottery (by period and fabric type)

8. List of environmental samples selected for full analysis and radiocarbon dating
9. Hand-collected animal bone
10. Plant remains
11. Quantification of mollusc remains from all samples
12. Sample composition (stony spreads)
13. Clast analysis

Archaeological work at Rotherwas Industrial Estate, Herefordshire (Rotherwas Futures)

Darren Miller

With contributions by Emily Beales, Nick Daffern, Robin Jackson, Andy Mann, Elizabeth Pearson, Hugo Lamdin-Whymark, Keith Wilkinson, and Dennis Williams

Part 1: Summary

This report presents and interprets the evidence from archaeological work on the Rotherwas Industrial Estate near Hereford (NGR SO 53027 37550; HSM 48812). The work was commissioned by Amey Consulting on behalf of Herefordshire Council, who are developing the estate (with Advantage West Midlands) in a project called Rotherwas Futures. The work followed a desk-based assessment and field evaluation by Archaeological Investigations Ltd. The field evaluation found significant prehistoric deposits in an area to the south of the estate. It also identified potentially significant deposits in the same area to the west and another area 500m to the north-east. The Service was commissioned to excavate the main area of prehistoric deposits and to trench both areas of potential significance.

The excavation revealed a sequence of prehistoric remains interleaved with alluvial soils. Six phases were identified spanning the period from the Late Neolithic to the Middle Bronze Age. The remains included three groups of pits and two burnt mounds. One of the burnt mounds was radiocarbon dated to the mid/late third millennium BC, the other to the mid/late second millennium BC. The alluvial soils contained molluscs which showed a change from wet woodland to grassland in this period. The excavation also exposed the ditches of a large curvilinear enclosure and a smaller rectilinear enclosure. Quite unexpectedly, the curvilinear enclosure was radiocarbon dated to the sixth or seventh century AD. The rectilinear enclosure was not dated but an early medieval date is more likely than an Iron Age or Roman date. Finally, there was evidence of post-medieval farming and a later phase of sedimentation.

This evidence represents a major addition to the archaeology of the area. The prehistoric evidence complements evidence found along the line of the Rotherwas Access road in 2006-7, and in other development-led work around the southern fringes of Hereford. The early medieval evidence represents a discovery of regional significance, although the rectilinear enclosure was not securely dated and the function of both enclosures remains uncertain.

Part 2: Introduction, methods and background

1. Planning background

A programme of archaeological work was undertaken during the initial stages of the development of the Rotherwas Industrial Estate. This ongoing project, known as Rotherwas Futures, is being managed and financed by Herefordshire Council in co-operation with Advantage West Midlands. It reflects the Council's policy to strengthen and diversify the local economy (Herefordshire Council 2007, 25).

The archaeological implications of the project were considered by Herefordshire Archaeology, the Council's archaeological service. On their advice, Archaeological Investigations Ltd was commissioned to undertake a desk-based assessment and field evaluation (AI 2008). This response also stemmed from Council policy (Herefordshire Council 2007, 26), and national government guidelines (DCLG 2006).

The desk-based assessment established a context for prehistoric and later activity in the area. It also mapped the buildings and fields that preceded the industrial estate. The field evaluation involved sample trenching in seven areas. Most of the trenches were excavated in an area to the south of the estate, designated Phase 2 (Fig. 1). Significant prehistoric remains were identified in the east of this area. Undated but potentially significant remains were found in the same area to the west, and in an area to the north-east, designated Phase 1, Plot 9.

On the basis of these results, Herefordshire Archaeology judged that further work was required in both of these areas, though not elsewhere. Subsequent to this Worcestershire Historic Environment ands Archaeology Service was commissioned to undertake a programme of further investigation by Amey Consulting, on behalf of the Council.

2. Aims

The main aim of the programme of further investigation was to mitigate the potential impact of development on the prehistoric remains identified near the east end of the Development Phase 2 area. This was to be achieved by excavating a trapezoidal area of *c* 6,500m² (Area 1; Fig. 1) around seven of the evaluation trenches (Trenches 37, 47, 49, 51, 53, 56, and 59; Fig. 1).

The work also aimed to provide more information on potentially significant remains in the same area (around Trench 24), and in Phase 1, Plot 9 (around Trenches 3 and 12). This was to be achieved by excavating four more trenches (two around Trench 24, one next to Trench 3, and one next to Trench 12). The product of this work was to be an appropriate, interpreted record of the remains, a satisfactory archive, and a satisfactory publication (Herefordshire Archaeology 2008, 3).

3. Methods

3.1 Fieldwork

A detailed specification was prepared by the Service (HEAS 2008). The fieldwork took place between 18 November 2008 and 26 May 2009. The reference code for the fieldwork and project archive is HSM 48812. The main investigated area is identified as Area 1 while trench numbering (Trench 60 onwards) extended the sequence used by Archaeological Investigations Ltd.

3.1.1 Phase 2 area

The first work in this area was the excavation of two additional trenches near evaluation Trench 24 (Trenches 60 and 61). The trench locations were specified by National Grid co-ordinates which were located using a GPS. Both trenches were 12m long by 4m wide. They were excavated to natural deposits by a tracked excavator fitted with a toothless bucket. The plant was supervised by an experienced archaeological banksman. The trench sides were cleaned using hand tools, and drawn, written, and photographic records were made according to standard Service practice (CAS 1995).

The main work in this area was the excavation of a trapezoidal area described above (Area 1; Fig 2; Plates 1 and 2). Like the trenches, the area was specified by co-ordinates. It was likewise marked out by GPS although it was necessary to exclude a small area around a protected tree. The area was stripped to an optimum level in two stages by the same tracked excavator used for the trenches. Backfilled evaluation trenches were re-excavated as the work progressed.

All features were cleaned and excavated by hand to levels agreed with Herefordshire Archaeology. All discrete features of Phases 2, 4, 6, and 7 were half-sectioned and some were excavated completely. Multiple slots were dug through curvilinear and rectilinear ditches assigned to Phase 8, representing samples of *c* 19% and 12.5% respectively. Three slots were dug through one of the ditches assigned to Phase 9, and a contemporary stone feature was excavated completely.

A lower sample level for the excavation was agreed with regard to extensive deposits. Three sondages and three 3m² test pits were dug through alluvial soils of Phases 1, 3, and 5.In the north of the area, these soils were removed by machine, under close supervision. Of the three stone spreads assigned to Phase 6, the southernmost was excavated complexly by hand, while the northernmost was investigated by hand-dug test pits and slots, representing a sample of *c* 30%. Two test pits were excavated through the third, more diffuse spread. The rest was excavated by machine.

Samples were taken from most fills and deposits, as described below in Sections 9 and 10. Records were made according to standard Service practice. In addition, overlapping vertical photographs were taken of Phase 6 and 7 stone spreads. The area was surveyed by EDM, as were most features, with additional detail recorded on hand-drawn plans.

Additional work was required to define the extent and form of a Phase 8 curvilinear enclosure. To begin with, an 8m wide trench was excavated from the south-west corner of the area. It extended westwards for 65m. Sample trenches were then excavated across the projected line of the ditch, across gaps between evaluation trenches where it could have returned to the north, and across the line of an inferred parallel side. Finally, two more areas were excavated, one of *c* 880m² (Trench 78), the other of *c* 515m² (Trench 82). All the additional trenches and areas were surveyed by EDM.

3.1.2 Phase 1, Plot 9

Two 12m by 4m trenches were required in this area, one to the south of evaluation Trench 3 (Trench 62), the other to the east of evaluation Trench 12 (Trench 63). They were located, excavated and recorded in the same way as described above.

3.2 Stratigraphic analysis

The fieldwork records were checked and cross-referenced. Basic information was entered into a combined stratigraphic, artefactual and environmental database. All plans and surveys were combined in a layered AutoCad drawing.

A Harris matrix was produced using ArchEd software. The matrix was phased by identifying stratigraphically contemporary contexts or (in the absence of stratigraphic proof) by grouping

contexts with formal or spatial affinities. The phases were then dated on the basis of associated artefacts and radiocarbon dates.

Ten stratigraphic phases were identified in total, six of which (Phases 2-7) dated to the Late Neolithic to Bronze Age period, the remaining four representing the Mesolithic to Late Neolithic/Early Bronze Age (Phase 1), the early medieval period (Phase 8) and the post-medieval and modern periods (Phases 9 and 10). Roman pottery was also recovered but only as residual material.

3.3 Radiocarbon dating

Twelve samples were submitted for AMS (Accelerator Mass Spectrometry) radiocarbon dating to the 14CHRONO Centre at Queens University Belfast (Tables 1 and 2; Appendix 1). The samples were selected based upon their position within significant, but poorly dated, features identified during the excavation such as the enclosure ditch and the burnt mounds/charcoal layers.

Material selected was a mixture of animal bone (three samples) and charred and un-charred plant macrofossil remains. The latter were identified by Elizabeth Pearson to ensure that no long-lived or aquatic species were submitted for dating. This included charred cereal grain, hazel (*Corylus avellana*) nutshell and charcoal (Table 1). The cell structure of the charcoal fragments was examined in three planes under a high power microscope and identifications were carried out using reference texts (Schweingruber 1978, Brazier and Franklin 1961 and Hather 2000) and reference slides housed at the Worcestershire Historic Environment and Archaeology Service.

During the initial percentage nitrogen test undertaken to indicate probable collagen preservation, all three bone samples (UBA-16385, UBA-16386 and UBA-16387) were well below the failure threshold of 0.79% with UBA-16385 and UBA-16386 providing an average of 0.13% and UBA-16387 marginally better with a figure of 0.18% (James McDonald, pers comm). The most likely explanations for the poor collagen preservation are adverse soil conditions or cooking of bone although the former is the most likely. Due to this failure, three additional plant macrofossil samples (UBA-16399, UBA-16400 and UBA-16401) were selected to replace the failed samples.

3.4 Artefact methodology

3.4.1 Artefacts: Recovery and processing

The artefact recovery policy and processing methodology conformed to standard Service practice (CAS 1995; appendix 2). Further to this, in the case of fragile prehistoric ceramics, cleaning comprised careful mechanical removal of surplus soil using a combination of wooden spatula, toothpicks, stiff and soft brushes. Subsequently sample sherds were carefully washed (using soft brushes or fingertip to remove soil) and dried and where they proved sufficiently robust the remaining sherds were similarly processed. Form sherds were packaged wrapped in acid free tissue paper in rigid plastic boxes.

3.4.2 Artefacts: Method of analysis

All hand retrieved finds were examined. They were identified, quantified and dated to period. A *terminus post quem* date was produced for each stratified context. The date was used for determining the broad date of phases defined for the site. All information was recorded on *pro forma* sheets.

Artefacts from environmental samples were examined, but none were worthy of comment, and so they not included below, nor included in the quantifications presented (Tables 3-7).

For the prehistoric pottery, the methodology approved by the Prehistoric Ceramics Research Group (PCRG 1995) was employed. Analysis was restricted by the very limited quantities present and the small size of sherds retrieved; however, where possible included analysis and production of detailed descriptions of fabrics, condition (size, degree of brokenness, condition of surfaces) and analysis of distribution and associations across the site.

Pottery fabrics were referenced where possible to the fabric reference series maintained by the Service (Hurst 1994). Although they were not re-examined, five early prehistoric pottery sherds recovered and reported during the evaluation stage of the project (Gibson 2008) were also re-considered in the light of the additional stratigraphic and chronological information gained from the excavation.

3.5 Environmental archaeology methodology

3.5.1 Sampling policy and sample selection for analysis

The environmental sampling strategy conformed to standard Service practice (CAS 1995, appendix 4). Animal bones were hand-collected during excavation and 137 bulk samples were taken from 120 fills and deposits (Table 8). Of the 137 samples, 85 samples (75 contexts) were assessed (HEAS 2010).

Material considered at assessment mostly derived from samples dated to Phases 1 to 8, with a small number of samples from Phase 9 (post-medieval). Following the assessment, a further 240 litres of bulk sample from selected Phase 1-8 deposits was processed specifically for the recovery of charred plant remains and /or animal bone appropriate for radiocarbon dating.

Samples from spreads of material containing various proportions of fire-cracked stone, charcoal and soil were taken from test pits at several points, distributed across the spread or layer so that an analysis of the spatial variation in composition could be undertaken. Spit samples were also taken in columns from alluvial layers in which molluscs were well preserved and abundant.

3.5.2 Animal Bone (Emily Beales)

All bone fragments were analysed and, where possible, identified to element and species with any butchery marks, pathological alterations and morphological abnormalities being recorded (Table 9). Identifications were aided by reference to the reference collection maintained by the Service and standard keys (Schmid 1972; Hillson 1992). Sex was not factored into this analysis as most of the bone elements were too incomplete to gain adequate measurements needed for sex determination. Teeth were identified to species using Hillson (1992).

The collected data were analysed and interpreted to assessment level, although no statistical analysis was undertaken due to the small sample size of identifiable remains.

3.5.3 Plant macrofossils (Elizabeth Pearson)

Bulk samples processed for the recovery of plant macrofossils were mostly processed at assessment with additional material processed during the analysis stage targeted to the recovery of material suitable for radiocarbon dating. Processing was by flotation using a Siraf tank. The flots were collected on a 300µm sieve and the residue retained on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds.

At assessment, the residues were scanned by eye and the abundance of each category of environmental remains estimated. The flots were scanned using a low power MEIJI stereo light microscope and plant remains identified using modern reference collections maintained by the Service, and seed identification manual (Cappers et al 2006). A magnet was also used to test for the presence of hammerscale.

Apart from identification of charred plant macrofossils recovered from the additional samples processed for material to support radiocarbon dating no further analysis was undertaken; however, the results from the assessment stage are included below (Section 8; Table 10) while plants macrofossils identified for the radiocarbon dating programme were identified as above (Section 3.3). Nomenclature for the plant remains follows the New Flora of the British Isles, 2nd edition (Stace 1997).

3.5.4 Mollusc analysis (Andrew Mann)

Following assessment, samples of between 5 and 40 litres were selected for full quantification (Table 11) from three alluvial soils (contexts 1219, 1182, and 1218), and three fills of an enclosure ditch terminus (1037, 1036, and 1023). The alluvial soils developed between the Mesolithic to the Early Bronze Age and the enclosure has been dated to the early medieval period.

The samples were processed by flotation followed by wet-sieving using a Siraf tank. The flot was collected on a 300µm sieve and the residue retained on a 1mm mesh. The flot and residue was scanned using a low power EMT stereo light microscope and the remains were identified using a modern reference collections housed at the County Archaeological Service. Identification and ecological information was aided by Kerney and Cameron (1979), Evans (1972), Kerney (1999) and Davis (2008). Nomenclature follows Kerney (1999).

3.5.5 Geoarchaeology (Keith Wilkinson and Nick Daffern)

The Rotherwas Futures site near Hereford was subject to a field visit on 4 February 2009 in order to comment on the stratigraphy and advise on sampling for geoarchaeological study

A large part of an early medieval sub-circular enclosure had been exposed in plan at the time of the visit. The ditches of the enclosure, including two termini, had been sectioned, while a 1m section through overlying deposits had been exposed in the southern part of the site. A 0.60m-thick section was present at the northern margins of the excavation trench, the difference from the south being explained by the present north to south slope. A number of prehistoric burnt spreads were noted in the interior of the enclosure, two of which had been exposed in box sections.

The aims of the geoarchaeological investigation were to determine:

- Can the geoarchaeological evidence support understanding of the stratigraphic sequence and how did each unit form?
- What was the nature of the environment in which the prehistoric features were constructed and used?

To support meeting these aims, vertical sections at the trench edges, in box sections and sections across the ditch were observed and sediment sequences/soil profiles were described in detail at three locations and then sampled as both columns of bulk samples and monoliths

The sampling points comprised:

- A section exposed in the southern margins of the site, immediately adjacent to a railway cutting;
- A box section through a burnt spread in the western part of the main excavation area; and
- The north-eastern section of the main excavation area

The monolith samples were, unfortunately subsequently damaged and discarded by a courier during transport from Worcester to Winchester and as a result the assessment has had to be compiled from extensive field notes made at the time of the visit. It is understood that due to subsequent landscaping the sample locations cannot be revisited.

3.5.6 Sample composition analysis (Elizabeth Pearson)

Contexts 1003 and 1188 (Phase 3; Bronze Age spreads of fire-cracked stone and cultural material from the southern and northern areas respectively) were selected for analysis. Analysis was carried out on these samples to compare their composition (Table 12), and in the case of spread 1003, to catalogue clast type and composition (Table 13) so that these layers can be compared with stony spreads on other sites of similar date in the area, for example, at Rotherwas Ribbon (Allen 2011).

All samples were processed by flotation using a Siraf tank. The flots were collected on a 300µm sieve and the residue retained on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds.

The residues were fully sorted by eye and the weight of each category of environmental, artefactual and clast remains over 2mm in size recorded.

Clast analysis was undertaken on context 1003 (the only sample suitable for such analysis) as follows. Following wet-sieving, sample residues were fractionated following lithological analytical techniques recommended by Gale and Hoare (1991) which are derived from Brigland (1986). Samples were sieved using a nest of sieves approximating to phi size 50mm, 25mm, 14mm, 10mm, and 5mm.

The number of clasts for analysis ideally should be 250 to 300 minimum and preferably 500 per sample (Gale and Hoare 1991). Sufficient clast material was fractionated to allow at least 250 clasts to be recorded.

Phi size	= mm	suggested graded set using WEAS available sieves
-6 Ø (phi)	(64mm)	c 50mm
-5 Ø	(32mm)	25mm (tank basket)
-4 Ø	(16mm)	16mm (endecotte sieve)
-3 Ø	(8mm)	9mm (bowl type sieve)
-2 Ø	(4mm)	4mm (endecottes)

Counts, weight and clast roundness (i.e. 10% subrounded, 70% rounded, and 20% subrounded)

4. Topographical context

The Rotherwas Industrial Estate straddles the Holme Lacy Road at a point 1km south-west of Rotherwas and 3km south-east of Hereford city centre (Fig. 1). In 2008, the area known as Phase 2 lay just outside the estate to the south. It has since been developed, and is now divided into plots on both sides of a T-shaped extension to Haugh Road.

The area known as Phase 1, Plot 9 lies 500m to the north-east, in the angle of Holme Lacey Road and Coldnose Road (see Fig. 24). At present, it remains one of several planned development areas.

In geological terms, both areas are on the first, Flandrian terrace of the River Wye (British Geological Survey 1989). The terrace is underlain by older glacio-fluvial deposits but overlooked by Dinedor Hill, a ridge of Siluro-Devonian Old Red Sandstone. The soils of the area have been mapped as silty and stony reddish brown soils of the Bullingdon Series (Hodgson and Palmer 1971).

5. Archaeological context

The immediate archaeological context for the excavation phase of the project was provided by the results of the field evaluation (AI 2008). This had involved trenching in seven areas across the estate, including 59 trenches in the Phase 2 area (a sample of 4.54%) and 13 trenches in Phase 1, Plot 2 (a sample of 4.69%). Although the results were not (and could not be) conclusive, they provided substantive evidence of past human activity in both areas.

The wider context was provided by information on previous sites and finds. Most of this information is collected in the Herefordshire Sites and Monuments Record. In the following paragraphs, evidence from the targeted areas and the wider area is summarised under broad period headings.

5.1 Prehistoric

Prehistoric deposits and features were found in the eastern half of the Phase 2 area (Fig 1). In Trench 28, a posthole contained fragments of burnt sandstone and a sherd of possible Bronze Age pottery. And in Trenches 42 and 43, a deposit of grey silt was interpreted as a prehistoric soil; however, the main evidence came from evaluation trenches further to the east within the Phase 2 area.

Prehistoric soils were observed in Trenches 37, 47, 49, 51, 53, 56, and 59. In Trench 49, the soil sealed a pit filled with fire-cracked stones and a small deposit of charcoal and animal bone. In Trench 53, the soil was overlain by a concentration of fire-cracked stones. The deposit was associated with eight worked flints, two sherds of pottery and a fragment of fired clay. The flints were dated to the Late Neolithic or Early Bronze Age. The ceramics were not diagnostic, but an Iron Age date was suggested. The evidence from this area was thought to represent a focus of prehistoric activity. Ditches found in Trenches 47 and 56 were placed in this context, as was a possible gully found in Trench 52; although, as discussed below, the ditches can be now assigned to a later phase of activity.

Turning to the wider area (Fig. 24), the best-known prehistoric site in 2008 was the monument known as the Rotherwas Ribbon, a sinuous track made of burnt stones in the Late Neolithic or Early Bronze Age. It was first observed *c.* 200m south of the industrial estate in 2006, during excavations along the line of the Rotherwas Access Road (Sworn, Jackson, and Woodiwiss 2009). It has since been traced northwards for 200m, almost up to the boundary of the Phase 2 area, and potentially southwards for a further 240m through a Herefordshire Archaeology project undertaken to further investigate this feature (Bapty and Williams 2011). Other prehistoric remains were found on either side of the Ribbon and further to the west in the watching brief undertaken during the construction phase of the Access Road (Sworn, Jackson, and Woodiwiss 2009). They included contemporary pits and deposits, pits of Middle Neolithic, Late Bronze Age, and Iron Age date, and the postholes of an Early or Middle Bronze Age roundhouse. There were also two Iron Age ditches, one cutting the Ribbon and another to the west.

Another significant prehistoric site was known from development-led fieldwork on land off Bullingham Lane in Bullinghope (Mann and Vaughan 2008; HSM 48339). Here, in one of 56 sample trenches, a spread of fire-cracked stones was found beside a silted watercourse. From its character and location, the deposit was immediately recognised as a burnt mound, i.e., the residue of prehistoric cooking, brewing or bathing using hot stones in water. It was the first burnt mound to be found in Herefordshire, although many have been found elsewhere. It was not closely dated but was assumed to date to the Middle Bronze Age, like the majority of excavated sites. Another trench also found the first evidence of Mesolithic activity in the area, in the form of seven diagnostic flints.

A third important site was found further to the north, at Bradbury Lines in 2002 (Jones and Duncan 2003; HSM 51603). The evaluation of this former military base found very little

apart from an Iron Age pit, but later excavation found eight broadly contemporary features, an important group of Neolithic and Bronze pottery, and the ditch of a Bronze Age barrow.

Other prehistoric sites were known from previous work, including find-spots of Neolithic material (HMS 6499, 6502, 6504, 8363, 8645, 8618, 8619, 9446) and the Iron Age hillfort of Dinedor Camp (HSM 1278). Most of the Neolithic material was found in Grafton and Lower Bullingham by local collectors in the 1950s and 1960s; the rest (apart from a doubtful "Neolithic occupation site" in Dinedor) was found in 1989, along a proposed bypass route that prefigured the line of the Access Road (Dinn and Hughes 1990).

5.2 Roman

No evidence of Roman activity was found in the evaluation but previous work had established a context for settlement and farming in this period. Roman features and pottery were found on the site at Bradbury Lines in 2003 (Jones and Duncan 2003; HSM 51603). The remains were interpreted as part of a rural settlement. Roman pottery was found at Dinedor Camp in 1951 (Kenyon 1954, 23-25; HSM 7169) and at Bullingham Court in 1992 (Wichbold 1992; HSM 6504). More pottery was found on the line of the Access Road in 1989 (HSM 9136, 9138, 9140) and both pottery and features were found during the excavations and watching brief in 2006-7 (Sworn, Jackson, and Woodiwiss 2009, 33 and 36). The Ribbon was cut by a ditch that contained enough Roman pottery to suggest settlement nearby, and two similar ditches were found to the west. The subsequent Herefordshire Archaeology project located further Roman deposits to the south on the slopes of Dinedor Hill and has confirmed the presence of a Late Iron Age and Romano-British settlement (Bapty and Williams 2011). A Roman ditch was also found on the site off Bullingham Lane (Mann and Vaughan 2008; HSM 48339), not far from the find-spot of a Roman brooch (HSM 8411).

5.3 Medieval

No medieval remains were found during the field evaluation, although a few sites were known in the wider area and there was a documented context for settlement and farming. The earliest and most significant medieval remains in the vicinity were found off Bullingham Lane in 2007 (Mann and Vaughan 2008; HSM 48339). Two features in a trench near the Withy Brook produced metalwork and other finds of 7th or 8th century date. These remains represented as the first stratified evidence of early medieval settlement in Herefordshire. Remains of later medieval settlements had long been recorded at Dinedor, Rotherwas, and Lower Bullingham and some remains at Lower Bullingham were excavated in 1990 (Hemingway 1990; HSM 8521). Finally, later medieval pottery and traces of ridge and furrow earthworks were found along the line of the Access Road in 1989 (Dinn and Hughes 1990; HSM 9137, 9138, 9139), and again in 2007 (Sworn, Jackson, and Woodiwiss 2009, 37).

5.4 Post-medieval

The only post-medieval features found in the evaluation were field ditches and stone field drains in the Phase 2 area (AI 2008). However, the tithe map reproduced in the report showed that the whole estate was enclosed farmland in 1840, and that that the targeted areas were managed as meadow and pasture. The field pattern suggested a mixture of old and new enclosures.

Stone drains were also found along the line of the Access Road (Sworn, Jackson, and Woodiwiss 2009). Two undated features were also considered in a post-medieval context: a hearth to the east of the main excavations, and a double-ditched enclosure near the south-east corner of the estate (Sworn, Jackson, and Woodiwiss, 37-38).

5.5 Modern

Modern deposits were found in every area investigated in the evaluation (AI 2008). Most of them related to the munitions factory that preceded the estate. The factory was established in 1916, produced lyddite shells until 1918, became a storage centre until the 1930s, and then a factory again until 1945. Some parts of the factory were sold to private business in the 1940s. Other parts were left to decay and were demolished piecemeal in the 1950s and 1960s. A row of brick and concrete magazines on the south side of the Phase 2 area remained in use until 2008 except for the last in the row, which stood on the line of the Access Road and was recorded before being demolished in 2007 (Sworn, Jackson, and Woodiwiss 2009, 38-42). A map of 1942 reproduced in the report shows how the magazines were linked by railway tracks to the main factory buildings. Although not mentioned in the report, a 5-wide deposit of rubble found in Trench 38 was probably the foundation for one of these tracks. No buildings are shown in Phase 1, Plot 9, but a track crossed the area from east to west, and a deposit of rubble found in Trench 4 may represent the site of building served by the track.

Part 3: Results

6. Radiocarbon dating (by Nick Daffern)

The full results of the radiocarbon dating are presented in Appendix 1.

The results of the AMS radiocarbon analysis enabled refinement and definition of the three principal phases of site activity (Phases 6, 7 and 8). The first (Phase 6) is the deposition of a series of charcoal-rich/burnt layers which occurred in the Late Neolithic/Early Bronze Age (cal BC 2464 to 2213, UBA-16381; cal BC 2285 to 2058, UBA-16382). The second phase (Phase 7) is associated with further charcoal-rich/burnt deposits including a trough (context 1386) whose fill accumulated in the Middle Bronze Age (cal BC 1291-1059, UBA-16379), although one of the samples produced a modern date indicating intrusion of modern plant material.

The third phase (Phase 8) is represented by the fills of a curvilinear enclosure ditch and a posthole (context 1381). The dates indicate a late 6th century date for the ditch (cal AD 433 to 599, 580 to 652 and 580 to657; UBA-16399, 16388, and 16401 respectively), and a mid to late 7th century date for the posthole (cal AD 599 to 657 and 620 to 677; UBA-16378 and 16377). Notably, this phase of site activity, although stratigraphically secure, was otherwise invisible in the archaeological record due to a complete absence of datable finds. An outlying Middle Neolithic date (cal BC 3095-2921; UBA-16400) identified from within the primary fill of the Phase 8 enclosure ditch (context 1061) can most likely be attributed to contamination as a result of the ditch truncating an earlier deposit although the nature of this earlier activity is unknown.

7. Stratigraphy

The following section describes the deposits and features found in the main investigation area (the Phase 2 area), and in Phase 1, Plot 2. It also describes the artefacts and ecofacts found with them, anticipating the detailed analyses in Sections 8 and 9. Fuller details of deposits and features are contained in Appendix 2, along with a phased Harris matrix.

7.1 Phase 2 area

7.1.1 Phase 1: Mesolithic to Late Neolithic/Early Bronze Age

The earliest evidence for human activity came from a deep alluvial soil (context 1013=1183=1214=1217=1219=1221). This soil was sampled in several locations but only excavated in a strip across the north of the area. A single flint flake and 66 fragments of animal bone were securely stratified within it. Another seven flints and 61 fragments of animal bone were found on the surface but may relate to later activity.

7.1.2 Phase 2: Late Neolithic/Early Bronze Age

In the north of the area, the Phase 1 alluvial soil was cut by a discrete group of seven small, shallow pits (contexts 1406, 1408, 1410, 1412, 1414, 1416, and 1418; Figs. 2, 3, 4 and 5). Four of these features had been dug close together to form a nearly straight, north-west to south-east line (contexts 1408, 1410, 1412, and 1414; Plate 3). A fifth feature lay on the same line, 1.6m to the north-west (context 1418). The fills contained no artefacts and few inclusions apart from occasional charcoal flecks.

7.1.3 Phase 3: Late Neolithic/Early Bronze Age

The Phase 2 features were sealed by a shallow alluvial soil (contexts 1023=1182=1184=1213=1216=1224). Four sherds of pottery were recovered from this soil (context 1182) along with two flints and 15 fragments of animal bone.

7.1.4 **Phase 4: Late Neolithic/Early Bronze Age**

The Phase 3 alluvial soil was cut by another group of small, shallow pits (contexts 1387, 1389, 1391, 1393, 1396, 1398, 1402, and 1404; Figs. 3, 6, and 7). This group almost overlapped with the first group, suggesting a continuity of activity across Phase 3. The fills were similar to those of the first group and no artefacts were found. A large oval pit found 16m to the north-east belongs in the same phase on stratigraphic grounds (context 1374; Figs. 3, 8 and 9; Plate 4). Three flints were found in the fill of this feature. Two pits to the west and one to the south have been assigned to the same phase on the basis of their proximity and similarity (contexts 1154, 1200, and 1210; Figs. 3, 8 and 9). The fills of these pits were less humic, however, and only produced one artefact between them, a single flint from the southern pit (context 1200; Plate 5).

7.1.5 **Phase 5: Late Neolithic/Early Bronze Age**

The Phase 4 features were sealed by another alluvial soil (contexts 1021=1181=1190=1215=1216=1223=1257). Five sherds of pottery were recovered from this soil (context 1181) along with one flint, 74 fragments of bone and four oyster shells.

7.1.6 **Phase 6: Late Neolithic/Early Bronze Age**

Later activity within the same period was represented in south of Area 1 by several groups of features (Figs 2 and 10).

The most well-defined of these was a discrete group of small pits or postholes and two larger, trough-like pits filled with charcoal-rich soil (pits and postholes numbered 1236, 1238, 1260, 1262, 1263, 1268, 1270, 1271, 1274, 1275, 1277, 1280, 1282, 1284, 1286, 1287, 1290, 1293, 1295, 1296, and 1298; troughs numbered 1226 and 1229=1232=1235=1242; Figs. 2, 10, 11, 12 and 13; Plate 6). The only artefacts from these features were a flint and a small fragment of animal bone from one of the troughs (context 1226). Most of these features were sealed by a shallow charcoal-rich deposit (context 1244=1245=1246). This in its turn was sealed by a more extensive deposit of fire-cracked stones (context 1003=1258; Fig. 11; Plates 7).

The remains were thought to be of Bronze Age date, although the assumption was tested by radiocarbon dating. Two samples of charcoal from the charcoal-rich deposit produced radiocarbon dates of 2465-2212 BC and 2286- 2058 BC. These dates are consistent with most of the artefacts associated with these deposits (including finds from cleaning layers 1002 and 1194 and several finds from the evaluation). The artefacts included a rim sherd in a similar fabric to the sherds found in the Phase 3 alluvial soil. There were also 26 flints (including nine from evaluation trench 53) and 54 fragments of animal bone. At least one flint was residual, however (e.g. a microlith from context 1002), and two artefacts were clearly later (a sherd of medieval pottery and a strip of modern copper).

Similar remains were found a few meters away to the north-east. Here, the Phase 3 alluvial soil was cut by seven pits of various sizes (contexts 1084, 1085, 1086, 1087, 1301, 1303, and 1308; Figs. 10, 14 and 15; Plate 8). Four of them were filled with charcoal-rich soil and fire-cracked stones, especially sandstone (contexts 1084, 1085, 1087, and 1301). No artefacts of any kind were found. Three of the pits were sealed by another deposit of charcoal-rich soil and fire-cracked stones (context 1193). This was overlain by another, smaller patch (context 1189). The stones were less dense than those to the south-west and there only four flints were found among them. There were also 177 fragments of animal bone and two modern finds, both probably intrusive.

Lastly, nineteen features in the south-east of the area may belong in this phase or the previous phase, although most were irregular, and probably represent the root-plates of ancient trees or shrubs (contexts 1027, 1056, 1066, 1068, 1068, 1069, 1071, 1072, 1073, 1074, 1075, 1076, 1078, 1079, 1080, 1081, 1082, 1083, 1103, and 1104; Fig. 10). No artefacts were recovered from any of the fills.

7.1.7 Phase 7: Middle Bronze Age

Later but similar activity was represented in the north of Area 1. Four small pits or postholes and another trough-like feature cut the Phase 3 alluvial soil (pits/postholes numbered 1363, 1375, 1377, and 1399; trough numbered 1385; Figs. 2, 16, 17 and 18).

A crescent-shaped deposit of fire-cracked stones was found to the west of the trough (context 1382; Fig. 16; Plate 9) and a similar deposit was partially exposed to the north-east (context 1384; Fig. 16).

Charcoal from the fill of the trough produced a radiocarbon date of 1291-1059 BC. No artefacts were found in the features, apart from a single fragment of animal bone (from fill 1400 of pit 1399).

The features were sealed by another spread of fire-cracked stones (context 1188; Fig. 16; Plate 10), from which 13 flints and 160 fragment of animal bone were recovered.

7.1.8 Phase 8: Early medieval

The Phase 5 soils were cut by two enclosures (Fig. 19): a rectilinear enclosure that extended beyond the northern limit of excavation (contexts 1310=1316=1319 etc), and a much larger curvilinear enclosure that continued to the north and west (contexts 1011=1017=1038 etc).

