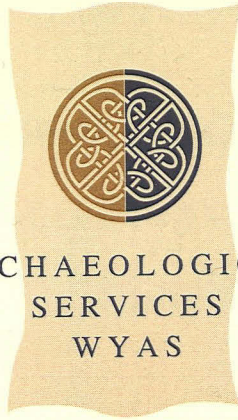


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ARCHAEOLOGICAL
SERVICES
WYAS

Leadenham Quarry

~~Leadenham~~ WELBOURN

Lincolnshire



Archaeological Excavation

Volume 1

May 2001

Report No. 901

CLIENT

Waste Recycling Group plc

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EVENTS LI 2355 LI 2356

SOURCE LI 7016

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Archaeological Excavation

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Summary

An archaeological watching brief undertaken by Archaeological Project Services revealed the substantial remains of prehistoric and Roman features. Subsequent excavation by Archaeological Services WYAS identified a Neolithic pit alignment of likely ritual significance. A relatively prolonged period of inactivity followed until the late Roman period when two stone built structures were constructed. Excavation of these features revealed that they represented T-shaped and H-shaped corn-drying ovens, which contained a substantial charred grain assemblage. Analysis of the archaeobotanical remains indicates their use for drying and germination of grain. The pottery assemblage recovered from these features dates their demolition to the later 3rd to the late 4th century AD. Tentative evidence suggests that they may form ancillary buildings to a larger complex, possibly a villa, which may be preserved to the west of the current excavations.

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1. Introduction

- 1.1 Archaeological Services WYAS was commissioned by Mr David Harper of Waste Recycling Group Plc to undertake an archaeological excavation at Leadenham Quarry, ^{LEADENHAM} Leadenham, Lincolnshire (NGR SK 9663525; Figs 1, 2 and 3). Planning permission has been granted for the extension of the existing quarry, with an archaeological condition attached. This work was carried out in order to fulfil the requirements of the planning condition.
- 1.2 The site is located off Pottergate Road, approximately 1km to the east of the village of Leadenham (Fig. 2). It comprises an area of approximately 1.51 hectares within the north-western extents of Leadenham Quarry. The site is situated on the Lincoln Edge in an area of land that slopes gradually from c.100mOD to 85mOD to the north-west. It is bounded by pasture fields to the north and west, by a small wooded plantation to the south-west and by the existing quarry to the south and east. Topsoil and subsoil deposits had been removed prior to Archaeological Services WYAS arrival on site, down to natural deposits.
- 1.3 The solid geology of the area is Jurassic Limestone of the Upper Lias (British Geological Survey 1979) and the soils are well drained fine loamy brown rendzinas of the Elmton 1 Association (343a; Soil Survey of England and Wales 1983)
- 1.4 The fieldwork was undertaken in two phases between the 15th March and 21st June 2000. Archaeological Project Services initially undertook a watching brief and limited excavation from the 15th March to the 7th April 2000 with between one and five archaeologists on site (Phase 1). The main excavation was completed by Archaeological Services WYAS between the 22nd May and 21st June 2000, with between five and eight archaeologists on site (Phase 2). Monitoring visits were made by Mr Jim Bonnor of Lincolnshire County Council Planning and Conservation Group on the 2nd, 15th and 20th June 2000.

2. Archaeological Background

- 2.1 Evidence for both prehistoric and Romano-British activity has been identified in the surrounding area of the quarry (Fig. 1). Cropmarks, visible on aerial photographs, allude to prehistoric activity to the south-east of the site that includes a trackway (17), an enclosure (18), a pit alignment (20) and a round-barrow (22). A prehistoric trackway, referred to as both the Jurassic Way and Pottergate, lay close to the Ermine Street Roman road. These two trackways were approximately half a mile apart and followed a similar line along the limestone uplands (Whitwell 1992). The name Pottergate may imply that this route ran close to the current development site.
- 2.2 In the vicinity of the proposed quarry extension, archaeological evidence suggests the location of a Roman settlement and associated cemetery. Romano-British burials containing pottery have been excavated to the south, during previous quarry extraction (4), and to the west of the site (6). The site is situated approximately 1.4km west of Ermine Street Roman road which runs north from London to Lincoln and then heads to York. The branch of this road

near the site, known as high dyke (Roman Road 26), runs along the high land of the Lincoln edge through Ancaster to Lincoln (Margary 1967).

3. Method

Phase 1

- 3.1 A specification for the watching brief was prepared for Robert Doughty Consultancy by Archaeological Project Services (Appendix VI).
- 3.2 The watching brief was undertaken during the controlled soil stripping of the development area (Fig. 2). The topsoil (spit 1), which measured *c.* 0.25m in depth was removed in six strips from east to west. A similar depth of subsoil/dirty natural (spit 2) was removed from the eastern and southern areas of the site (full extent unknown).
- 3.3 Archaeological features uncovered including identified medieval ridge and furrow were surveyed using an EDM and a small element of hand and machine excavation was undertaken. Machine excavated sections were placed through large features at both the southern and central eastern areas of the site. A small element of hand excavation was completed at the southern end of the site and commenced at the central eastern and north-western parts of area. The resulting sections were cleaned by hand and a partial written, drawn and photographic record was produced. A 10 litre soil sample was taken from deposits where it was deemed necessary.
- 3.4 In addition the cleaning and collection of artefacts (all small finds were recorded electronically) was undertaken within two stone buildings identified. A human burial (SK 1) was removed after the coroner had been informed and a Home Office licence (No. A2532) issued.

Phase 2

- 3.5 The excavations were undertaken in accordance with a written scheme of investigation produced by Mr Paul Wheelhouse of Archaeological Services WYAS, approved by Mr Jim Bonner of Lincolnshire County Council Planning and Conservation Group (Appendix VII).
- 3.6 The aim of the open-area excavation was to clarify the nature, extent, date and function of the archaeology exposed during Phase 1 and ensure the preservation of identified remains by archaeological record.
- 3.7 Initially, an area at the very southern extent of the site (measuring 2752m²), which had been excavated and fully recorded during Phase 1, was demarcated and handed over for quarrying operations. All archaeological features to the north of this area were tagged and then accurately recorded in plan using a 600 series Geodimeter Total Station Theodolite. In order for the digital data produced from the two phases to be amalgamated, the survey was carried out from stations established during Phase 1.
- 3.8 In order to assist in ensuring a constant area was available for the quarrying operations to continue, the excavations were commenced from the south. This strategy was an alternative to that proposed in the project design.
- 3.9 The majority of features encountered on the site comprised discrete pits and post-holes, of which a minimum 50% sample was excavated. Where a

structure or possible structure was identified a 100% sample was excavated. All pits and post-holes were half sectioned, with a 100% excavation being undertaken on structural elements. Linear features had an appropriate sample placed through them, which was no less than 1m in length.

- 3.10 Stone walling was observed in two areas of the site and in order to establish the nature and form of these features they were both initially quarter sectioned. Excavation of the walling infill was removed stratigraphically. Once the form of these features had been identified as sunken structures with flues, the majority of the material filling them was removed in order to expose fully the stonework.
- 3.11 A JCB mechanical excavator, fitted with a toothless ditching bucket, was judiciously used to remove homogeneous material from the ambiguous large spreads of material observed in the central eastern and western areas of the site. This was in order to establish the nature and form of these deposits and the features that they filled. Excavation ceased at the first significant archaeological horizon or when natural was encountered.
- 3.12 All features were scanned with a metal detector whilst undertaking the preliminary survey of the site. In addition, all excavated deposits from Structures 1 and 2, and Quarry Pits 1220 and 1439, were searched with the metal detector for the recovery of metal artefacts.
- 3.13 A full, written, drawn and photographic record was made of excavated features and deposits in accordance with Archaeological Services standard method (Boucher 1995). Plans and sections were made of excavated features at an appropriate scale and included spot-heights related to Ordnance Datum (O.D.) in metres correct to two decimal places.
- 3.14 A soil-sampling programme was undertaken for the identification and recovery of carbonised and waterlogged remains, vertebrate remains, molluscs and small artefactual material. Soil samples of 10 litres were taken from the fill of all excavated features and deposits, where appropriate. A complete inventory of the environmental samples is presented in Appendix IV.
- 3.15 The paper archive and artefacts resulting from the works are currently stored by Archaeological Services WYAS and will be deposited with the City and County Museum, Lincoln, within a timescale agreed between Archaeological Services (WYAS) and the recipient museum. An inventory of the archive is presented in Appendices I, II and III.
- 3.16 It should be noted that grid north has been used throughout the text and illustrations. An asterisk after the finds catalogue number denotes that a find has been drawn.

4. Results

- 4.1 The excavations revealed two main phases of archaeological activity, dating to the Neolithic (Phase 1) and Romano-British (Phase 3) periods. Evidence was also uncovered to suggest possible Iron-Age occupation (Phase 2), and small-scale Medieval and Post-medieval activity (Phase 4). Each phase will be discussed individually and chronologically throughout this section.

Phase 1: Neolithic (later 4th-early 3rd millennium BC)

Pit alignment Group 1 (Figs 4, 5 and 6)

- 4.2 The only feature securely dated to this phase comprised a linear arrangement of pits in the central-eastern edge of the site. It comprised seventeen pits, aligned north-north-east to south-south-west and measuring *c.* 38m in total. It comprised contexts 1226, 1256, 1258, 1260, 1265, 1266, 1267, 1268, 1269, 1271, 1275, 1277, 1283, 1293, 1292, 1294 and 1316 (Pl. 1).
- 4.3 The majority of these features were sub-oval U-shaped pits and measured between 0.25-0.80m by 0.15m-0.48m by 0.27m-0.15m in depth. These pits appeared to become increasingly larger towards the northern end of the alignment. Features 1269, 1271, 1275 and possibly 1292, represent elongated pits which ranged in size from 1.6m-5m by 0.95-1.10m in width by 0.20-0.59m in depth. Feature 1271 was observed to cut an earlier north-west to south-east curvi-linear elongated pit (1283) measuring *c.*5m by 1.00m by 0.28m in depth.
- 4.4 All the features were filled with homogeneous mid-orange brown silty clay. At the very northern end of the alignment pit 1277 was found to contain 48 fragments of animal bone, seven sherds of Neolithic Grooved Ware pottery, two tertiary flakes of flint and a partly polished flint adze (Fig 19. Cat. 1). Such flint tools were first used at the end of the 4th millennium BC although their popularity increased in the first half of the 3rd millennium BC (Brooks this volume). This date is consistent with the pottery recovered from this feature which has been dated between about 3100 and 2600 cal BC (Allen this volume). Flint tools are generally discovered with Peterborough Ware, whilst stone tools are usually associated with Grooved Ware (Brooks pers. comm.), interestingly a pattern not identified on the Leadenham site.
- 4.5 Similar Grooved Ware pottery was recovered from pit 010 (twenty sherds), as was a quantity of Peterborough Ware (eleven sherds) and twelve fragments of animal bone. These finds were collected from the surface of the pit by APS during Phase 1 of the project. The pit was located on a small scale plan of the site (scale unknown), which made it difficult to establish which feature it correlated to on the ground. From a process of elimination it would appear that this feature could be equated to 1226, although this cannot be stated with any certainty. No further finds were recovered from the fill of this feature (1227).
- 4.6 A number of other pits within this group contained artefacts. Both pits 1269 and 1276 contained a small assemblage of flint and animal bone. Animal bone was also recovered from pit 1260, and 1256, from which 2 sherds of undecorated pottery, possibly of Neolithic date (Allen this volume) was also identified.

Phase 2: Iron Age (Fig. 5)

- 4.7 Tentative evidence to suggest Iron Age occupation is implied by pit 1014, which yielded a small fragment of undecorated pottery, of possible Iron-Age date, from its fill (1015). This sub-circular feature was found to have a U-shaped profile and measured 1.22m by 0.85m by 0.29m in depth. To the west

of this feature a slightly larger pit (1010), with a similar shape and profile, was observed. It measured 1.5m by 1.2m by 0.32m and may be associated with pit 1014, however no stratigraphic relationship or dating evidence was recovered. These features do not appear to be forming part of a structure and probably represent the remains of storage pits. The dating of this feature on the premise of it containing one fragment of potentially residual pottery should be treated with caution.

Phase 3: Late Roman (3rd-4th century AD)

Summary

The majority of dated features at the site were assigned to this phase. The main focus of activity was within the central and very southern end of the site where large quarry pits, a possible trackway and two stone structures were identified. The pottery assemblage recovered from the majority of features provides a *terminus post-quem* of the mid-3rd to 4th century.

Structure 1 (Figs 7 and 8) and Quarry Pits (Figs 5 and 9)

- 4.8 In the central eastern area of the site, the remains of a stone structure were observed (Pls 2 and 3). This feature was positioned within a shallow depression (1375), measuring c.8m by c.8m, that was flanked on its northern and eastern sides by large sub-oval pits 1220 and 1439. It was not possible to establish if a previous feature, such as a quarry pit, had been utilised for the construction of the building or if it had been deliberately excavated as a construction cut.
- 4.9 The cut (1375) was identified on the western and southern sides, however, it was only partially exposed on the northern edge. A machine trench excavated to the east had unfortunately destroyed the majority of the remainder of the cut.
- 4.10 Slots were excavated through the northern, western and southern sides of the cut (1375). It contained a mid-brown grey clay silt (1232) from which 86 animal bone fragments and a quantity (44 sherds) of Roman pottery, of 4th-century date, were obtained. One of the pottery sherds recovered from this deposit was a fragment from a rare Nene Valley parchment ware dish. It is possible that this deposit had been deliberately backfilled within the cut, either prior to or after the construction of the stone building.
- 4.11 Inserted within the cut was a rectangular structure that had external dimensions of c.7.5m by 5.4m and was formed by walls 1318, 1319, 1320 and 1322. The southern and western walls of the structure were the best preserved being constructed of large roughly hewn limestone blocks 0.20m-0.40m in length by 0.20m in width by 0.10m in depth. Truncation on the north-eastern side of the building had left the remains of small quantities of limestone rubble, which represented the position of walling in this area.

- 4.12 Excavation revealed a number of internal features thought to be contemporary with the external walling, although no conclusive dating evidence was recovered.
- 4.13 The main feature was a T-shaped stone built flue which was positioned within the western side of the structure. At its northern end was a large circular pit (1450), cut into the natural which measured *c.*1.4m by *c.*0.86m by 0.45m in depth. A linear construction cut (1235) was then noted to the south of this feature and is probably a continuation of 1450. It measured 3.28m by *c.*1.0m by between 0.7-0.75m in depth (axial flue) and was orientated north-south. At its very southern end, the cut then splayed out 0.82m to the east and 0.70m to the west to form a T-junction at the end, measuring *c.*0.32m in width by 0.80m in depth (transverse flue). Positioned within this cut were dry-stone walls that survived to seven courses in height and were one course in width (1243). Dry-stone walling was not present at either the very southern or northern ends of this cut, where natural deposits were exposed.
- 4.14 The walls were formed from roughly hewn limestone blocks 0.35-0.10m by 0.20m-0.10m by 0.10m in depth. The bottom two courses had been heat affected and an area around walls 1240/1245 was heavily burnt at the base of cut, representing the area of the firebox. The remaining area of the flue was formed of natural deposits. A yellow sandy clay (1317) was noted to have been used as bonding material, from which a small quantity of animal bone (2 fragments) and 1 sherd of Roman pottery were recovered. This material was also noted filling the remainder of the construction cut 1235.
- 4.15 Walls 1240 and 1245 were observed to be short spurs of walling which probably, originally, joined over the top of the flue forming an internal division or support for an upper floor level or capping stone. Both walls were aligned east-west and were constructed of large limestone blocks of which a maximum of 2 courses survived. These were constructed directly upon the natural. Wall 1245 was observed to butt against wall 1322 and measured 0.84m by 0.52m by 0.10m in depth. Wall 1240 was slightly larger measuring 1.1m by 0.62m by 0.15m.
- 4.16 Butting against wall 1240 was one course of limestone flags (1423). It was again constructed upon natural deposits and up to a maximum of three courses in width. It is possible that this represents the remains of a flag floor, which continued across the flue to the western side, although no flags were observed at this side of the flue. A clear edge of context was, however, noted (1323) and is thought to represent the former edge where the flags had been removed. To the west was deposit 1424 a mid-brown sandy silt deposit 0.05m in depth which butted wall 1322 and 1245. This deposit contained patches of black and red burnt material, which may indicate that it had been partly accumulated or heat affected during the destruction of the building or may be waste material from the activities going on inside the structure.
- 4.17 A similar deposit (1239) was noted to the east onto which wall 1324 had been placed which indicates that it had been accumulated above the natural during the use of the structure. Identified within this deposit were 43 fragments of animal bone and a quantity of mortar. The southern wall appeared to be collapsing into the internal area of the building and walls 1324 and 1374 may

- be attempts at preventing further collapse and represent later internal buttressing.
- 4.18 A red sandy silt deposit, 1373 was observed filling a slot between walls 1374 and 1240 and feature 1423. It was noted to be 0.5m by 0.4m and 0.05m in depth overlying natural deposits and may be contemporaneous with deposits 1239 and 1424.
- 4.19 No evidence was found to suggest how a superstructure, if one existed, was supported.
- 4.20 The final use of the building before abandonment is represented by deposit 1242 (not illustrated), a thin (*c.* 0.10-0.22m in depth) organic grain rich deposit which lined the base of the flue. It was noted to extend from the stokehole to the southern end of the traverse flue and increased in depth toward the south.
- 4.21 Archaeobotanical analysis undertaken on samples of this deposit identified that it was dominated by spelt wheat, of which a large proportion had germinated (Young this volume). Also contained within this fill were 42 fragments of animal bone and a fragment of flint. This deposit appears to be an accumulation of material falling into the flue from a upper level and being charred. During the use of the building, the flue would have probably been cleaned out regularly and evidence to suggest this is contained within the fill of pit 1220 (see 4.25 for more detail).
- 4.22 Following the abandonment of the building a concerted effort to backfill the structure, specifically the flue, was observed. Initially deposit 1234 (not illustrated) was deposited within the base of the flue sealing deposit 1242. Thirty-one animal bone fragments, a fragment of flint and two sherds of pottery dating to the 3rd century AD were recovered from this context. This deposit was formed mainly of large limestone slabs similar to those observed in the remaining structure and probably represents the upper courses and floors that had been demolished. Deposit 1447 (not illustrated) then accumulated at the western side, which in turn was overlain by deposit 1426 (not illustrated). This deposit was very similar to 1234. Deposit 1180 was then observed to be filling the rest of the structure. This deposit contained 271 fragments of animal bone, 50 sherds of Roman pottery dating to the 3rd-4th century, and a small quantity of tile, flint and metal artefacts.
- 4.23 To the east of the building a sub-oval pit (1439/1441; Fig. 9, S.221 and 222) was identified. A machine cut trench had been placed through the western edge of this feature in the first stage of excavation removing the first 0.30m of the fill of this feature. In order to obtain a full profile, a further machine slot measuring *c.* 1.60m in width was excavated through the central area of this feature (1441). A hand-excavated slot was also excavated for the recovery of finds (1439). The pit was found to have been initially filled with a homogeneous deposit (1251/1252) which from its composition appeared to be re-deposited natural that had accumulated as the edges of the feature weathered.
- 4.24 A total of 222 animal bone fragments, along with one flint fragment, one fragment of possibly Neolithic undecorated pottery and two Roman pottery sherds providing a date in the middle 4th century were recovered from the secondary fill of this feature, 1440. A bronze coin dating to the mid-4th century