Taking the curvilinear enclosure first, it was defined by a ditch that curved around the east and south sides of the Area 1and then held a nearly straight east-west line for more than 130m, as established by Trenches 64, 65, 83, 67, and 76. It could not be traced further, and no evidence was found of a return to the north, or a parallel northern side. It had an entrance on the east side, defined by a narrow gap in the ditch. The ditch was up to 1.57m wide and 1.36m deep. In Area 1, the sides sloped steeply to a gently rounded base (Fig. 20; Plates 11 and 12). As the ditch continued to the west, however, it became narrower, shallower, and more concave (Plate 13). There was no evidence of a bank or palisade in any of the sixteen excavated slots. Likewise, there was no evidence for scouring or recutting, implying that the ditch had been left to silt naturally.

At first, the ditch was thought to represent a Late Neolithic cursus or large enclosure. This hypothesis was supported by the artefacts recovered from the excavated slots in Area 1. Two flints were found in primary fills (contexts 1037 and 1122), and another flint and a sherd of prehistoric pottery were found in a secondary fill (context 1024). Another secondary fill produced a nodule of chert from the Gower Penninsula (context 1015: a conjoining fragment was subsequently found in the fill of evaluation Trench 56). A fourth flint was found in a tertiary fill (context 1124). All fills contained small quantities of bone. However, a secondary fill from Trench 67, 162m to the west of Area 1 produced five sherds of Roman pottery (context 6707). This questioned the hypothesis, but the issue was only resolved by radiocarbon dating of selected samples. Two samples from primary fills produced dates of AD 433-599 (context 1060 in slot 1061) and AD 580-658 (context 1052 in slot 1053) and while one sample from the tertiary fill produced a date of AD 620-678 (context 1119 in slot 1123). This evidence shows all the artefacts described above were residual, in some cases by two millennia.

The rectilinear enclosure was defined by two straight ditches that met at an angle of 105° (Plate 14). The length of the ditches suggests an enclosed area of at least 53m by 48m, giving

a minimum area of 0.14 hectares. The ditches were up to 2.65m wide and 1.10m deep. The sides sloped more or less steeply to a rounded base (Fig. 21; Plates 15 and 16). There was no break in the ditches, implying that the enclosure was entered from the north. As in the case of the curvilinear enclosure, there was no evidence of a bank or palisade, and no evidence of scouring or re-cutting.

Very few artefacts were found in the ditches. A single flint came from a primary fill (context 1341). Four pieces of possible Roman slag came from a secondary fill (context 1328), and four more pieces were found in a tertiary fill (context 1349). Another secondary fill contained 75 fragments of bone (context 1322). No artefacts were recovered from primary fills.

At the time, the possible Roman slag was accepted as approximate dating evidence, and no samples of bone or charcoal were submitted for radiocarbon dating. In retrospect, this was unfortunate, as the date of the slag is now less certain and other remains once thought to be Roman have been dated to the post-medieval period. The date of the enclosure is therefore uncertain, although negative and circumstantial evidence makes an early medieval date more likely than any other alternative.

The negative evidence is the complete absence of Iron Age material, and the lack of Roman material across the site. If the enclosure had been created in either period, and especially in the Roman period, there would have been plenty of material, or at least enough to provide an approximate date. The circumstantial evidence is the context provided by the curvilinear enclosure, and by a posthole inside the rectilinear enclosure (context 1381). At the time, the posthole was thought to be prehistoric and a sample of charcoal from the fill was submitted for radiocarbon dating. Unexpectedly, however, the sample produced a date of AD 599-658. It is possible, of course, that the post-hole represents activity inside the curvilinear enclosure, rather than the rectilinear enclosure which appears to contain it, but the lack of other early medieval features across Area 1 argues against this possibility.

7.1.9 Phase 9: Post-medieval

A stone structure was found near the south-east corner of the area, next to evaluation Trench 50 (Fig 2; Plates 17 and 18). Only the foundations of the structure survived. The main elements were walls of local stone blocks (contexts 1030 and 1248). These had been laid in courses along both sides of a rectangular trench (context 1108=1206=1250). The gap between the walls had been filled with unmortared rubble and soil (context 1249). Several artefacts were associated with these remains: an iron nail, two fragments of brick, and single fragments of tile, coal, and bone. At first, this material was thought to be Roman but after cleaning and examination the brick and tile were identified as late medieval or post-medieval products.

At around the same time, parallel gullies on north-west to south-east alignments were dug across the centre of the area (contexts 1019 etc, 1020 etc, 1160, and 1332=1334; Fig 2; Plate 19). Similar ditches were found in the trenches to the west, and a long length of ditch was exposed in Trench 82 (Plate 20) Sometime later, about half a metre of sediment built up across the whole of the Phase 2 development area (context 1012=1222).

7.1.10 Phase 10: Modern

The Phase 9 sediment was sealed by made ground that included abundant fragments of clinker and metalwork. It was also cut by trenches for metal water pipes and square pits for brick inspection chambers.

7.2 Phase 1, Plot 9

No archaeological deposits, features, or artefacts were found in Trenches 62 and 63. Both trenches showed similar profiles of fine loamy over clayey soils (Plates 21 and 22). The soils

were deeper than those found in the Phase 2 area and probably represent a greater admixture of colluvium.

8. Artefact analysis

8.1 Introduction

The artefactual assemblage, recovered from 58 stratified contexts, consisted of 1,255 items with a total weight of 2.497kg, as summarised in Table 3.

Stone finds comprised worked flint, as well as pebbles that appeared to have been heat-cracked. The bulk of the pottery was Roman, although a small number of prehistoric sherds were also retrieved. Other finds, found in small quantities, included metal, slag, and brick/tile, and probably all related to medieval and later activity (Phases 8-10) at the site.

8.2 The early prehistoric pottery (by Robin Jackson)

8.2.1 Analysis

Only 14 prehistoric pottery sherds weighing 57g (av wt 4g) were recorded from the site (Table 4). Of these 9 were recovered from the main excavation area and these are described below alongside five sherds reported from the evaluation (Gibson 2008). Of the latter, two derived from a trench (Trench 58) which intersected deposits in part of the subsequent main excavation area and revealed to be associated with a Late Neolithic to Early Bronze Age burnt mound. The other three were recovered from trenches to the west (Trenches 16 and 28).

Phase 3
Phase 3 deposits produced two well-preserved and decorated rim sherds, a decorated body sherd with only the external surface surviving and a very badly degraded body sherd. These were recovered close together towards the northern side of the excavated area and from within an extensive Phase 3 alluvial deposit (1182). This deposit both sealed and was cut by pits and postholes associated with phases of Late Neolithic to Early Bronze Age activity.

All four sherds appeared to be from a single vessel although no conjoins were present among the small sherds recovered. The fabric was well-fired and dark grey to black throughout, with a slightly soapy texture. Rare quartz sand inclusions (0.25-1.00mm in size) and sparse mica and sub-rounded clay/mudstone pellets (or possibly grog) were also present. The badly degraded body sherd also contained a large (7mm) fragment of grog of a well fired orange-brown fabric with quartz sand inclusions. From the fragments available, form was hard to determine although the profile presented by the two rim sherds (Fig. 22.1 and 2) appears to suggest a (?globular) bowl-form. Both were flat-topped and indicated a rim diameter in the region of 120-140mm and a body thickness of *c.* 10mm. Surviving external surfaces were present on three of the four sherds and these were decorated with diagonal lines of twisted cord impressions (Fig. 22.1-3). Both rim sherds had incised chevron patterns across their full width. No internal decoration was present on the two sherds where internal surfaces survived.

The only other Phase 3 material recovered was a single sherd from an equivalent alluvial deposit recorded during the evaluation in a trench some distance to the south (SF20; context 5308). The sherd was described as small (4g) and abraded, with a hard, well-fired and dark grey fabric, c. 5mm thick with brown inner and outer surfaces (Gibson 2008). Fine sparse quartz sand and some rounded possible mudstone inclusions were noted but there was no decoration or formal characteristics. Traces of a possible seed impression were noted on the outer surface (*ibid* 2008).

Phase 5
Five body sherds were recovered from a Phase 5 alluvial horizon (context 1181) which sealed Late Neolithic/Early Bronze Age activity and was overlain by a further phase of Late

Neolithic to Early Bronze Age activity (Phase 6; dating established through radiocarbon dating). The fabric was very friable and dark grey to black in colour, with a mid-brown outer surface. Fine, sub-rounded quartz inclusions were sparsely present along with dark sub-rounded clay pellets and occasional charcoal fragments. All sherds appeared to derive from one vessel although no conjoins were identified. The sherds were on average 10mm thick, however, no diagnostic form sherds or decoration was present.

Phase 6
No pottery was recovered from Phase 6 contexts in the main excavation phase; however, during evaluation a rim sherd was recovered from a deposit (SF18; context 5305) which can be equated to Phase 6 deposits associated with the burnt mound activity in the southern part of the site. These have been radiocarbon dated to the end of the third millennium BC. This was in a hard well-fired fabric, 5mm thick at the wall and fired grey throughout. Quartz and possible mudstone inclusions were recorded which break through both surfaces, especially on the rim (Gibson 2008). The rim is rounded, everted and well formed with traces of light fingertip dimples on the top of the rim.

Phase 7
A single body sherd was recovered from context 1024. This was not diagnostic in terms of form but appears to be of early prehistoric date, and thus is residual in this early medieval context. The fabric had a soapy texture, and was orange-brown with a black internal surface. Its inclusions comprised sparse quartz or quartzite inclusions, plus sub-rounded grog fragments that were darker brown in colour than the matrix.

Unphased prehistoric material from evaluation
Three sherds recovered during the evaluation and examined by Alex Gibson (2008) are also of Late Neolithic to Bronze Age date and although the deposits with which they were associated cannot be closely correlated with the main site phasing, all can be dated broadly within the span of activity represented in Phases 2 to 6.

Two conjoining sherds were recovered from Trench 28 (SF23; context 2802) from a pit or posthole associated with burnt stone and clay. The fabric is medium soft and somewhat abraded with an abraded outer brown surface and an inner black surface with some carbonaceous inclusions (Gibson 2008). The sherd had no decorative or formal traits but was of about 10mm thickness and had grog inclusions.

The other sherd was from Trench 16 (SF27). No contextual information is provided in the report (AI 2008), however the sherd is described (Gibson 2008). Weighing only 1g, this was in a well-fired, medium-hard orange-brown fabric with a black internal surface. It contained finely crushed grog giving it a slightly soapy texture. Despite the small size of the sherd the external surface was noted to have been decorated with two vertically applied fingernail impressions which possibly formed part of a horizontal cordon.

8.2.2 Discussion

The small size of the assemblage and paucity of diagnostic traits necessarily limits interpretation; however, the assemblage supports dating of site activity during Phases 1-7 to the Late Neolithic/Early Bronze Age to later Bronze Age periods. With the exception of one residual sherd, all the early prehistoric pottery examined derived from securely stratified contexts which can be dated to this period through other artefact associations (flint) and/or radiocarbon dating.

The fabrics are characterised by a soapy texture and the presence of sparse quantities of quartz sand inclusions and grog, or in several cases grog alone. In this respect they resemble the fabric of a Middle Bronze Age vessel recovered from a waterhole at Moreton-on-Lugg some 10km to the north (fabric MoL 1; Jackson and Hurst 2003, 12) and also the WCC Late Neolithic to Early Bronze Age (Beaker) fabrics 5.3 and 5.9; although where present quartz is more sparsely present than is usually the case in these fabrics.

Five sherds had formal or decorative traits. The form, decorative motifs and fabric of the sherds recovered from context 1182 indicate that these derive from a vessel liable to of an Early Bronze Age tradition, possibly a Food Vessel; an earlier date and association with Peterborough Ware traditions is also possible but locally fabrics of this date are usually characterised by the presence of large angular quartzite inclusions. Only one other example of a possible Food Vessel is known from Herefordshire from the nearby site of Bradbury Lines where a grog tempered wall sherd was suggested to be potentially of this tradition (or, in this instance more probably a Peterborough ware variant; Woodward 2010). The fabric and fingernail impressions present on the small sherd from Evaluation Trench 16 were tentatively identified as from a small rusticated Beaker dating c. 2200-1700 (Gibson 2008) and, although no contextual information was provided, the dating of such material is entirely consistent with phases of prehistoric activity across the site. Beakers have only rarely been recorded in Herefordshire and the south Marches as a whole with only 3 sites listed from Herefordshire in Clarke's 1970's corpus, to which can be added Beaker material recovered from Wellington Quarry (Harrison et al 1999), that from The Grove, Staunton-on-Arrow (Gibson 2003), and from the Rotherwas Access Road (Edwards 2009), all of which had been produced in finely made grog tempered fabrics. Lastly, the rim sherd with fingertip impressions recorded in a Phase 6 deposit in Evaluation Trench 53 shares traits with both Late Neolithic/Bronze Age and Iron Age traditions, but in this case is clearly associated with Late Neolithic/Bronze Age activity as demonstrated by radiocarbon dating of associated deposits investigated during the main excavation phase.

In conclusion, although an Iron Age date was tentatively suggested for several of the sherds recorded during the evaluation (Gibson 2008), the fabrics and decorative traits of the assemblage are entirely consistent with the Late Neolithic to Bronze Age dates provided by the majority of the flint assemblage and the radiocarbon dates. This assemblage therefore provides a small but useful addition to a growing body of Late Neolithic to Bronze Age dated material recovered from sites located within a broad band of relatively low lying land to the south of Hereford and on the south side of the River Wye. These include the Rotherwas Access Road (Edwards 2009) and associated English Heritage funded investigations of the Rotherwas Ribbon (Edwards 2011), and two sites on Bullingham Lane (Evans 2008; Woodward 2010). None of these are substantial assemblages but all derive from well-stratified, and for the most part well-dated contexts, and together are providing a developing understanding of ceramic traditions in use in this area during the 2nd to 3rd millennium BC.

8.3 The worked flint (by Hugo Lamdin-Whymark)

8.3.1 Introduction

Excavations at Rotherwas Futures yielded 102 struck lithics and 2 pieces of burnt unworked stone (Tables 5 and 6). The assemblage includes a microlith and a backed blade dating from the Mesolithic and a small component of broadly contemporary blade-orientated debitage, but the majority of the assemblage dates from the later Neolithic/early Bronze Age and is broadly contemporary with the burnt mound related activity in Phases 6 and 7.

8.3.2 Methodology

The flints were catalogued according to broad artefact/debitage type and retouched pieces were classified following standard morphological descriptions (Bamford 1985; Healy 1988; Bradley 1999; Butler 2005). Additional information was recorded on condition of the artefacts including, burning, breakage, the degree of edge-damage and the degree of cortication. Unworked burnt flint and stone was quantified by weight and number. A copy of the catalogue has been deposited with the archive.

8.3.3 Results

Raw material and condition

The raw material for the struck lithic assemblage was flint, with the exception of one flake of a mid brown chert with orange inclusions. The flint was typically light brown and translucent, but shades of mid brown, grey-brown and orange-brown were also noted. Surviving areas of cortex were typically abraded indicating that the raw material was collected from a fluvial gravel source. A single flint exhibited an 8mm thick unweathered white chalk cortex; this artefact, an end scraper from the Phase 1 or Phase 3 alluvial soil, probably originates from a chalk region.

The flint assemblage is in reasonably fresh condition, although occasional pieces exhibit slight edge-damage. A light bluish-white to a heavy white surface cortication is present on approximately half of the flints; the other flints are free from surface cortication (Shepherd 1972). Seventeen flints were burnt and forty-seven were broken, representing 17.5% and 48.5% of the assemblage respectively excluding chips.

The assemblage
The lithic assemblage is composed of artefacts from two distinct industries; one dating from the Mesolithic and the other from the late Neolithic/early Bronze Age.

The earliest industry is represented by a small number of regular blades, bladelets, blade-like flakes and retouched tools including a microlith and a broken backed blade. The microlith, from cleaning context 1002, measures 26 mm long by 4.5 mm wide and 3.5 mm thick and was manufactured on a grey-brown, slightly twisted, bladelet (Fig. 23.1). The left-hand side was retouched against an anvil and this abrupt retouch extends along the entire side in a broad curve. This microlith is not easily assigned to a class but it is most comparable to Jacobi's 3d (Jacobi 1978). The backed bladelet, from topsoil (7800, SF 148), is broken at the distal end but exhibits slight abrupt retouch along its right hand side and across a proximal truncation. These retouched artefacts date from the Mesolithic and the blade-orientated flake debitage is likely to be contemporary. Other artefacts, including two burins, two serrated flakes, an edge retouched bladelet, a possibly fabricator and the tip of a well used pick-like tool may also belong to this industry although they cannot be dated with confidence.

The second industry was orientated towards the production of small flakes of squat proportions and dates to the later Neolithic/early Bronze Age. A high proportion of retouched tools indicate that the assemblage is largely composed of utilised artefacts. However, limited flake production is attested to by the presence of a tested nodule, a single platform flake core (possibly re-used as a scraper) and an irregular multi-platform flake core exhibiting two episodes of flaking; these cores weigh 14 g, 16 g and 11 g respectively. Tools were also being produced as evidenced by the presence of an unfinished arrowhead (possibly a barbed and tanged blank: Fig. 23.2) and two retouch chips that result from the production of simple uni-facial retouched tools, such as knives or scrapers.

Retouched artefacts include a broad range of tools, but scrapers, knives and simple edge-retouched flakes dominate. In total, nine scrapers were recovered comprising three end and side scrapers, two end scrapers and four thumbnail forms (Fig. 23.3 and 4). These scrapers were typically of small dimensions with the smallest measuring only 20 mm long by 16 mm wide; only two examples measure over 30 mm in length (5301, SF22, 56 mm; 1013/1182, SF108, 38 mm). Five knives were recovered, comprising two backed forms (e.g. Fig. 23.5) and three miscellaneous forms manufactured flakes (Fig. 23.6-8). In addition, an edge-retouched flake with piercer on one corner and an awl were recovered (Fig. 23.9 and 10).

8.3.4 Discussion

The recovery of a microlith and associated artefacts provide evidence for Mesolithic activity on the site, although the assemblage is too limited to accurately date the assemblage or characterise the activities undertaken at this location.

The Late Neolithic/Early Bronze Age assemblage is more substantial and many of the artefacts were recovered from contemporary contexts associated with the southern burnt

mound (Excavation Phase 6 and Evaluation Trench 53). The assemblage from these contexts is dominated by tools, particularly scrapers and knives, which indicate an emphasis on scraping and cutting activities. The association of these tools with the burnt mound deposits is particular significant as the burnt stone surface of the Rotherwas Ribbon yielded a comparable range of tools, including thumbnail scrapers (Lamdin-Whymark 2008). This potentially indicates that the assemblages from the Rotherwas Ribbon and the current site are broadly contemporary and that they may have been generated by similar activities.

8.3.5 Illustration catalogue (Fig 23)

1. Microlith comparable to Jacobi (1978) 3d. Cleaning layer 1002 on burnt mound. Small find 1. Mesolithic.
2. Broken arrowhead blank, probably for a barbed and tanged form. Pit 1229, fill 1231. Late Neolithic/Early Bronze Age.
3. 'D'-shaped thumbnail scraper. Re-worked burnt mound 1188. Late Neolithic/Early Bronze Age.
4. Burnt end and side scraper with retouch in the ventral and dorsal surfaces. Burnt mound 1003. Small find 64. Late Neolithic/Early Bronze Age.
5. Backed knife. Small find 59. Neolithic/Early Bronze Age.
6. Knife. Machine excavated spoil 7800. Small find 146. Late Neolithic/Early Bronze Age.
7. Knife manufactured from a broken flake. Context 1034. Small find 12. Late Neolithic/Early Bronze Age.
8. Knife. 1194, cleaning burnt mound 1003. Small find 42. Late Neolithic/Early Bronze Age.
9. Awl. Burnt mound 1382. Small find 130. Late Neolithic/Early Bronze Age.
10. Retouched flake/piercer. Snapped flake with abrupt retouch along three edges and a piercing point on one corner. Post-roman enclosure ditch 1123, fill 1123. Neolithic/Early Bronze Age.

8.4 Roman, medieval and post-medieval pottery (by Dennis Williams)

All Roman and later dated pottery sherds were grouped and quantified according to fabric type, as shown in Table 7. Several of the Roman sherds could be dated from their forms; where possible, each of the remaining sherds was assigned to a general period or production span, according to its fabric type.

8.4.1 Roman pottery

Of the Roman pottery, 97% (by weight) was recovered from context 7602, a Phase 8 early medieval, deposit. This material mainly comprised oxidised coarsewares, of the Severn Valley type, which have been placed in the fabric 12 category of the WHEAS reference series, for the purposes of the tables shown above. Although soft and powdery to the touch, the surfaces of these oxidised coarsewares were mostly free from significant abrasion or weathering, suggesting they had not been subject to much movement within or above the ground.

One oxidised body sherd (from the body of a jar or flagon) found in context 7602 may have been possibly manufactured within the Severn Valley itself. This had a uniform, easily-abraded fabric, with rare to moderate quartz or feldspar inclusions, and very rare mica. Iron-rich inclusions (both black and red) were infrequent but much larger than would be normally observed in Severn Valley ware manufactured in the major production area around the north end of the Malvern Hills.

Close examination of the remainder of the oxidised coarsewares revealed fabrics that had rare to moderate quartz or feldspar inclusions, and rare mica, but which contained red and black iron rich inclusions, plus significant amounts of sandstone (or siltstone) in some cases. The presence of sandstone would not be expected in fabric 12 vessels manufactured in Worcestershire, so the most striking conclusion is that these coarsewares were probably made more locally, thus avoiding a dependence on trading links with the Worcestershire production area. Although all were wheel-thrown, the surfaces of many of these oxidised coarsewares were 'lumpy' and irregular, with coarse-textured fracture surfaces, owing to poor mixing of their clays. It was noted that there were often clay pellets which tended to stand slightly proud of abraded surfaces.

These oxidised coarseware fabrics were carefully compared with those in the *Ariconium* (Weston-under-Penyard) type series established by Willis (2003). Oxidised coarsewares from the excavations in the area of the nearby Rotherwas Ribbon and from watching briefs along the Relief Road have been previously linked to *Ariconium* fabrics O10, O12, O13, O14, O15, O17, O18, O22 and O23 (Crawford pers. comm.). However, most of the fabrics in the present, much smaller assemblage could not be exactly matched to samples in the *Ariconium* series, when examined in terms of inclusion densities, size distributions, and types. One exception was a rim sherd from a narrow-mouthed jar, found in context 7602, which had a fabric similar to O19 described by Willis. The present fabric was unusually hard and sandy with very thin orange-brown oxidised surfaces, over a mid-grey reduced core. Its surfaces were rough, with exposed inclusions, probably of quartz, as well as red and black iron-rich ones. No organic-tempered material was observed, although this is often found in Severn Valley ware (as fabric 12.2 in the WHEAS series).

The forms found at the Rotherwas Futures site appeared to be consistent with some of those known in Worcestershire and elsewhere in the Severn Valley. A sherd with the O19 fabric, mentioned above, and found in context 7602, was from a divided or 'pulley' rim broadly similar to that of the Type 10 jar type described by Webster (1976), According to Webster's study, this would be probably 3rd-4th century in date.

Two other recognisable forms, in the group from context 7602, provided good matches within the Webster series, but again with local fabrics. There were three slightly-hooked rim sherds from a single wide-mouthed jar, similar to Type 22 (2nd-3rd century), which had clay pellets and sparse sandstone in their fabric. A rim of a Type 43 tankard (late 2nd-3rd century) contained sparse sandstone and pronounced but ill-sorted iron-rich inclusions. It was observed that hooked rims, from Type 22/23 wide-mouthed jars, were also found during excavations along the Rotherwas Relief Road, as were sherds from Type 41/42/43 tankards (Crawford pers comm.).

Body sherds from context 7602 appeared to have been from jars or flagons. Five small oxidised body sherds found in context 6707 were from a single vessel, probably a tankard. Their fabric was characterised by clay pellets and iron oxide inclusions. A single body sherd from context 1018 was undiagnostic in terms of form, but had a hard fabric with ill-sorted, sandstone inclusions.

In context 7602, evidence of traded wares was provided by Black Burnished (BB1) sherds (fabric 22).Three everted rim sherds were from a Type 2 jar, possibly 2nd-3rd century in date, but a decorated body sherd from this context had an almost 'square' lattice pattern indicative of a production date no later than the mid-3rd century. The wall of a Type 20 bowl found in this context was undecorated, and could have been produced during a wider 2nd-4th century date range (Seager Smith and Davies 1993).

In addition, context 7602 yielded a single sherd in the form of a hand-made lid with lifting knob, presumably to fit a cooking pot. This had coarse Malvernian inclusions (fabric 3.2), and could have been from a transitional 1st century BC - 2nd century date range, although the Severn Valley and Black Burnished wares were all consistent with a later 2nd-4th century date range.

8.4.2 Phase 9: Medieval and post-medieval pottery

Medieval
A small body sherd of Malvernian unglazed ware (fabric 56) was found in context 1002. This material contained abundant, ill-sorted quartz inclusions, and was possibly from the base of a cooking pot, since the one side was blackened.

Post-medieval
The only post-medieval pottery recovered from the site was a small sherd of a black-glazed red ware, 16th-18th century in date range. This was found in context 8220.A small body sherd of Malvernian unglazed ware (fabric 56) was found in context 1002. This material contained abundant, ill-sorted quartz inclusions, and was possibly from the base of a cooking pot, since the one side was blackened.

The only post-medieval pottery recovered from the site was a small sherd of a black-glazed red ware, 16th-18th century in date range. This was found in context 8220.

8.5 The worked stone (by Hugo Lamdin-Whymark)

A polished and perforated pebble was recovered from topsoil (7800, SF 149; Fig. 23). This artefact, measuring 37 mm by 43 mm by 6 mm thick, is manufactured from a fan-shaped pebble of a dark greyish-black micacious siltstone. The pebble has a central hourglass perforation measuring 9 mm diameter on surface, but only forming a 4 mm diameter hole. The perforation exhibits clear striations on side of hole from boring and the hole is slightly ovoid due to wear from suspension. The surface of the artefact has been finely polished, but exhibits numerous scratches and striations. The latter probably result from use as a whetstone. Date uncertain.

8.6 Metal finds (by Dennis Williams)

Metal finds included fragments of copper alloy from 1002, 1189 and 1194, none of recognisable form.

Iron objects were confined to two hand-forged nails, probably post-medieval, found in 1030 and at an unstratified location, plus a rusted, unidentifiable fragment from context 1145.

8.7 Slag (by Dennis Williams)

Small amounts of high-density iron slag, in the form of discrete but irregular pieces, were recovered from Phase 8 ditch fills (contexts 1328 and 1349). This material is typical of smithing waste often found on Roman and some medieval sites. Much larger, but very compact, lumps of iron slag were found in another Phase 8 ditch fill (context 1327). These showed no evidence of the solidification patterns usually observed on the surfaces on Roman smelting slag, so these may well have waste from a later, large-scale forging process.

Fragments of slag from a ditch found in Trench 82 (context 8204) were of low density and probably from a late post-medieval or modern smelting process, which had left little residual iron in this waste product.

8.8 Other finds (by Dennis Williams)

These included very small fragments of brick/tile, mortar, clay pipe stem, and an oyster shell. Except for the broad 16th-19th century production span of the pipe stem, all these finds were undiagnostic in terms of providing dating evidence.

8.9 Discussion of the Roman and later artefacts

Most of the Roman finds came from context 7602, a soil that formed over the Phase 8 curvilinear enclosure described above. It is therefore clear that the pottery is residual, which limits its potential to provide information on Roman activity in the area.

However, it is notable that the Severn Valley type pottery differed from both Worcestershire and South Wales products. In particular, the Severn Valley type forms found at Rotherwas Futures were probably influenced by those followed in the Worcestershire production area, rather than the ones used in South Wales. The fabrics at Rotherwas Futures displayed general features (e.g sandstone and iron-rich inclusions, and poor clay mixing) that suggested they may have used clays similar to those of the pottery found previously at *Ariconium*. As noted by Willis (2003) for the *Ariconium* fabrics, fine-grained sandstones or siltstones found in this type of pottery may occur in a variety of colours, which include those of Old Red Sandstones underlying local Herefordshire or west Gloucestershire. There remains a possibility that some of the oxidised fabrics excavated at the Rotherwas Futures site may have originated in production areas further afield, e.g from South Wales, although the absence of any very micaceous fabrics makes this appear less likely than a local source.

The further study of possible Roman pottery production in Herefordshire is severely hindered by a lack of clear evidence for kiln or waster sites within the County (Ray 2002). Marley Hall, west of Ledbury, has been recorded as a possible site, but Watkins (1931) included no evidence for either a kiln structure or any wasters as such, when he reported this discovery. However, it has been noted that a small number of blistered, over-fired sherds (grey reduced, with thin surface oxidation), possibly from a single jar, were recovered during a watching brief near the west end of the Rotherwas Relief Road in 2007 (Crawford pers comm). Unfortunately, these were from the fill of a narrow ditch with no signs of any kiln structure or other obvious wasters, and in any case it is quite feasible that, in spite of its malformation, this pottery may have been made elsewhere and traded as a usable vessel.

The remainder of the artefacts were all very fragmentary and isolated. Although some of the slag and copper alloy fragments may have been waste from small-scale Roman industry, the handful of medieval and post-medieval finds were probably all consistent with farming or domestic occupation in the area.

9. Environmental analysis

9.1 The animal bone (by Emily Beales)

9.1.1 Introduction

The results are summarised in Table 9. The faunal assemblage consists of three identifiable species, sheep (*Ovis aries),* cattle (*Bos*) and deer (*Cervus*). This does not rule out the possibility that other species may also be represented in the assemblage, however, the fragmentary nature of the remains leads to difficulty in identification.

Of the 1,020 fragments 20% were identified as *Bos*, with *Cervus* representing 5.39% and *Ovis aries* representing 0.69%.

9.1.2 Results

Prehistoric
A total of 792 fragments were from contexts that fall between Phases 1-7 (Mesolithic to to Middle Bronze Age). The *Bos* elements present include fragments of distal humerii, metapodials, radii, tibiae, scapulae, molars and one rib fragment. The *Cervus* elements present include antler (both coronet and tine fragments), ulna, calcaneous, astragalus and molar fragments. Finally the *Ovis aries* elements present consist of molar fragments only.

Medieval

A total of 232 fragments were found in contexts dated to Phase 8 and 9 (early medieval and post-medieval). Of these, 225 fragments are not identifiable to species, only five fragments are identified as *Bos* metatarsal and only two *Ovis aries* molar fragments are present.

Butchery marks and pathological alterations
Butchery marks and pathological alterations are only present on the prehistoric fragments. The presence of butchery is fairly low with only 6.76% of fragments exhibiting butchery marks. A high percentage of fragments (40.1%) are markedly weathered suggesting that the bones were left to the elements. In addition only 4.1% show evidence of root damage and 3.4% exhibiting signs of pathology. The pathological alterations consist of two space occupying lesions on the proximal articulation surface of a B*os* metacarpal, a small area of osteophytic lesions on the anterior surface of a *Bos* metatarsal and two separate small areas of striated compact bone on unidentified fragments.

Despite the severity of degradation, butchery appears to consist of mid shaft splitting for the extraction of bone marrow. In addition the coronet of a deer antler has a depression on the proximal articulation surface; the antler has subsequently split down the body with each broken surface exhibiting signs of weathering. This suggests that the antler was utilised as some sort of tool and was not deposited until split in two.

The percentage of unidentifiable fragments is extremely high for this site (73.92%); this is most likely due to the high degree of weathering to which the bones were exposed before deposition. No other pre-depositional activities were identified as contributing to the degradation of the bone. A mortality profile was not constructed for the prehistoric or medieval assemblages due to the limited quantity of diagnostic elements. There were only four molars identifiable to species (two *Bos* and two *Ovis*) and therefore available for wear patterning analysis and hence the fragmentary nature of the long bones did not allow further age analysis.

9.1.3 Discussion

Due to the state of preservation and fragmentation of the assemblage, an analysis of the cultural setting cannot be constructed. Despite this, there is evidence of a continuation of animal bone deposition from Phase 1 through to Phase 6 (prehistoric), then through the medieval period from phase 7-8. Due to the fragmentary nature of the assemblage no further investigations, using the animal remains, into the subsistence and economy of the community at Rotherwas has been undertaken.

9.2 Plant macrofossils (by Elizabeth Pearson)

As a result of the assessment it was determined that no further work was warranted on the plant macrofossils but that the results from the assessment should be integrated into the final report. The charred and waterlogged plant remains identified are summarised in Table 10.

9.2.1 Phase 1: Mesolithic to Late Neolithic alluvial soil

The Phase 1 alluvial soil contained no plant remains except for occasional remains of bramble (*Rubus* sect *Gladulosus*) and dead nettle (*Lamiaceae* sp indet) from one pit-sample sample (context 1183, 0.90-1.00m).

9.2.2 Phase 2: Late Neolithic/Early Bronze Age features

The only plant remains recovered from Phase 2 features were some elderberry seeds (*Sambucus nigra*) from the fill of pit 1406 (fill 1405).

9.2.3 Phase 3: Late Neolithic/Early Bronze Age alluvial soil

The Phase 3 alluvial soil contained remains of ten species, as well as unidentified herbaceous stem and root fragments, although the quantities are too small to support reliable inferences. The possible presence of dyer's rocket (*Reseda luteola*), a yellow dye plant, in a prehistoric context is of some interest but it be intrusive from modern plants growing as casuals in the vicinity.

9.2.4 Phase 4: Late Neolithic/Early Bronze Age features

A charred hazelnut shell (*Corylus avellana*) was found in a sample from one of the Phase 4 features (fill 1394 of pit 1393) but no other plant remains were recovered.

9.2.5 Phase 5: Late Neolithic/Early Bronze Age alluvial soil

No plant remains were found in the Phase 5 alluvial soil except for a few remains of goosefoot (*Chenopodium* sp).

9.2.6 Phase 6: Late Neolithic/Early Bronze Age features and burnt mound

Plant remains of eight species were found in Phase 6 fills and deposits but only in very small quantities. They included charred remains of hazel (*Corylus avellana*), birch (*Betula*) and alder (*Alnus*).

9.2.7 Phase 7: Middle Bronze Age features and burnt mound

The (reworked) burnt mound deposit (context 1188) produced a few remains of goosefoot (*Chenopodium* sp).