- was also recovered from this fill. The entire pit measured *c.* 5.40m by *c.* 4.5m by 1.00m in depth.
- 4.25 The excavation of the initial machine slot made it difficult to establish any relationship between this pit and Structure 1 as only a small baulk remained. The material filling the pit and building were very similar in both colour and composition. From the remaining section it appeared that the construction cut of the building (1375) had cut through the upper fill of the quarry pit (Fig. 9, S. 222), however, this relationship is tentative due to the minimal section exposed and should be treated with caution.
- 4.26 A further large pit (1220) was observed to the north of the building (Fig. 9, S. 205). Measuring *c.* 11m by *c.* 10m by 1.30m in depth, this feature was observed to contain a series of five deposits. The primary fill 1221, a mid-brown yellow silty clay, contained 85 fragments of animal bone. Overlying this was a thin charcoal and grain rich deposit 1225, *c.* 0.1m in depth. Contained within this fill was a quantity of animal bone (33 fragments). This fill was similar in composition to deposit 1242 and contained the greatest single concentration of grain identified from the processed samples, again with a proportion showing signs of germination. The similarity of these fills suggests that quarry pit 1220 may have been utilised as a rubbish pit for the disposal of the waste material accumulated during activities undertaken within Structure 1, a theory possibly supported by the archaeobotanical evidence (Young this volume).
- 4.27 Accumulated above deposit 1225 was a layer of redeposited natural (1223) above which a further grain rich deposit (1222), similar in composition to 1225, was identified. It should be noted that the proportion of germinated grains within this context was considerably less than in deposit 1242 or 1225. Contained within this deposit were three lenses (1262, 1263, 1264; not illustrated) and a quantity of animal bone (320 fragments). Pottery recovered from this deposit (sixteen sherds) provided a date of the mid to late 4th century. In addition, a tile fragment, a flint fragment and one fragment of human bone were obtained from the excavation of this deposit.
- 4.28 Observed above deposit 1222 was a deep homogeneous fill (1224), 0.65m in depth which represented the final filling episode. The majority of pottery obtained from this deposit was dated to the mid to late 4th century, however, one post-medieval sherd was recovered. This may indicate that the final filling episode was not completed until Phase 4 or may be intrusive within the fill. In addition 47 fragments of animal bone, one flint and one metal object were identified which in the presence of the post-medieval pot have to be presumed to be of a late date.
- 4.29 A trench was excavated at the southern side of this pit and at the northern limit of Structure 1 to establish if any relationship existed between the features. The excavation of a modern pipe trench, exactly in the line of the meeting of these two features had unfortunately disturbed the area to such an extent that no relationship was identified.

Structure 2 (Figs 10 and 11)

- 4.30 A second stone-built structure was situated in the central area of the site. It comprised an H-shaped construction cut *c.* 3.30m by *c.* 1.40m (1392). Dry-

stone walling (1393, 1397, 1396, 1395, 1394), had been built into this cut to form flues (Pls 6 and 7).

- 4.31 The main flue (axial) measured 2.25m by *c* 0.25m (internal dimensions) and was seen to survive to a maximum of nine courses in height (0.85m). At its eastern end the cross-flue (east-west) was observed surviving to a similar height and measured 2.5m by 0.35m (internal dimensions). Traverse flues then splayed out from the cross-flue at its northern and southern ends. These narrow flues measured 2.5m by 0.3m and survived to ten course in height.
- 4.32 At the western end of the main flue a sub-oval bulbous cut (1314) was identified cutting into the natural and represents the stoke-hole, being similar in form to that observed in Structure 1.
- 4.33 The walls were formed from roughly hewn limestone blocks, of similar size to those forming Structure 1. They had been faced on their internal surface and a maximum of ten courses remained. The bottom two courses were bonded with a light brown yellow sandy clay. The other courses did not appear to have the same bonding material but a layer of yellow sand. Burning was evident on all elevations of the walls that formed the structure, however, the heat appears to have been most intensive towards the western end, within the area of the firebox, as would be expected. One capping stone remained *in situ* at the eastern end of the southern traverse flue.
- 4.34 A shallow cut (1398) was noted to the south of the structure, measuring *c*. 6.8m by *c*. 3.6m by *c*. 0.10m in depth (Pl. 6). The fragmentary remains of limestone flags (1399) had been placed around this cut and possibly corresponds to the remains of a small wall/boundary. The base of the cut was partially lined with a fragmentary compacted limestone, metalled surface (1249) and may represent an external working area to the structure. At the southern end a thin (0.02m in depth) deposit (1250) was identified. This dark-grey sandy silt contained a large quantity of stone and charred material. No relationship was observed between this deposit and 1249 and it is probable that they are contemporaneous.
- 4.35 Cut into surface 1249 was a small pit (1246), which was found to be filled with burnt bone and was initially interpreted as a cremation pit and, therefore, excavated as such. The bone has later been identified as animal in origin (Start this volume).
- 4.36 Similarly to Structure 1, no evidence was identified to suggest that the base of the flues had been lined but was formed of natural deposits. Accumulated above this was a thin layer of organic material (1286, not illustrated). Archaeobotanical analysis of this deposit has demonstrated that similarly to deposit 1242 within Structure 1 it was dominated by spelt wheat, although no germinated grains were recovered from this context. This deposit was observed to line all the flues from the western end of the stokehole and contained 41 Roman pottery sherds of 4th-century date and 63 fragments of animal bone. This context also yielded five metal objects that included a possible stylus. The majority of artefacts recovered from this context were recovered from the area around the stokehole and firebox.
- 4.37 The flues then appear to have been rapidly backfilled with material procured from demolition. Three deposits were observed above deposit 1286. Above the

firebox, 0.80m to the west, a light yellow-grey silty sand (1315, 0.30m in depth) was noted (not illustrated). This deposit was overlain by 1312 (not illustrated) a light brown-grey clay silt with frequent limestone fragments. Contained within the fill of this deposit was a quantity of animal bone including a complete dog skeleton, three large millstone fragments and one metal artefact. The pottery assemblage recovered dates the deposit to the mid-3rd to 4th century and one sherd which joins a sherd recovered from context 1286 suggests backfilling around the same time. Large capping stones were also recovered from the fill and two large stones located within the area of the firebox (not illustrated) suggest that they were *in situ* when broken and formed one large cap above the firebox. Overlying this fill was a thin deposit (1313) c.0.30m in depth, observed across the length of the H-shaped structure.

- 4.38 This deposit was similar in composition to 1312, but was found to contain slightly more limestone fragments. One metal object, four fragments of animal bone and six sherds of grey ware, providing a 3rd to 4th century date, were recovered from this deposit.
- 4.39 This upper fill is possibly the same as deposit 1238 (the fill of the shallow depression 1398), however, no stratigraphic relationship was observed between the two deposits. Two metal objects, one fragment of animal bone and thirteen sherds of grey ware were recovered from deposit 1238. Deposit 014 (not illustrated), thought to be the same as this deposit was found to contain metalwork including four lead ingots and two Roman coins, with dates in the mid-4th century.
- 4.40 At the southern end of the building a mid-grey brown deposit (1229) was identified. This thin deposit (0.01m in depth), which contained an iron nail, is thought to have built up against wall 1421 during or after the use of the structure.

Trackway and Associated Quarry Pits (Figs 5 and 12)

- 4.41 At the southern extent of the site a linear east-west aligned ditch was observed. One section was excavated (025) along the 27.5m exposed. An average width of 3.6m was noted and the excavated section revealed it was 0.30m in depth and contained one fill (026) from which a sherd of pottery, of probable 3-4th-century date was recovered.
- 4.42 To the west, three short parallel linear ditches (041, 043 and 045) were identified. One section was excavated at their western end, which revealed that they measured between 0.43-1.33m in width by between 0.10-0.60m in depth. A similar homogeneous deposit was observed filling all three features. These linear ditches have been tentatively identified as possible cart ruts of a former trackway. As they are on a similar alignment to 025 it has been suggested that this is a continuation of this feature and together forms a trackway or driveway, although it should be considered that no rutting was observed in ditch 025, as would be expected.
- 4.43 Flanking either side of this feature were large elongated sub-oval pits that have been interpreted as quarry pits. Machine slots were excavated through a selection of these features. The largest pits were at the eastern end of ditch 025.

- 4.44 Pit 019 (Fig. 12, S.6) measured 11.5m by 7.9m by 1.7m deep and was filled by eight deposits (020, 027, 032, 033, 034, 035, 036 and 037). Only deposit 020 contained finds from which one grey ware sherd and one fragment of *tegula* were recovered. A later pit, 038, had been cut into the upper fill (032) of pit 019. Three deposits were then noted filling this smaller pit, the full extent of which, is unknown.
- 4.45 To the south a series of pit cuts was observed. Pit 040 (Fig. 12, S.6) was the first to be identified and was found to measure *c.*2.1m by 1.3m in depth; the length of this feature is unknown. Two naturally accumulated deposits were then observed to be filling this feature. A large pit (039), measuring 9.7m by 8.2m by 1.6m in depth had subsequently cut the upper fill, and was then filled by seven deposits (051, from which four fragments of animal bone and one flint was recovered, 053, 066, 067, 068, 069 and 070). These fills were deposited in such a way to suggest that they had been backfilled into the feature.
- 4.46 Pit 057 was slightly smaller measuring *c.*3.60m by 12.5m by 2.22m deep. Three fills (054, 055 and 056) were observed filling this feature. Although a section was not excavated through this feature to establish stratigraphic relationships with features to the east and west, it is fairly clear in plan that it had been cut at both its eastern and western end. It was not possible to establish if it had been cut by pit 019 or 038 at its eastern end. To the west, a smaller pit (061) was found to measure *c.*4.3m by *c.* 7.5m and 1.21m deep and contained two fills (062 and 065). It is possible that it continued for a further *c.* 5m to the west, however, the plans available do not show any context number for this feature.
- 4.47 A long sub-oval pit (047), *c.*18m by *c.* 0.60m by 0.98m deep contained three deposits (050 (048) and 049, 060) which yielded the largest quantity of finds in this area of the site. All the deposits, except for context 049, were found to contain a quantity of animal bone. Roman pottery, dating to the 3rd to 4th century was recovered from deposits 048, 049 and 050. The primary deposit (060) was found to be charcoal rich and possibly represents the remnants of a fire in the base of the pit prior to it being backfilled.
- 4.48 A further three quarry pits were noted to the west of pit 039. The first was unexcavated and the fill was given the number 063. A further unexcavated pit (058) was observed and appeared in plan to cut a further quarry pit 021. A small section was placed across the profile of this feature which established that it measured *c.*11m by 4m by 0.9m deep and was filled by a series of three fills (022, 023 and 024). The only datable artefact recovered from this feature was one sherd of Roman grey ware from context 022. This context also yielded a fragment of animal bone and tile. Flint was recovered from deposit 024.

Miscellaneous features

- 4.49 At the southern extent of the site an irregular-shaped feature was exposed. Excavation revealed it to be a series of sub-oval shallow pits (1071 and 1073) with a possible associated gully (1075). Pit 1073 measured *c.*1.35m by *c.*0.5m by 0.29m deep and was cut by pit 1071. This shallow sub-oval feature was

found to contain a single clay fill from which a sherd of pottery dating to the 3rd century was recovered. During excavation a small gully (1075) was discovered at the western side, which had been obscured by a spread of subsoil. No relationship was established between this feature and pits 1071 and 1073 as the fills were all very similar. Contained within deposit 1076 were six fragments of under fired *tegula* suggesting tile making in the vicinity (Tibbles this volume).

- 4.50 A large sub-oval pit (1178) was uncovered in the central-western area of the site (Figs 5 and 13, S. 190). Measuring 3.6m by 3.3m by 0.43m deep the pit contained two fills 1179 and 1187. The primary fill (1179) produced two fragments of animal bone, two sherds of Roman grey ware pottery, one sherd of undecorated pottery, possibly Neolithic in date, and one flint. The secondary fill (1187) was similar to deposit 1179, although no finds were recovered from this deposit. A modern east-west orientated pipe trench, which was seen to extend across the width of the site, truncated the middle of this feature.
- 4.51 To the south of Structure 2 a sub-oval pit (1419) was identified, which measured 1.9m by 1.46m by 0.25m deep (Fig. 4). Filling its V-shaped profile was deposit 1420 which contained two sherds of Roman pottery, dating to the mid to late 4th century and one fragment of animal bone.
- 4.52 A large sub-circular depression (1451), measuring a minimum of *c.* 7.00m by 5.85m was noted to the north-west of Structure 2, running under the western baulk and was initially thought to be a further quarry pit. A machine excavated section through the feature revealed it to be very shallow (0.20m). Although large fragments of Roman pottery (4th century in date) were found in the upper 0.10m of deposit 1416 which filled this feature, as was a lead object and animal bone, these are thought to be filling a natural depression rather than an anthropogenic feature.
- 4.53 Pottery dating to the 3rd to 4th century was recovered from an isolated linear gully (1379) at the northern end of the site. Measuring *c.* 4.5m by 1.03m by 0.36m, it was found to contain two fills (1380 and 1381). Animal bone, Roman pottery, a metal object and a sherd of probable Neolithic pottery, thought to be residual, were recovered from deposit 1380.

Phase 4: Medieval and Post-medieval

- 4.54 Only one archaeological feature contained pottery dating to this phase. As previously discussed, the upper fill (1224) of quarry pit 1220 yielded one sherd of glazed post-medieval pottery (Darling this volume). Medieval pottery dating to the 15th to 16th century was obtained from subsoil deposits during machining. Later pottery dating to the 16th to 17th century was also recovered from subsoil and topsoil contexts suggesting medieval and post-medieval activity near to the site during these periods (Cumberpatch this volume).

Unphased

- 4.55 The majority of features identified on the site remained unphased, due to inclusive or lack of dating evidence recovered. It is possible that some of the

features may date to one of the phases previously discussed and where this possibility has been identified this is stated clearly in the following text.

Structure 3 and Group 2 post-holes (Fig. 14)

- 4.56 An arrangement of post-holes was identified in the south-western area of the site. This group of features appears to form at least one structure (Structure 3), with surrounding post-holes (Group 2).
- 4.57 Post-holes 1037, 1047, 1041 and 1043 form a sub-square four-post structure measuring *c.* 3m². They ranged in size from 0.55m-0.44m by 0.42m-0.31m by 0.07-0.26m deep. One small fragment of undecorated pottery was recovered from post-hole 1037. Although it is not possible to state categorically that this fragment is Neolithic it is of the same fabric type as the Neolithic grooved ware pottery found nearby (Allen this volume). The two southernmost features were the deepest. All these features contained a distinctive fill, a dark grey-brown sandy silt, which contained a considerable quantity of charred cereal grain, particularly deposit 1040 (fill of post-hole 1037; Young this volume). A small animal bone assemblage was recovered from post-holes 1037 and 1041.
- 4.58 Two further post-holes (1053 and 1055) were identified 4m to the north of this group on a similar alignment if not slightly offset to the east. They were of similar dimensions being 0.35-0.4m by *c.* 0.32m by 0.20m-0.15m deep and contained a similar fill, with deposit 1056 (fill of post-hole 1055) containing a significant quantity of cereal grain (Young this volume). This association suggests that these features form a six-post structure.
- 4.59 Alternatively, it is possible in the case of post-hole 1101, which measured 0.57m by 0.37m by 0.13m that a further four-post structure/feature is present with the north-eastern feature no longer visible. It is evident from the depth of the majority of the features in this area that heavy truncation has occurred. However, it should be noted that the fill of this feature was significantly different being devoid of cereal grain and is more comparable to the features in Group 2.
- 4.60 The recovery of charred grain assemblages containing spelt wheat, from these post-holes, indicates that the pottery is residual and the features date to a later phase, a matter discussed further in Section 8.7.
- 4.61 The post-holes contained within Group 2 did not appear to be forming any further identifiable structures, although it is possible that features 1033, 1049 and 1051 may be in some way associated. This linear alignment of sub-oval post-holes, which ranged in size from 0.6-0.38m by 0.37-0.2m by 0.13-0.07m deep, may have formed a fence-line.
- 4.62 To the south four further post-holes were identified: 1025, 1027, 1029 and 1031. Both 1027 and 1029 contained undecorated pottery similar to that recovered from feature 1037. This suggests that these features may be contemporary with the other post-holes observed in the area.

Structure 4 (Fig. 5)

- 4.63 A further possible four-post structure was observed to the north and includes post-holes 1121, 1123 and 1125, which measured between 0.3m-0.5m by 0.2-

0.36m by 0.08-0.22m deep. The north-east post is absent, possibly due to heavy truncation. The visible sides suggest that this feature was *c.* 2.9m². No dating evidence was recovered from these features.

Structure 5 (Fig. 15)

- 4.64 This arrangement of post-holes was located at the south-eastern end of the site and appears to form a sub-circular structure, measuring *c.* 3m in diameter with a central post. This small group of seven post-holes comprises features 1079 1081, 1083 1085 1089 and 1165, which range in size from 0.35-0.52m by 0.36-0.50 by 0.12-0.25m in deep. The shadow of a post-hole (1448) also appears to be part of this group. No dating evidence was recovered from the fill of any of these features.

SK1 (Fig. 4)

- 4.65 Isolated within the central area of the site, north of Structure 2, the partial remains of an adult human burial were uncovered (016, sex unknown). No visible grave cut was identified, although the heavily truncated skeletal remains suggest that it may have been removed by ploughing. It is also possible that it had been placed in a shallow grave, which was no longer discernible. It was orientated approximately north-south and measured *c.* 0.7m by *c.* 0.25m. Due to the heavy truncation of the skeleton it was not possible to establish in what position it had been placed. In addition no finds were recovered to assist in dating. An osteological assessment of these remains is presented in Section 7.1.

Potential occupation/industrial features (Figs 4 and 5)

- 4.66 Two shallow clay-lined sub-oval pits (1135 and 1402) were found to be filled with burnt cobbles that may suggest occupational activity or an industrial use on the site.
- 4.67 Pit 1135 was observed to the north of Structure 4 and was found to contain three fills. The primary fill was noted to be a clay lining (1140) above which two deposits 1138 and 1139 had accumulated. Contained within 1138 were occasional fragments of burnt limestone and charcoal flecks.
- 4.68 To the north of Structure 2, pit 1402 was identified. The clay lining within pit 1402 (1403) was a light brown-green colour and may indicate staining from a process undertaken within the pit. This thin deposit (0.09m in depth) was overlain by a black-grey deposit (1433) containing burnt cobbles (0.02m in deep).

Miscellaneous features potentially dating to Phase 1

- 4.69 An isolated pit (1109) and later hearth (1449) (Figs 5 and 13, S. 164) were identified in the central part of the site. Pit 1109 measured 1.20m by 0.95m by 0.75m deep and was found to have a stepped U-shaped profile. The primary fill (1141) consisted of a homogeneous light grey-brown silt with frequent limestone inclusions. This was overlain by deposit 1116, a dark black clay silt

which appears to have been heavily heat affected from the later hearth (1449) which had been cut into this context. Hearth 1149 measured 1.1m by 0.95m by 0.24m, again with a U-shaped profile. Lining the base of this cut were heavily burnt limestone platy flags (1111), measuring between 0.06 and 0.3m². Accumulated above this context was a mid-brown sandy silt (1110) containing charcoal inclusions and fragments of heavily burnt limestone suggesting it is waste from the hearth. Finds recovered from this fill include a sherd of undecorated pottery possibly of Neolithic date and a fragment of animal bone.

- 4.70 To the south-west of this feature a further sub-oval pit was identified containing similar pottery sherds. Pit 1154 was found to be a shallow U-shaped feature containing a single homogeneous fill (1155). One sherd and two fragments of undecorated pottery of a possible Neolithic date were recovered from this feature.
- 4.71 A sherd of Neolithic grooved pottery and a small fragment of flint were recovered from the surface of unexcavated post-hole 1091. This small sub-circular feature measured 0.6m in diameter and was similar to post-hole 1087 observed 2m to the south. This post-hole was found to have a U-shaped profile, and measured 0.6m in diameter by 0.10m in depth, suggesting that it may have been heavily truncated. Although no evidence was identified to the east, it is possible that these two features represent the remains of a further four post structure with the post-holes to the east obliterated, although there is not enough evidence to substantiate claims of a further structure in the area. The fill of these features was very similar in being a mid-grey brown clayey silt with charcoal flecks.
- 4.72 The quantity of Neolithic pottery within these features may indicate further evidence of Neolithic occupation/activity on the site. However, the quantity of pottery contained within these features does not conclusively date them to Phase 1 and may indicate residuality on the site.