9.2.8 Phase 8: Early medieval enclosure(s)

Between them, four fills from the curvilinear enclosure produced sparse remains of spelt wheat (*Triticum spelta*), goosefoot (*Chenopodium* sp), blackberry/bramble (*Rubus* sect *Glandulosus*) and thistle (*Carduus/Cirisium*). The fill of a posthole (context 1380) also produced charred seeds of spelt wheat (*Triticum spelta*) and barley (*Hordeum vulgare*).

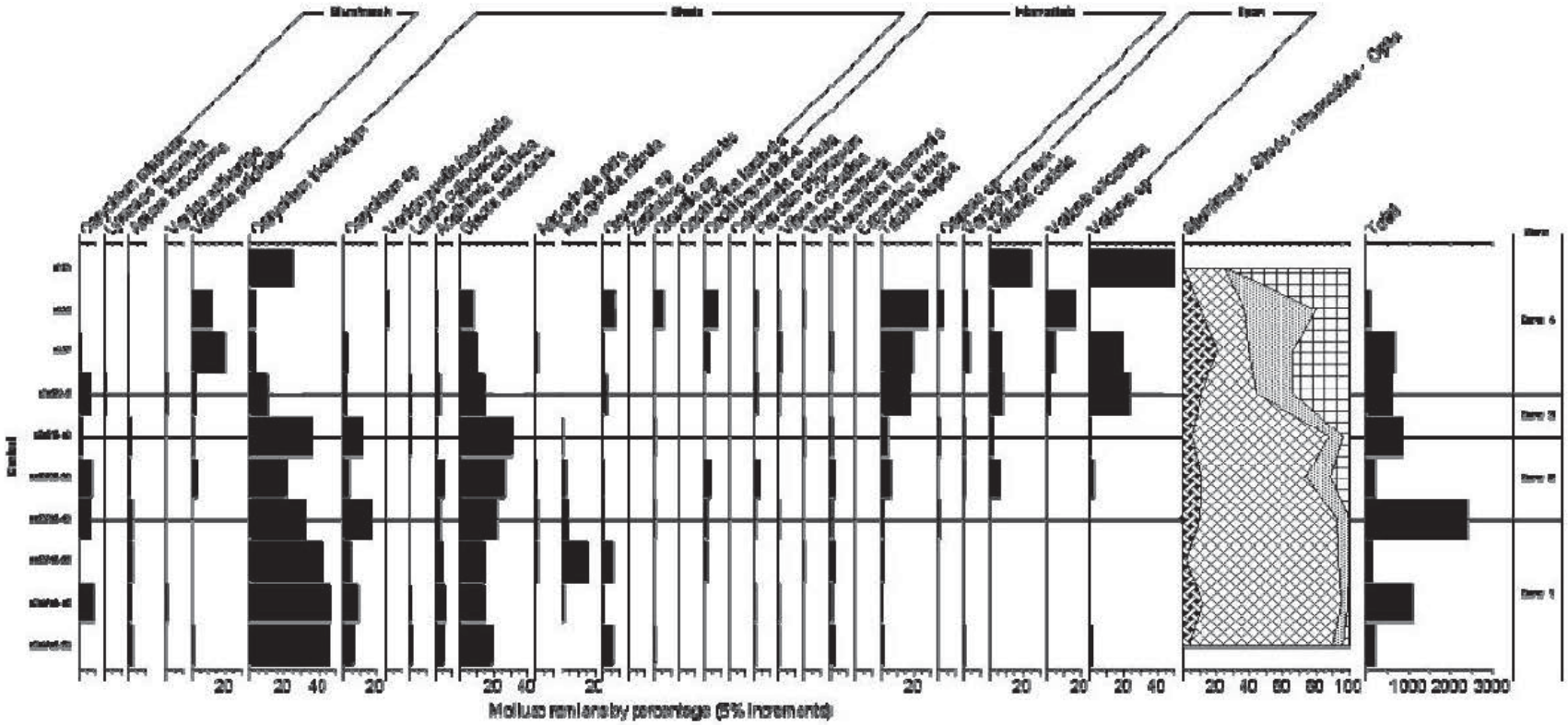
9.3 Molluscan analysis (Andrew Mann)

9.3.1 Results

The molluscscan evidence recovered is summarised in Table 11 and the following diagram. The diagram is an amalgamation of all samples in their chronological order, indented to reflect habitation changes across the entire site.

Although the majority of the samples come from a palaeosol within alluvial layers, the assemblages are thought to be autochthonus (laid down by *in situ* processes) as they are from fine grain overbank deposits and are lacking true freshwater species (Evans *et al* 1992, Davis 2008). Only one true freshwater species was identified within all the samples quantified (*Pisidium* sp). As the samples do not contain a high allochthonous freshwater component it also implies that the deposition was likely to be seasonal and of low energy. The increased numbers of shells recovered from the middle of (1182) may imply a period of stabilisation where less alluvium was being deposited, although a soil horizon was not identified and it is, therefore, likely to have been short-lived.

Zone 1 (Rotherwas Futures Phase 1 to 5)
The first two zones (1 and 2) are relatively similar and can be considered to be a single zone apart from the slight reduction in shade loving species within zone 2. These cover alluvial contexts (1219) and (1182) and the lower half of palaeosol (1218).


Marshland
Shade
Hinterland
Open
Total
Zone 4
Zone 3
Zone 2
Zone 1
20
20 40
20
20 40
20
20
20
20 40
20 40 60 80 100
1000 2000 3000
Molluscan taxa by percentage (5% increments)

Both zones are dominated by woodland snails, including exclusively woodland species *Cohlidona laminate* and *Zonitoides excavates*. The former is indicative of mid-Holocene closed woodland. The assemblages are dominated by *Carychium tridentatum* and *Discus rotundatus* that decrease and increase respectively through the profile. The relatively rich assemblage and the presence of *Discus rotundatus* suggests this was probably primary woodland and the lack of open country species suggests that it was closed.

The assemblages include a number of other typical woodland species, specifically Zonitidae although in much lower numbers. These include *Aegopinella pura*, *Aegopinella nitidula* and *Acanthinula aculeate.*

The woodland assemblage contains a small group of species that suggest the woodland, although closed, was relatively wet or contained areas of standing water. Two amphibious species were present (*Lymnaea trunctula* and *Anisus leucostoma*) while other wet ground species typical of wet woodlands include *Punctum pygmaeum* and *Carychium minium*.

Zone 2 (Rotherwas Futures Phase 1 to 5)
Other than a small reduction in the total numbers of shade loving species and an increase in open country species, specifically Vallonias, there is little evidence for significant openings within the dense woodland. This zone thus appears to reflect a temporary clearance within the woodland. It is at this point the assemblages contain typical open country, grassland species *Vertigo pygmaea*, *Vallonia pulchella* and *Vallonia costata*, with the latter being more common. Although all reflect grassland environments, *Vallonia pulchella* is more common within damper environments such as meadows while *Vallonia costata* can be seen within open woodlands and is often an indicator species of temporary woodland clearances in the mid Holocene (Davis 2008).

Zone 3 (Rotherwas Futures Phase 5)
This zone, the last within an alluvial deposit, the upper half of palaeosol (1218), sees a dramatic reduction in the shade loving component of the assemblage reflecting more permanent clearances. The assemblage still contains a high proportion of shade loving species dominated as before by *Carychium tridentatum* and *Discus rotundatus*, with *Acanthinula aculeate* and *Oxychilus* sp. However, other shade/woodland species are missing from this zone including *Aegopinella* sp. During Zone 2 there was a significant rise in the numbers of the coloniser *Vallonia costata* and now, in Zone 3, *Vallonia excentrica* becomes established, a xerophilous species of dry short turfted grassland, which may reflect the area beginning to dry out in places. This is also supported by the reduction in the numbers of *Anisus leucostoma,* a previously common species. There is also a notable increase in the numbers of *Trichia hispida* at this point which is likely to be a reflection of increased meadow/pasture. It also shows an affinity to sites associated with human activity or occupation suggesting human activity within the area had become more common. This developed meadow is unlikely to have been heavily grazed due to the relatively large numbers of *Carychium* sp that cannot tolerate it. It is, therefore, likely to have been long, rank tussocky grassland that was still able to accommodate a small shade-loving component.

Zone 4 (Rotherwas Futures Phase 8)
The final zone is solely represented by assemblages from an enclosure ditch terminus. This zone sees a considerable reduction in the woodland component including the absence of *Discus rotundatus* at the top of the sequence. *Carychium tridentaum* and *Acanthinula aculeate* are also greatly reduced. The reduction and ultimate absence of *Carychium tridentatum*, *Lymnaea truncatula, Anisus leucotsoma* and *Vallonia pulchella* suggests that the landscape had significantly dried out at this point. The reduction of *Carychium* sp and *Discus rotundatus* may indicate increased grazing between the Bronze Age and early medieval period and a reduction in longer grasses or weeds.

As with Zone 3 the Vallonias, specifically *Vallonia excentrica* are dominant suggesting dry short turfed grassland was established; the presence of shade-loving species is likely to be a reflection of the sheltered habitat of the ditch rather than the surrounding landscape. This is

likely to have contained taller, grassy, vegetation that would have provided an appropriate habitat for those remaining shade-loving species, specifically *Carychium* sp, and some of the Zonitidae to have survived. No amphibious or slum water species were present within any of the ditch samples suggesting that the area had become much drier, to the extent that it rarely held standing water for any length of time.

9.3.2 Discussion

The mollusc remains are recording a typical progression from dense closed wet woodland during prehistory to more open meadow/pasture during the early medieval period. Zones 1 and 2 are typical of national Mollusc Zones C and D (Davis 2008) and contain an almost closed wet woodland assemblage that is likely to have existed from the 6th century BC (Mesolithic) when nationally *Discus ruderdatus* is replaced with *Discus rotundatus*, as seen within Mollusc Zone C. This woodland is likely to have existed unchanged up to approximately 2000 BC (Bronze Age) prior to more permanent woodland clearances. Towards the top of the alluvial sequence much more permanent woodland clearances appear, creating more open woodland and large areas of tussock grassland that still contained a woodland fauna. This zone is likely to reflect national Mollusc Zone E, during the Middle Neolithic through the Bronze Age when more permanent clearances became established within the closed woodland. The final zone reflects both the surrounding environment and the micro-habitat within the large enclosure ditch. The latter is likely to have contained longer grass tussocks and weeds within a largely cleared, dry grazed grassland. There is no evidence at this point for any cultivation as the indicator species as such are absent, specifically *Pomatias elegans*, *Pupilla muscorum* and *Hellicella itala*.

10. Geoarchaeology (Keith Wilkinson and Nick Daffern)

The site sits on the margins of the first terrace of the River Wye and is bordered on its southern side by Dinedor Hill which is composed of Siluro-Devonian Old Red Sandstone.

The soils of the area have been mapped as silty and stony reddish brown soils of the Bullingdon Series (Hodgson and Palmer 1971).

10.1 Stratigraphy

10.1.1 Unit 1 - Site Phase 1: Mesolithic to Late Neolithic/Early Bronze Age

The oldest deposit was a grey clay/silt which was cut by features of Late Neolithic or Early Bronze Age date. This deposit is interpreted as floodplain alluvium. Context numbers assigned to this unit are 1013, 1183, 1214, 1217, 1219 and 1221.

10.1.2 Unit 2 - Site Phase 3: Late Neolithic/Early Bronze Age

Overlying and sealing the features of Site Phase 2 was a mollusc-rich, red brown silt clay. This unit is interpreted as representing an oxidised (pedogenically worked) version of Unit 1 which again formed within a floodplain environment. Unit 2 is likely to have been the B Horizon (sub-soil) of Unit 3. Contexts numbers assigned to this unit are 1023, 1182, 1184, 1213, 1216, 1220 and 1224.

10.1.3 Unit 3 – Site Phase 5: Later Neolithic. Early Bronze Age

Unit 3 was a grey brown silt/clay and is likely to represent a buried A horizon (topsoil) and was probably the stable ground surface which was cut by the features of Phases 6-8. Contexts numbers assigned to this unit are 1021, 1181, 1190, 1215, 1218 and 1223.

10.1.4 **Unit 4 – Site Phase 6: Late Neolithic/Early Bronze Age**

This unit sealed Late Neolithic/Early Bronze Age features in the south of Area 1. It had two components: consisted of spreads of thin, charcoal-rich soil (1244, 1245, 1246) and extensive spreads of fire–cracked stones (1003, 1188). It was sealed by Unit 7.

10.1.5 **Unit 5 – Site Phase 7: Bronze Age**

This unit sealed Middle Bronze Age features in the north of Area 1. It was similar to Unit 4, and likewise sealed by Unit 7.

10.1.6 **Unit 6 – Site Phase 8: Early Medieval**

Unit 6 refers to the fills of two partially exposed enclosures, a rectilinear enclosure that extended to the north of Area 1 (1310, 1316, 1319 etc) and a much larger curvilinear enclosure that continued to the north and west 1011, 1017, 1038 etc).

There was no indication of re-cutting of the ditches, the residual nature of the finds recovered and the naturally accumulated silt fills of the ditches indicating that the enclosure ditches were relatively short-lived features which silted up naturally through alluviation, slope-wash and colluviation.

10.1.7 **Unit 7 – Site Phase 9: Late/post-medieval**

Unit 7 refers to the red brown sand observed across the Phase 2 area. It is uncertain whether this is an alluvial unit; perhaps unlikely given the sediment calibre and the location of the site *c*6m above the present level of the River Wye, or distal outwash derived from gullies cut into the Old Red Sandstone on Dinedor Hill. Contexts numbers assigned to this unit are 1012, 1035 and 1222.

10.1.8 **Unit 8 and 9 – Site Phase 10: Modern**

Unit 8 refers to the modern A horizon which developed within the red brown sand of Unit 6 whilst Unit 8 refers to the modern concrete and made ground associated with the construction of the magazines and railways *c* 1916 or possibly the removal of the railway in the 1950s. The made ground contained abundant clinker and metal fragments.

10.2 Discussion

The discard of the monoliths and the inability to resample the deposits for detailed laboratory analysis has seriously undermined the role of geoarchaeology in the project and made the task of meeting the stated aims much more challenging. Despite this, the field notes and discussions between the Geoarchaeologist, Environmental Archaeologists and the Project Leader have meant that the aims can be addressed, although not as extensively as would have been hoped.

As has previously been illustrated (Section 7: Stratigraphy), the formation processes of the distinct units are relatively well understood with the exception of Unit 7. The majority of deposits identified during the field visit were natural in origin with floodplain alluvium forming the main basal units (1-3). A change in the fluvial regime, possibly the migration or downward incision of the River Wye to its present, lower position, marks a halt in the deposition of floodplain alluvium.

The lack of colluvial/slope-wash deposition overlying Unit 3 until Site Phase 9 suggests that the flanks of Dinedor Hill were still reasonably well vegetated and the deposition of Unit 7 may represent clearance of this vegetation leading to erosion of the Old Red Sandstone of

Dinedor Hill, although this must remain a tentative hypothesis in the absence of monoliths for analysis.

11. Sample composition and clast analysis (Elizabeth Pearson)

To enable comparison of the composition and make up of the two principal areas of fire-cracked stone deposited during Phases 6 and 7, both with each other and with similar deposits investigated on the Rotherwas Ribbon sites, composition and clast analysis was undertaken of the stone content of these deposits.

Context 1003 in the southern area was significantly more stone-rich than context 1188 in the northern area (Table 12). Both areas contained only small quantities of artefactual and ecofactual material which included low levels of fragmented animal bone, molluscs, charcoal, coal ash or clinker, fired clay, possible flint waste flake and iron slag. Context 1003 appears to be slightly more charcoal-rich, while iron slag was only found in context 1188.

Only context 1003 produced sufficient clast material (250 to 300 clasts) to merit carrying out clast analysis (Table 13). This showed that the material was made up of predominantly sub-angular to sub-rounded clasts in similar proportions in all size fractions and in all three test pits. Occasional angular clasts were noted in the 25mm fraction and occasional rounded clasts in the 5mm fraction. Overall composition appeared to be relatively consistent across three samples from test pits 8, 9 and 10, although the sample from Test Pit 10 (<77>) was less stony. The majority of the sub-angular and sub-rounded clasts appeared to be heat-shattered stones, presumably from the burnt mound (context) nearby, and the rounded stones reddish, probably, burnt stone.

The majority of the material also fell within the 25mm fraction and to a lesser degree the 16mm fraction.

Size fraction	% of total weight (g)
50mm	1.4%
25mm	77.8%
16mm	43.2%
10mm	12.2%
4mm	2.6%

This layer appeared to be predominantly made up of burnt mound material with very little material that would indicate naturally lain gravelly spreads, such as small rounded pebble-like clasts. Small quantities of quartz were noted, some of which appeared shattered. Although stony spread 1188 was not suitable for clast analysis, visually the composition appeared to be similar.

11.1 Discussion

Both spreads of material are different in composition from the stony layers identified at Rotherwas Ribbon (Allen 2011). Here, densely packed layers of large cobbles were dominant with some quartz, the latter in larger quantities than would be expected naturally. In places heat-shattered stones were present, particularly in the vicinity of a pit containing burnt mound material but these were not extensive. The provisional interpretation is that these layers formed in part naturally within a water flush line on the lower slopes of Dinedor Hill but seem to have been enhanced by the addition of stone to make a clear routeway up the hill towards a spring line (Allen 2011).

The clast analysis for Rotherwas Ribbon showed a greater variation in roundedness (particularly a greater proportion of rounded clasts, especially at the northern end of the site) and a greater proportion of large (< 50mm) clasts than seen in the material from Rotherwas Futures. This probably largely reflects the dominance of large, rounded pebbles, some of which were of natural origin and some interpreted as manuports, which were absent at

Rotherwas Futures. Quartz fragments were noted in the Rotherwas Futures samples but appear to be present in lower levels that on the Ribbon site.

12. Overview of environmental evidence

Environmental remains were generally poorly preserved on this site, with the exception of rich molluscan assemblages in prehistoric alluvial deposits and an early medieval enclosure ditch, and sparsely distributed charred cereal crop waste. Calcareous deposits have resulted in the poor preservation of pollen remains.

Molluscan evidence shows a typical sequence of dense wet woodland during early prehistory (Mesolithic/Neolithic period) with an opening up of the woodland canopy during the Neolithic to Early Bronze Age periods. A dramatic decrease in shade tolerant molluscs in a palaeosol indicates a significant opening of the environment during the Later Neolithic to Early Bronze Age, presumably as a result of both an increase in clearance of woodland for settlement and probably predominantly for pastoral agriculture. There is no evidence for an expansion of arable agriculture on the terrace edge, where the site is situated, as there are no signs of arable indicators in the molluscan assemblage (these equate to species common on disturbed ground). This evidence, though, will also reflect the floodplain environment where cultivation is unlikely. Crop residues may also be under-represented as cereal crops are likely to have been a prized resource, and the by-products efficiently used for animal fodder, bedding and flooring (Jones 2000). Crops may also have been processed by rubbing and pounding rather than parching which would result in limited charred crop debris surviving (Robinson 2000). Charred crop debris is commonly sparse in deposits of early prehistoric date and is similarly so at Rotherwas Ribbon, close by to the south of this site (Pearson 2009 and Pearson and Daffern 2011). Nevertheless, it is slightly more prominent during early prehistoric phases at Wellington Quarry in the Lugg valley to the north of the site (Pearson 2006).

Stony spreads of Late Neolithic/Early Bronze Age and Middle Bronze Age date sealed features cut into the alluvial soils. Composition and clast analysis confirm these to be made up almost entirely of burnt mound material. The results contrast with similar analyses undertaken at the Rotherwas Ribbon (Allen 2011) close by to the south where stony layers were predominantly made up of large rounded pebbles with some discrete areas of heat-cracked stone and slightly more cultural material. This was interpreted as partly a naturally formed feature within a flush line on the lower slopes of Dinedor Hill which seems to have been enhanced by the addition of stone to make a clear routeway up the hill towards a spring line.

Alluviation ceased around the later Neolithic to Early Bronze Age, probably because of a change in the fluvial regime such as the migration or downward incision of the River Wye to its present position. The cessation of alluviation is earlier at Rotherwas Futures than at Wellington Quarry in the Lugg Valley to the north, where alluviation continues into the medieval period, although there are breaks in the sequence of alluviation when palaeosols formed and activity on the floodplain resumed. The difference in the two sites is likely to at least partly reflect the position of Rotherwas Futures on the margins of the gravel terrace and Wellington Quarry on the floodplain at the junction of two rivers. There appears to be a general lack of colluvium or hillwash, and it has been suggested (Section 4.2) that Dinedor Hill may have been well vegetated until relatively recently.

Molluscan evidence from the early medieval curvilinear enclosure ditch indicates a significantly more open environment consisting of open meadow or grazed pasture – a pattern that is commonly seen in palaeoenvironmental profiles from alluvial or palaeochannel deposits of this date. Occasional charred cereal grains were recovered from the enclosure ditch, including grains of spelt wheat (*Triticum spelta*). This may have still been the main wheat in cultivation and this phase may predate the transition to predominant cultivation of

free-threshing wheat (*Triticum* sp free-threshing) which nationally tends to occur from around the mid-Saxon period.

13. Synthesis

This section attempts to combine the evidence presented above and to add another layer of interpretation. The wider significance of points is discussed in Section 14.

13.1 Holocene alluviation and Mesolithic activity

The fluvioglacial terrace deposits were overlain by a soil of alluvial origin which, by the seventh or sixth millennium BC (by analogy with similar sites elsewhere) supported a habitat of dense, wet woodland. This is the deposit assigned to Phase 1. As described above, the flint assemblage contained a Mesolithic element including artefacts made on small, narrow blades and associated blade-like debitage. Most of this material was found in later deposits, but at least one flint and fragments of animal bone were stratified within the Phase 1 soil. The material cannot bear much interpretation but it was spread over a wide area and probably represents repeated visits by small groups engaged in hunting and gathering.

13.2 Late Neolithic to Middle Bronze Age activity

Most of the evidence relates to activity between the Late Neolithic and Middle Bronze Age, a period of six or seven centuries between the early third and late second millennium BC. The activity was intermittent, however, and took place in a changing environment.

The earliest activity was represented by the Phase 2 features in the north of Area 1. The features formed a discrete group and were probably dug around the same time. At all events, four of the features were a uniform size and formed a closely-spaced line, without intercutting. They may have been postholes for a small timber structure but they were very shallow, with flat bases, and probably represent the well-attested practice of burying selected cultural material, although in this case, it seems that the material deposited was organic, as no flints or durable artefacts were recovered.

The Phase 2 activity took place in much the same environment as existed in the Mesolithic period. A period of alluviation followed, however, depositing silt which became the alluvial soil assigned to Phase 3. The artefacts recovered from this soil could represent activity in this period, rather than reworked Phase 1 deposits, as the mollusc assemblage suggests limited clearance of woodland.

The next phase of activity is represented by another group of small, shallow pits, and larger pits to the west. The small pits can be interpreted as evidence of deposition, like the Phase 1 pits described above. They may even have been dug with reference to the earlier pits if the latter were marked in some way, or remembered. The larger pits do not fit this model and remain enigmatic, though not unique.

The Phase 4 features were sealed by an alluvial soil representing another phase of flooding and soil formation (Phase 5). The artefacts from this soil, including five sherds of pottery, may have been derived from earlier deposits but probably represent contemporary activity, including the further clearance attested by molluscs.

The next activity, assigned to Phase 6, probably took place in the last three centuries of the third millennium BC (based on two overlapping radiocarbon dates). It was represented by two groups of features in the south of Area 1, and by overlying spreads of charcoal-rich soil and fire-cracked stones. These remains can be interpreted as evidence for cooking, brewing or bathing using hot stones in water. Such spreads are usually referred to as burnt mounds,

although in this case, the stones seem to have been spread, rather than mounded. Most of the flint and animal bone described above was associated with these deposits.

There is no evidence of activity in the early second millennium BC, but sometime between the third and first centuries, another "burnt mound" was created in the north of Area 1. At all events, the evidence shows two concentrations of fire-cracked stones around a trough-like feature.

The extent of prehistoric activity elsewhere in Area 1 is uncertain, despite the number of evaluation and additional trenches. As noted above, evaluation Trench 24 exposed a small pit which produced a sherd of possible Bronze Age pottery. Another pit in the same trench was filled with fire-cracked stones, implying a prehistoric date, and undated, but potentially prehistoric features were found in evaluation Trenches 20, 24, 36, and 37. These features, and nine residual flints from evaluation Trenches 14, 16, 37, 43, 44, and 48, suggest at least intermittent prehistoric activity. The additional trenches added no more evidence, except in Trench 78, where eight flints and the perforated stone described above were recovered from the surface of an alluvial soil.

13.3 Roman activity

No deposits of Roman date were identified, but five sherds of Roman pottery was found in Trench 67 and 59 sherds of Roman pottery were found in a discrete deposit in Trench 76. Ten or twelve pieces of possible Roman slag were also found in Area 1. All of this material was residual in Phase 8 contexts. The slag is not certainly Roman and may indicate small-scale smithing in Phase 8, but .the pottery from Trenches 67 and 76 is unmistakeably Roman, even if the fabrics are rather unusual. Its presence in Phase 8 contexts is problematic, as there is no evidence of Roman deposits nearby, or of later excavations which could have brought the pottery to the surface. However, it is likely enough that the area was managed as farmland in the Roman period, and that the pottery represents some event in this context.

13.4 Early medieval enclosure(s)

The enclosures assigned to Phase 8 were originally thought to be of prehistoric date. In particular, the large curvilinear enclosure (exposed in Area 1 and five trenches to the west) was thought to represent a Neolithic cursus. However, as explained above, two radiocarbon dates show that this enclosure was of early medieval date. Judging by the date ranges, and allowing for different rates of sedimentation it seems that the enclosure was dug in the late sixth century AD and had silted by the late seventh century. The much smaller rectilinear enclosure could not be dated, but, as argued above, an early medieval date is more likely than an Iron Age or Roman date. It is unlikely that the enclosures were contemporary, however, and one probably replaced the other.

The size and shape of both enclosures are uncertain, as neither one was fully exposed. By extrapolation, the rectilinear enclosure could have covered an area of at least 0.14 hectares. The curvilinear enclosure covered at least 2 hectares but the south side seems to have petered out to the west and there was no evidence of return to the north or a northern side within the Phase 2 area. It is possible that its southern side was continued by postholes, as a posthole was found on the line of the ditch in Trench 72, but no more postholes were found further to the west in Trenches 74, 79, and 81.

Both enclosures were strangely lacking in internal features, with the exception of a single posthole which, as argued above, was probably dug inside the rectilinear enclosure. In addition, most of the artefacts found in Area 1 can also be securely dated to earlier phases, either intrinsically or on stratigraphic grounds. Negative evidence is never conclusive, but the near-complete absence of features and artefacts strongly suggests that neither enclosure represented a settlement. The question of their function must therefore remain open, although a possible function and context is suggested below.

13.5 Medieval and post-medieval land-use

Medieval activity was represented by a single sherd of pottery from Area 1. It could have been been introduced with manure mixed with household waste in a nearby farmstead, although manure was usually spread on arable land and there was no evidence of medieval ploughing. Given this lack of evidence, the location of the area on a floodplain, and the field systems shown on later maps, it is likely that the area was managed as meadow and pasture in this period.

Post-medieval activity was represented by the stone structure in the south-west of Area 1 and the ditches found across the Phase 2 development area. A single sherd of 18th century pottery was also recovered from Trench 82. The ditches and later cartographic evidence confirm that the area was farmland in this period. Some of the ditches to the west may have drained water off arable fields but the parallel ditches in Area 1 are more likely to have marked post-enclosure allotments of meadow. They correspond broadly to boundaries shown by dotted lines on the Rotherwas tithe map of 1840. In this context, the stone structure must be seen as an agricultural feature, but what function it served is still uncertain.

13.6 Modern sedimentation and development

The deposit of reddish brown silty sand assigned to the latter part of Phase 9 sealed the features described above and was observed in trenches across the area. It did not have the character of made ground and seems to represent an undocumented phase of colluvial and/or alluvial sedimentation.

The construction of the munitions factory in 1916 was hardly represented in the archaeological record, except by slag and metalwork contained in deposits of topsoil and made ground. The south-east part of Area 1 was evidently truncated down to the Phase 3 alluvial soil, but there was no evidence brought in from the north.

14. Research frameworks

The evidence presented above has much to contribute to local and regional research frameworks.

The evidence for Mesolithic activity is a welcome addition to the present, rather meagre record from Herefordshire. It increases the number of known recorded find-spots to thirteen, including the site at Bullinghope mentioned above. The finds are not significant in themselves, however, and the distribution of find-spots merely reflects the distribution of recent fieldwork.

The evidence for late Neolithic and Bronze Age activity is consistent with evidence from other sites in *Herefordshire*, and across the West Midlands. The Phase 2 and Phase 4 pit groups are similar to and broadly contemporary with those found along the line of the Rotherwas Access Road, and at Wellington Quarry 10km to the north (Jackson and Miller 2006). The Phase 6 and 7 burnt mounds are also similar to and broadly contemporary with those found at Bullinghope (Mann and Vaughan 2008; HSM 48339) and in 2009 at Hereford Academy (Webseter, Roberts, and Vaughan 2009). By chance, these finds have made this part of Herefordshire an important area for prehistoric studies. All of these sites also have parallels in neighbouring counties, and across lowland England (Garwood 2011).

The Roman pottery is slightly different to other assemblages in the area, however. It seems to represent a type of Severn Valley ware, made by local potters using local clays but copying forms from the east of the region.

The early medieval evidence is exceptional and of great significance at a time when archaeologists with an interest in this period are still striving to find material to study (Hooke

2011). Along with the probable seventh/eighth century settlement at Bullinghope, the Rotherwas remains (one enclosure or both) are important additions to a meagre record, which otherwise consist mostly of coins and metalwork.

That said, it is impossible at present to characterise the remains. They do not seem to represent settlement, but their scale suggests a serious purpose. A literature search has found no close parallels, but it is possible that the curvilinear enclosure, if not the rectilinear enclosure, represents a temporary camp of soldiers engaged in policing (or disputing) a political frontier. In 1988, Musson and Spurgeon investigated a motte and bailey-like earthworks at Cwrt Llechryd, in Radnorshire and established an ninth or tenth century date of construction (Musson and Spurgeon 1988). They interpreted the site as one of seven possible "Dark Age" enclosures in the Welsh Marches, some built by Mercians, others by Welshmen. The suggested sites included rectilinear and curvilinear enclosures on the floodplains of the Wye and Severn, in similar topographical contexts to those at Rotherwas. As the Wye north of Rotherwas formed the boundary between English and Welsh kingdoms between the mid seventh and late eighth centuries (the reigns of Penda and Offa), the Rotherwas remains might be seen in a similar context.

15. Acknowledgements

The project was commissioned by Amey Consulting on behalf of Herefordshire Council. Amey were represented by Andy Teague, the Council by Alan Ronald. Plant and welfare facilities were provided by Owen Pell Ltd, through Derek Evans, who also supplied pumps and Youngman boards in what were often difficult working conditions. The fieldwork was directed and monitored by Keith Ray and Julian Cotton of Herefordshire Archaeology.

16. Personnel

The fieldwork and report preparation was led by Darren Miller. The project manager responsible for the quality of the project was Robin Jackson. Fieldwork was undertaken by Tegan Cole, Tim Cornah, Elizabeth Curran, Nick Daffern, Christine Elgy, Marge Feryok, Chris Gibbs, Andy Mann, Darren Miller, Mike Nicholson, Sean Rice, Richard Shakles, Matt Simmonds, Simon Sworn, and Steve Woodhouse. Artefacts were analysed by Robin Jackson, Hugo Lamdin-Whymark, and Dennis Williams. Soils and sediments were analysed by Nick Daffern and Keith Wilkinson, molluscs by Andy Mann, animal bones and stone samples by Emily Beales, and plant macrofossils by Elizabeth Pearson. Elizabeth Plane (neé Curran) and Graham Arnold assisted with databases, matrixes, and appendices. The illustrations were produced by Steve Rigby and Carolyn Hunt.

17. Bibliography

Allen, M, 2011 Rotherwas Ribbon, Herefordshire (CHR10): Geoarchaeology and palaeo-environmental field summary, in I Bapty and D N Williams, *Further investigation of the Rotherwas Ribbon: 2010 excavation assessment report* (Herefordshire Archaeology report 231)

AI, 2008 *Rotherwas Futures Hereford. Archaeological Evaluation Interim Report* (Archaeoelogical Investigations report 790)

Bamford, H, 1985. *Briar Hill: excavation 1974-1978* (Northampton: Development Corporation)

Bapty, I, and Williams, D N, 2011 *Further Investigations of the Rotherwas Ribbon: 2010 Excavation Assessment Report* (Herefordshire Archaeology report 231)

Bradley, P, 1999 Worked flint, in A Barclay and C Halpin (eds). *Excavations at Barrow Hills, Radley, Oxfordshire. Volume 1: The Neolithic and Bronze Age monument complex* (Oxford: Oxford Archaeology), 211-227.