Miscellaneous features

- 4.73 Flint was found in a number of features, although the presence of the material does not secure these features to any particular phase. Possible pit 1012, at the south-eastern end of the site, was found to be an irregular sub-oval feature measuring 1.40m by 1.35m by 0.21m in deep. The reddish brown clay fill was similar to that of natural solution hollows observed across the site, and the anthropogenic origin of this feature is questionable.
- 4.74 Pit 1017 was identified to the west. This shallow pit, measuring 0.9m by 0.47m by 0.10m deep was again sub-oval in plan with a U-shaped profile. Both animal bone and a fragment of flint were recovered from this feature. Pit 1059 was identified immediately to the east. This slightly smaller feature, measuring 0.6m by 0.3m by 0.09m was filled with a similar deposit and it is probable that they are contemporaneous.
- 4.75 Flint was found in another pit, 1417, a sub-oval U-shaped feature to the east of Structure 2. It was found to measure 2.77m by 0.88m by 0.49m deep.
- 4.76 The excavations revealed a further 160 features, of which 73 were unexcavated. The majority of these were isolated pits and post-holes, the

excavated samples of which yielded no datable artefacts and therefore it was not possible to allocate them to a particular phase. The dimensions of these features have been presented in Appendix V, as a full description was not deemed to be warranted. It was observed that a mid-orange brown silty clay filled the majority of these features. It is interesting to note that features to the south of the site, including Structures 1 and 2 were filled with a mid-grey brown clay silt deposit. This may indicate that these features belong to a different phase of activity.

5. *The Pottery*

Prehistoric Pottery by Dr Carol Allen

Quantification and methodology

- 5.1 A total of 57 sherds and 49 fragments of pottery weighing 765g were found during the excavation of the site. The small assemblage originated in a number of pits and post-holes, and within a ditch. There are no complete or near complete pots, and the sherds uncovered (excluding the fragments) are quite small with an average weight of 14g. The fabric types and wall thicknesses are recorded in the catalogue, and indicate that at least ten different pots are represented by the assemblage. Sherds from five different vessels are illustrated (Fig. 16).
- 5.2 The assemblage was analysed according to the guidelines of the PCRG (1995), and the sherds were counted, weighed and recorded as detailed on Table A1. Pieces with all dimensions below 10mm have been termed fragments, and many of these are very small crumbs. The sherds were examined with a X4 binocular microscope and grouped into fabric types. The abrasion level of each piece has also been noted on Table A1.

Fabrics

General

- 5.3 Five main fabric types were noted (Table 1), and these are described in detail in Appendix VIII. It should be noted that the quantities of inclusions within fabrics of this prehistoric pottery are not homogeneous and therefore there is likely to be some variation and overlap both within and between types.

FabricType	% of Total weight	Code	Inclusions/quantity/size
1	18%	SHMC	fossil shell/moderate/coarse
2	6%	SHCC	fossil shell/common/coarse
3	30%	SHMV	fossil shell/moderate/very coarse
4	45.9%	SHMM	fossil shell/moderate/medium
5	0.1%	GTSC	granite/sparse/coarse

Table 1. Fabric Types

- 5.4 Fossil shell tempering dominates the assemblage, and the most common fabric is type 4 with moderate amounts of medium sized shell inclusions. It is apparent that fabric types change with time in prehistory (Allen 1991; Cleal 1995), and in this region shell tempering is common in the Neolithic period (Allen and Hopkins 2000). Inclusions employed for pottery manufacture in prehistory depended on obtainable materials, but the local tradition in use at a particular time was more important than locally available materials or technological and functional considerations.

Source

- 5.5 Four of the fabrics (99.9%) of the pottery sherds contained fossil shell in varying quantities and sizes. The site lies on the fossil limestones of the Jurassic upper lias (British Geological Survey 1979), and a number of other Jurassic formations are also near by (Kent *et al.* 1980). The clear white platey fossil shell appearance of the material strongly suggests that a local clay, rich in shelly limestone, was selected for the manufacture, and that this received only minimum treatment before being incorporated into the pottery. It seems fairly certain therefore that the material used for the pottery is likely to have originated on or very close to the excavated area. However, thin section analysis would be required to confirm this.
- 5.6 A single sherd from isolated pit 1014 was tempered with granite. There is no granite on or near the site, and the source of this material is most likely to be the Boulder Clay, which contains stones and boulders of distant origin carried by glaciation (Swinerton and Kent 1976). The nearest source is likely to lie about 15 km to the west of the site.

Neolithic Pottery Typology

General

- 5.7 All the pottery sherds listed in Table A1 are considered to be prehistoric in date. The form and decoration of the larger decorated sherds can be clearly defined, but some sherds are small and undecorated and their identification is less clear.

Grooved Ware

Form, Decoration and Typology

- 5.8 Pottery from the contexts presented in Table 2 is identified as Neolithic Grooved Ware.

Context	Catalogue No.	Description	Fabric	No. of sherds	Weight g
002		subsoil	SHMC	3	14
007/2	4	subsoil	SHCC	1	16
009/1	1	pit fill 010	SHMV	15 + 5	229
009/2	2	pit fill 010	SHMM	5	16
1091		posthole	SHMC	1	3
1278	3	fill of pit 1277	SHMC	7 + 3	114
Total				32 + 8	392

Table 2. Neolithic Grooved Ware

- 5.9 Within pit 010 were found a number of sherds which originate from three separate vessels, and two of these are Neolithic Grooved Ware. Sherds from pot 009/1 (Cat. 1) have horizontal, diagonal and chevron grooved decoration. Some flat base sherds and a decorated base/body are apparent, together with some body sherds with a wall thickness of 12mm, and all indicating a large straight-sided pot. There are no rim or upper body sherds. The form and decoration (Fig. 16, Cat.1) indicate that this vessel is of the Clacton style of Grooved Ware (Wainwright and Longworth 1971, 236-7; Manby 1974, 78) found throughout Britain, for example at Durrington, Wilts. and Rudston Wold, Yorks. This form and decoration is commonly seen on a number of sites in the Midlands and north of England, such as Willington, Derbys.; Thurmaston, Leics.; Fengate, Cambs. and Risby Warren, Lincs. (Manby 1999, 60; Pryor 1978).
- 5.10 Body sherds of pot 009/2 (Cat. 2) again exhibit grooved chevron decoration, but the vessel has a thin wall only 5mm in thickness. Similar fine walled Grooved Ware vessels are known from Storey's Road subsite, at Fengate, Peterborough (Pryor 1978). Two sherds of a shallow beaded rim of Grooved Ware style (Wainwright and Longworth 1971) with small round impressions just below the rim are of the same fabric and are likely to originate from the same vessel. There is also a small undecorated simple flat base/body sherd of the same fabric and all these sherds seem to indicate a small thin walled pot (Fig 16, Cat. 2).
- 5.11 Sherds from pit fill 1278 (Cat. 3) include rim, body and base sherds from a straight-sided vessel with a wall between 6 and 9mm in thickness. The pot has a simple rounded rim, and applied grooved decoration inside the rim typical of the Clacton style (*ibid.*). The exterior is covered with grooved diagonal and horizontal decoration above rows of small rounded, perhaps twig end, impressions. Similar decoration is apparent on sherds from Fengate, Cambs. (Pryor 1978) and Thurmaston, Leics. (Manby 1999). Some flat base sherds of the same pot were found together with joining base/body sherds showing horizontal grooved decoration on the lower part of the pot (Fig. 16, Cat. 3).
- 5.12 Within the subsoil (007/2) on the site was found a sherd of a protruding base (Fig 16, Cat. 4) very likely of Grooved Ware type (Wainwright and Longworth 1971). The sherd is unabraded suggesting that it had only recently been

disturbed from its context. A few additional sherds of the same shelly fabric were also found on the site. Three came from within the subsoil (002) and show fingertip decoration and another sherd from a post-hole (1091) has finger moulding. Finger tip decoration and moulding is also seen on Grooved Ware of Clacton type, as seen for example at Hunstanton, Norfolk (Cleal 1993), and these sherds are very likely of similar type.

- 5.13 The fabric of each of the sherds discussed above is typical of the Grooved Ware tradition. It is clear that in many areas the preference for shelly fabrics for the Clacton/Woodlands style of Grooved Ware is very common (Barclay 1999, 12) regardless of the local geology or technology required. Occasionally it has been proved that the shell included in this type of vessel is not fossil type but marine (Cleal *et al.* 1994, 447). At Redgate Hill, Hunstanton, Norfolk, Clacton style Grooved Ware also contained shell tempering, but again identified as oyster and mussel.

Undecorated

- 5.14 All the sherds listed in Table 3 are small and undecorated and therefore it is not possible to state with certainty that these are Neolithic. However, all have the same fabric types as those identified as being used for the Neolithic Grooved Ware pottery found nearby. It seems very likely, therefore, that these sherds too came from Neolithic Grooved Ware pottery, although this identification cannot be certain.

Context	Description	Fabric	No of sherds	Weight g
007/1	subsoil	SHCC	4	23
1028	post-hole	SHMM	1	1
1030	post-hole	SHMM	1	6
1040	post-hole	SHCC	1	5
1110	hearth	SHMC	1	3
1155	isolated pit	SHMC	1 + 2 frags	2
1179	isolated pit	SHMM	1	1
1257	isolated pit	SHMC	2	4
1380	ditch	SHMV	1 + 1 frag	3
1440	quarry pit	SHMM	0 + 1 frag	
Total			13 + 4	48g

Table 3. Undecorated pottery

Peterborough Ware

- 5.15 Within pit 10 a third vessel (009/3, Cat. 5) was found with walls approximately 11mm thick. The eleven sherds (and 37 fragments) of this pot, weighing 324g, are shell tempered and include rim, body and base sherds, and

the pot has a deep rounded collar below a tapering rim. In the break between the two joining rim sherds it is possible to see that clay was turned back and over the pot to form the outer part of the collar in much the same manner as collared urns were constructed (Allen 1987). There is random fingernail decoration on the upper and middle body, and one small flat base sherd is apparent (Fig 16, Cat.5). This pot is very similar in form and decoration to a regional style of Fengate Peterborough Ware recognised in Yorkshire at Carnaby Top Site 19 (Manby 1975; 1988). The round rim and collar form together with fingertip decoration of this type of Peterborough Ware is also seen elsewhere in Yorkshire, for example at Sawdon Moor (Brewster and Finney 1995).

Other Pottery

- 5.16 The sherd from pit 1014 (1g) is unfortunately very small and undecorated, but from the type of fabric used, it is very likely to be of a later date, possibly Iron Age (Allen and Hopkins 2000; Knight 1992, 40). As the nearest likely source of granite lies some distance from the site, it seems probable that this sherd came from a traded vessel (see Knight 1992).