Brazier, J D, and Franklin, G L, 1961 *Identification of hardwoods: a microscope key* (London: HSMO/Dept of Scientific and Industrial Research, Forest Products Research Bulletin, 46)

Brigland, D R, 1986 Discussions of procedures and recommendations, in D R Brigland (ed), *Clast lithological analysis* (Cambridge: Quaternary Research Association Technical Guide 3)

British Geological Survey, 1989 *Sheet number 198 Hereford, solid and drift (1:50,000)* (London: British Geological Survey)

Butler, C, 2005. *Prehistoric flintwork* (Stroud: Tempus)

CAS, 1995 (as amended) *Manual of Service practice: fieldwork recording manual*, (County Archaeological Service, Hereford and Worcester County Council, report 399)

Daffern, N, Mann, A, Pearson, E, and Wilkinson, K, 2010 Environmental remains, in D Miller, *Assessment and Updated Project Design: Archaeological excavations at Rotherwas Futures, Hereford (Phase 1 and 2)* (Worcestershire Historic Environment and Archaeology Service unpublished report)

Davis, P, 2008 *Snails, Archaeology and Landscape Change* (Oxford: Oxbow Books)

DCLG, 2006 *Planning Policy Guidance 16 Archaeology and Planning* (Department for Communities and Local Government)

Dinn, J, and Hughes, J, 1990 *Hereford Bypass: archaeological evaluation* (County Archaeological Service, Hereford and Worcester County Council, report 45)

Edwards, E, 2009 Neolithic and Bronze Age pottery, in Sworn, S, Jackson, R and Woodiwiss, S, 2009 *Rotherwas Access Road, Herefordshire: Preliminary structural description and assessment of the Rotherwas Ribbon and closely associated activity* (Worcestershire County Council, Historic Environment and Archaeology Service, interim report for Herefordshire Archaeology)

Edwards, E, 2011 Prehistoric pottery, in Bapty, I, and Williams, D N, 2011 *Further investigation of the Rotherwas Ribbon Stage 2: 2010 Excavation assessment/interim report* (Herefordshire Archaeology report, 281), 47-8

Evans, C J, 2008 The early prehistoric pottery, in Mann, A, and Vaughan, T, 2008 *Archaeological Evaluation at Bullingham Lane, Bullinghope, Herefordshire* (Worcestershire County Council, Historic Environment and Archaeology Service, internal report 1632), 10

Evans, J G, Davis, P, Mount, R and Williams, D, 1992 Molluscan taxocenes from Holocene overbank alluvium in southern central England, in S Needham and M G Macklin (*eds*) *Alluvial Archaeology in Britain* (Oxford: Oxbow Books), 65-74

Evans, J G, 1972, *Land Snails in Archaeology* (London: Seminar Press)

Fairbairn, A (ed), 2000 *Plants in Neolithic Britain and Beyond* (Oxford: Oxbow)

Gale, S J, Hoare, P G, 1991 *Quaternary sediments; petrographic methods for the study of unlithified rocks* (London: Belhaven Press)

Garwood, P, 2011 *The earlier prehistory of the West Midlands, in* S Watt (ed.) *The Archaeology of the West Midlands. A Framework for Research* (Oxford: University of Birmingham and Oxbow Books), 9-99

Gelling, M, 1992 *The West Midlands in the Early Middle Ages* (Leicester: Leicester University Press)

Gibson, A, 2003 The Beaker pottery from The Grove, Staunton-on-Arrow, in P White, 2003 *The Arrow Valley, Herefordshire. Archaeology, landscape change and conservation* (Herefordshire Studies in Archaeology 2), 122-3

Gibson, A, 2008 The prehistoric pottery from Rotherwas Futures, Hereford, in AI 2008, appendix 5

Harrison, R J, Jackson, R, and Napthan, M, 1999 A rich Bell Beaker burial from Wellington Quarry, Marden, Herefordshire, in *The Oxford Journal of Archaeology* 18.1, 1-16

Hather, J G, 2000 *The identification of the Northern European hardwoods: a guide for archaeologists and conservators* (London: Archetype Publications)

Healy, F, 1988. *The Anglo-Saxon cemetery at Spong Hill, North Elmham. Part VI: Occupation in the seventh to second millennia BC.* (Gressenhall: Norfolk Archaeological Unit)

HEAS 2008 *Proposal for an archaeological excavation at Rotherwas Futures (Phases 1 and 2), Hereford* (Historic Environment and Archaeology Service, Worcestershire County Council, unpublished document dated 4 November 2008, P3299)

Herefordshire Archaeology 2004 *Standards for archaeological projects in Herefordshire: issue 1* (Herefordshire Council Planning Services, document dated 27 August 2004)

Hooke, D, The post-Roman and the early medieval periods in the west midlands: a potential archaeological agenda, in S Watt (ed.) *The Archaeology of the West Midlands. A Framework for Research* (Oxford: University of Birmingham and Oxbow Books), 149-172

Hillson, S, 1992 *Mammal bones and teeth: an introductory guide to methods of identification* (London: Institute of Archaeology, University College London)

Hurst, J D, 1994 (as amended) *Pottery fabrics. A multi-period series for the County of Hereford and Worcester* (County Archaeological Service, Hereford and Worcester County Council report 445)

IfA, 2008 *Standard and guidance for archaeological excavation* (Reading: Institute for Archaeologists)

Jackson, R and Miller, D, 2006 *Wellington Quarry, Herefordshire (1986 – 1996): Investigations of a landscape in the Lower Lugg Valley* (Worcestershire Historic Environment and Archaeology Service internal report)

Jacobi, R, 1978 The Mesolithic of Sussex, in P L Drewett (ed.), *Archaeology in Sussex to AD 1500* (York: Council for British Archaeology, Research Report 29), 15-22

Jones, G, 2000 Evaluating the importance of cultivating and collecting in Neolithic Britain, in Fairbairn 2000, 79-84

Jones, L, and Duncan, M, 2010 *The excavation of a Bronze Age pond barrow, Iron Age and Romano-British settlement at Bradbury Lines, Bullingham Lane, Bullingham, Hereford, 2003* (Birmingham Archaeology draft publication report)

Kenyon, K M, 1954 Excavations at Sutton Walls, Herefordshire, 1948-1951, in *The Archaeological Journal*, Vol. 101 (1953), 1-87

Kerney, M P, 1999, *Atlas of the Land and Freshwater molluscs of Britain and Ireland* (Cambridge: Cambridge University Press)

Kerney, M P, and Cameron, R A D, 1979, *A Field Guide to the Land Snails of Britain and North-West Europe* (Glasgow: Collins)

Lamdin-Whymark, H, 2008. The flint, in HEAS 2010 *Assessment and updated project design: excavations at Rotherwas Futures (Phases 1 and 2)* (Historic Environment and Archaeology Service, Worcestershire County Council, unpublished report dated 12 March 2010), 16-18

Mann, A, and Vaughan, T, 2008 *Archaeological evaluation at Bullingham Lane, Bullinghope, Herefordshire* (Historic Environment and Archaeology Service, Worcestershire County Council, report dated 18 August 2008)

Musson, C R, and Spurgeon, C J, 1988 Cwrt Llechrhyd, Llanelwedd: an unusual moated site in central Powys, in *Medieval Archaeology*, Vol. 32, 97-109

Pearson, E, 2006 Environment, in R Jackson and D Miller, *Wellington Quarry, Herefordshire (1986 – 1996): Investigations of a landscape in the Lower Lugg Valley* (Worcestershire Historic Environment and Archaeology Service internal report)

Pearson, E, Plant macrofossils, in S Sworn and S Woodiwiss, *Assessment and updated project design for the Rotherwas Access Road, Herefordshire* (Worcestershire Historic Environment and Archaeology Service internal report)

Pearson, E, and Daffern, N, 2011 Environmental Remains, in I Bapty and D N Williams, *Further investigation of the Rotherwas Ribbon: 2010 excavation assessment report* (Herefordshire Archaeology Report 231)

Robinson, M A, 2000 Further considerations of Neolithic charred cereals, fruit and nuts, in Fairbairn 2000, 85-91

Schmid, E, 1972 *Atlas of animal bones* (Amsterdam: Elsevier)

Schweingruber, F H, 1978 *Microscopic wood anatomy: structural variability of stems and twigs in recent and subfossil woods from Central Europe* (Birmensdorf: Swiss Federal Institute of Forestry Research)

Shepherd, W, 1972. *Flint: its origin, properties and uses* (London: Faber)

Soil Survey of England and Wales, 1971 *Soils in Herefordshire I, Sheet SO 53 (South Hereford)* (Harpenden:Soil Survey of England and Wales)

Sworn, S, Jackson, R, and Woodiwiss, S, 2009 *Rotherwas Access Road, Herefordshire: Archaeological Assessment and Updated Project Design* (Historic Environment and Archaeology Service, Worcestershire County Council, report dated 1 October 2009)

Webster, J, Roberts, T, and Vaughan, T, 2009 *Archaeological Evaluation at Hereford Academy, Stanberrrow Road, Redhill, Hereford* (Historic Environment and Archaeology Service, Worcestershire County Council, report 1711)

Wichbold, D, 1990 *Evaluation at Bullinghope Court* (County Archaeological Service, Hereford and Worcester County Council, report 111)

Woodward, A, 2010 Prehistoric pottery, in Jones and Duncan 2010, 8-13

Tables

UBANo	Sample ID	Material selected	Species	Context
UBA-16377	HSM 48812/112/1	Charred seed or nutshell	*Triticum spelta* grain	Fill of pit/posthole [1381]
UBA-16378	HSM 48812/112/2	Charred seed or nutshell	*Hordeum vulgare* grain	Fill of pit/posthole [1381]
UBA-16379	HSM 48812/1386/113/1	Charcoal	Maloideae sp	Fill of trough [1386]
UBA-16380	HSM 48812/1386/113/2	Seed or nutshell	*Sambucus nigra*	Fill of trough [1386]
UBA-16381	HSM 48812/1245/79/1	Charcoal	*Betula* sp	Charcoal-rich layer (1245) - TP9
UBA-16382	HSM 48812/1245/79/2	Charcoal	*Alnus* sp	Charcoal-rich layer (1245) - TP9
UBA-16383	HSM 48812/1003/75/1	Charred seed or nutshell	*Crataegus monogyna* fruit	Charcoal-rich layer (1003) (TRAMPLE?) - TP8
UBA-16384	HSM 48812/1003/77	Charred seed or nutshell	*Carduus/Cirsium* sp	Charcoal-rich layer (1003) (TRAMPLE?) - TP10
UBA-16385	HSM 48812/1148	Animal bone	Failed	Fill of ditch [1151]
UBA-16386	HSM 48812/1149	Animal bone	Failed	Fill of ditch [1151]
UBA-16387	HSM 48812/1119	Animal bone	Failed	Upper fill southern enclosure ditch
UBA-16388	HSM 48812/1119/19	Charcoal	Maloideae sp	Upper fill southern enclosure ditch
UBA-16399	HSM48812/1060/13/1	Plant macrofossil	*Triticum* sp grain	Primary fill of ditch [1061] - (southern enclosure)
UBA-16400	HSM48812/1060/13/2	Charred seed or nutshell	*Corylus avellana* shell	Primary fill of ditch [1061] - (southern enclosure)
UBA-16401	HSM48812/1052/8	Charcoal	*Corylus avellana* sp	Primary fill of ditch [1053] - (southern enclosure)

Table 1: Material submitted for AMS radiocarbon dating

UBANo	Sample ID	Context	14C Age	±	AMS 13C	F14C	±	BC/AD
UBA-16377	HSM 48812/112/1	Fill of pit/posthole [1381]	1373	22	-23.2	0.8429	0.0023	AD 620 to 677
UBA-16378	HSM 48812/112/2	Fill of pit/posthole [1381]	1420	22	-24.7	0.838	0.0023	AD 599 to 657
UBA-16379	HSM 48812/1386/113/1	Fill of trough [1386]	2961	23	-28	0.6917	0.002	1291 to 1059 BC
UBA-16380	HSM 48812/1386/113/2	Fill of trough [1386]	Greater than modern		-26.7	1.0979	0.0028	AD 1896 to 1904
UBA-16381	HSM 48812/1245/79/1	Charcoal-rich layer (1245) - TP9	3869	27	-23.5	0.6178	0.0021	2464 to 2213 BC
UBA-16382	HSM 48812/1245/79/2	Charcoal-rich layer (1245) - TP9	3766	24	-24.7	0.6257	0.0018	2285 to 2058 BC
UBA-16383	HSM 48812/1003/75/1	Charcoal-rich layer (1003) (TRAMPLE?) - TP8	Greater than modern		-31.9	1.0887	0.0026	AD 1896 to 1904
UBA-16384	HSM 48812/1003/77	Charcoal-rich layer (1003) (TRAMPLE?) - TP10	Greater than modern		-28.2	1.0667	0.0028	AD 1896 to 1904
UBA-16385	HSM 48812/1148	Fill of ditch [1151]	FAILED					
UBA-16386	HSM 48812/1149	Fill of ditch [1151]						
UBA-16387	HSM 48812/1119	Upper fill southern enclosure ditch						
UBA-16388	HSM 48812/1119/19	Upper fill southern enclosure ditch	1437	23	-29.1	0.8362	0.0024	AD 580 to 652
UBA-16399	HSM48812/1060/13/1	Primary fill of ditch [1061] - (southern enclosure)	1530	25	-20.6			AD 433 to 599
UBA-16400	HSM48812/1060/13/2	Primary fill of ditch [1061] - (southern enclosure)	4400	27	-24.4	0.5782	0.0019	3095 to 2921 BC
UBA-16401	HSM48812/1052/8	Primary fill of ditch [1053] - (southern enclosure)	1426	28	-25.8	0.8373	0.0029	AD 580 to 657

Table 2: Results of AMS radiocarbon dating

Material class	Period	Count	Weight (g)
Ceramic	Undated	2	2
Ceramic	Iron Age/Roman	6	64
Ceramic	Medieval	1	6
Ceramic	Post-medieval	3	45
Ceramic	Prehistoric	11	38
Ceramic	Roman	58	1080
Mortar	Undated	3	150
Metal	Post-medieval	2	97
Metal	Undated	8	19
Organic	Undated	12	26
Slag	Roman	10	122
Slag	Modern?	4	1138
Stone	Prehistoric/undated	114	2881
Totals:		1333	8432

Table 3: Quantification of artefact assemblage

Main excavation area					
Phase	Context	SF no.	Count	Weight (g)	Notes
3	1182	-	4	22	2 decorated rim sherds and one decorated body sherd
3	*5308*	*20*	*1*	*4*	*Body sherd*
5	1181	137	4	8	Body sherds
6	*5305*	*18*	*1*	*8*	*Rim with fingertip dimple impressions*
7	1024	-	1	1	Body sherd
Other trenches					
Trench 16	-	*27*	*1*	*1*	*Body sherd with fingernail impressions*
Trench 28	*2802*	*23*	*2*	*13*	*Conjoining body sherds*
Totals			14	57	

Table 4: Early Prehistoric pottery (by phase)
*Entries in italics are finds from the evaluation

	Evaluation trench										**Grand Total**
CATEGORY TYPE	0	14	16	37	43	44	48	49	53	54	
Flake	1	1		1	1	1	1		4		10
Blade		1							1		2
Irregular waste				1				1			2
Chip		1									1
End and side scraper									1	1	2
Thumbnail scraper			1						1	1	3
Grand Total	1	3	1	2	1	1	1	1	7	2	20

Table 5: The flint assemblage from the evaluation (by trench)

	Uncertain phasing	Phase 1 (1013)	Phase 3 (1213, 1224)	Phase 4 (1373, 1199)	Phase 5 (1181)	Phase 6						Phase 7		Phase 8 (1024, 1122, 1341)	Phase 9 (1035, 1333)	Phase 10 (1000, 1005)	Grand Total
CATEGORY TYPE						1002	1003	1189	1194	1225	1231	1188	1382				
Flake	12	1	1	4		3	2		5		1	4	2			1	36
Blade						1	1		1								3
Bladelet									1					1			2
Blade-like	2							1	2	1							6
Irregular waste	1								1								2
Chip	1		1			1		1									4
Rejuvenation flake core edge															1		1
Tested nodule/bashed lump	1																1
Single platform flake core									1								1
Multiplatform flake core								1									1
Microlith	1					1											2
Unfinished arrowhead/blank											1						1
End scraper	1														1		2
End and side scraper							1										1
Thumbnail scraper												1					1
Awl													1				1
Serrated flake	2																2
Notch	1																1
Backed knife	1														1		2
Other knife	2								1								3
Retouched flake	1											1		2	1		5
Pick	1																1
Fabricator?	1																1
Burin					1								1				2
Burnt unworked stone	1															1	2
Grand Total	**29**	**1**	**2**	**4**	**1**	**6**	**4**	**3**	**12**	**1**	**2**	**6**	**4**	**3**	**4**	**2**	**84**

Table 6: The flint assemblage from the excavation (by phase)

Period	WCC Fabric code	Fabric common name	Count	Weight(g)
Iron Age/Roman	3.2	Malvernian tubby cooking pot	1	134
Roman	12	Severn Valley ware	1	77
Roman	-	Variant of Severn Valley ware	57	808
Roman	22	Black-burnished ware, type 1 (BB1)	5	131
Medieval	99	Miscellaneous medieval wares	1	6
Post-medieval	78	Post-medieval red wares	1	4
Totals:			66	1160

Table 7: Quantification of the later pottery (by period and fabric type)

Context	Sample	Spit sample/ Test pit	Context type	Phase	Sample volume (L)	Volume processed (L)
1003	075	TP8	Layer	6	40	40
1003	076	TP10	Layer	6	40	40
1003	077	TP9	Layer	6	40	40
1012	072		Alluvium	8	10	10
1015	004		Ditch	8	40	20
1023	001		Alluvium	3	40	40
1026	002		Pit	6	20	10
1033	081		Wall	9	40	10
1036	003		Ditch	8	40	40
1037	005		Ditch	8	40	40
1040	032		Ditch	8	20	10
1048	006		Ditch	8	20	10
1050	007		Ditch	8	30	10
1052	008		Ditch	8	10	10
1054	010		Pit	6	40	10
1055	009		Pit	6	10	10
1058	012		Ditch	8	40	10
1060	013		Ditch	8	40	30
1064	015		Ditch	8	40	10
1065	014		Ditch	8	40	10
1105	016		Ditch	8	30	20
1112	018		Ditch	8	40	10
1119	019		Ditch	8	40	10
1120	020		Ditch	8	20	10
1122	021		Ditch	8	20	20
1124	022		Ditch	8	20	10
1131	029		Ditch	8	20	10
1135	023		Ditch	8	20	20
1148	026		Ditch	8	20	10
1149	027		Ditch	8	20	10
1150	030		Ditch	8	10	10
1152	034		Pit	4	20	10
1153	035		Pit	4	20	10
1159	033		Ditch	9	20	10
1173	036		Tree-bole	6	10	10
1175	039		Pit	6	10	10
1177	037		Ditch	8	20	10
1178	038		Ditch	8	20	10
1181	068	0.30-0.35m	Former topsoil	5	20	10
1181	069	0.30-0.40m	Former topsoil	5	10	10
1182	068	0.65-0.70m	Alluvium	3	20	10
1182	072	5-10cms	Alluvium	3	10	10
1182	072	25-30cms	Alluvium	3	10	10
1182	072	35-40cms	Alluvium	3	10	10
1182	072	45-55cms	Alluvium	3	10	10
1183	068	1.05-1.10m	Alluvium	1	20	10
1183	069	0.90-1.00m	Alluvium	1	10	10
1188	060	TP4	Layer	7	40	40
1188	061	TP5	Layer	7	40	40
1188	062	TP6	Layer	7	40	40
1189	083		Layer	6	40	10
1189	063		Layer	6	40	10
1190	044		Layer	5	40	10
1190	043		Layer	5	40	40
1197	040		Pit	6	20	10
1198	041		Pit	4	20	10
1199	042		Pit	4	20	20
1201	045		Pit	6	20	20
1208	046		Pit	4	20	20
1209	047		Pit	4	20	10

Context	Sample	Spit sample/ Test pit	Context type	Phase	Sample volume (L)	Volume processed (L)
1213	050		Alluvium	3	40	20
1215	051		Alluvium	5	40	20
1215	049		Alluvium	5	40	30
1215	048		Alluvium	5	40	30
1215	052		Alluvium	5	40	10
1218	053	0-5cms	Alluvium	5	40	40
1218	054	5-10cms	Alluvium	5	40	40
1219	056	10-15cms	Alluvium	1	40	40
1219	055	15-20cms	Alluvium	1	40	40
1220	057		Alluvium	3	40	30
1225	064		Pit	6	40	10
1227	065		Pit	6	40	10
1233	074		Pit	6	40	10
1244	078		Layer	6	40	10
1245	079		Layer	6	40	40
1246	080		Layer	6	40	10
1248	089		Wall	9	10	10
1249	087		Wall	9	20	10
1307	096		Pit	6	20	10
1331	098		Ditch	8	20	10
1347	102		Ditch	8	10	10
1373	109		Pit	4	40	10
1386	113		Pit	7	40	20
1386	115		Pit	7	40	40
1388	120		Pit	4	10	10
1394	118		Posthole	4	10	10
1395	116		Posthole	4	10	10
1397	117		Pit	4	10	10
1402	121		Posthole	4	10	10
1405	124		Pit	2	10	10
1409	125		Pit	2	10	10
1415	123		Pit	2	10	10
1417	122		Pit	2	20	10

Table 8: List of environmental samples processed at assessment and analysis dating

Context	Phase	Species	Element	Part	Butchery	Path.	Other	Measurable	Preservation	Fragmentation	No.	Comments
1002	6	Cervid	Antler	Prox-Mid	Yes	No	Very weathered	No	3	4	13	Frags of coronet and tine of possibly fallow deer. Middle of articulation of coronet has deep depression and has broken in two down the centre.
1002	6	Bos	Metatarsal	Distal	No	Yes		No	4	4	1	Osteophytes on anterior surface
1002	6	Unident	Long bone	Mid	No	No		No	4	4	11	
1002	6	Unident	Long bone	Mid	No	Yes	Weathered	No	3	3	9	Small area of striated compact bone on a few frags.
1013	1	Unident	Jaw	Mid	No	No	Very weathered	No	2	3	1	
1013	1	Bos	Radius	Dist-Mid	No	No	Very weathered	No	3	3-4	28	
1013	1	Bos	L.Scapula	Medial	No	No	Very weathered & root damaged	No	2	2	3	
1013	1	Bos	Rib	Mid	Yes	No		No	2	2	1	Sliced down mid shaft
1013	1	Bos	L.Metatarsal	Proxi	No	No	Very weathered	No	2	3	5	
1013	1	Unident	Long bone	Mid	No	No	Very weathered	No	2	3	22	
1013	1	Bos	R.M3		No	No		No	3	2-3	1	Unworn
1013	1	Cervid	R.Calcaneous		No	No		No	3	2-3	2	
1013	1	Unident	Unident	Unident	No	No		No	3	2-3	2	
1013	1	Unident	Long bone	Mid	No	No		No	3	4	4	
1013	1	Ovis	Molar	Cusp	No	No		No	3	2	2	Slightly worn
1013	1	Unident	Long bone	Mid	No	No		No	3	2	1	
1013	1	Bos	Metatarsal	Vari	Yes	No		No	2	3	34	Looks to have been split down midshaft, poss for marrow.
1013	1	Unident	Long bone	Mid	Yes	No	Very weathered	No	3	3-4	6	Look like split down mid shaft for marrow.
1013	1	Bos	Humerus	Dist	No	No	Very weathered	No	2	3	4	
1013	1	Unident	Long bone	Mid	No	No		No	4	4	23	
1013	1	Bos	L.Metacarple	Proxi	Yes	Yes	Very weathered	No	3	3	13	Hole in medial aspect of proxi artic surface and small depression on lateral of proxi artic surface (suggesting space occupying lesions) Shaft looks split for marrow.
1013	1	Cervid	R.Ulna	Proxi	No	No	Very weathered	No	3	3	11	
1013	1	Cervid	Antler	Tine	No	No	Possibly worked	No	3	3	18	Trabecular bone inside tine looks like its been smoothed. Also tip looks sliced.
1013	1	Unident	Long bone	Mid	No	No	Very weathered	No	4	4	28	
1013	1	Unident	Unident	Unident	No	No	Very weathered	No	3	4	6	
1013	1	Unident	Long bone	Mid	No	No		No	3	4	12	
1013	1	Unident	Long bone	Mid	No	No	Very weathered	No	4	4	6	
1013	1	Unident	Unident	Unident	No	No	Very weathered	No	3	4	2	
1013	1	Unident	Long bone	Mid	No	No		No	3	4-5	7	
1013	1	Cervid	Astragalus		No	No		No	4	4	10	
1013	1	Unident	Unident	Unident	No	No	Burnt (white)	No	4	4	11	
1013	1	Unident	Long bone	Mid	No	No	Very weathered	No	4	4	1	
1013	1	Cervid	R.Calcaneous		No	No		No	2	1	1	
1013	1	Bos	L.Metatarsal	Dist-Mid	No	No	Very weathered	No	4	4	15	
1013	1	Ovis	PM3	Cusp	No	No		No	4	3	3	
1024	8	Unident	Long bone	Mid	No	No		No	2	4	1	
1030	9	Unident	Long bone	Mid	No	No		No	2	3	1	
1042	9	Unident	Long bone	Mid	No	No		No	2	4-5	68	
1048	8	Unident	Long bone	Mid	No	No	Very weathered	No	2	4	10	
1050	8	Ovis	R.M3	Cusp	No	No		No	2	3	2	Unworn.
1050	8	Unident	Long bone	Mid	No	No		No	2	3	4	5
1057	8	Unident	Long bone	Mid	No	No		No	3	4	7	
1060	8	Unident	Unident	Unident	No	No		No	4	5	4	
1119	8	Unident	Long bone	Mid	No	No		No	3	4	17	
1124	8	Unident	Long bone	Mid	No	No		No	3	4	3	With flint.
1148	8	Unident	Long bone	Mid	No	No		No	3	4	21	
1149	8	Unident	Long bone	Mid	No	No		No	2	2	1	
1181	5	Unident	Unident	Unident	No	No		No	3	4	2	
1181	5	Unident	Long bone	Mid	No	No	Very weathered	No	3	3-4	17	
1181	5	Bos	Molar	Cusp	No	No		No	2	3	3	Slightly worn
1181	5	Unident	Long bone	Mid	No	No		No	3	4	24	
1188	6	Unident	Long bone	Mid	No	No	Weathered	No	3	3	3	
1189	6	Unident	Long bone	Mid	No	No		No	3	4	1	
1189	6	Unident	Long bone	Mid	No	No		No	3	4	50	

Context	Phase	Species	Element	Part	Butchery	Path.	Other	Measurable	Preservation	Fragmentation	No.	Comments
1189	6	Unident	Long bone	Mid	No	No		No	3	4	27	
1189	6	Unident	Unident	Unident	No	No		No	5	5	1	
1189	6	Unident	Long bone	Mid	No	No	Very weathered	No	3	4	55	
1189	6	Bos	Metacarple	Dist-Mid	No	No	Very weathered	No	3	4-5	62	
1189	6	Unident	Unident	Unident	No	No		No	5	5	1	
1190	5	Bos	L.Tibia	Mid	No	No	Very weathered	No	3	3	25	
1192	6	Unident	Long bone	Mid	No	No		No	3	4-5	16	
1194	6	Unident	Long bone	Mid	No	No	Burnt (white)	No	3	4	1	
1194	6	Unident	Tooth	Cusp	No	No		No	3	4	3	
1194	6	Unident	Long bone	Mid	No	Yes	Very weathered	No	3	3	12	Small amount of compact bone on one fragment.
1194	6	Unident	Tooth	Cusp	No	No		No	3	4	1	
1201	6	Unident	Long bone	Mid	No	No		No	3	4	25	
1213	3	Unident	Long bone	Mid	No	No		No	3	3	4	
1213	3	Bos	M2	Cusp	No	No		No	3	3	2	Slightly worn
1215	5	Unident	Long bone	Mid	No	No		No	3	4	1	
1224	3	Bos	Molar	Cusp	No	No		No	3	4	1	Unworn
1224	3	Unident	Long bone	Mid	No	No	Very weathered	No	3	4	14	
1225	6	Unident	Unident	Unident	No	No	Burnt	No	3	5	3	
1322	8	Bos	Metatarsal	Mid	No	No		No	2	3-4	5	
1322	8	Unident	Long bone	Mid	No	No		No	2	5	84	
1381	8	Unident	Long bone	Mid	No	No	Very weathered	No	3	3	4	
1382	7	Unident	Unident	Unident	No	No		No	2	5	21	
1382	7	Unident	Long bone	Mid	No	No		No	2	3-4	22	
1382	7	Unident	Long bone	Mid	No	No	Very weathered	No	2	3	12	
1382	7	Unident	Long bone	Mid	Yes	No		No	2	3	2	Sliced half way down mid shaft.
1382	7	Unident	Long bone	Mid	No	No	Root damage	No	3	3	29	
1382	7	Bos	Molar	Cusp	No	No	Root damage	No	3	3	1	Slightly worn
1382	7	Unident	Tooth	Cusp	No	No		No	3	4	1	
1382	7	Unident	Long bone	Mid	No	No	Root damage & very weathered	No	3	3	9	
1382	7	Unident	Long bone	Mid	No	No	Very weathered	No	3	3-4	18	
1382	7	Unident	Long bone	Mid	No	No		No	2	3	3	
1400	7	Unident	Unident	Unident	No	No	Burnt bone	No	3	5	1	

Table 9: Hand-collected animal bone

Key:
Fragmentation – 1 = whole to 5 = very fragmented
Preservation – 1 = well preserved to 5 = poorly preserved

	Family	Common name	Habitat	1183 0.90-1.00m	1405	1023	1182	1182 0.30-0.35 m	1182 0.30-0.40 m	1394	1190	1003 <77>	1197	1225	1246	1307	1188 <62>	1048	1058	1135/ 1134
Phase				1	2	3	3	3	3	4	5	6	6	6	6	6	7	8	8	8
Latin name																				
Charred plant remains																				
Cereal sp indet grain	Poaceae	cereal	F																+	
cf *Corylus avellana* shell fragment	Betulaceae	hazelnut	C							+										
Stellaria media	Caryophyllaceae	common chickweed	AB						+											
Rumex sp	Polygonaceae	dock	ABCD						+											
Stachys sylvatica	Lamiaceae	hedge woundwort	CD						+											
Waterlogged plant remains																				
Urtica dioica	Urticaeae	common nettle	ABCD						+						+	+	+			
Chenopodium sp	Chenopodiaceae	goosefoot	ABD			+					+							+		
Atriplex sp	Chenopodiaceae	orache	AB									+								
Chenopodium/Atriplex sp	Chenopodiaceae	goosefoot/ orache	AB										+							
cf *Reseda luteola*	Resedaceae	dyer's rocket, weld	ABDF				+	+												
Rubus sect *Glandulosus*	Rosaceae	bramble	CD	+																+
cf *Frageria vesca*	Rosaceae	wild strawberry	C					+												
cf Lamiaceae sp indet	Lamiaceae	dead-nettle	ABCDEF	+																
Sambucus nigra	Caprifoliaceae	elderberry	BC		+			+	+											
Carduus/Cirsium sp	Asteraceae	thistle	ABDE					+						+						+
Chrysanthemum segetum	Asteraceae	corn marigold	AB						+											
Carex sp	Cyperaceae	sedge	CDE					+	+											
unidentified stem fragments	unidentified						+++													
unidentified root fragments	unidentified					+++	+++	+++	+++		+++		++				+++	+++		+++
unidentified wood fragments	unidentified																+			
unidentified herbaceous fragments	unidentified											+++					+			

Table10: Plant remains

Habitat	Quantity
A= cultivated ground	+ = 1 - 10
B= disturbed ground	++ = 11- 50
C= woodlands, hedgerows, scrub etc	+++ = 51 -100
D = grasslands, meadows and heathland	++++ = 101+
E = aquatic/wet habitats	
F = cultivar	

	CONTEXT	1219	1219	1182	1182	1182	1218	1218	1037	1036	1023
	Sample Number	56 (15-20 cm)	55 (10-15 cm)	72 (45-55 cm)	72 (35-40 cm)	72 (25-30 cm)	54 (5-10 cm)	53 (0-5 cm)	5	3	1
	Sample Volume (ltr)	40	40	10	5	10	10	10	40	40	40
HABITAT	SPECIES										
freshwater	*Pisidum sp*				1						
slum	*Carychium minimum*		98		180	18	16	40	4		
slum	*Lymnaea truncatula*	1	4		14			8			
slum	*Anisus leucostoma*	5	14	4	54	1	16	1			
slum	*Vertigo antivertigo*		10					4			
slum	*Vallonia pulchella*	2	7		5	6	13	12	130	12	
shade	*Carychium tridentatum*	103	518	70	765	48	296	61	23	3	1
shade	*Carychium sp*	14	98	7	415	8	97	10	18		
shade	*Vertigo pusilla/substriata*							1		2	
shade	*Lauria cylindracea*	3	5				8	4			
shade	*Acanthinula aculeata*	12	72	7	71	12	12	19	8	1	
shade	*Discus rotundatus*	44	164	25	540	62	257	90	63	8	
shade	*Aegopinella pura*		2	2	30	2					
shade	*Aegopinella nitidula*		25	6	87	6	9		8		
shade	*Oxychilus sp*	13	10	3	12	2		14	2	7	
shade	*Zonitoides excavatus*				7				2		
shade	*Cochlodina laminata*				3						
shade	*Clausilia bidentata/sp*	3	6	1	23	2	13	2		6	
intermediate	*Cochlicopa lubrica*		5	3	46	9	4	2	19	8	
intermediate	*Columella edentula*		1		2						
intermediate	*Punctum pygmaeum*	3	9		18	7	2	12	5	2	
intermediate	*Vitrea crystallina*	1	5		23			3	9	1	
intermediate	*Vitrea contracta*		1	1	7		4	1		1	
intermediate	*Nesovitrea hammonis*	5	14	3	30	6	13	5	10	1	
intermediate	*Euconulus fulvus*							1			
intermediate	*Trichia hispida*	5	9	4	42	15	37	103	125	29	
intermediate	*Cepaea sp*				7		7			2	
open	*Vertigo pygmaea*	2			1	3	6	2	24	2	
open	*Vallonia costata*	1	8			14	18	51	42	2	1
open	*Vallonia excentrica*				2			8	26	17	
open	*Vallonia sp*	5	3		1	7	5	138	123		2

Table 11: Quantification of mollusc remains from all samples

Context	Sample	Test pit	Sample volume (L)	Large mammal bone	Molluscs	Charcoal	Coal ash/clinker	CBM	Iron slag	Flint	Heat-cracked stone
1003	75	TP8	40	<1g		39g	<1g	1g		<1g	11059g
1003	76	TP9	40	1g	<1g	<1g		1g			10516g
1003	77	TP10	40	2g		17g					8029g
1188	60	TP4	40	<1g		1g	<1g		<1g		2582g
1188	61	TP5	40	<1g		5g	1g	6g	14g		2700g
1188	62	TP6	40	<1g		<1g			<1g		1580g

Table 12: Sample composition (stony spreads)

				Sample Number		
		Context 1003	**75**	**76**	**77**	**Totals**
Size	**Sample**					
50mm	**Angular**	Count	0	0	0	**0**
		Weight (g)	0	0	0	**0**
	Subangular	Count	0	0	1	**1**
		Weight (g)	0	0	125	**125**
	Subrounded	Count	0	0	1	**1**
		Weight (g)	0	0	175	**175**
	Rounded	Count	0	0	0	**0**
		Weight (g)	0	0	0	**0**
25mm	**Angular**	Count	2	0	0	**2**
		Weight (g)	66	0	0	**66**
	Subangular	Count	82	70	60	**212**
		Weight (g)	3073	2298	2279	**7650**
	Subrounded	Count	74	62	58	**194**
		Weight (g)	3201	2378	3305	**8884**
	Rounded	Count	3	0	3	**6**
		Weight (g)	105	0	98	**203**
16mm	**Angular**	Count	0	0	0	**0**
		Weight (g)	0	0	0	**0**
	Subangular	Count	172	238	57	**467**
		Weight (g)	1820	2546	714	**5080**
	Subrounded	Count	144	145	82	**371**
		Weight (g)	1629	1550	1052	**4231**
	Rounded	Count	0	0	0	**0**
		Weight (g)	0	0	0	**0**
10mm	**Angular**	Count	0	0	0	**0**
		Weight (g)	0	0	0	**0**
	Subangular: 10mm	Count	177	378	28	**583**
		Weight (g)	496	891	100	**1487**
	Subrounded: 10mm	Count	188	293	44	**525**
		Weight (g)	478	521	149	**1148**
	Rounded: 10mm	Count	0	0	0	**0**
		Weight (g)	0	0	0	**0**
4mm	**Angular: 5mm**	Count	0	0	0	**0**
		Weight (g)	0	0	0	**0**
	Subangular: 5mm	Count	174	387	20	**581**
		Weight (g)	86	154	18	**258**
	Subrounded: 5mm	Count	157	210	6	**373**
		Weight (g)	75	97	9	**181**
	Rounded: 5mm	Count	87	221	5	**313**
		Weight (g)	30	81	5	**116**
	Total Stones		**1260**	**2004**	**365**	**3264**
	Total Weight (g)		**11059**	**10516**	**8029**	**21575**

Table 13: Clast analysis

Appendix 1: Radiocarbon dating

Methods

Twelve samples were submitted for AMS (Accelerator Mass Spectrometry) radiocarbon dating to the ^{14}CHRONO Centre at Queens University Belfast (Tables 1 and 2). The samples were selected based upon their position within significant features identified during the excavation such as the enclosure ditch and the burnt mounds/charcoal layers.

Material selected was a mixture of animal bone (three samples) and charred and un-charred plant macrofossil remains. The latter was identified by Elizabeth Pearson to ensure that no long-lived or aquatic species were submitted for dating.

During the initial percentage nitrogen test undertaken to indicate probable collagen preservation, all three bone samples (UBA-16385, UBA-16386 and UBA-16387) were well below the failure threshold of 0.79% with UBA-16385 and UBA-16386 providing an average of 0.13% and UBA-16387 marginally better with a figure of 0.18% (James McDonald, *pers comm*). The most likely explanations for the poor collagen preservation are adverse soil conditions or cooking of bone although the former is the most likely.

Due to this failure, three additional samples (UBA-16399, UBA-16400 and UBA-16401) were selected to replace the failed samples.

Results and discussion (by Nick Daffern)

The results of the AMS radiocarbon dating show three phases of activity. The first is the deposition of the charcoal-rich/burnt layers which occurred in the late-Neolithic/early-Bronze Age (cal BC 2464 to 2213, UBA-16381; cal BC 2285 to 2058, UBA-16382).

The second phase is associated with the trough [1386] whose fill accumulated in the middle-Bronze Age (cal BC 1291-1059, UBA-16379) although one of the samples produced a modern date indicating intrusion of modern plant material.

The final phase is the abandonment of the enclosure with deposition of the respective fills of pit/posthole [1381] and the enclosure ditch occurring in the post-Roman/ early-medieval period with the probabilities indicating a late 6th century date for the enclosure ditch and an early-mid 7th century date for the postholes.

The outlying middle Neolithic date (cal BC 3095-2921; UBA-16400) identified from within the primary fill of ditch [1061] can most likely be attributed to contamination as a result of the enclosure ditch truncating an earlier deposit although the nature of this earlier activity/feature is unknown.

These dates are shown below in a simple diagram. Another diagram is included showing dates from other sites in the area, namely two dates from component B1 of the Rotherwas Ribbon (Sworn, Jackson, and Woodiwiss 2009, 25), separate dates from two adjacent pits (*ibid,* 3), and three dates from a Bronze Age pond barrow at Bradbury Lines in Bullingham (Jones and Macey 2010, Table 10).

Tables

UBANo	Sample ID	Material selected	Species	Context
UBA-16377	HSM 48812/112/1	Charred seed or nutshell	*Triticum spelta* grain	Fill of pit/posthole [1381]
UBA-16378	HSM 48812/112/2	Charred seed or nutshell	*Hordeum vulgare* grain	Fill of pit/posthole [1381]
UBA-16379	HSM 48812/1386/113/1	Charcoal	Maloideae sp	Fill of trough [1386]
UBA-16380	HSM 48812/1386/113/2	Seed or nutshell	*Sambucus nigra*	Fill of trough [1386]
UBA-16381	HSM 48812/1245/79/1	Charcoal	*Betula* sp	Charcoal-rich layer (1245) - TP9
UBA-16382	HSM 48812/1245/79/2	Charcoal	*Alnus* sp	Charcoal-rich layer (1245) - TP9
UBA-16383	HSM 48812/1003/75/1	Charred seed or nutshell	*Crataegus monogyna* fruit	Charcoal-rich layer (1003) (TRAMPLE?) - TP8
UBA-16384	HSM 48812/1003/77	Charred seed or nutshell	*Carduus/Cirsium* sp	Charcoal-rich layer (1003) (TRAMPLE?) - TP10
UBA-16385	HSM 48812/1148	Animal bone	Failed	Fill of ditch [1151]
UBA-16386	HSM 48812/1149	Animal bone	Failed	Fill of ditch [1151]
UBA-16387	HSM 48812/1119	Animal bone	Failed	Upper fill southern enclosure ditch
UBA-16388	HSM 48812/1119/19	Charcoal	Maloideae sp	Upper fill southern enclosure ditch
UBA-16399	HSM48812/1060/13/1	Plant macrofossil	*Triticum* sp grain	Primary fill of ditch [1061] - (southern enclosure)
UBA-16400	HSM48812/1060/13/2	Charred seed or nutshell	*Corylus avellana* shell	Primary fill of ditch [1061] - (southern enclosure)
UBA-16401	HSM48812/1052/8	Charcoal	*Corylus avellana* sp	Primary fill of ditch [1053] - (southern enclosure)

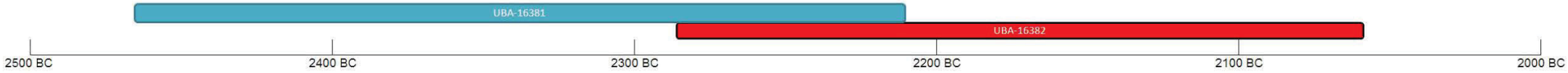
Table 1 Material submitted for AMS radiocarbon dating

UBANo	Sample ID	Context	14C Age	±	AMS 13C	F14C	±	BC/AD
UBA-16377	HSM 48812/112/1	Fill of pit/posthole [1381]	1373	22	-23.2	0.8429	0.0023	AD 620 to 677
UBA-16378	HSM 48812/112/2	Fill of pit/posthole [1381]	1420	22	-24.7	0.838	0.0023	AD 599 to 657
UBA-16379	HSM 48812/1386/113/1	Fill of trough [1386]	2961	23	-28	0.6917	0.002	1291 to 1059 BC
UBA-16380	HSM 48812/1386/113/2	Fill of trough [1386]	Greater than modern		-26.7	1.0979	0.0028	AD 1896 to 1904
UBA-16381	HSM 48812/1245/79/1	Charcoal-rich layer (1245) - TP9	3869	27	-23.5	0.6178	0.0021	2464 to 2213 BC
UBA-16382	HSM 48812/1245/79/2	Charcoal-rich layer (1245) - TP9	3766	24	-24.7	0.6257	0.0018	2285 to 2058 BC
UBA-16383	HSM 48812/1003/75/1	Charcoal-rich layer (1003) (TRAMPLE?) - TP8	Greater than modern		-31.9	1.0887	0.0026	AD 1896 to 1904
UBA-16384	HSM 48812/1003/77	Charcoal-rich layer (1003) (TRAMPLE?) - TP10	Greater than modern		-28.2	1.0667	0.0028	AD 1896 to 1904
UBA-16385	HSM 48812/1148	Fill of ditch [1151]	FAILED					
UBA-16386	HSM 48812/1149	Fill of ditch [1151]						
UBA-16387	HSM 48812/1119	Upper fill southern enclosure ditch						
UBA-16388	HSM 48812/1119/19	Upper fill southern enclosure ditch	1437	23	-29.1	0.8362	0.0024	AD 580 to 652
UBA-16399	HSM48812/1060/13/1	Primary fill of ditch [1061] - (southern enclosure)	1530	25	-20.6			AD 433 to 599
UBA-16400	HSM48812/1060/13/2	Primary fill of ditch [1061] - (southern enclosure)	4400	27	-24.4	0.5782	0.0019	3095 to 2921 BC
UBA-16401	HSM48812/1052/8	Primary fill of ditch [1053] - (southern enclosure)	1426	28	-25.8	0.8373	0.0029	AD 580 to 657

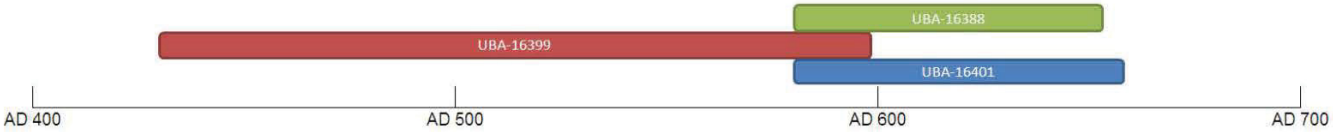
Table 2 Results of AMS radiocarbon dating

Diagram 1: Radiocarbon dates from Rotherwas Industrial Estate

Phase 6 charcoal-rich layer (1245)



Phase 8 curvilinear enclosure ditch



Phase 8 posthole [1381]

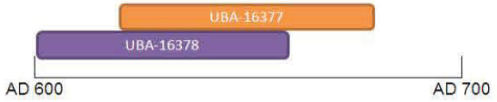
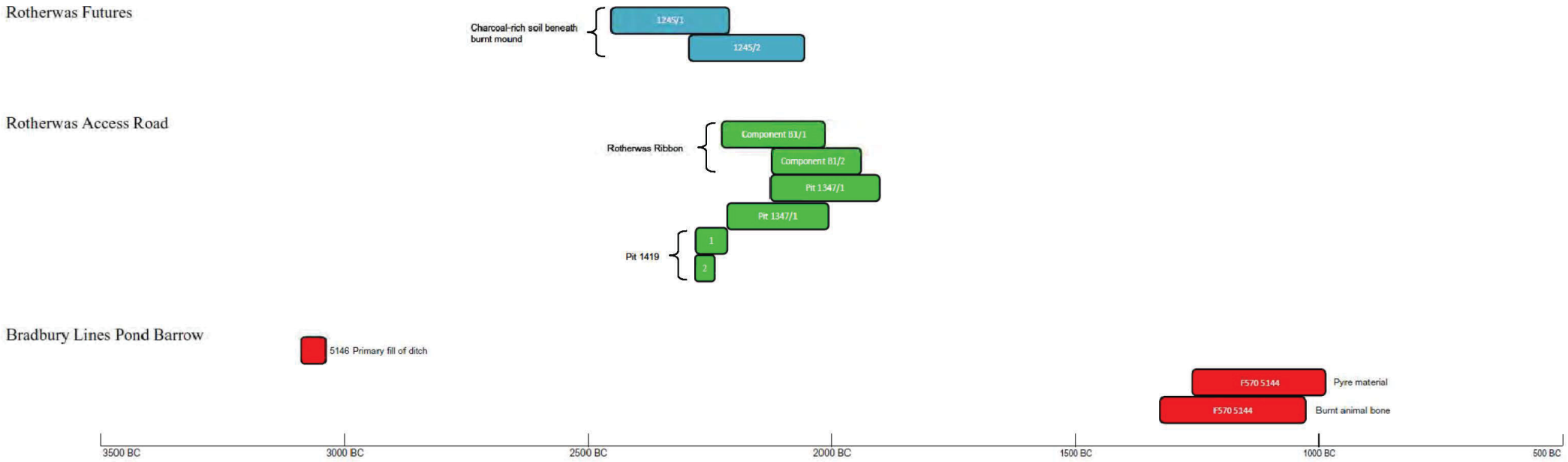


Diagram 2: Prehistoric radiocarbon dates from Rotherwas Industrial Estate and other sites in the area



Appendix 2: Stratigraphic data and phased matrix

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1000	Layer	Topsoil	0.36				10
1001	Layer	Made ground	0.24				10
1002	Layer	Cleaning layer					6
1003	Layer	Layer	0.09	9.25	11.00		6
1004	Fill	Field drain					10
1005	Cut	Field drain					10
1006	Fill	Ditch	0.35	1.33			8
1007	Fill	Ditch	0.17	0.97			8
1008	Fill	Ditch	0.35	0.88			8
1009	Fill	Ditch	0.14	0.76			8
1010	Fill	Ditch	0.16	0.51			8
1011	Cut	Ditch	0.82	1.33			8
1012	Layer	Alluvium	0.7				8
1013	Layer	Alluvium	0.5				1
1014	Fill	Ditch	0.16	0.8			8
1015	Fill	Ditch	0.52	1.06			8
1016	Fill	Ditch	0.42	0.72			8
1017	Cut	Ditch	0.66	1.06			8
1018	Fill	Linear	0.64	1.8			9
1019	Cut	Linear	0.64	1.8			9
1020	Cut	Linear	0.48				9
1021	Layer	Alluvium	0.08				5
1022	Layer	Alluvium	0.22				5
1023	Layer	Alluvium	0.12				3
1024	Fill	Ditch	0.26	1.07			8
1025	Fill	Ditch	0.12	0.98			8
1026	Fill	Pit	0.16	0.68	2.25		6
1027	Cut	Pit	0.16	0.68	2.25		6
1028	Fill	Linear	0.16	0.54	2.05		9
1029	Cut	Linear	0.16	0.54			9
1030	Structure	Wall	0.25	0.6	3.06		9
1031	Layer	Wall	0.09	0.32	1.7		9
1032	Structure	Drain	0.59	0.35	0.85		9
1033	Layer	Wall	0.05	0.4	1.77		9
1034	Layer	Layer					9
1035	Layer	Layer	0.5				9
1036	Fill	Ditch	0.14	0.87			8
1037	Fill	Ditch	0.08	1.57			8
1038	Cut	Ditch	0.73	1.57			8
1039	Cut	Ditch	0.3	1.35	1.5		8
1040	Fill	Ditch	0.3	1.35	1.5		8
1041	Cut	Ditch	0.17	0.47	1.2		9
1042	Fill	Ditch	0.17	0.47	1.2		9
1048	Fill	Ditch	0.87	1.18			8
1049	Fill	Ditch	0.2	0.8			8

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1050	Fill	Ditch	0.4	0.9			8
1051	Fill	Ditch	0.07	0.5			8
1052	Fill	Ditch	0.07	0.22			8
1053	Cut	Ditch	1.36	1.46			8
1054	Fill	Pit	0.14	0.77			6
1055	Fill	Pit	0.25	1.74			6
1056	Cut	Pit	0.47	1.86	2.52		6
1057	Fill	Ditch	0.6	0.6	1.44		8
1058	Fill	Ditch	0.14	0.14			8
1059		VOID					
1060	Fill	Ditch	0.36	0.22			8
1061	Cut	Ditch	1.1	0.6			8
1062	Cut	Ditch	0.7	1.16			8
1063	Fill	Ditch	0.7	0.5			8
1064	Fill	Ditch	0.41 - 0.66	0.95			8
1065	Fill	Ditch	0.41	1.16			8
1066	Cut	Stakehole	0.3			0.6	6
1067		VOID					
1068	Cut	Stakehole	0.12			0.13	6
1069	Cut	Stakehole	0.15			0.3	6
1070		VOID					
1071	Cut	Pit	0.03	0.7	0.9		6
1072	Cut	Pit	0.03	0.9	1.1		6
1073	Cut	Tree bole	0.08			0.38	6
1074	Cut	Tree bole	0.43			0.72	6
1075	Cut	Posthole	0.22			0.18	6
1076	Cut	Posthole	0.12	0.61	0.64		6
1077		VOID					
1078	Cut	Natural	0.02	0.28	0.37		6
1079	Cut	Natural	0.08	0.78	1.9		6
1080	Cut	Natural	0.04	0.8	1.03		6
1081	Cut	Pit	0.05	0.75	1.1		6
1082	Cut	Pit	0.3	0.8	1.6		6
1083	Cut	Tree bole	0.15			0.8	6
1084	Cut	Posthole	0.07	0.26	0.3		6
1085	Cut	Posthole	0.06			0.26	6
1086	Cut	Posthole	0.06			0.43	6
1087	Cut	Pit	0.14	0.7	0.85		6
1088		VOID					
1089		VOID					
1090	Fill	Pit	0.22	1.44			6
1091	Cut	Linear	0.72	1.8			9
1092	Fill	Linear	0.72	1.8			9
1093	Cut	Linear	0.72	1.8			9
1094	Fill	Linear	0.72	1.8			9
1095	Cut	Linear	0.72	1.8			9
1096	Fill	Linear	0.72	1.8			9
1097	Cut	Linear	0.22	0.7	1.1		9

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1098	Fill	Linear	0.22	0.7	1.1		9
1099	Cut	Linear	0.18	0.56	1		9
1100	Fill	Linear	0.18	0.7	1		9
1101	Cut	Linear	0.07	0.6	1		9
1102	Fill	Linear	0.07	0.6	1		9
1103	Cut	Pit	0.3	1.5	3		6
1104	Cut	Pit	0.3	1.5	3		6
1105	Fill	Ditch	0.14	0.6	0.7		8
1106	Fill	Linear	0.19	0.6	0.7		9
1107	Cut	Linear	0.33	0.6	0.7		9
1108	Cut	Construction trench	0.09	0.48			9
1109		VOID					
1110	Cut	Ditch	0.58	1.3			8
1111	Fill	Ditch	0.58	0.56			8
1112	Fill	Ditch	0.53	1.3			8
1113	Layer	Layer	0.15	0.34			6
1114	Layer	Layer	0.28	0.68			9
1115	Layer	Layer	0.26	0.48			10
1116	Layer	Made ground	0.38	0.56			10
1117	Layer	Layer	0.14	0.54			10
1118	Layer	Topsoil	0.1	0.54			10
1119	Fill	Ditch	0.62	1.24			8
1120	Fill	Ditch	0.28	1.7			8
1121	Fill	Ditch	0.36	2.24			8
1122	Fill	Ditch	0.16	0.45			8
1123	Cut	Ditch	1.12	2.24			8
1124	Fill	Ditch	0.2	2.3			8
1125	Fill	Ditch	0.3	1.9			8
1126	Fill	Ditch	0.65	1.4			8
1127	Cut	Ditch	1.02	2.3			8
1128	Cut	Ditch	0.7	1	1.2		8
1129	Fill	Ditch	0.08				8
1130	Fill	Ditch	0.34				8
1131	Fill	Ditch	0.28				8
1132	Fill	Ditch	0.56				8
1133	Fill	Ditch	0.47				8
1134	Cut	Ditch	1.24	2.6			8
1135	Fill	Ditch	0.19				8
1136	Cut	Linear	0.1	0.58			9
1137	Fill	Linear	0.1	0.58			9
1138	Cut	Ditch	1.08	3.34			8
1139	Fill	Ditch	0.31	1.44			8
1140	Fill	Ditch	0.37	1.1			8
1141	Fill	Ditch	0.92	1.82			8
1142	Fill	Drain	1.08	3.34			8
1143	Cut	Linear	0.17	0.47	1.2		9
1144	Fill	Linear	0.07	0.47	1.2		9

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1145	Fill	Linear	0.1	0.65	0.12		9
1146	Fill	Ditch	0.15	0.71			8
1147	Fill	Ditch	0.21	1.1			8
1148	Fill	Ditch	0.31	1.16			8
1149	Fill	Ditch	0.17	0.86			8
1150	Fill	Ditch	0.17	0.86			8
1151	Cut	Ditch	0.86	1.54			8
1152	Fill	Pit	0.15	1.4	3.3		4
1153	Fill	Pit	0.6		3.1		4
1154	Cut	Pit	0.75	1.4	3.3		4
1155		VOID					
1156	Cut	Linear	0.35	1.22			8
1157	Fill	Linear	0.39	2.3	2.8		9
1158	Cut	Linear	0.39	2.3	2.8		9
1159	Fill	Ditch	0.26				9
1160	Cut	Ditch	0.26	0.95 - 1.55			9
1161	Cut	Linear	0.1	0.65	1.2		9
1162	Fill	Posthole	0.22			0.18	6
1163	Fill	Tree bole	0.13	1.2	1.5		6
1164	Fill	Pit	0.02	0.28	0.37		6
1165	Fill	Pit	0.08	0.78	1.9		6
1166	Fill	Pit	0.04	0.8	1.03		6
1167	Fill	Posthole	0.12	0.61	0.64		6
1168	Fill	Pit	0.05	0.75	1.1		6
1169	Fill	Tree bole	0.03	0.7	0.9		6
1170	Fill	Tree bole	0.15			0.8	6
1171	Fill	Tree bole	0.03	0.9	1.1		6
1172	Fill	Tree bole	0.3			0.6	6
1173	Fill	Tree bole	0.3			0.6	6
1174	Fill	Stakehole	0.12			0.13	6
1175	Fill	Pit	0.13	1.2	1.5		6
1176	Fill	Pit	0.13	1.2	1.5		6
1177	Fill	Ditch	0.56	1.8			8
1178	Fill	Ditch	0.51	1.3			8
1179	Cut	Ditch	1.05	1.8			8
1180	Fill	Posthole	0.15			0.3	6
1181	Layer	Former topsoil	0.17				5
1182	Layer	Alluvium	0.19				3
1183	Layer	Alluvium	0.1				1
1184	Layer	Alluvium	0.4				3
1185	Fill	Posthole	0.13	0.05	0.22		6
1186	Fill	Linear	0.08	0.39	2		10
1187	Fill	Linear	0.08	0.39	2		10
1188	Layer	Layer	0.1				7
1189	Layer	Layer	0.06	1	1		6
1190	Layer	Layer	0.12	3	3		5
1191	Fill	Posthole	0.07	0.26	0.3		6
1192	Fill	Posthole	0.06			0.26	6

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1193	Layer	Layer	0.08				6
1194	Layer	Cleaning layer	0.02				6
1195	Fill	Posthole	0.06			0.43	6
1196	Fill	Posthole	0.06			0.21	6
1197	Fill	Pit	0.14	0.7	0.85		6
1198	Fill	Pit	0.57	1.3	2.84		4
1199	Fill	Pit	0.23	1.04			4
1200	Cut	Pit	0.8	1.3	2.84		4
1201	Fill	Pit	0.3	1.5	3		6
1202		VOID					
1203	Fill	Ditch	0.22	2			9
1204	Fill	Ditch	0.04	2			9
1205	Cut	Ditch	0.26	2			9
1206	Cut	Construction trench	0.16	0.35			9
1207	Fill	Wall	0.16	0.35	3.06		9
1208	Fill	Pit	0.55	1.03	3.2		4
1209	Fill	Pit	0.13	0.98			4
1210	Cut	Pit	0.68	1.03	3.2		4
1211		VOID					
1212		VOID					
1213	Layer	Alluvium	0.15	3	3		3
1214	Layer	Alluvium	0.22	3	3		1
1215	Layer	Alluvium	0.2				5
1216	Layer	Alluvium	0.2				3
1217	Layer	Alluvium	0.22				1
1218	Layer	Alluvium	0.12				5
1219	Layer	Alluvium	0.22				1
1220	Layer	Alluvium	0.15				3
1221	Layer	Alluvium	0.22				1
1222	Layer	Subsoil	0.5				9
1223	Layer	Alluvium	0.1				5
1224	Layer	Alluvium	0.15				3
1225	Fill	Pit	0.29	0.7	1.6		6
1226	Cut	Pit	0.29	0.7	1.6		6
1227	Fill	Pit	0.12	0.76	1.5		6
1228	Fill	Pit	0.2	0.95	1.5		6
1229	Cut	Pit	0.2	0.95	1.5		6
1230	Layer	Made ground	0.1	1.9			10
1231	Fill	Pit	0.12	1			6
1232	Cut	Pit	0.12	1			6
1233	Fill	Pit	0.18				6
1234	Fill	Pit	0.11				6
1235	Cut	Pit	0.27	0.58			6
1236	Cut	Pit	0.1	0.42			6
1237	Fill	Pit	0.1	0.42			6
1238	Cut	Pit	0.1	0.34			6
1239	Fill	Pit	0.1	0.34			6

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1240	Fill	Pit	0.23	0.85	3		6
1241	Fill	Pit	0.05	1.1	3		6
1242	Cut	Pit	0.3	0.85	3		6
1243	Layer	Layer	-	-	-		6
1244	Layer	Layer	0.06				6
1245	Layer	Layer	0.05	1	1		6
1246	Layer	Layer	0.05				6
1247	Structure	Wall	0.39	2.4	3.06		
1248	Structure	Wall	0.38	0.17	1.7		9
1249	Fill	Wall	0.28	0.3	2.2		9
1250	Cut	Construction trench	0.16	0.35			9
1251	Fill	Wall	0.16	0.35			9
1252	Layer	Layer	0.08				6
1253	Cut	Field drain	0.1				10
1254	Fill	Field drain	0.1				10
1255	Cut	Linear	0.82	1			9
1256	Fill	Linear	0.38	1			9
1257	Fill	Linear	0.44	1			5
1258	VOID						6
1259	Fill	Pit	0.1	0.45	0.9		6
1260	Cut	Pit	0.1	0.45	0.9		6
1261	Fill	Pit	0.11	0.5	0.9		6
1262	Cut	Pit	0.11	0.5	0.9		6
1263	Cut	Pit	0.15	0.8	1		6
1264	Fill	Pit	0.15	0.8	1		6
1265	Cut	Field drain	0.2	0.24	10		10
1266	Fill	Field drain	0.2	0.24	10		10
1267	Fill	Pit	0.05			0.24	6
1268	Cut	Pit	0.05			0.24	6
1269	Fill	Pit	0.06			0.3	6
1270	Cut	Pit	0.06			0.3	6
1271	Cut	Pit	0.06	0.36	0.52		6
1272	Fill	Pit	0.06	0.36	0.52		6
1273	Fill	Pit	0.09	0.4	0.8		6
1274	Cut	Pit	0.09	0.4	0.8		6
1275	Cut	Posthole	0.08			0.33	6
1276	Fill	Posthole	0.08			0.33	6
1277	Cut	Stakehole	0.1			0.15	6
1278	Fill	Stakehole	0.1			0.15	6
1279	Fill	Pit	0.08	0.4	0.9		6
1280	Cut	Pit	0.08	0.4	0.9		6
1281	Fill	Posthole	0.02			0.12	6
1282	Cut	Posthole	0.02			0.12	6
1283	Fill	Pit	0.06	0.4	0.56		6
1284	Cut	Pit	0.06	0.4	0.56		6
1285	Fill	Pit	0.04	0.24	0.4		6
1286	Cut	Pit	0.04	0.24	0.4		6

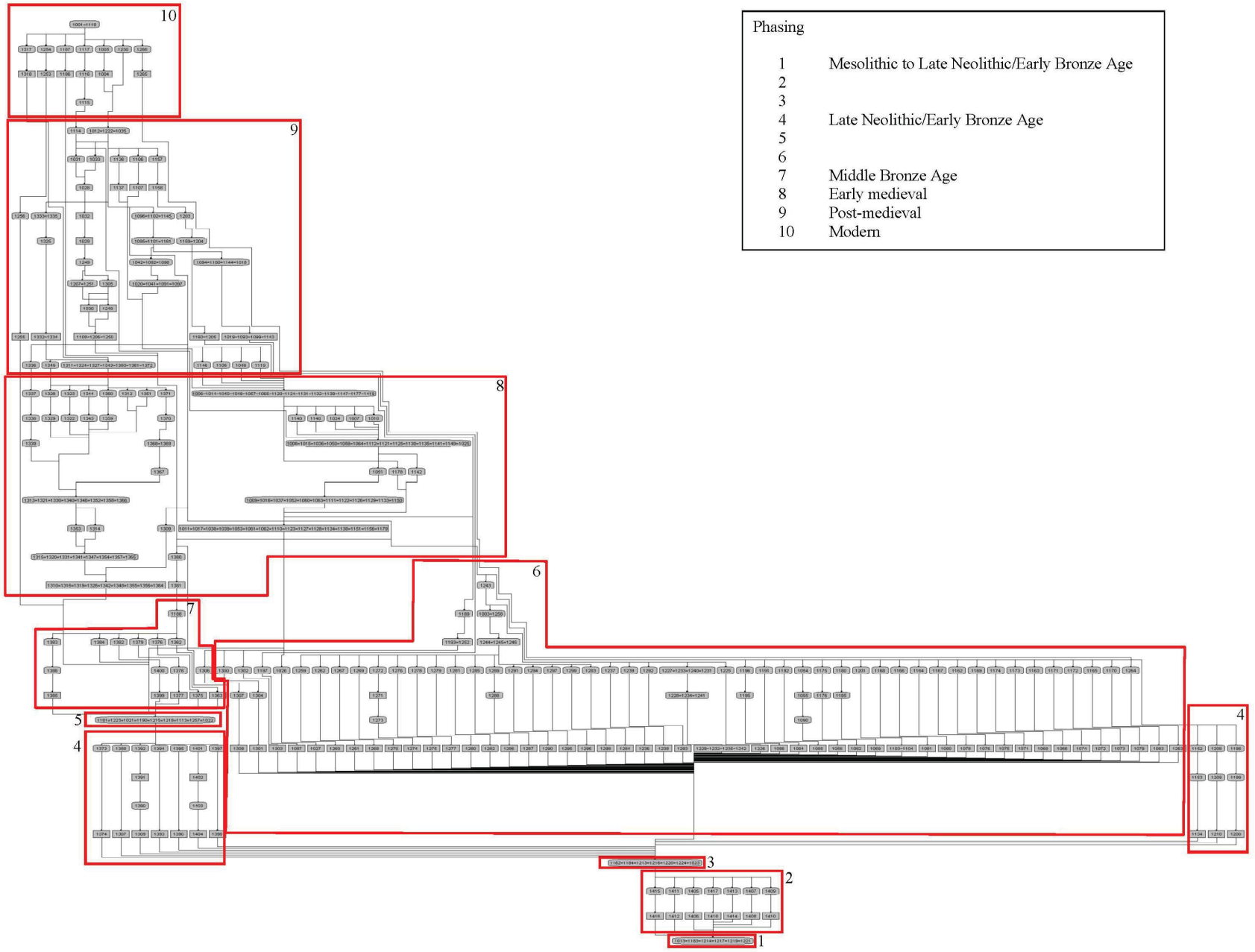
Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1287	Cut	Posthole	0.08			0.5	6
1288	Fill	Posthole	0.04			0.5	6
1289	Fill	Posthole	0.08			0.33	6
1290	Cut	Posthole	0.06			0.2	6
1291	Fill	Posthole	0.06			0.2	6
1292	Fill	Posthole	0.08			0.3	6
1293	Cut	Posthole	0.08			0.3	6
1294	Fill	Pit	0.06	0.34	0.45		6
1295	Cut	Pit	0.06	0.34	0.45		6
1296	Cut	Posthole	0.08			0.28	6
1297	Fill	Posthole	0.08			0.28	6
1298	Cut	Stakehole	0.03			0.15	6
1299	Fill	Stakehole	0.03			0.15	6
1300	Fill	Pit	0.1			0.94	6
1301	Cut	Pit	0.43			0.94	6
1302	Fill	Pit	0.12			0.9	6
1303	Cut	Pit	0.12			0.9	6
1304	Fill	Pit	0.33			0.94	6
1305	Fill	Wall	0.14	0.3	2.8		9
1306	Fill	Pit	0.24	0.47			6
1307	Fill	Pit	0.35			0.8	6
1308	Cut	Pit	0.35			0.8	6
1309	Fill	Ditch	0.28	1.6			8
1310	Cut	Ditch	0.9	1.62			8
1311	Fill	Ditch	0.37	1.43			8
1312	Fill	Ditch	0.03				8
1313	Fill	Ditch	0.19				8
1314	Fill	Ditch	0.03				8
1315	Fill	Ditch	0.15				8
1316	Cut	Ditch	0.75	1.43			8
1317	Fill	Posthole	0.57	0.57	0.57		10
1318	Cut	Posthole	0.57	0.57	0.57		10
1319	Cut	Ditch	0.94	2			8
1320	Fill	Ditch	0.1	0.5			8
1321	Fill	Ditch	0.14	1.1			8
1322	Fill	Ditch	0.02	1.15			8
1323	Fill	Ditch	0.1	1.25			8
1324	Fill	Ditch	0.6	2			8
1325		VOID					9
1326	Cut	Ditch	0.9	2.14			8
1327	Fill	Ditch	0.53	1.6			8
1328	Fill	Ditch	0.15	1.1			8
1329	Fill	Ditch	0.11	1.15			8
1330	Fill	Ditch	0.08	1.15			8
1331	Fill	Ditch	0.13	0.82			8
1332	Cut	Ditch	0.25	0.7			9
1333	Fill	Ditch	0.25	0.7			9
1334	Cut	Ditch	0.3	1.35			9