Neolithic Pottery – Contexts and Finds

- 5.17 There is no stratigraphic relationship between the features that contained prehistoric pottery to assist in establishing a sequence or chronology. Pit 010, containing pots 9/1, 9/2 and 9/3 (possibly equated with pit 1226), appears to lie at the southern end of a line of pits, and pit 1277, containing pot 1278, lies at the northern end. This line of pits and features is located on the east of the excavated area just to the west of the edge of the quarry. All the Grooved Ware pottery found, excluding the base sherd from the subsoil, came from this area.
- 5.18 Grooved Ware material of Clacton style is often found in small assemblages, usually in pits, as on this site (Cleal 1999, 5; Garwood 1999; 159; Thomas 1999, 119). It is thought that many of these deposits are not collections of rubbish dropped into a hole but assemblages of artefacts deliberately placed into pits which were then backfilled. This is considered to be indicated by the single fill of a pit rather than fills which have accumulated over time, and certainly 1226 and 1278 are each a single fill. In addition, the pottery from both these contexts is in fresh and unabraded condition, suggesting deliberate deposition rather than rubbish which has gradually infilled the pit, and which would tend to be worn and abraded.
- 5.19 The remainder of the prehistoric pottery on the site, single or small numbers of sherds, originated in isolated pits or post-holes, and some must be residual. Pit fill 1179, from pit 1178, contained an abraded sherd of prehistoric pottery, flint, animal bone and Roman pottery, and a prehistoric sherd was found in ditch fill 1380 in the north of the site.
- 5.20 Other artefacts and bones were often deposited with Grooved Ware in pits with ashy deposits (Barclay 1999, 14). Flints and axes, sometimes deliberately broken were placed with pottery, and often only rims or highly decorated pieces of pots were selected (*ibid.*). In the case of pit 1278 three flints, two

tertiary flakes and one tool (Brooks 2000), 48 pieces of animal bones, including thirteen sheep/goat bones and a flint adze were deposited with a Grooved Ware vessel. In a similar manner at Barrow Hills, Radley, Oxon., a reworked flint axe was found deposited in a pit with Grooved Ware and other flints (Barclay and Halpin 1999, 94). The occurrence of Grooved Ware and Peterborough-like Ware found within pit 010, has also been identified from a surface deposit at Salmonby (Jacklin's), Lincs. (Longworth and Cleal 1999, 190).

Dating

- 5.21 Grooved Ware vessels of all types are considered to be dated between about 3100 and 2600 cal BC (Garwood 1999, 152) from an examination and careful analysis of a number of radiocarbon dates in 'southern' Britain. This range does include dates from Barholm, Lincs. and Storey's Bar Road, Fengate, Peterborough, Cambs. Regional styles seem likely to exist (Cleal 1999, 2; Garwood 1999, 154) but the analysis did not show any notable variation in dating of styles between regions (Garwood 1999). It is suggested too that the Clacton style may be an earlier type of this pottery (*ibid.*) although there are instances when the type carries on into the later part of the Grooved Ware period.
- 5.22 A programme of radiocarbon dating investigating Peterborough Wares suggested that this type of pottery was current between 3400 and 2500 cal BC (Gibson and Kinnes 1997) and therefore the later styles of this type would overlap with the earlier Grooved Wares. On the basis of stylistic development and typology Fengate is thought to be the later of the Peterborough styles, although this was not proved by radiocarbon dates.
- 5.23 Dating and typological considerations, and the condition of the pottery, thus suggest that the sherds of the Fengate pot could have been deliberately deposited with those of two Grooved Ware vessels in pit 010.
- 5.24 In addition to the recovery of a Grooved Ware vessel with flints, animal bone and a partially polished adze of flint placed in pit 1226, it seems likely that the pottery on this site should be dated to the early part of the 3rd millennium cal BC: a date of sometime between 3000 and 2700 cal BC would fit all the artefacts. The adze, a utilitarian type of tool, became popular in the later part of the 4th millennium cal BC and was in use after that time (Brooks this volume), which concurs with the dating for the pottery.

Discussion

- 5.25 The location of the pit alignment on the eastern side of this site, very close to the quarry edge, unfortunately suggests that important evidence has already been lost from this area where the most interesting pottery deposits are located.
- 5.26 The deliberate placing of decorated and unabraded Grooved Ware pottery in pits alongside Fengate pottery and artefacts is considered to indicate the location of a special deposit, perhaps with a special ritual meaning to the people of that period. Often such deposits in pits are located fairly close to

later barrow sites (Cleal 1999, 6). This suggests that the landscape in which these pits occurred was of special importance and that people visited the location for ceremonies or gatherings over a long period of time. However, any associated ceremonial site may have been lost.

- 5.27 In some cases pits with Grooved Ware have also been found to have been located close to Neolithic structures as at Yarnton, Oxon. (G. Hey pers. comm.) and at the site of White Horse Stone, Kent (A. Barclay pers. comm.), but if such a structure existed at Leadenham the supporting evidence has been lost.
- 5.28 At present there are 9 sites with Grooved Ware pottery recorded in Lincolnshire (Longworth and Cleal 1999, 190). These are:

Site	Sherds/Vessels	Type/Comments
Barholm	144 sherds	Clacton and Woodlands style
Deeping St Nicholas	6 vessels	not originally identified as Grooved Ware
Salmonby - 4 locations	a few sherds	Durrington Walls style at each site
Stainsby	1 sherd	unclear type
Tattershall Thorpe	4 sherds	Durrington Walls style
West Ashby	14 sherds	Clacton style

- 5.29 Neolithic pottery is very fragile and is not a common find in Lincolnshire or elsewhere. The Grooved Ware pottery known in the county is limited to the small number of sherds recorded from those sites shown above. Therefore, this assemblage of pottery, including three Grooved Ware vessels of Clacton type, comprising at least 27 sherds, together with a Fengate pot and other artefacts, makes an interesting addition to the knowledge of the Neolithic period in the county.

Catalogue

- 1* Grooved Ware base and body sherds of straight sided vessel, grooved decoration in chevron, horizontal and diagonal pattern, fabric SHMV, unabraded: LPR, Pit 010, Context 009
- 2* Grooved Ware rim and body sherds of small thin walled pot, horizontal grooved decoration on body, small rounded impressions below simple rounded rim, fabric SHMM, unabraded: LPR, Pit 010, Context 009
- 3* Grooved Ware rim, upper body and base sherds, grooved decoration in diagonal and horizontal pattern above rounded impressions, applied grooved decoration on rim interior, fabric SHMC, unabraded: LQL; Pit 1277; Context 1278
- 4* Grooved Ware protruding base sherd, no decoration, fabric SHCC, slightly abraded: LPR; subsoil; Context 007
- 5* Peterborough Ware rim, joining body sherds and one base sherd of Fengate pot with deep rounded collar, random fingernail decoration on the body, fabric SHMM, slightly abraded: LPR, Pit 010, Context 009

Roman Pottery by Margaret Darling

Introduction

- 5.30 The Roman pottery has been examined by the author, and archived according to the guidelines of the *Study Group for Roman Pottery*, the archive includes sherd count and weight (archive format is detailed in Appendix IX). Details of the form and decoration codes used in the archive are in Table A4; the fabric codes are defined below. The pottery amounted to 350 sherds, weighing 7.022 kg, from 41 deposits, summarised for quantities, dating, condition and sherd links in Table A2. Apart from abrasion, the condition of the pottery is good. A copy of the archive database is in Appendix IX (Table A5).

Overview of fabrics and vessel types

- 5.31 The fabrics from the site as a whole are summarised in Table 4. Definitions of the fabrics are below. Details of the vessel types, classes and possible functions by fabric are given in Table A3.

Fabric	Code	Sherds	%	Weight	%
Oxidised light	OXL	1	0.29	7	0.10
Oxidised	OX	3	0.86	14	0.20
Oxidised? burnt	OX?	2	0.57	10	0.14
Oxidised sandy	OXSA	37	10.57	244	3.47
Nene Valley colour-coated	NVCC	11	3.14	483	6.88
Nene Valley parchment ware	NVPA	1	0.29	26	0.37
Colour-coated?	CC?	1	0.29	7	0.10
Grey	GREY	225	64.29	4991	71.08
Grey? burnt	GREY	3	0.86	10	0.14
Grey fine	GFIN	12	3.43	61	0.87
Late coarse grey	LCOA?	5	1.43	49	0.70
Late grooved	SPIR?	1	0.29	65	0.93
Shell-gritted	SHEL	39	11.14	897	12.77
Mortaria Swanpool Lincoln	MOSP	3	0.86	111	1.58
Post-Roman	PRO	4	1.14	37	0.53
Fired clay	FCLAY	2	0.57	10	0.14
Total		350		7022	