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1335	Fill	Ditch	0.3	1.35			9
1336	Fill	Ditch	0.61	2.3			8
1337	Fill	Ditch	0.11				8
1338	Fill	Ditch	0.03				8
1339	Fill	Ditch	0.13				8
1340	Fill	Ditch	0.04				8
1341	Fill	Ditch	0.06				8
1342	Cut	Ditch	1.02	2.3			8
1343	Fill	Ditch	0.47	1			8
1344	Fill	Ditch	0.12	1.16			8
1345	Fill	Ditch	0.14	1.24			8
1346	Fill	Ditch	0.17	0.7			8
1347	Fill	Ditch	0.1	0.6			8
1348	Cut	Ditch	1	1.8			8
1349	Fill	Ditch	0.37	0.54			8
1350	Fill	Ditch	0.33	2.65			8
1351	Fill	Ditch	0.03	0.21			8
1352	Fill	Ditch	0.45	2.65			8
1353	Fill	Ditch	0.05	0.82			8
1354	Fill	Ditch	0.14	0.78			8
1355	Cut	Ditch	1	2.65			8
1356	Cut	Ditch	1.1	1.92			8
1357	Fill	Ditch	0.17	0.6			8
1358	Fill	Ditch	0.1	0.7			8
1359	Fill	Ditch	0.12	0.7			8
1360	Fill	Ditch	0.24	1.96			8
1361	Fill	Ditch	0.6	1.75			8
1362	Fill	Posthole	0.13			0.4	7
1363	Cut	Posthole	0.13			0.4	7
1364	Cut	Ditch	1.02	1.66			8
1365	Fill	Ditch	0.02				8
1366	Fill	Ditch	0.12				8
1367	Fill	Ditch	0.06				8
1368	Fill	Ditch	0.16				8
1369	Fill	Ditch	0.16				8
1370	Fill	Ditch	0.2				8
1371	Fill	Ditch	0.02				8
1372	Fill	Ditch	0.6				8
1373	Fill	Pit	0.36	2.3	3		4
1374	Cut	Pit	0.36	2.3	3		4
1375	Cut	Pit	0.22	0.37	0.66		7
1376	Fill	Pit	0.22	0.37	0.66		7
1377	Cut	Pit	0.16	0.55			7
1378	Fill	Pit	0.06				7
1379	Fill	Pit	0.1				7
1380	Fill	Posthole	0.19			0.4	8
1381	Cut	Posthole	0.19			0.4	8
1382	Layer	Surface	0.08	1.4	16.4		7

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
1383	Fill	Surface	0.05	0.9	2.8		7
1384	Layer	Surface	0.04	2	4.95		7
1385	Cut	Pit	0.1	0.9	2.8		7
1386	Fill	Pit	0.05	0.9	2.8		7
1387	Cut	Pit	0.08	0.13			4
1388	Fill	Pit	0.08	0.13			4
1389	Cut	Pit	0.06	0.47	0.61		4
1390	Fill	Pit	0.06	0.47	0.61		4
1391	Cut	Posthole	0.06			0.24	4
1392	Fill	Posthole	0.06			0.24	4
1393	Cut	Posthole	0.21			0.2	4
1394	Fill	Posthole	0.21			0.2	4
1395	Fill	Posthole	0.26			0.3	4
1396	Cut	Posthole	0.26			0.3	4
1397	Fill	Pit	0.07	0.3	0.64		4
1398	Cut	Pit	0.07	0.3	0.64		4
1399	Cut	Pit	0.17			0.7	7
1400	Fill	Pit	0.17			0.7	7
1401	Fill	Posthole	0.1			0.36	4
1402	Cut	Posthole	0.1			0.36	4
1403	Fill	Posthole	0.08	0.28	0.38		4
1404	Cut	Posthole	0.08	0.28	0.38		4
1405	Fill	Pit	0.09			0.6	2
1406	Cut	Pit	0.09			0.6	2
1407	Fill	Pit	0.05			0.46	2
1408	Cut	Pit	0.05			0.46	2
1409	Fill	Pit	0.05			0.46	2
1410	Cut	Pit	0.05			0.46	2
1411	Fill	Pit	0.05			0.46	2
1412	Cut	Pit	0.05			0.46	2
1413	Fill	Pit	0.05			0.46	2
1414	Cut	Pit	0.05			0.46	2
1415	Fill	Pit	0.2			0.5	2
1416	Cut	Pit	0.2			0.5	2
1417	Fill	Pit	0.05	0.8	1.1		2
1418	Cut	Pit	0.05	0.8	1.1		2
1419	Fill	Ditch	0.31	1.41			8
2000	Layer	Topsoil	0.15				10
2001	Layer	Subsoil	0.52				12
2002	Layer	Alluvium	0.26				14
2003	Layer	Alluvium	0.15				16
2004	Cut	Ditch	0.78	2.06			18
2005	Fill	Ditch	0.44	2.06			20
2006	Fill	Ditch	0.32	1.65			
6706	Fill	Ditch	0.23	0.96			
6707	Fill	Ditch	0.3	0.9			
6708	Fill	Ditch	0.14	0.5			
6709	Cut	Ditch	0.76	1.05			

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
6804	Fill	Ditch	0.27	0.9			
6805	Cut	Ditch	0.7	1.6			
6806	Fill	Ditch	0.32	0.6			
6807	Cut	Ditch	0.32	0.6			
6808	Fill	Ditch	0.33	0.9			
6809	Cut	Ditch	0.45	0.8			
6810	Fill	Ditch	0.4	1.6			
6811	Fill	Ditch	0.12	0.5			
6812	Layer	Layer	0.12	0.38			
7504	Fill	Ditch	0.17	0.85			
7505	Cut	Ditch	0.17	0.85			
7704	Cut	Linear	0.15	0.6			
7705	Fill	Linear	0.15	0.6			
7804	Structure	Wood		0.32	1.34		
7805	Structure	Wood		0.11	0.7		
7806		VOID					
7807		VOID					
7809	Layer	Surface	0.04			0.45	
7810	Cut	Pit	0.25	0.57			
7811	Fill	Pit	0.25	0.57			
7812	Cut	Pit	0.19	0.74			
7813	Fill	Pit	0.19	0.74			
7814	Fill	Posthole	0.04	0.3	0.38		
7815	Cut	Posthole	0.04	0.3	0.38		
7816	Cut	Pit	0.5	1.02			
7817	Fill	Pit	0.5	1.02			
7818	Fill	Linear	0.11	0.59			
7819	Fill	Linear	0.11	0.59			
7820	Fill	Linear	0.14	0.56			
7821	Cut	Linear	0.14	0.56			
7824	Fill	Tree bole	0.04	0.45	1.2		
7825	Cut	Tree bole	0.04	0.45	1.2		
7826	Fill	Tree bole	0.04	0.45	1.2		
7827	Cut	Tree bole	0.04	0.45	1.2		
7828	Fill	Tree bole	0.04	0.45	1.2		
7829	Cut	Tree bole	0.06	0.47	1.1		
7830	Fill	Tree bole	0.06	0.47	1.1		
7831	Cut	Tree bole	0.08	0.43	1.04		
7832	Fill	Tree bole	0.07	0.53	0.9		
7833	Cut	Tree bole	0.07	0.53	0.9		
7840	Fill	Pit	0.15		1.57		
7841	Cut	Pit	0.15		1.57		
7842	Cut	Pit	0.1	0.53			
7843	Fill	Pit	0.1	0.53			
7900	Cut	Posthole	0.26	0.34			
7901	Fill	Posthole	0.26	0.34			
7902	Cut	Linear	0.12	0.47			
7903	Fill	Linear	0.12	0.47			

Context	Context type	Feature type	Depth	Width	Length	Diameter	Phase
7904	Cut	Pit	0.33	0.9			
7905	Fill	Pit	0.33	0.9			
7906	Layer	Topsoil	0.15				
7907	Layer	Alluvium	0.4				
7908	Layer	Alluvium	0.35				
8000	Layer	Topsoil	0.08				
8001	Layer	Made ground	0.14				
8002	Layer	Alluvium	0.78				
8003	Fill	Linear	0.25				
8004	Cut	Linear	0.25				
8005	Layer	Unknown	0.35				
8100	Layer	Topsoil	0.26				
8101	Layer	Layer	0.29				
8102	Layer	Layer	0.36				
8103	Layer	Alluvium	0.37				
8200	Layer	Topsoil	0.22				
8201	Layer	Alluvium	0.27				
8202	Layer	Alluvium	0.13				
8203	Layer	Alluvium	0.37				
8204	Fill	Ditch	0.45				
8205	Fill	Ditch	0.45				
8206	Cut	Ditch	0.59				
8207	Fill	Ditch	0.35				
8208	Cut	Ditch	0.35				
8209	Fill	Ditch	0.17				
8210	Cut	Ditch	0.1				
8211	Cut	Ditch	0.11	0.69			
8212	Fill	Ditch	0.11	0.69			
8213	Fill	Posthole	0.2			0.3	
8214	Cut	Posthole	0.2			0.3	
8215	Fill	Ditch	0.3	1.95	1.1		
8216	Cut	Ditch	0.3	1.95	1.1		
8217	Fill	Ditch	0.45				
8218	Cut	Ditch	0.59				
8219	Layer	Subsoil	0.17				
8220	Fill	Ditch	0.59				


Phasing
1 Mesolithic to Late Neolithic/Early Bronze Age
2
3
4 Late Neolithic/Early Bronze Age
5
6
7 Middle Bronze Age
8 Early medieval
9 Post-medieval
10 Modern
10
9
8
7
6
5
4
4
3
2
1

Plates

Plate 1: General view of Area 1 facing east

Plate 2: General view of Area 1 facing west

Plate 3: Phase 2 features 1408, 1410, 1412, 1414 and 1416, facing south

Plate 4: Section of Phase 4 feature 1374, facing north

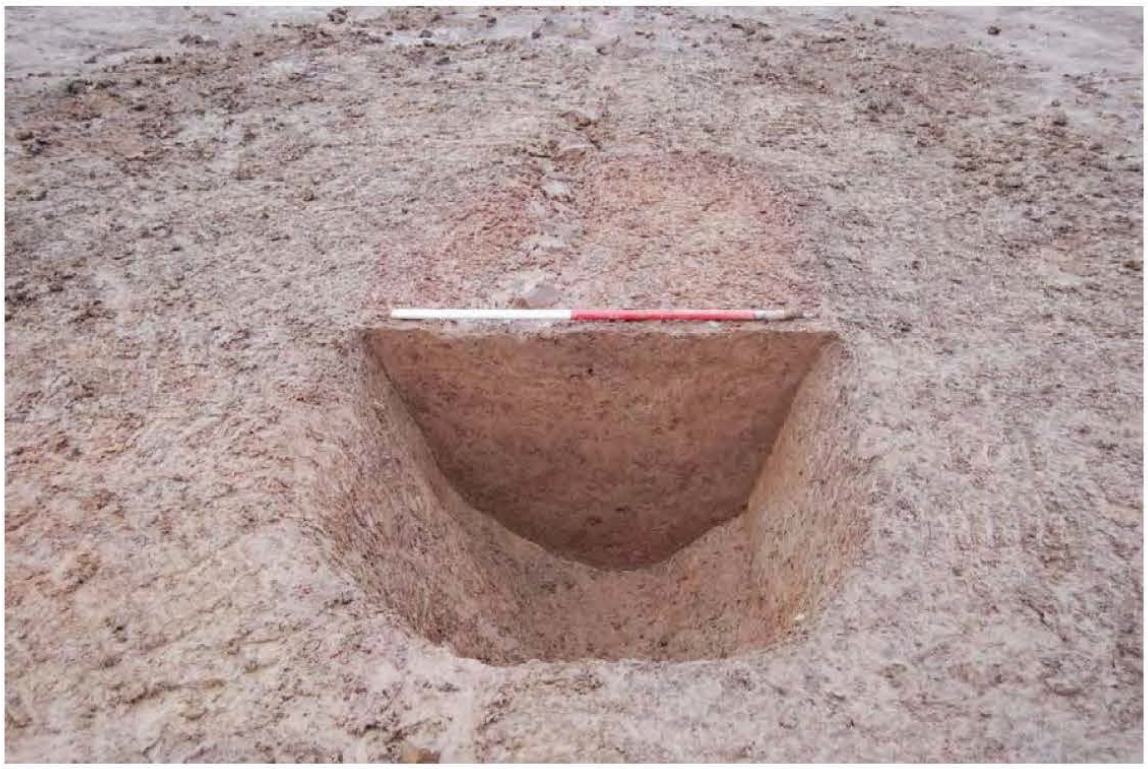


Plate 5: Section of Phase 4 feature 1200, facing north

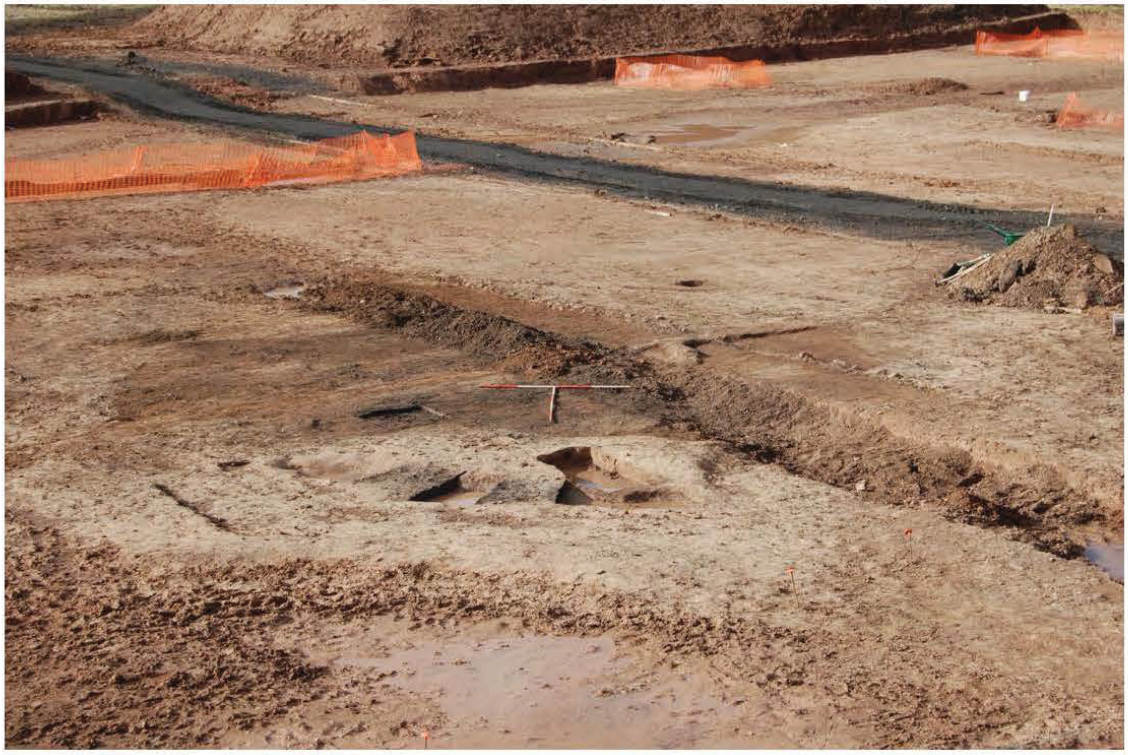


Plate 6: General view of Phase 6 features beneath deposits 1003 and 1244, facing north west

Plate 7: Phase 6 deposit 1003 and features 1226 and 1229 in foreground, facing north west

Plate 8: Phase 6 features 1301 and 1303, facing south

Plate 9: Phase 7 spread of fire-cracked stones 1382, facing east

Plate 10: General view of Phase 7 deposit 1188, facing east

Plate 11: Section 1061 through Phase 8 curvilinear enclosure, facing north

Plate 12: Section 1123 through Phase 8 curvilinear enclosure, facing west

Plate 13: South side of Phase 8 curvilinear enclosure in Trench 76, facing west

Plate 14: Phase 8 rectilinear enclosure, facing east

Plate 15: Section 1310 through Phase 8 rectilinear enclosure, facing north-east

Plate 16: Section 1319 through Phase 8 rectilinear enclosure, facing north

Plate 17: Phase 9 strucure 1030-1248, facing west

Plate 18: Detail of Phase 9 structure 1030-1248, facing north

Plate 19: Phase 9 ditches 1093 and 1160, facing north

Plate 20: Ditches 8206 and 8208 in Trench 82, facing north-west

Plate 21: General view of Trench 62, facing west

Plate 22: Section of Trench 63, facing north

Appendix 3: The archive

The archive consists of:

438	Context records AS1
95	Field progress reports AS2
14	Photographic records AS3
1901	Digital photographs
4	Drawing number catalogues AS4
7	Context number catalogues AS5
6	Recorded finds records AS13
100	Sample records AS17
2	Sample number catalogues AS18
4	Levels records AS19
95	Flot records AS21
138	Site drawing sheets AS34
13	Pollen score sheet AS35
28	Trench record sheets AS41
1	Box of finds
1	CD-Rom
1	Bound copy of report

The archive is intended to be placed at:

Hereford Museum and Art Gallery
Broad Street
Hereford
HR4 9AU
Tel. 01432 26092

Figures

Figure 1: Location of Rotherwas Industrial Estate and trenches in Phase 2 area (evaluation trenches top right; Area 1 and additional trenches bottom right)

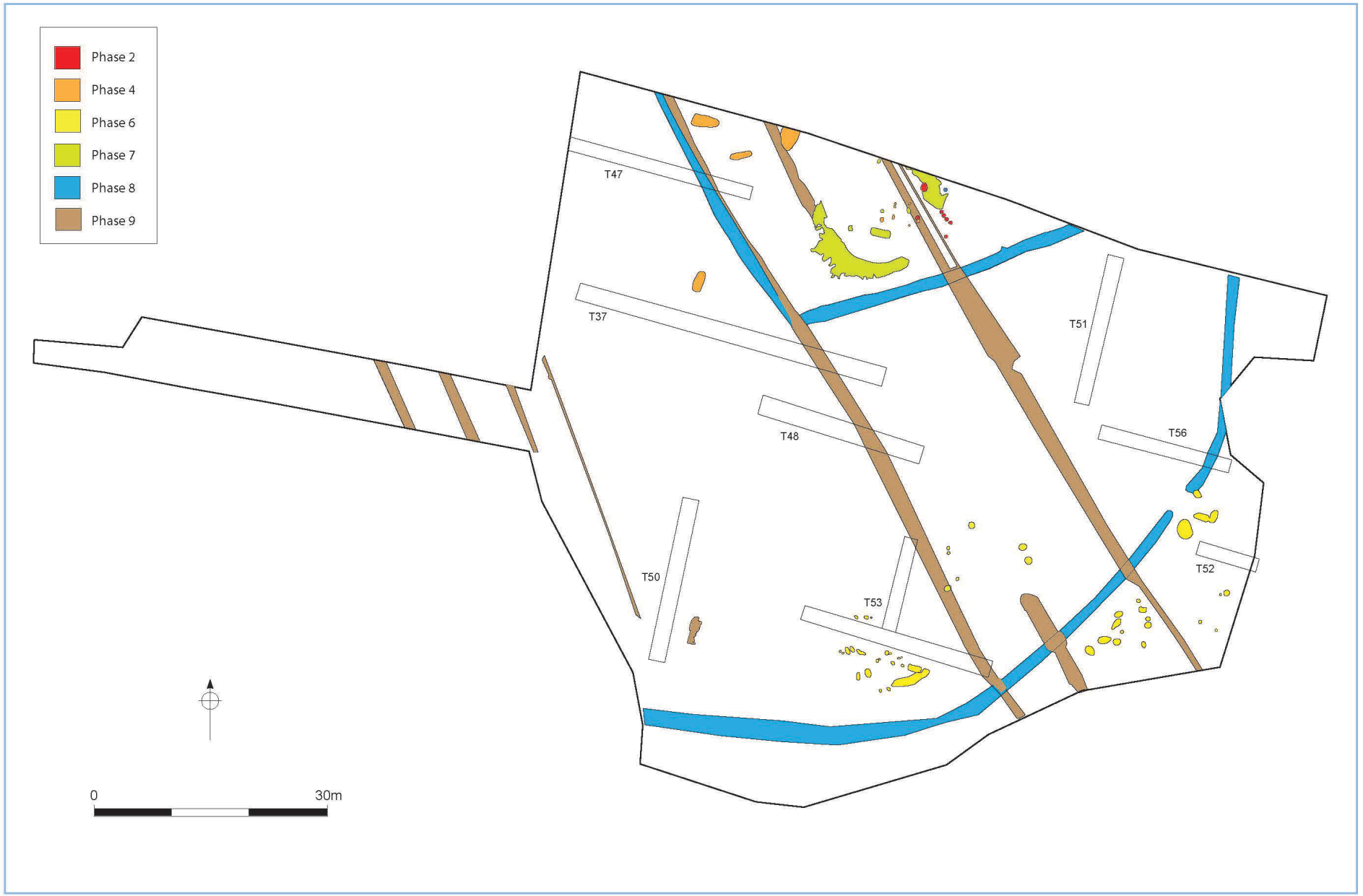


Figure 2: Area 1, showing features of Phases 2, 4, 6, 7, 8 and 9

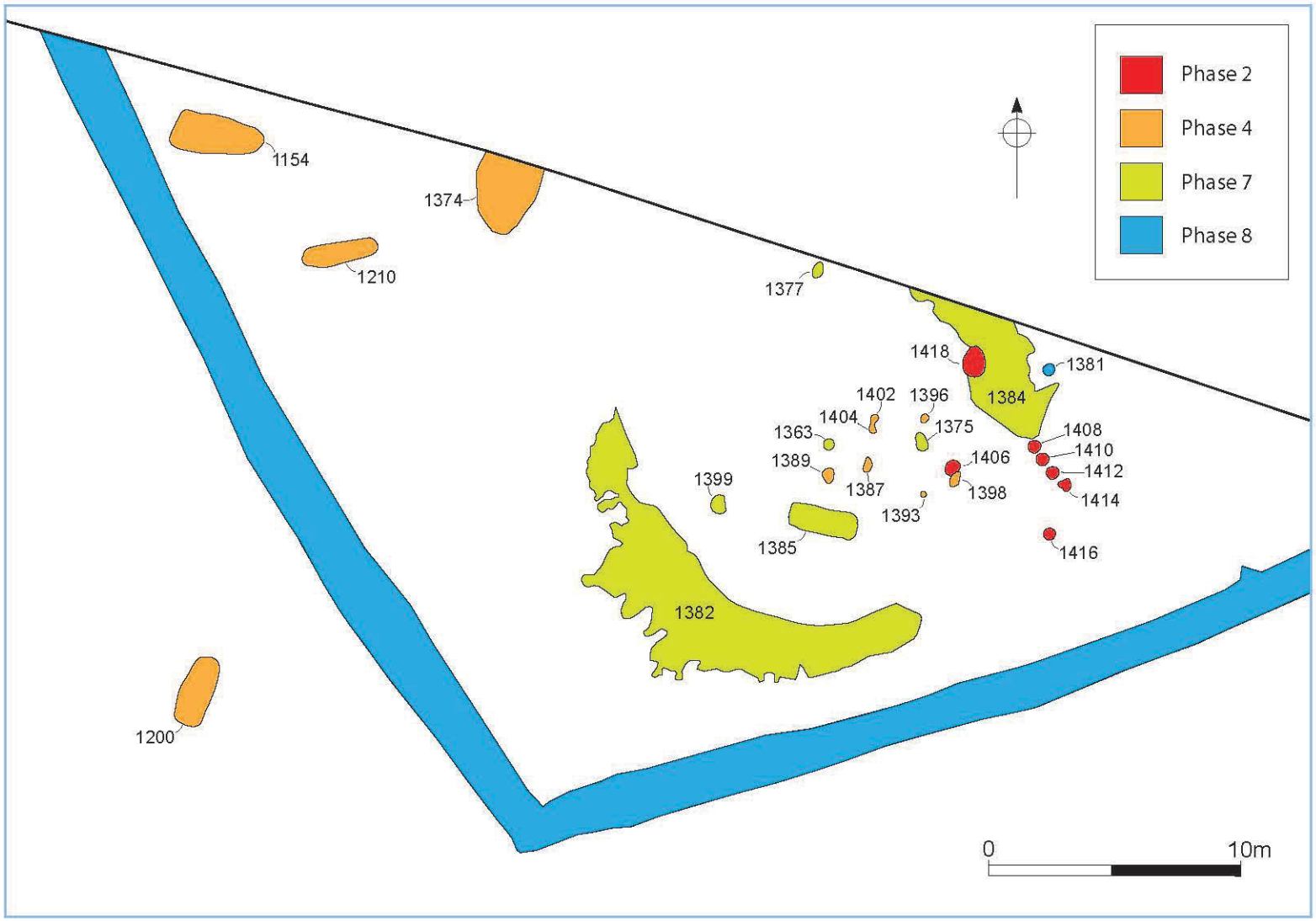


Figure 3: Area 1 North, showing features of Phases 2, 4, 6, 7, and 8

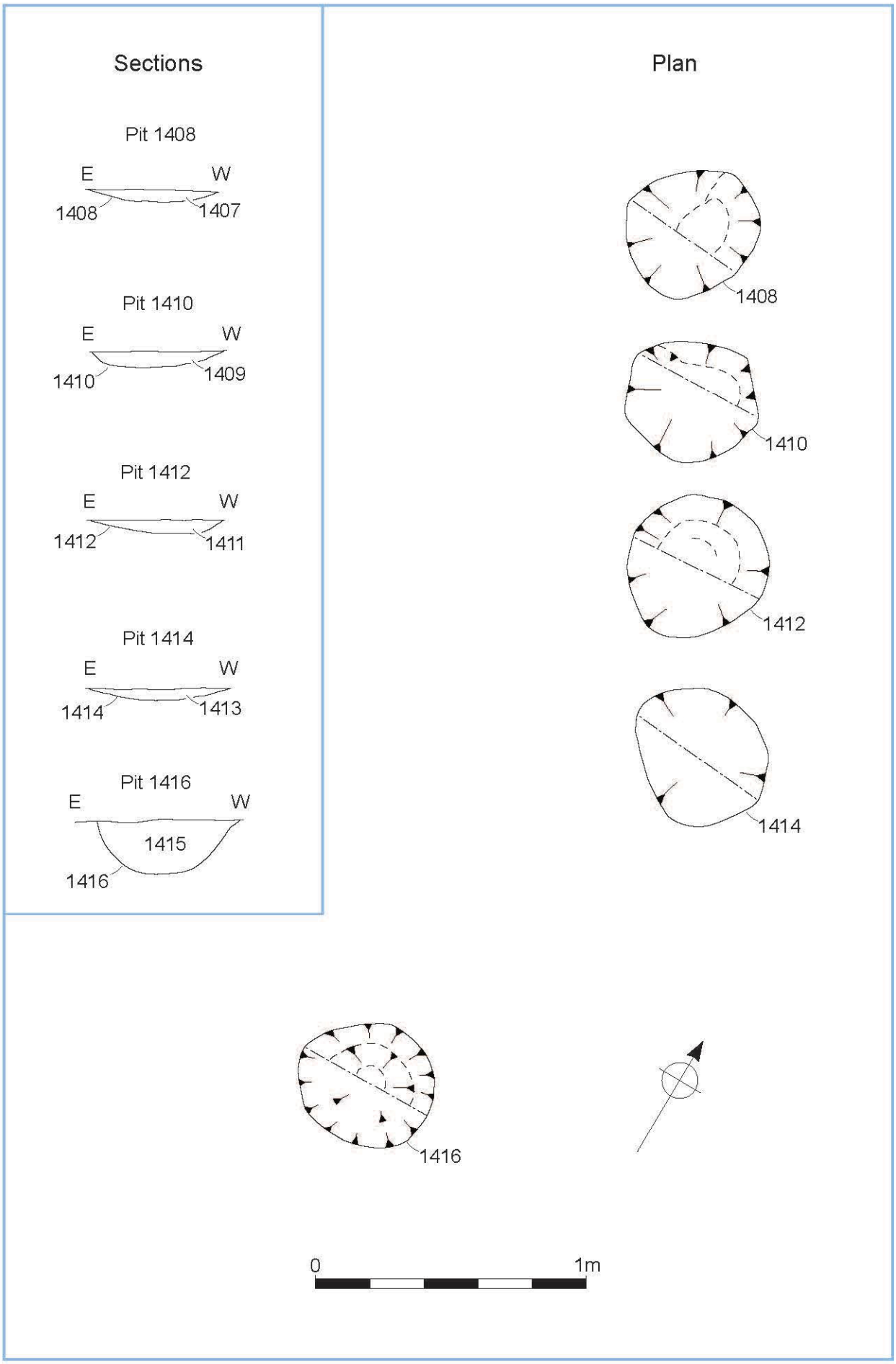


Figure 4: Plans and sections of Phase 2 features cutting Phase 1 alluvial soil

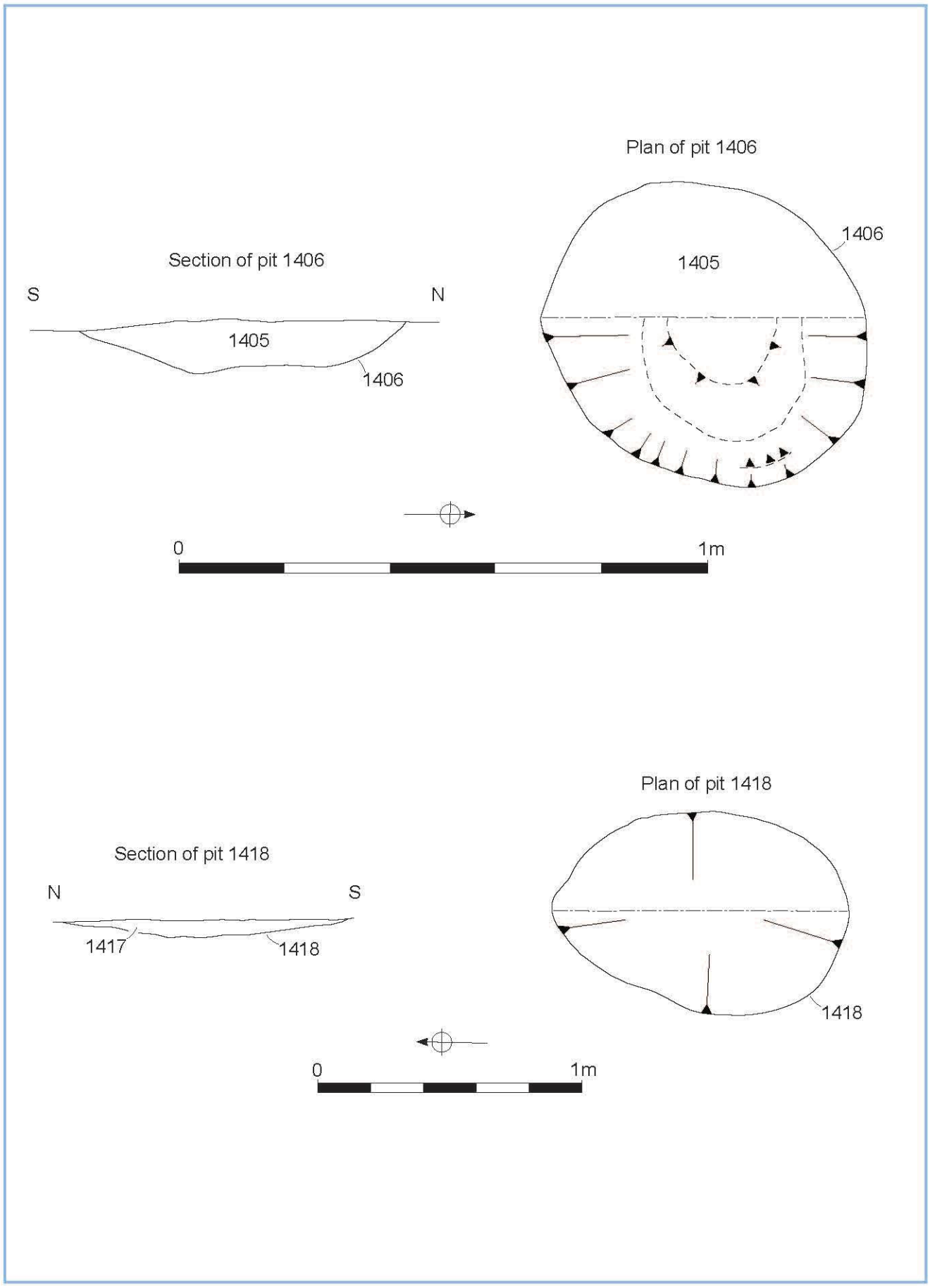


Figure 5: Plans and sections of Phase 2 features cutting Phase 1 alluvial soil

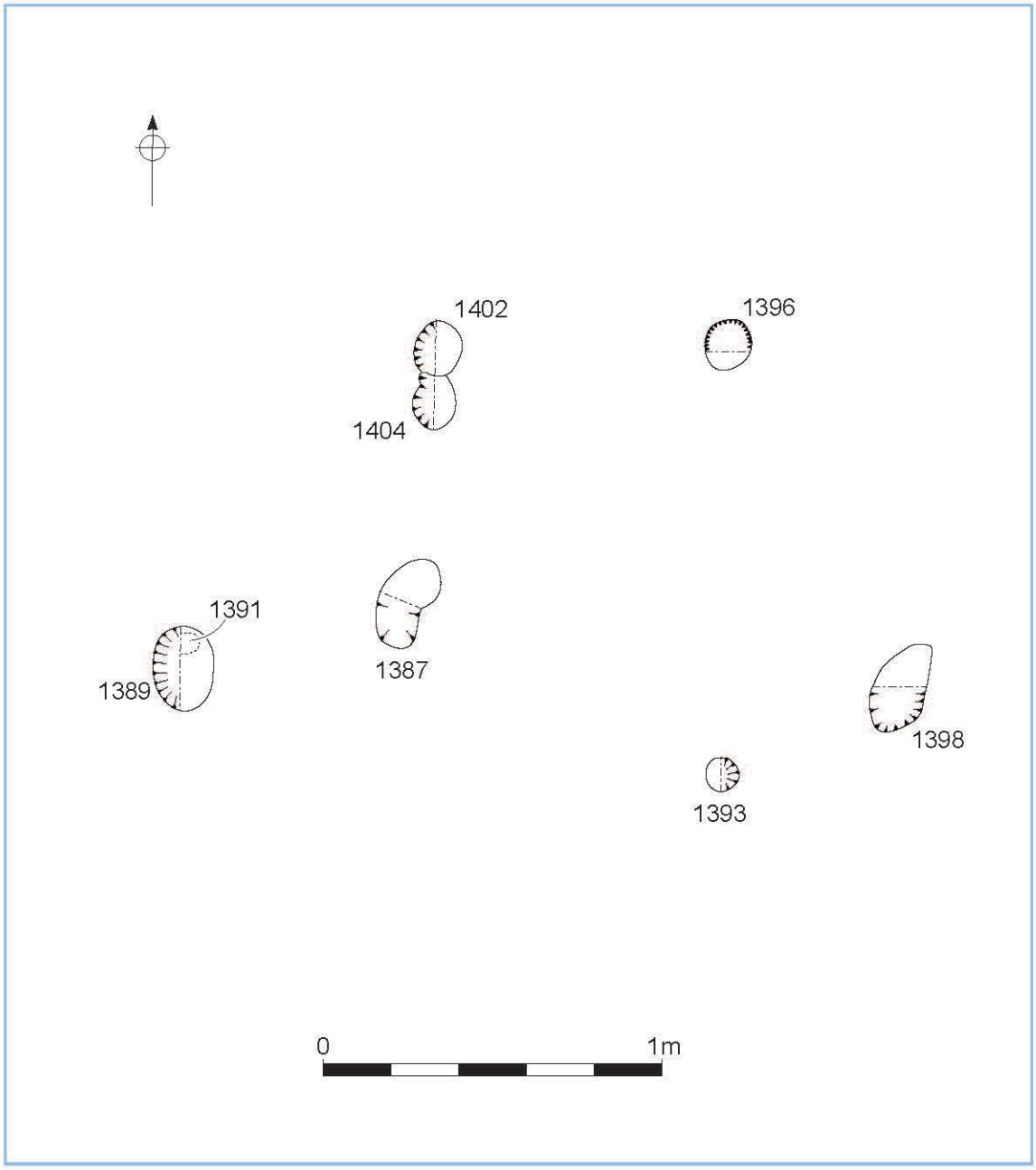


Figure 6: Phase 4 features cutting Phase 3 alluvial soil

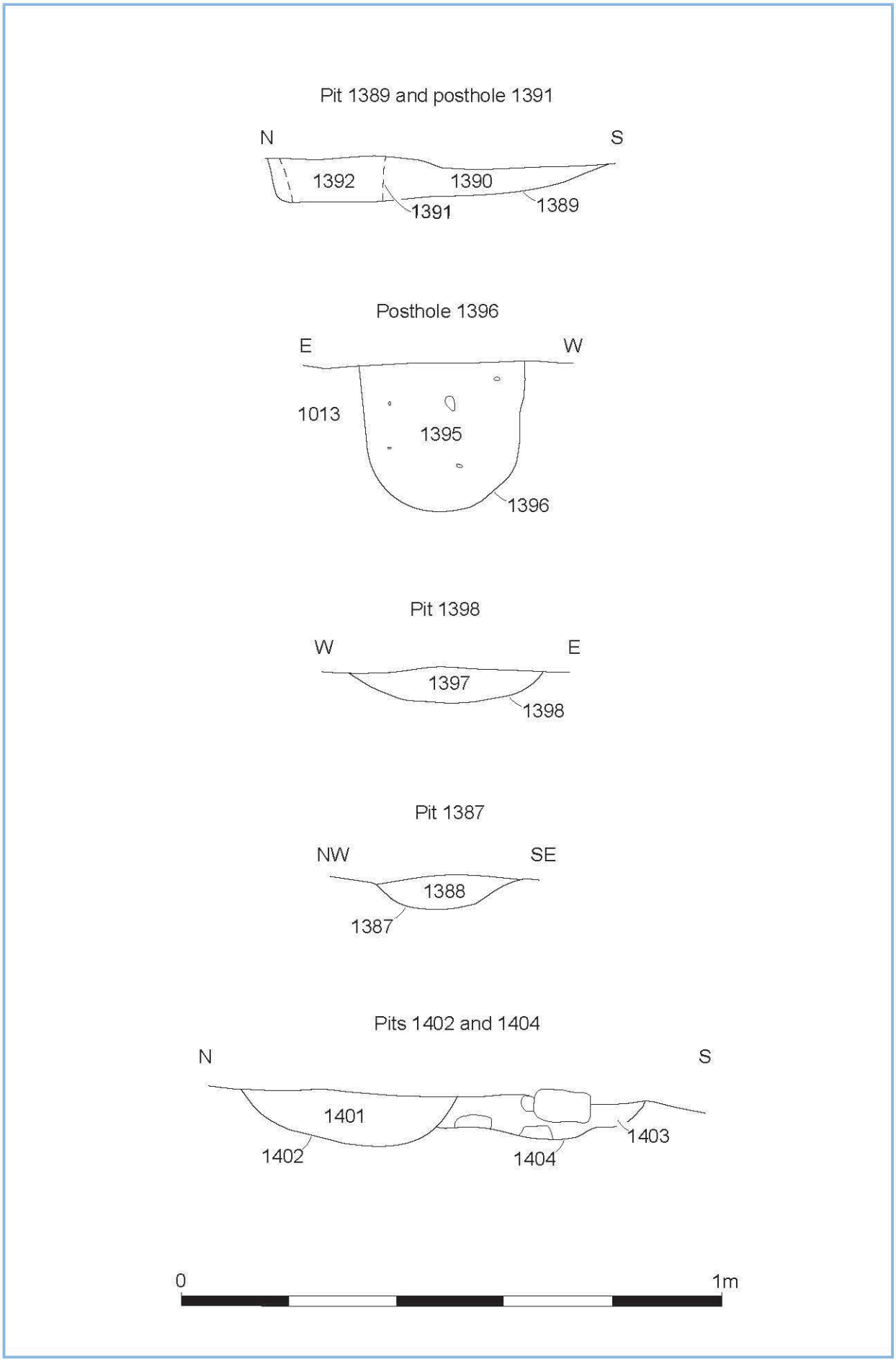


Figure 7: Sections of Phase 4 features cutting Phase 3 alluvial soil

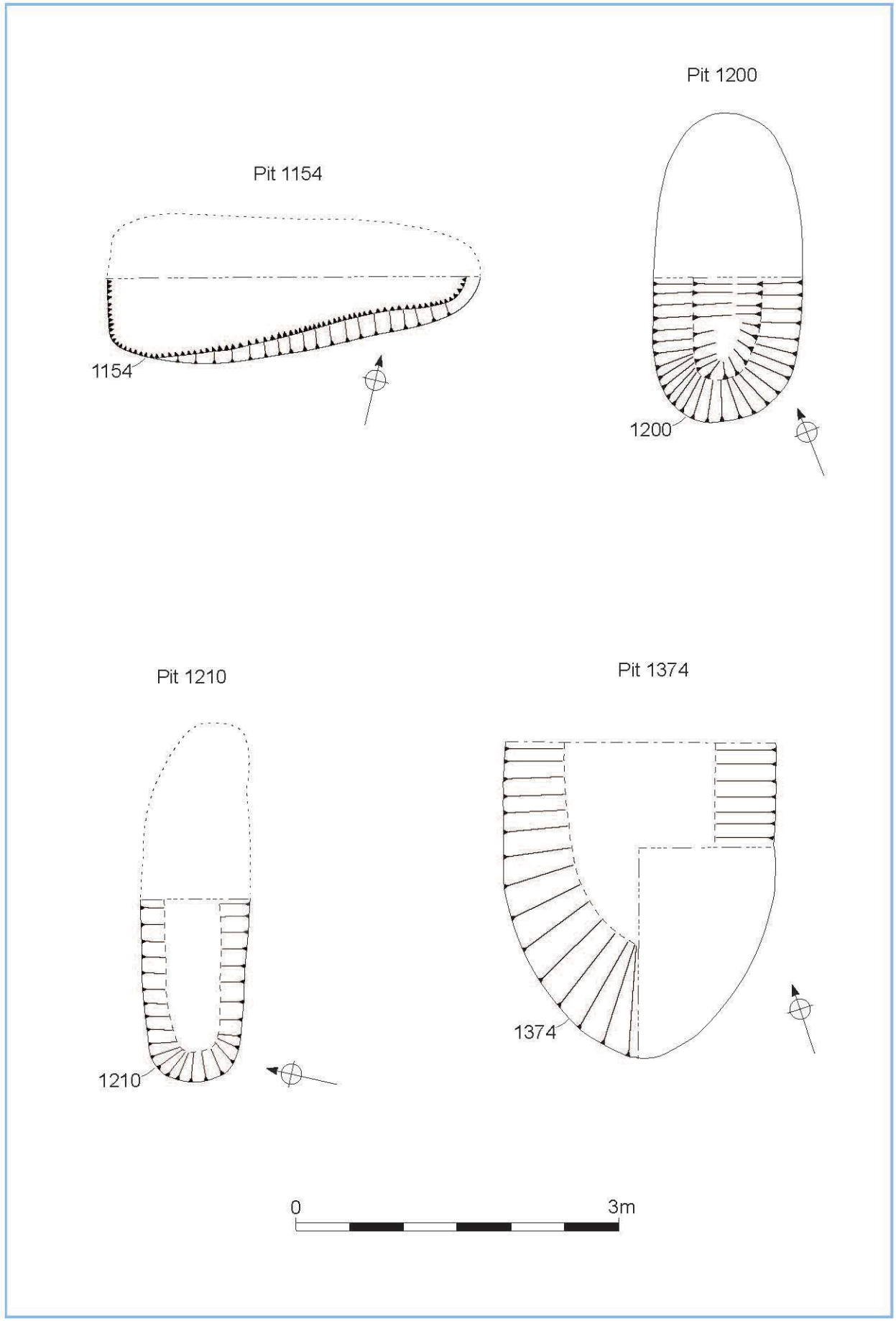


Figure 8: Plans of Phase 4 features cutting Phase 3 alluvial soil

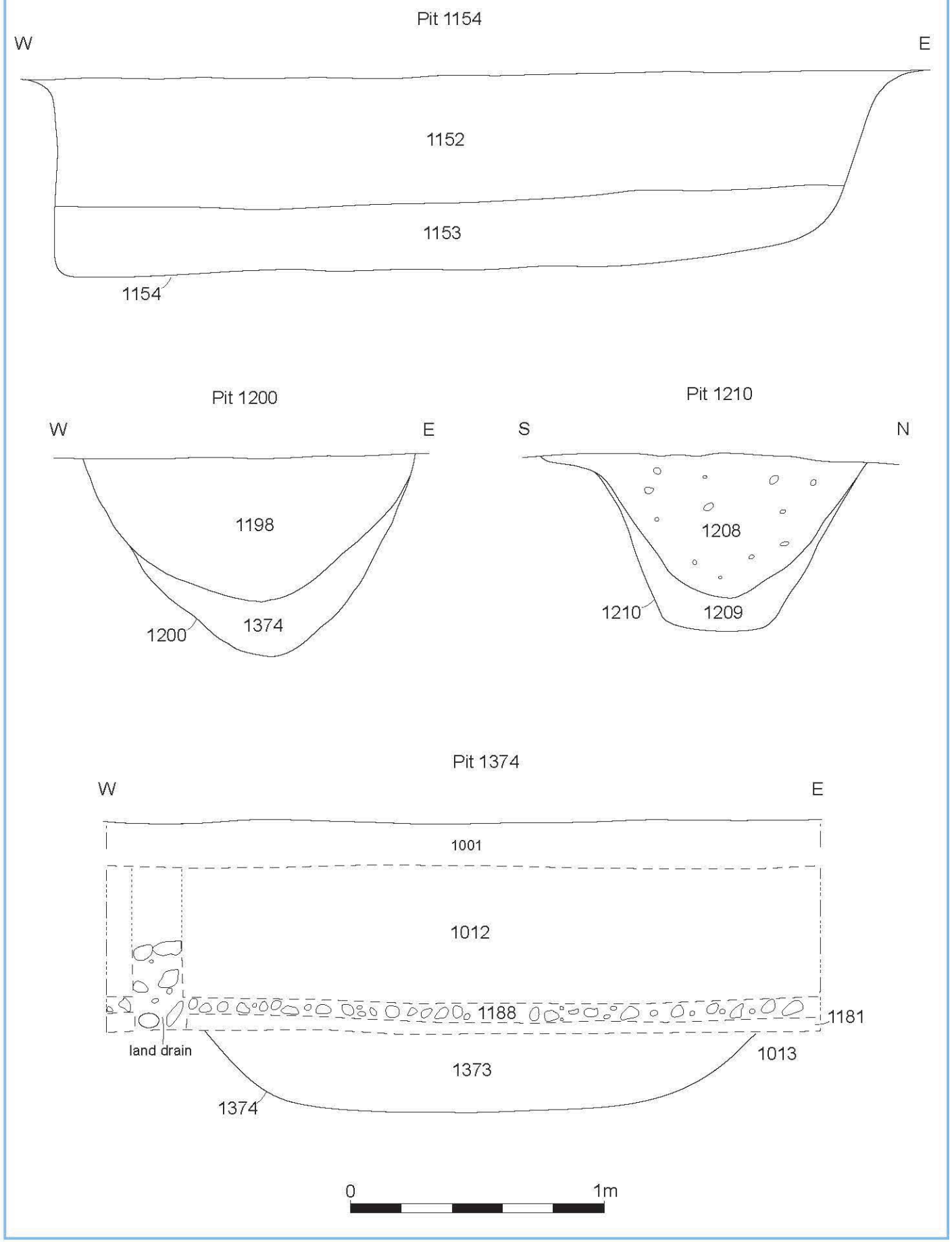


Figure 9: Sections of Phase 4 features

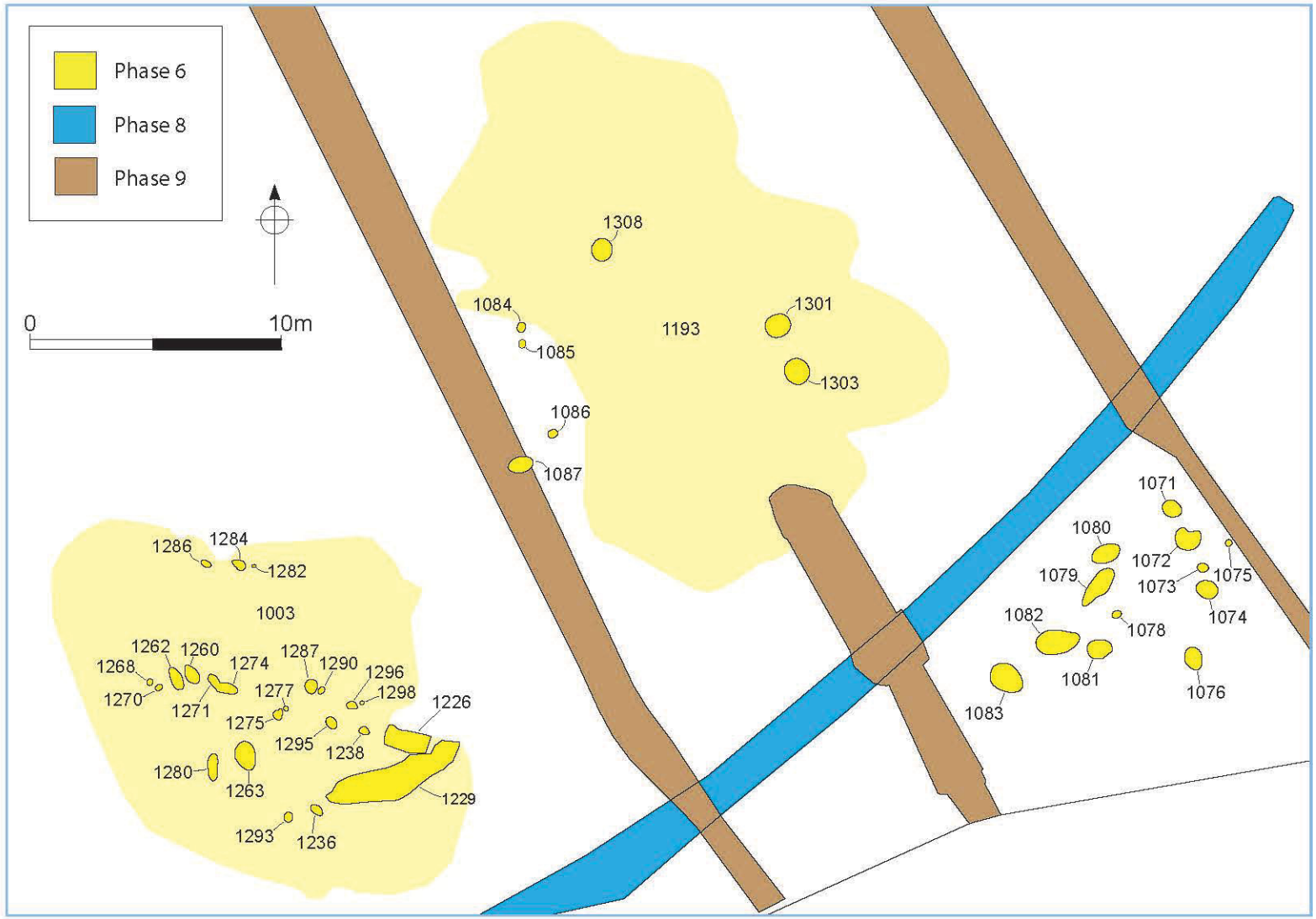


Figure 10: Area 1 South, showing features of Phases 6, 8, and 9

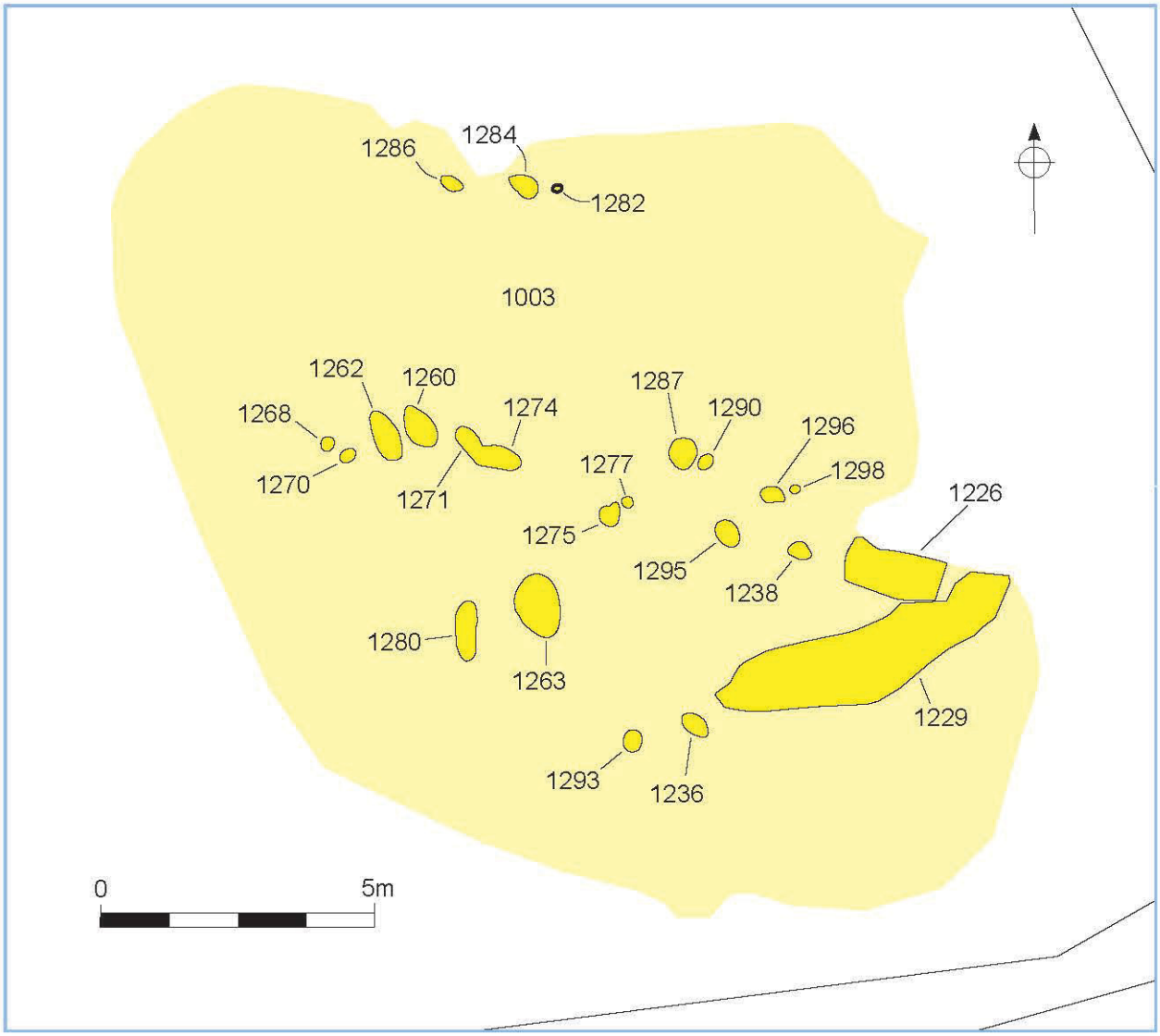


Figure 11: Area 1 South, showing features of Phase 6 and extent of deposit 1003

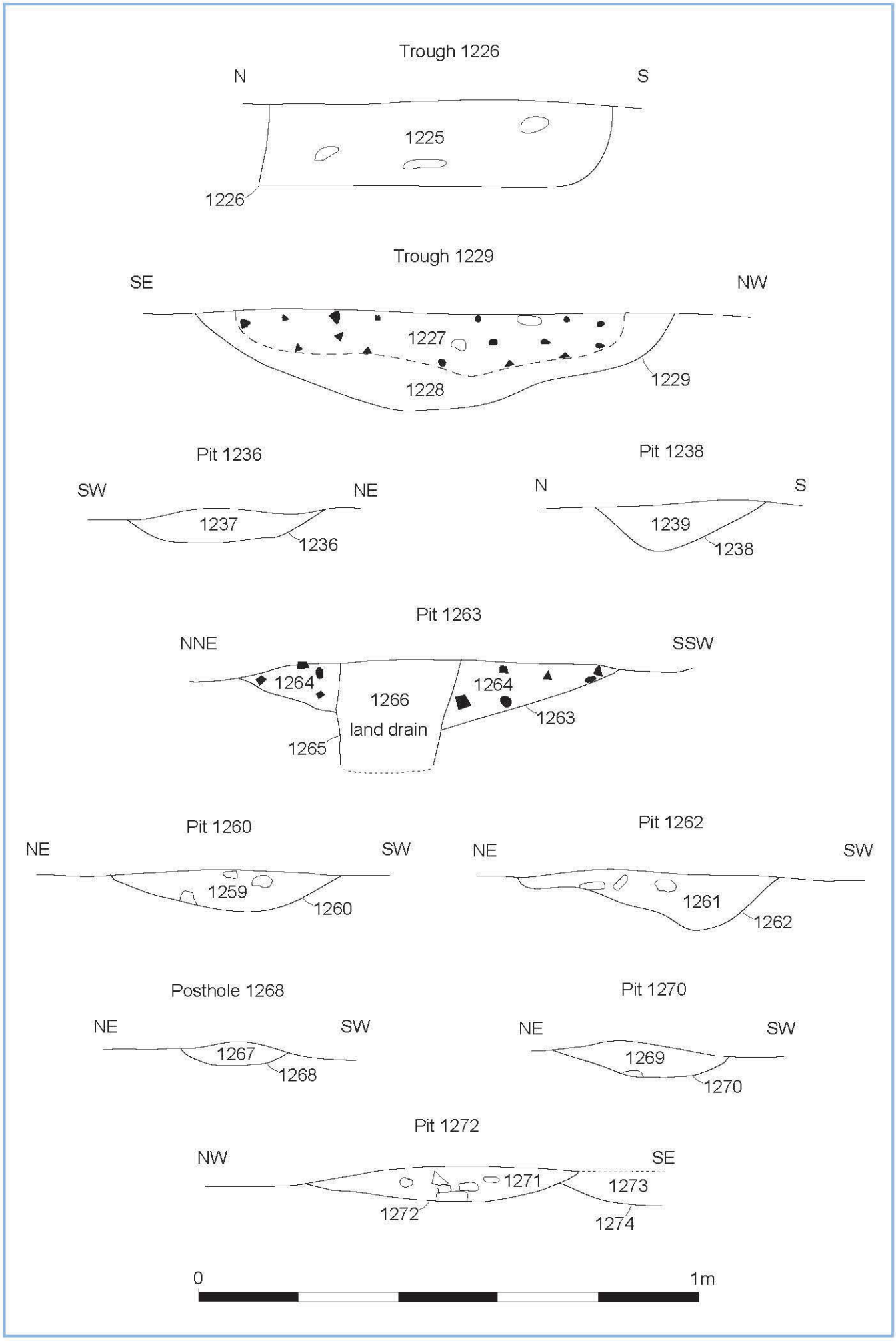


Figure 12: Sections of Phase 6 features