Table 4. Fabrics quantities

- 5.32 The bulk of the coarse pottery was in standard quartz-gritted grey fabrics (GREY 64-71%), which cannot be definitely attributed to any particular kiln, although a number are likely to be from the late kilns at Swanpool in Lincoln (Webster and Booth 1947). The forms include many wide-mouthed bowls typical of the later 3rd and 4th centuries (Fig. 17, Cats 10 and 17), alongside a high-beaded flanged bowl (Fig. 17, Cat. 19), an inturned bead-and-flange bowl (Fig. 17, Cat. 16), typical of the products of the Swanpool kilns of later 4th-century date, everted rimmed and lid-seated jars, also of Swanpool type (Fig. 17, Cat. 14), narrow-necked jar (Fig. 17, Cat. 8), and a single lug-handled jar (Fig. 17, Cat. 7). Decoration is typical of the later 3rd to 4th century, with burnished and combed wavy lines, and many bases are string-marked, a feature significantly more common in the later Roman period. Twelve sherds are in a finer grey fabric, mostly from a small jar or beaker (Fig. 17, Cat. 4) from Structure 1.
- 5.33 Shell-gritted fabrics account for 11-13%, and are likely to have come from comparatively local sources; some sherds are of a type similar to the products of the kilns at Harrold, Bedfordshire (Brown 1994), although more than one kiln is likely to have been making these jars, which are widely distributed in the later Roman period. Their appearance in Lincolnshire appears to date mainly to the 4th century. The occasional sherd is reminiscent of the products of the kilns at Bourne, Lincolnshire (unpublished), but may be from another site using similar clays. Vessels in such fabrics are likely to be mainly for cooking. All appear to be from jars except for a bead-and-flange bowl (Fig. 17, Cat. 12), two inturned bead-and-flange bowls (Fig. 17, Cats 18 and 20) and a possible lid fragment. While most jar sherds cannot be closely dated, a lid-seated type (Fig. 17, Cat. 15) is probably 4th century, and the bowls are of definitively 4th-century types. There is a single hand-made base fragment probably from a jar or cooking pot, burnt on the underside, from the topsoil. Unfortunately this is not diagnostic enough to be certain of date.
- 5.34 The small quantity of oxidised sherds includes a single very abraded light brown fragment which could be from a tile (OXL, from Structure 1 demolition). The few oxidised sherds (OX) are very fragmentary, abraded and burnt, with only one rim from a probable plain-rimmed dish. A fairly distinctive sandy fabric (OXSA) accounts for 37 sherds, but nearly all from a single jar in very poor condition with a simple curved rim and a string-marked base (none illustrated).
- 5.35 The finer wares from the Nene Valley kilns include a single parchment ware vessel (Fig. 17, Cat. 1), and all the rest are colour-coated ware, from bowls, dishes, castor box lids and two sherds probably from jars or other closed forms. No clear parallels have been traced for the parchment ware shallow bowl; these are always rare, but the form and painted decoration are more common in the later Roman period, as at Crambeck (Wilson 1989). There are no beaker sherds. A single sherd in a light red-brown fabric (coarser than the normal late NVCC) has possible traces of a dark grey exterior colour-coat (CC); the source is unknown. The NVCC forms are all of later 3rd to 4th-century date, the rarity or absence of beakers being a feature of 4th-century deposits.

- 5.36 The only mortarium consists of base fragments from a single mortarium from the Swanpool kilns in Lincoln, in typical fabric with slag trituration grits. The Swanpool potters virtually took over the market for mortaria in Lincoln in the 4th century.
- 5.37 Two less common fabrics are present, one a late coarse pebbly fabric (LCOA) which occurs in the city of Lincoln only in the latest Roman deposits of the later 4th-century. The usual forms are lid-seated jars as Cat. 9 (Darling 1977, 17). Also appearing in similar very late Roman contexts in Lincoln is a late ribbed oxidised fabric (SPIR), almost exclusively occurring as jars of a typical later Roman type, similar in form to Portchester D and late Alice Holt jars (Fulford 1975; Lyne and Jefferies 1979), Cat. 13 from quarry pit 1220. The source of these jars remains a mystery; they are very rare finds in Lincoln, and while examples have been noted to the south of Lincoln (as at Normanton, a late Roman group, Darling 1998), the fabric has not been seen further south. A source relatively local to Lincoln is suspected. The fabric does not match those at Portchester or Alice Holt (pers. comm. Malcolm Lyne); oxidised jars of a similar type are known at Mucking but details of the fabric are unknown. The notable feature of these two fabrics is their consistent occurrence in the latest Roman deposits in the city of Lincoln.
- 5.38 Functional analysis of pottery can be approached on the basis of vessel forms or classes, or assumed functions. The vessel forms represented at Leadenham are shown, irrespective of fabric, in Table 5.

Form	Code Prefix	Sherds	%	Weight	%
Beaker	BK	14	4.00	224	3.19
Jar handled	JH	8	2.29	180	2.56
Jar narrow-necked	JNN	9	2.57	766	10.91
Jar	J	71	20.29	1183	16.85
Small jar/beaker	JBK	9	2.57	62	0.88
Closed	CLSD	13	3.71	166	2.36
Jar or Bowl	JB	31	8.86	1330	18.94
Closed forms		155	73.11	3911	64.72
Bowl	B	42	12.00	1793	25.53
Dish	D	4	1.14	120	1.71
Bowl or dish	BD	5	1.43	53	0.75
Lid	L	3	0.86	55	0.78
Mortarium	M	3	0.86	111	1.58
Open forms		57	26.89	2132	35.28
Untyped sherds	-	138	39.43	979	13.94
Total		350		7022	

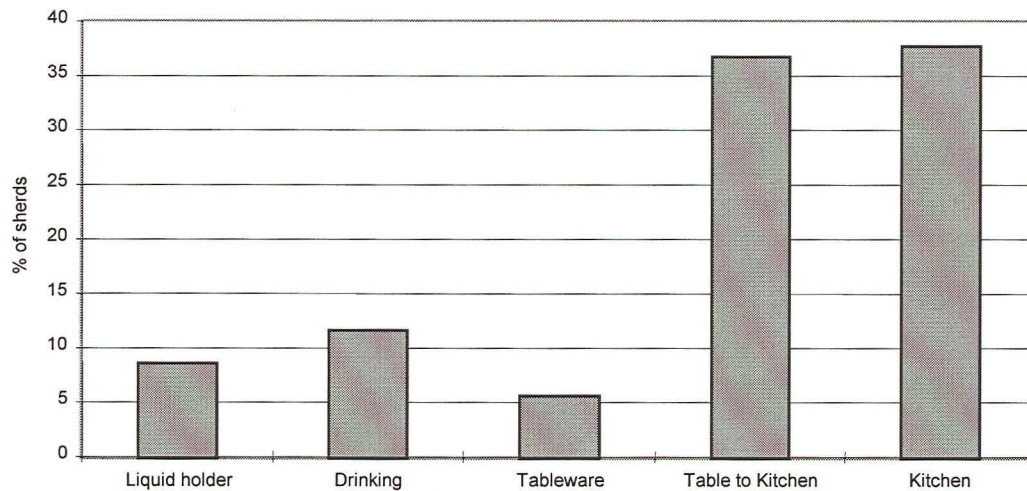
Table 5. Vessel forms

- 5.39 Vessel forms vary chronologically, reflecting changes in the material used for vessels, some of which, being organic, will not be normally present in the archaeological record, while metal and glass are more subject to recycling and thus less likely to be representative of the vessels in use. Closed forms normally predominate, as at Leadenham, and rise proportionately in this area in the later Roman period. When compared with a later Roman assemblage at Normanton, a rural site to the south, a number of differences are apparent, although these have to be viewed in the light of the small sample from Leadenham, only a quarter of the size of that from Normanton. The site at Normanton has some earlier pottery, and may be associated with a higher status establishment. Jar numbers appear to be lower at Leadenham, and the absence of larger storage type vessels is notable for a rural site, although there are more wide-mouthed bowls. The percentage of mortaria is low, particularly since the three sherds represent a single vessel.
- 5.40 Another approach to assessing the assemblage is to assign functions to vessels based on their fabric and vessel type. Table 6 and Chart 1 show the functional analysis. The attribution of vessel types to their assumed functions is detailed in Table A3.

Function	Code	Sherds	%	Weight	%
Liquid holder	LH	17	8.54	946	16.10
Drinking	DR	23	11.56	286	4.87
Tableware	TW	11	5.53	489	8.32
Table to Kitchen	TK	73	36.68	2857	48.61
Kitchen	K	75	37.69	1299	22.10
	199	100	5877	100	
Unallocated	-	151		1145	
Total		350		7022	

Table 6. Functional analysis

Leadenham quarry, functions, sherds percentages

**Chart 1. Functions, sherds percentages**

5.41 The chart is based on sherd count percentages, since the extreme disparity in weights of different vessel types suggests count is the more representative measure; vessel forms with large surface areas (such as jars) and more fragile forms (such as beakers) tend to be over-represented. The same analysis using weight suggests such over-representation does not alter the overall picture. The chart emphasises the dominance of kitchen wares. Again the notable absentee is the storage vessel, while the drinking percentage is probably over-represented based on sherds. The bulk of the assemblage is concerned with food preparation and serving, but the latter includes very few higher quality tablewares.

The pottery and the site

5.42 The pottery is detailed by context in Table A2. A summary of the deposits is in Table 7.

Description	Sherds	%	Weight	%	g/sherd	Dating
Structure 1 flue construction cut fill	1	0.29	1	0.01	1.0	Roman
Structure 1 demolition	105	30.0	1496	21.3	14.3	4th C
<i>Sub-total</i>	<i>106</i>	<i>30.3</i>	<i>1497</i>	<i>21.3</i>	<i>14.1</i>	
Structure 2 fill flue	19	5.43	265	3.77	13.9	mid-3rd-4th C
Structure 2 fill & stokehole	52	14.85	2454.5	34.95	47.2	4th C
Structure 2 demolition	19	5.43	149.5	2.13	11.2	mid-3rd-4th C
<i>Sub-total</i>	<i>90</i>	<i>25.7</i>	<i>2869</i>	<i>40.86</i>	<i>31.9</i>	
Ditch 1379	9	2.57	171	2.44	19.0	mid-3rd-late 4th C
Quarry pits	51	14.58	1075	15.3	18.5	mid-4th C
Pits	8	2.29	172	2.45	21.5	mid-late 4th C
Sub-circular feature 058	3	0.86	20	0.28	6.7	late 3rd-4th C
Pit/ephemeral feature 1451	10	2.85	555	7.9	55.5	4th C
Post-hole? 1162	1	0.29	1	0.01	1.0	Roman
Linear trackway 026	1	0.29	12	0.17	12.0	3rd-4th C
Sub/top soil	71	20.3	650	9.26	9.1	late 3rd-4th C
Unstratified	3	0.86	29	0.41	9.7	late 3rd-4th C
Total	350		7022		20.0	

Table 7. Summary of deposits

- 5.43 The largest quantity and the freshest sherds came from Structure 2, particularly from the fill and stokehole, giving an above average sherd weight of 32g. The pottery from Structure 1 was more fragmentary, well below the site average sherd weight, and was notably abraded. All the pottery is likely to have been deposited post-use of the structures. The highest average sherd weight came from the fill of pit/ephemeral feature 1451 where sherds were fairly large and fresh, and included three vessels with joining sherds, one a fairly large jar or bowl. Sherds from other cut features were of average weight, many from the quarry pits being very abraded.
- 5.44 The dating of all deposits centres on the later 3rd and 4th centuries, the earliest feasible date being the mid-3rd century. The absence of samian and NVCC beakers is consistent with this dating.