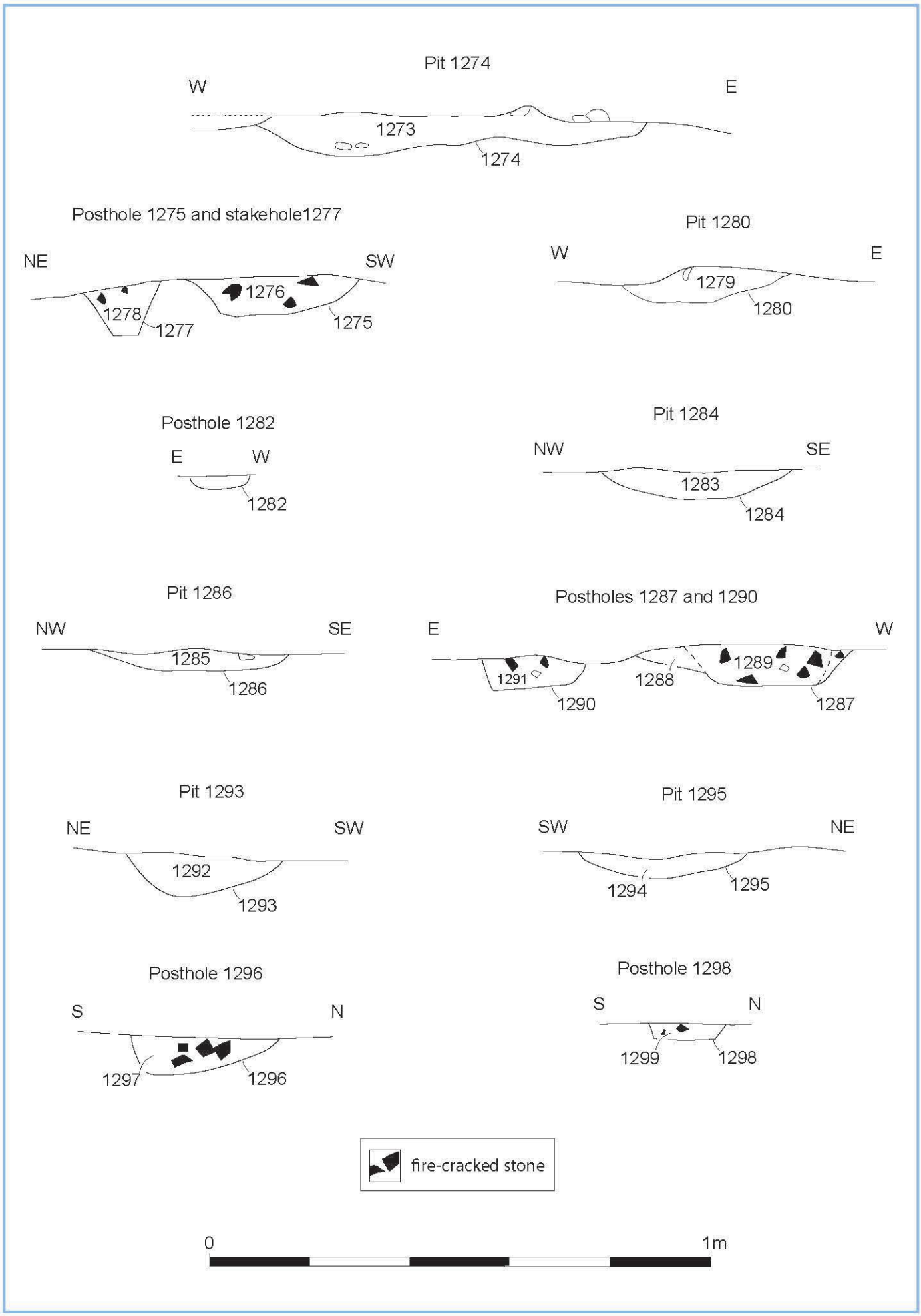


Figure 13: Sections of Phase 6 features

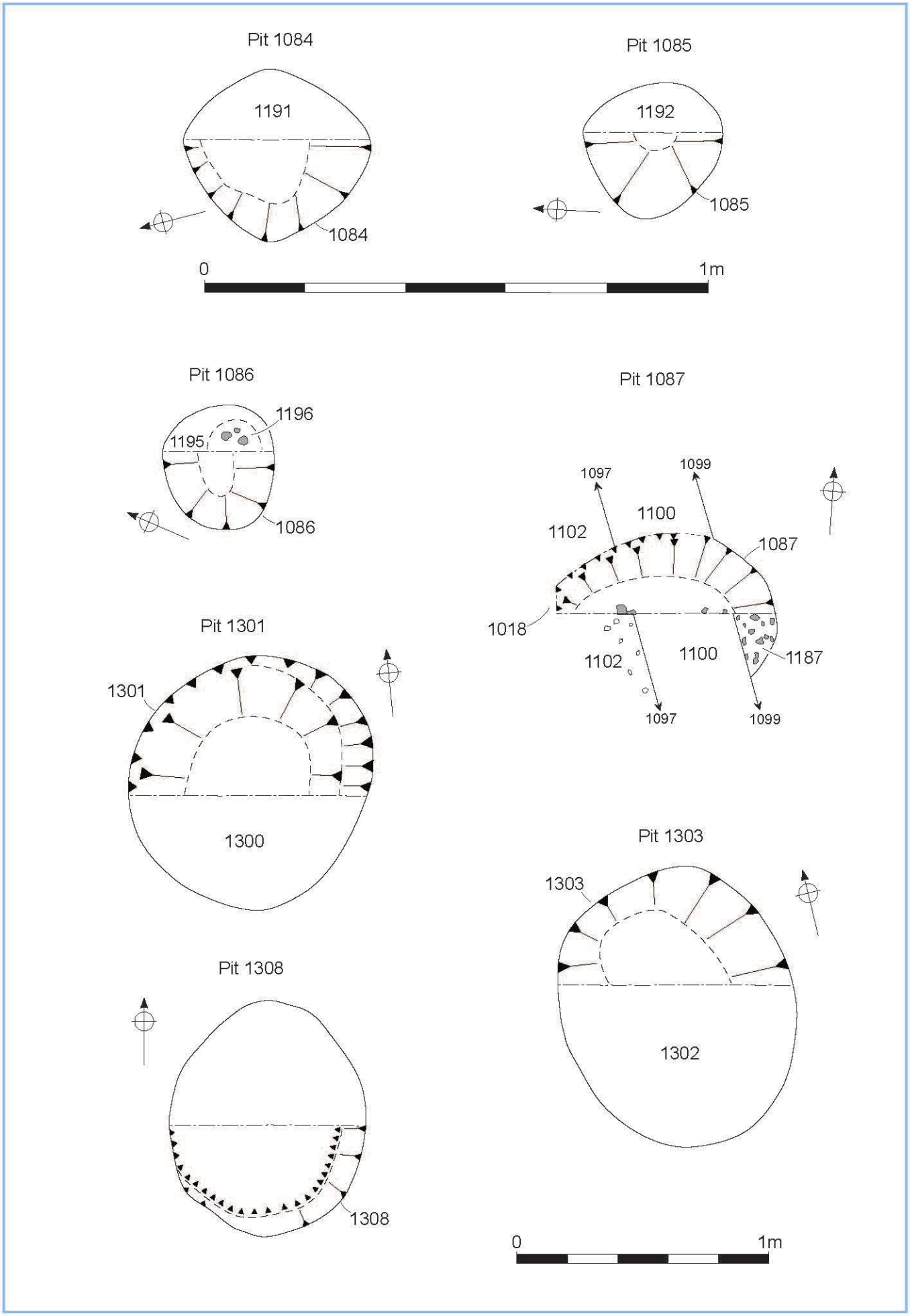


Figure 14: Plans of Phase 6 features

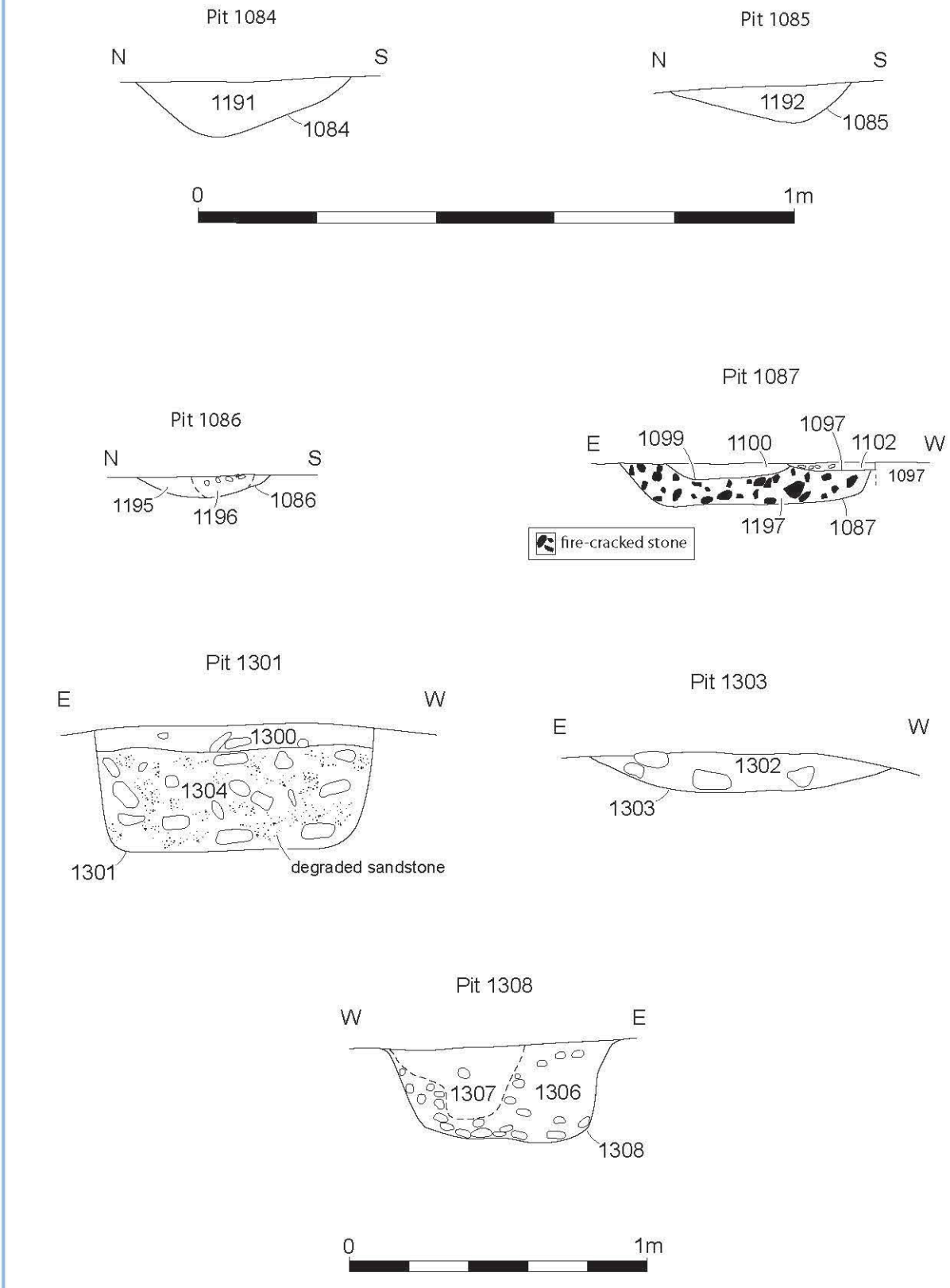


Figure 15: Sections of Phase 6 features

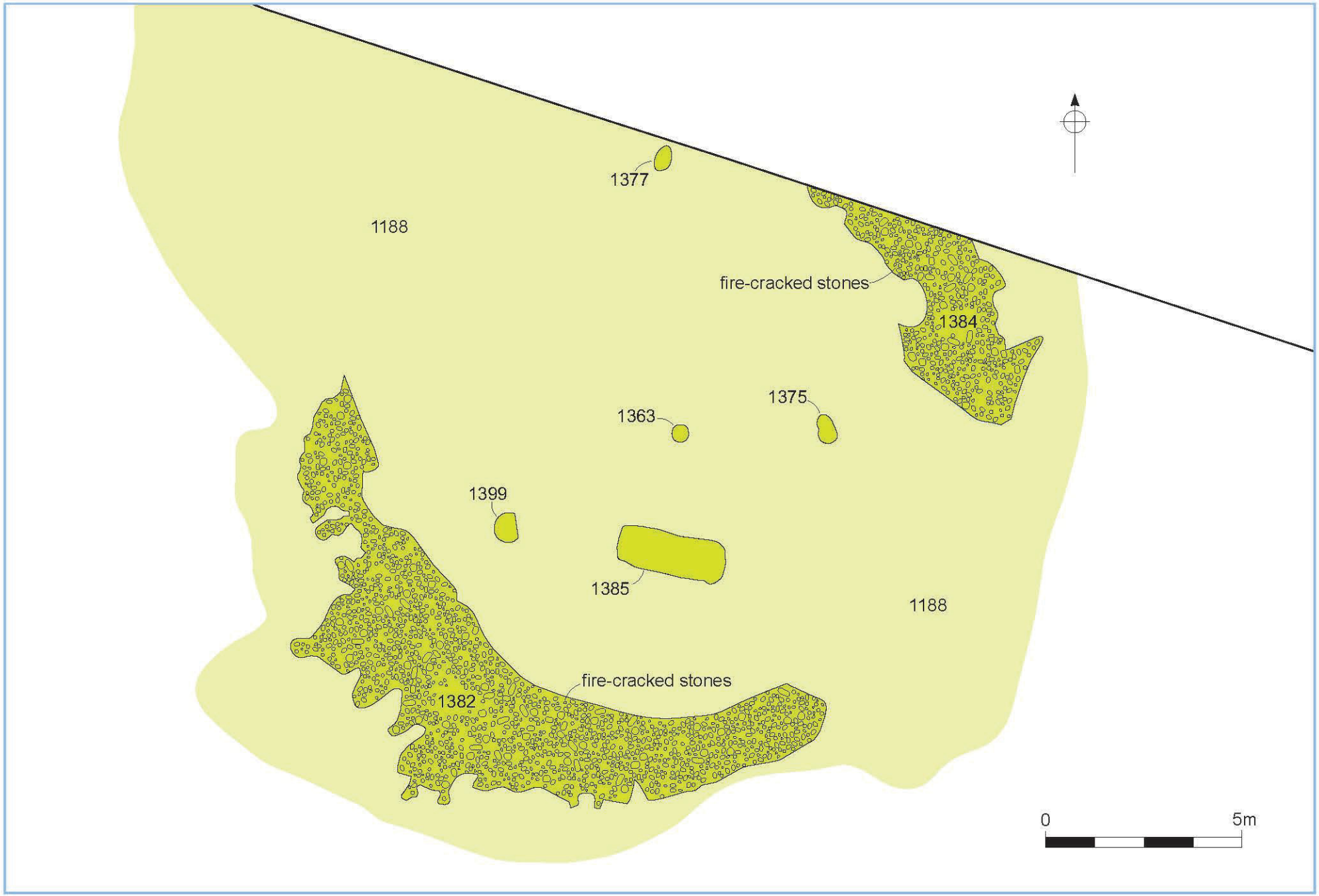


Figure 16: Phase 7 features and extent of deposit 1188

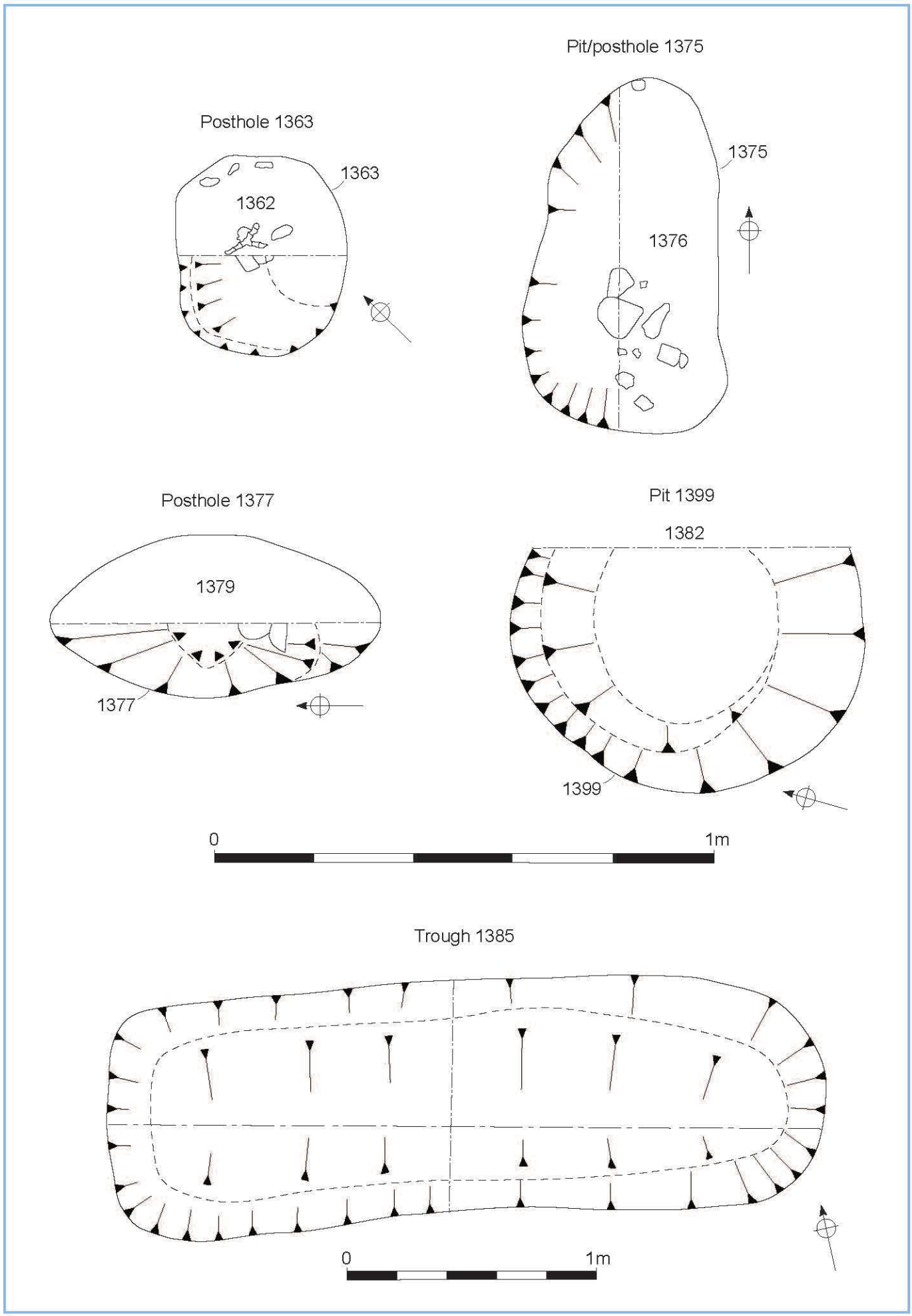


Figure 17: Plans of Phase 7 features

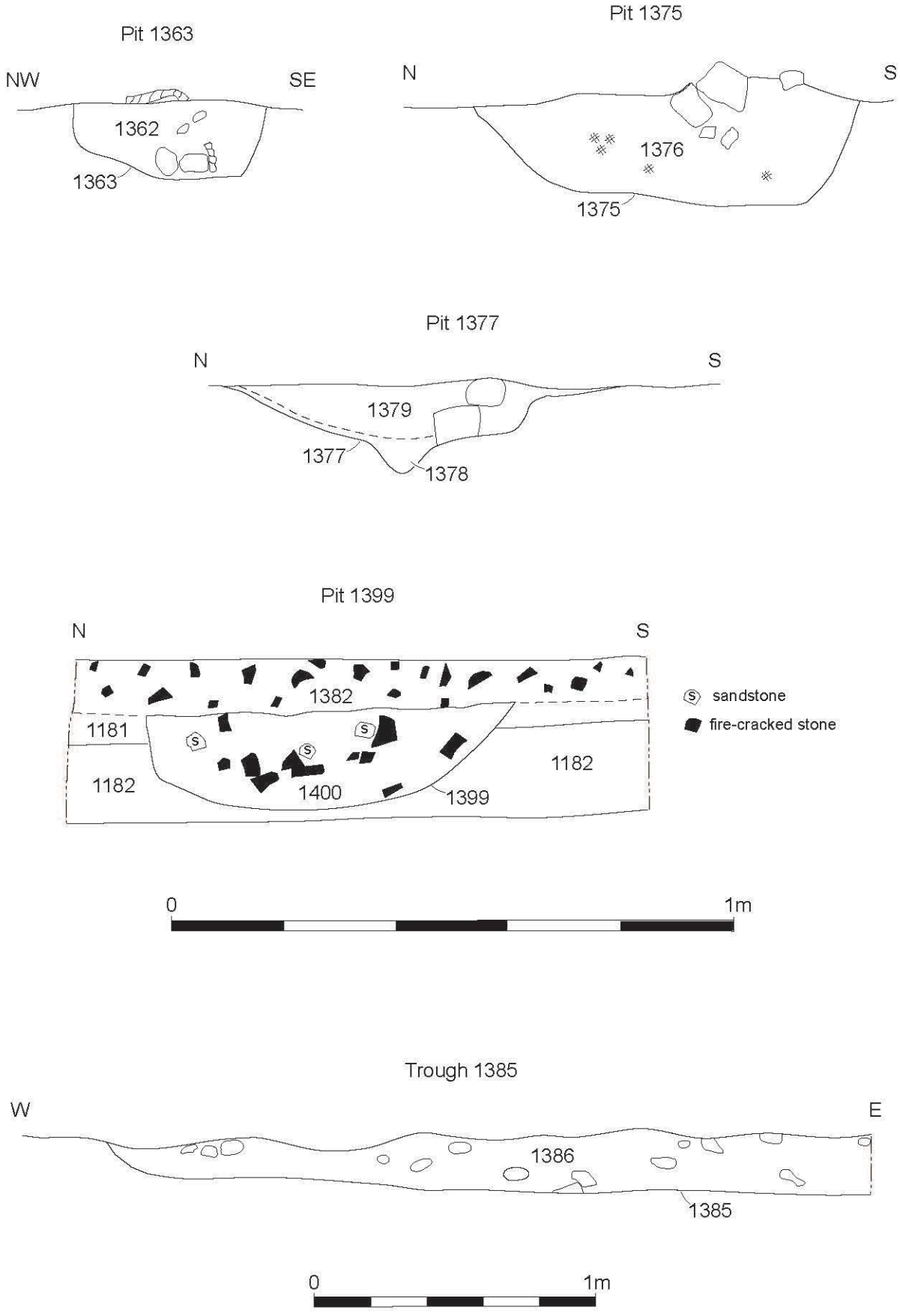


Figure 18: Sections of Phase 7 features

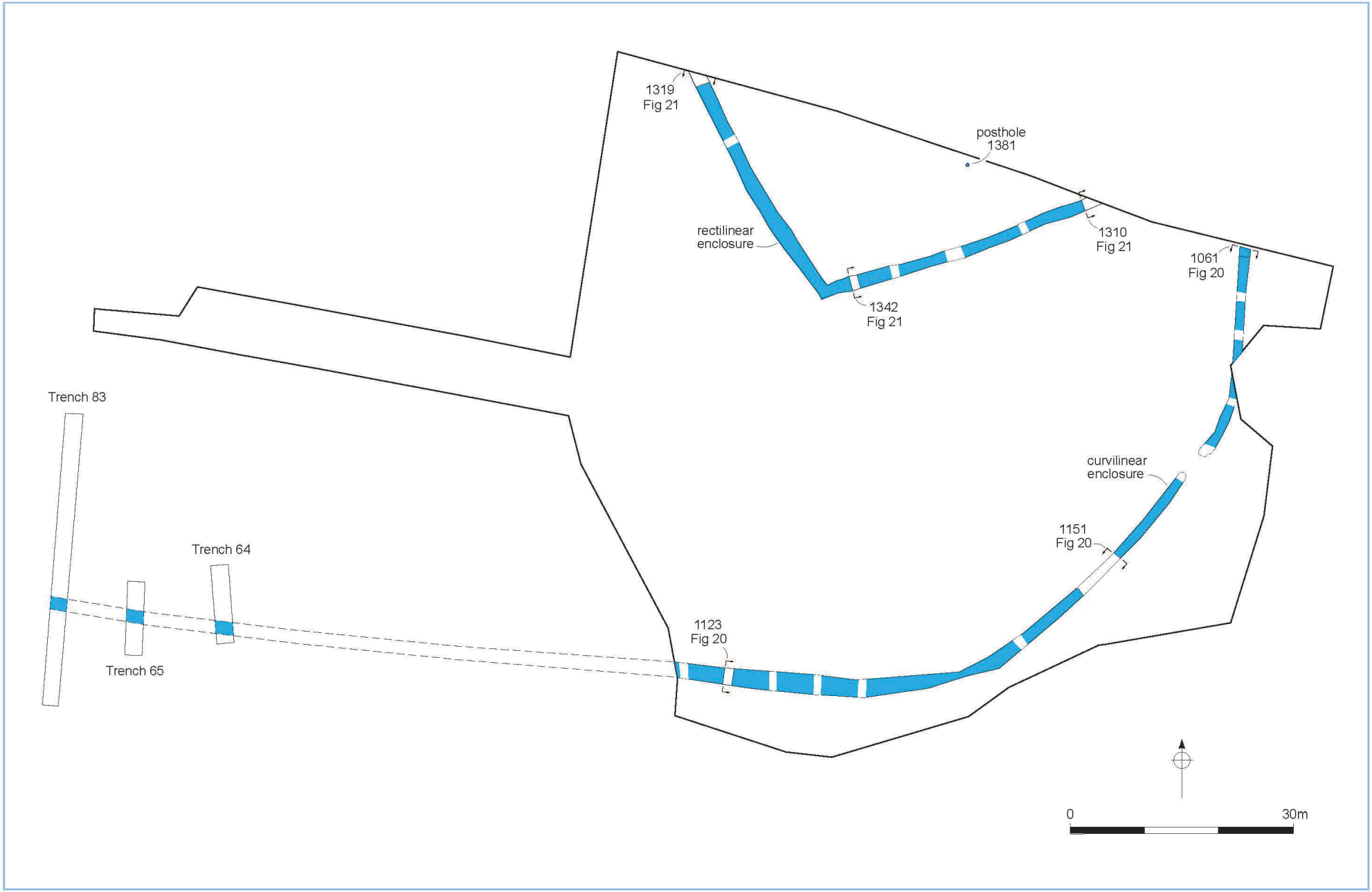


Figure 19: Phase 8 curvilinear enclosure and near-contemporary(?) rectilinear enclosure

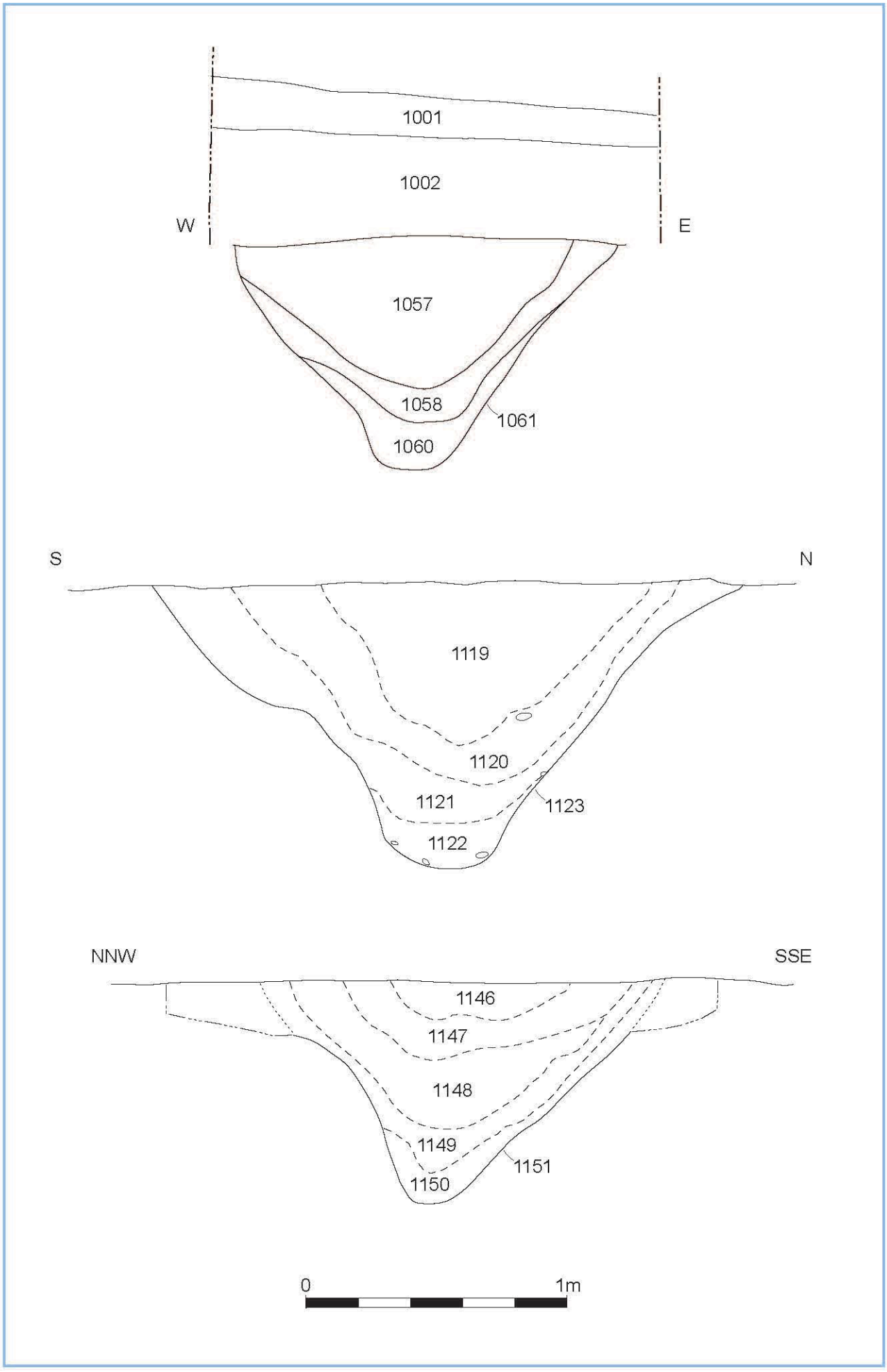


Figure 20: Sections through Phase 8 curvilinear enclosure

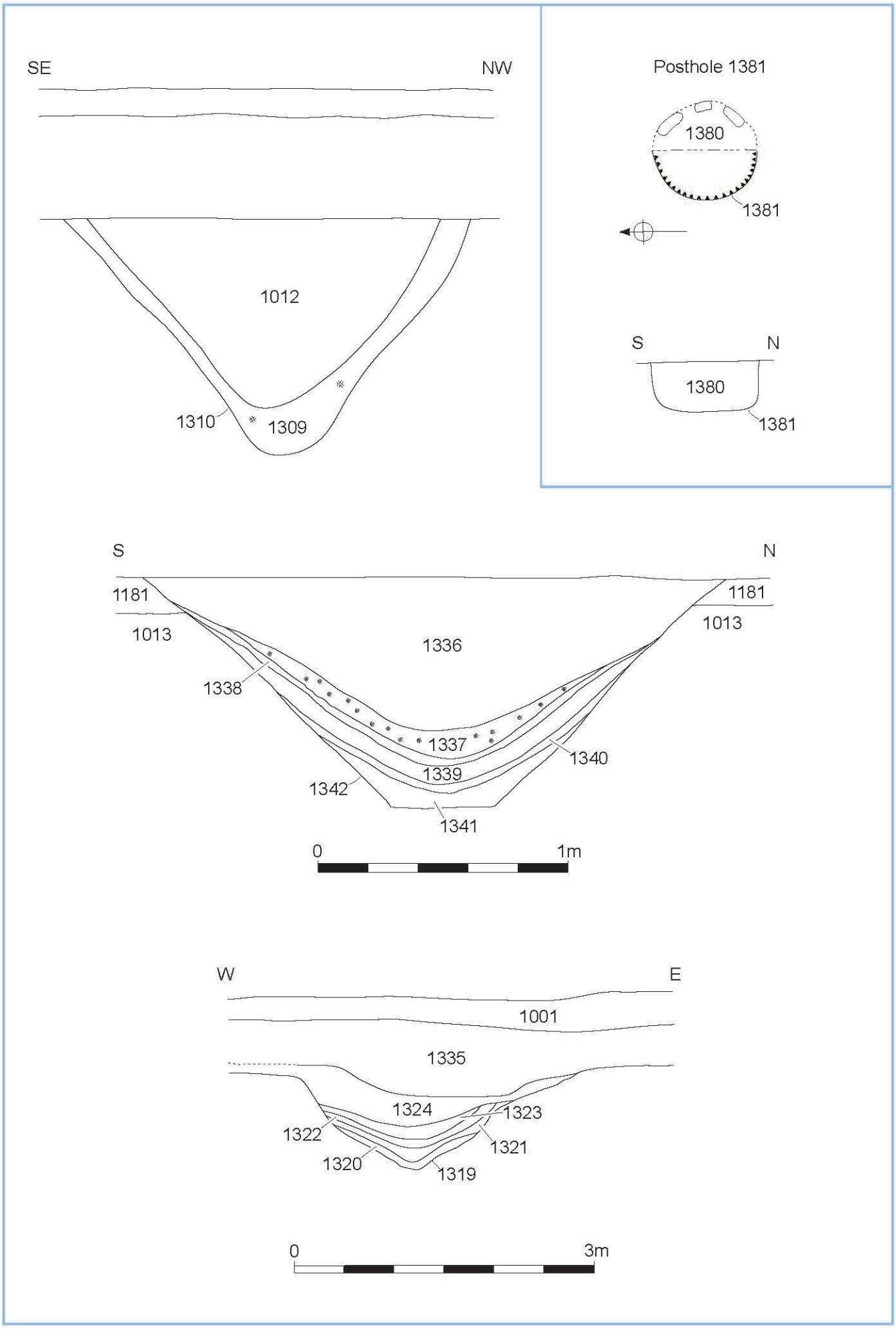


Figure 21: Sections through rectilinear enclosure and plan and section of Phase 8 posthole

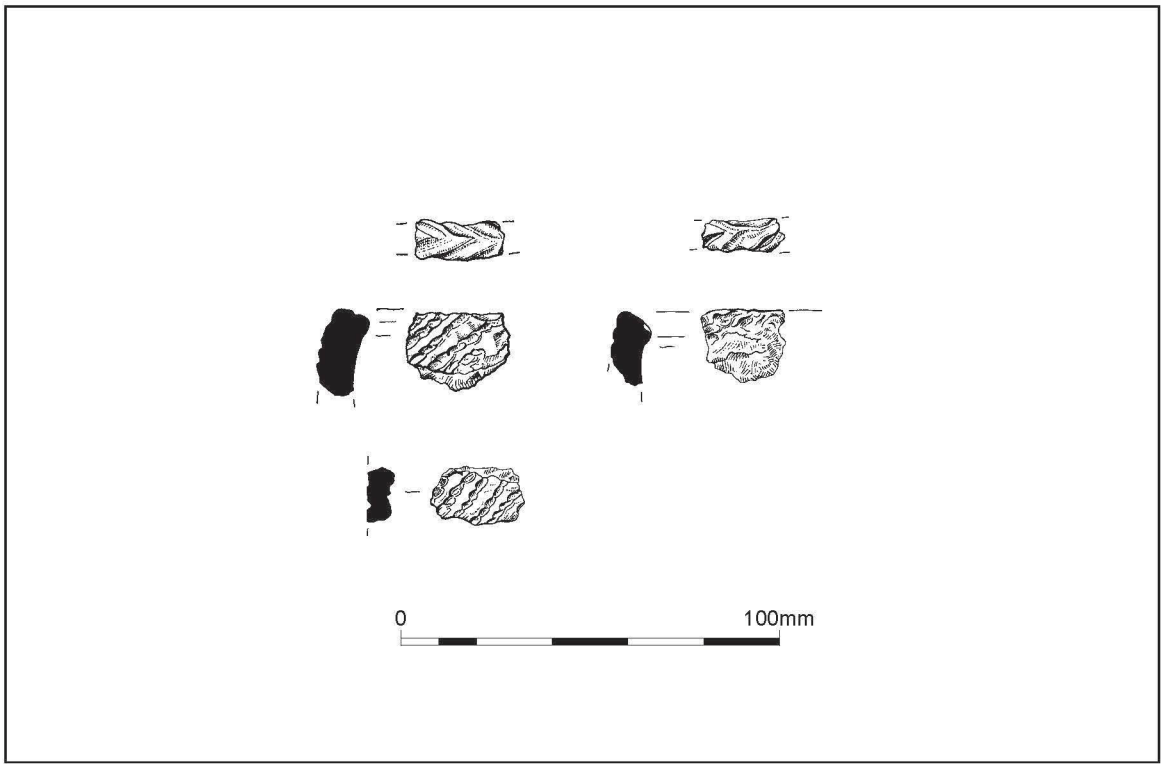


Figure 22: Decorated sherds from Phase 3 alluvial soil 1182

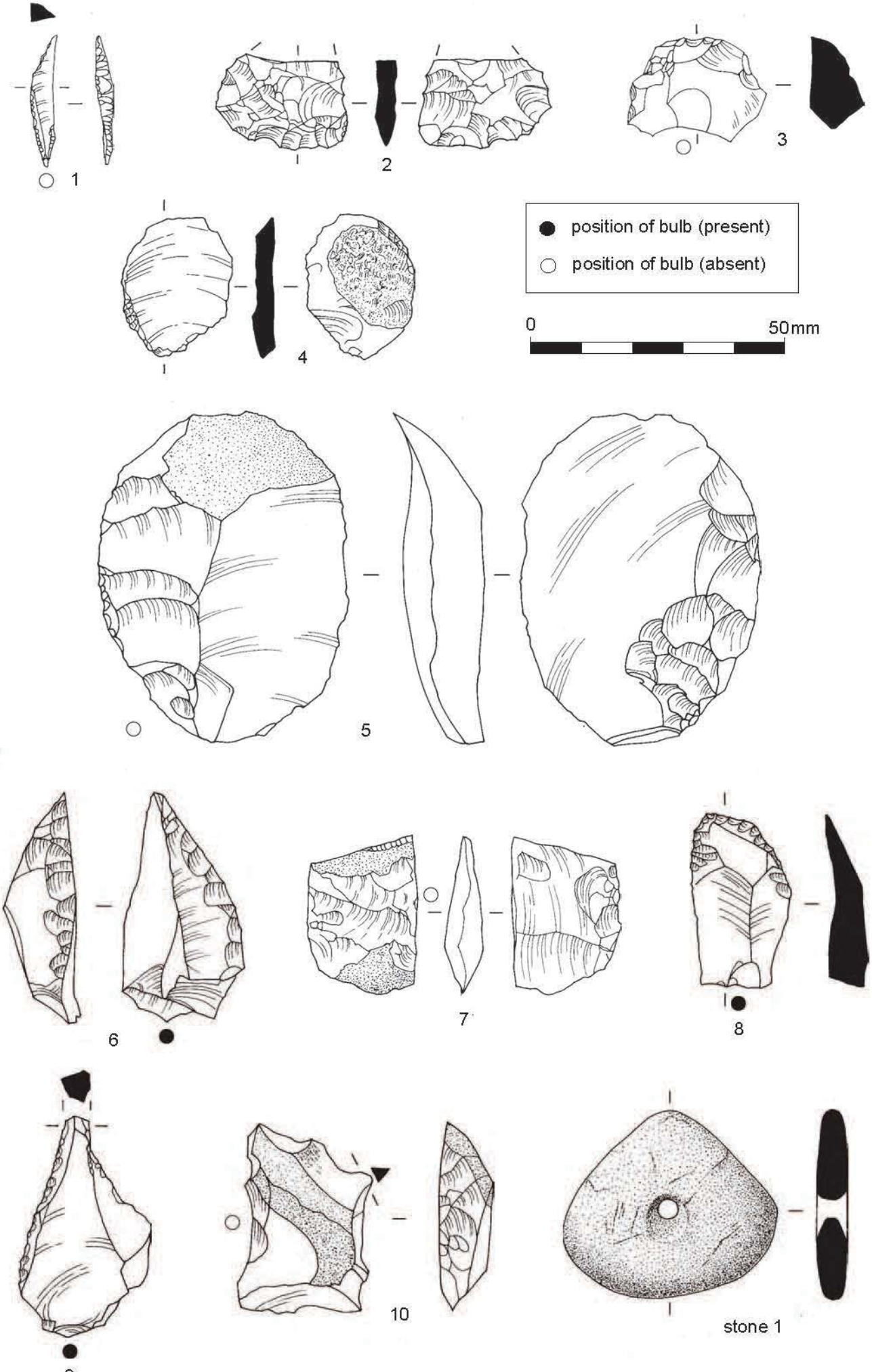


Figure 23: Selected flints and perforated stone

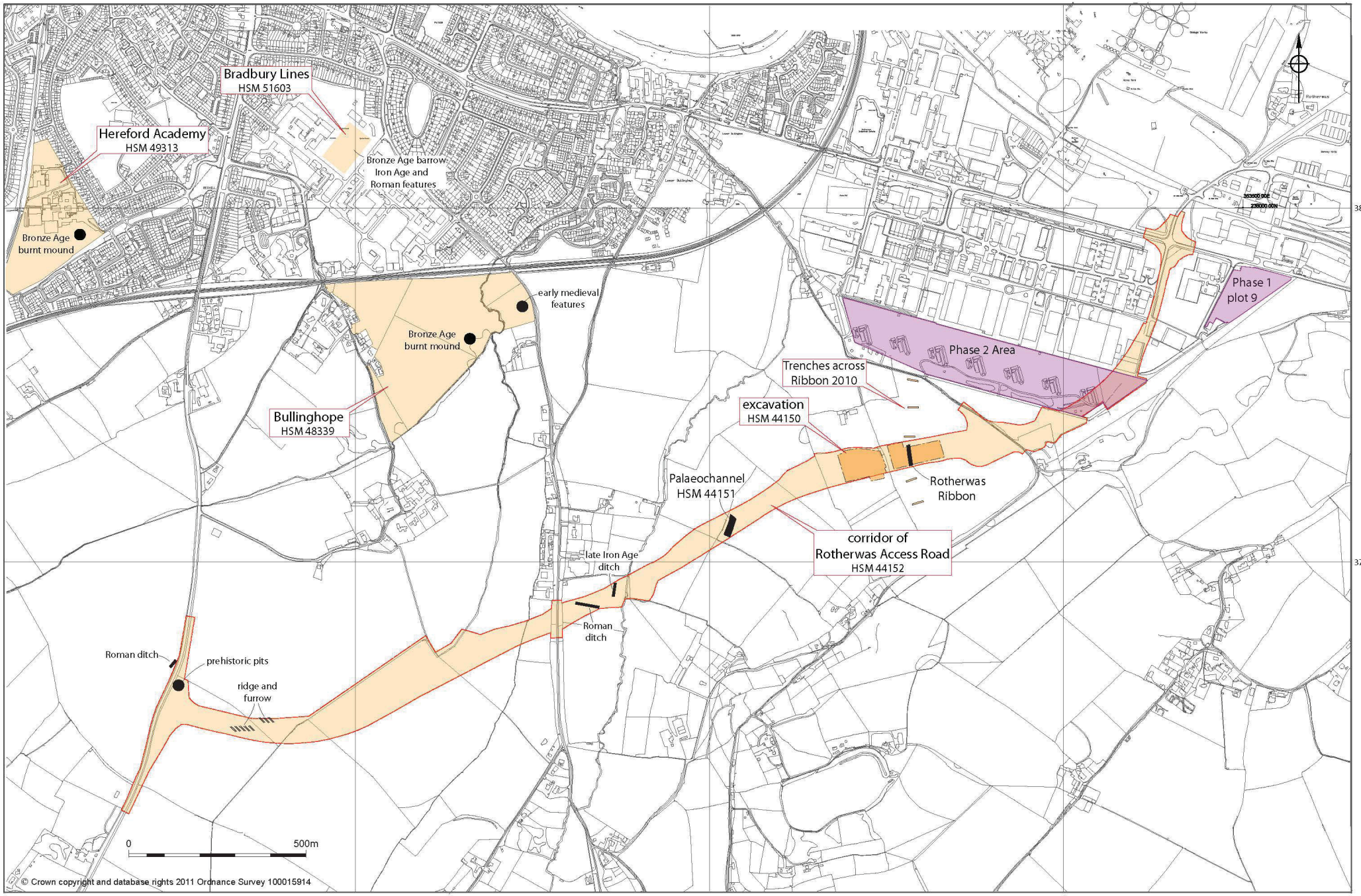


Figure 24: Areas investigated 2008-9 and other significant areas and sites