Discussion

- 5.45 This assemblage is too small for detailed analysis, but appears to be a late Roman group, probably confined in dating to the later 3rd and 4th centuries. The range of vessels is consistent with what would be expected on a rural site of that period, although the inclusion of the parchment dish suggests a higher status site within the vicinity. The presence of only a single mortarium is perhaps unusual, although this may be due to the small sample size. The absence of any amphorae is acceptable for a late Roman rural site. The total absence of any colour-coated beakers could be taken to indicate an exclusively 4th-century date, but this could be due to the small size of the sample, or alternatively, it could be an indication of a low status site. This latter alternative would, however, be at odds with the presence of the fine parchment ware dish. Vessels likely to indicate earlier occupation in the 3rd century would include samian, probably Nene Valley grey ware, and certainly the occasional colour-coated beaker.
- 5.46 A notable feature of the assemblage is the quantity of pottery likely to have come from the late Roman kilns at Swanpool, Lincoln. This is very similar to the situation at another rural site to the south along the limestone ridge at Normanton (Darling 1998), and reflects the dominance of those kilns in the later Roman period.
- 5.47 Two caveats apply to the interpretation of this assemblage: firstly, the small size of the sample restricting the evidence, and secondly, that the pottery comes from only a part of a rural site, and one moreover involved in agricultural processes rather than occupation. This could well restrict the nature of the sample, leaving it unrepresentative of the occupation on the site.
- 5.48 Given such limitations, the assemblage suggests a relatively confined late Roman dating, conservatively later 3rd to the late 4th century, the pottery suggesting a rural establishment, not necessarily of much pretension. This forms an interesting addition to rural sites along the limestone ridge, some 5-6km from another late site at Normanton, and a new site suspected at Carlton Scroop.

Catalogue

The pottery is arranged by feature or deposit in the order: Structure 1, Structure 2, quarry pit 1220, ditch 1379 and miscellaneous deposits. The sequence of each entry is: Illustration number, fabric code, details, original drawing number (which appears in the archive database and with the sherds), site code context.

- 1* VPA, shallow dish decorated with painted lazy-S decoration internally. 06;. Structure 1, Context 1232.
- 2* NVCC, plain rimmed dish. 05. LQL, Structure 1; Context 1232
- 3* GREY, beaker, unusually clumsy and thick-walled. Abraded. 07; LQL; Structure 1; Context 1232
- 4* GFIN, beaker with everted rim. 03. LQL; Structure 1, Context 1228.
- 5* GREY, jar with everted rim. Coarser grey fabric, burnt externally. 04; LQL; Structure 1, Context 1228.

- 6* NVCC, flanged bowl, complete except for a fragment of flange. Burnt, with sooty deposit on flange (another from quarry pit 47). 09.LQL; Structure 2, Context 1286
- 7* GREY, lug-handled jar, burnished wavy line on shoulder (cf. Swanpool, Webster and Booth 1947, F1-2). 11. LQL, Structure 2; Context 1286
- 8* GREY, narrow-necked jar, decorated with burnished and combed wavy lines. Joins 1287.10. LQL; Structure 2, Context 1286
- 9* LCOA, lid-seated jar, rim and non-joining shoulder sherds, burnt externally (a further body sherd came from quarry pit 1439). 13. LQL; Structure 2; Context 1287
- 10*GREY, wide-mouthed bowl, external lighter self-slip, with burnished line decoration. 08. LQL; Structure 2; Contexts 1238 and 1247
- 11* SHEL, jar, poor condition, burnt. 20. LQL; Structure 2; Context 1286
- 12* SHEL, flanged bowl with curved grooved wall. 12. LQL; Structure 2; Context 1286
- 13*SPIR, jar rim and shoulder (above the normally grooved body zone), no obvious white external slip, burnt on rim and neck. 15. LQL; Quarry Pit 1220; Context 1222
- 14*GREY, jar with everted rim, burnished (cf. Swanpool, Webster and Booth 1947, C23 etc.). 16. LQL; Quarry Pit 1220; Context 1222
- 15* SHEL, lid-seated jar rim, burnt. 18. LQL; Quarry Pit 1220; Context 1222.
- 16*GREY, inturned flanged bowl (cf. Swanpool, Webster and Booth 1947, D13-23). 14. LQL; Quarry Pit 1220. Context 1224
- 17*GREY, wide-mouthed bowl rim, (cf. Swanpool, Webster and Booth 1947, D43). 19. LQL; Quarry Pit 1220; Context 1222
- 18* SHEL, inturned flanged bowl. 02. LQL; Ditch 1379, Context 1380 cleaning
- 19*GREY, flanged bowl with high bead, burnished surfaces (cf. Swanpool, Webster and Booth 1947, D1-12). 01. LQL; Pit/Ephemeral feature 1451; Context 1416
- 20*SHEL, inturned flanged bowl. 17. LQL; Pit 1419; Context 1420

Medieval and post-medieval pottery by Chris Cumberpatch

Introduction

- 5.49 The assemblage consisted of twenty-three sherds of pottery weighing 294 grams. There were no joining sherds and the majority of the sherds were abraded and worn. The details of the assemblage are summarised in Table A6.

Discussion

- 5.50 The majority of the pottery was of 16th or 17th-century date, with only two sherds of medieval material (both from context 003) and one sherd of 15th or 16th-century Midlands Purple ware. A small number of sherds of more recent

types were also present. The post-medieval material was predominantly of utilitarian types, both in terms of the fabrics and the vessel forms while the modern sherds were tablewares.

- 5.51 The two medieval sherds were both in reduced sandy ware fabrics, although they were not the same type. In the absence of a positive identification it is suggested that they are of local manufacture. Only comparison with the county type series would allow a more precise definition of their origin and a closer dating.
- 5.52 The lack of joining sherds, the mixing of the various types and the degree of abrasion suggests that the deposits from which the pottery was recovered were of a mixed and reworked nature. The medieval sherds were not accompanied by later material, but their condition suggests that they too had undergone a process of reworking, possibly as a result of agricultural activity.

Conclusion

- 5.53 The pottery assemblage from the site is of mixed character and indicates activity on, or close to, the site throughout the medieval and early modern periods. The mixed and abraded character of the sherds indicates that the deposits from which they were recovered had been subject to reworking and disturbance over a considerable time period.

6. *The Small Finds*

Coins by Peter Guest

Discussion

- 6.1 The excavations recovered five bronze coins, all of which date to the 4th-century, specifically the period from AD 335 to 380. Three of these coins were recovered from demolition or disuse deposits (contexts 014 and 1440), perhaps indicating an episode of general abandonment and demolition during the second half of the fourth century. The two copies from Leadenham both imitate types regularly encountered in Roman Britain and they were probably struck during the period of restricted official coin supply from AD 354 to 364.

Catalogue

Cat. No.	S.F.No.	Context	Denomination	Date	Obverse	Reverse	Mint-mark	Mint	Ref.
1	15	001	AE3	337-41	Helena	PAX PVBLICA	// [...]		-
2	25	001	AE4 copy	352-64	As Hse of Constantine	As FEL TEMP REPARATIO (falling horseman)	// [...]		-
3	1	014	AE3 copy	350-53	as Magnentius	As VICTORIAE DD NN A VG ET CAE[S]	// [...]		-
4	9	014	AE3/4	364-78	Hse of Valentinian	GLORIA ROMANORVM (8)	// [...]		-
5	103	1440	AE3	347-48	Constans	ViCTORIAE DD A AVGGQ NN	D//TRP	Trier	HK:148

Metalwork by Holly Duncan

Overview

- 6.2 The excavations at Leadenham Quarry produced a modest assemblage comprising 42 items of metalwork, excluding coinage. The majority of the assemblage consisted of iron (33 items or 78.6%), whilst lead accounted for eight items (19%). A single item of copper alloy was present.
- 6.3 Stratified contexts yielded 26 finds, the remainder deriving from topsoil and subsoil deposits (Table 8). This discussion will concentrate on the provenanced material; the full assemblage is addressed within the catalogue (Appendix XI).
- 6.4 Ceramic evidence indicates a date within the Roman period for the use of Structures 1 and 2. Whilst few of the metalwork finds are of a distinctively Roman date, many being of a utilitarian nature not susceptible to changes in fashion, the assemblage does sit comfortably within the suggested date range.

Provenance	Iron	Lead	Copper alloy	Total
Topsoil	9	2		11
Subsoil	3	1	1	5
Structure 1	2			2
Adjacent Structure 1	2			2
Building 2	16	4		20
Isolated features	1	1		2
Total				42

Table 8. Provenance of finds by material

- 6.5 The excavated evidence for structures is complemented by the predominance of nails within the assemblage and their pattern of distribution (Table 9). The occurrence of nails was restricted to deposits within or immediately adjacent to Structures 1 and 2, the majority from the latter structure. All derive from activity post-dating the use of these buildings and most likely represent deliberate dismantling. This is perhaps reflected in the incomplete state of the nails. The quantities recovered do not suggest that timber or cladding was a large component of these structures and this may not be surprising given their probable use as corn-drying kilns. However, it has been suggested that plank flooring may have been a feature of some corn-drying kilns and although the quantities recovered from Leadenham do not indicate this, the possibility of subsequent reuse of salvaged metalwork cannot be overlooked.
- 6.6 The limited evidence for lead-working recovered, in the form of ingots (Fig. 18, Cats 4 and 5) and spills, was confined to demolition deposits within Structure 2 (Table 3). Again, these finds would appear to be associated with

- activity post-dating the use of this structure as a corn-drying kiln. Their presence may suggest either a change of use for the building or perhaps relate to the deliberate dismantling of the structure, any lead components being melted down for later reuse.
- 6.7 Two saw fragments (Fig. 18, Cats 6 and 7) were recovered from the fill of stoke hole 1314 and the demolition fill within Structure 2. It is tempting to suggest that these related to the sawing of fuel for the drying kilns, although other uses cannot be ruled out.
- 6.8 Finds of styli are more commonly encountered on fortress, town and villa sites. The recovery of a possible stylus (Fig. 18, Cat. 8) from the fill of stoke hole 1314 in Structure 2 is, therefore, noteworthy.
- 6.9 Drying kilns are common structures on 'villa' sites. Examples have been found inserted into rooms of the main structure and within, or adjacent to, agricultural buildings. There are, however, drying kilns found at a distance from the nearest domestic occupation. At Flitwick, Bedfordshire a T-shaped kiln was found within a square-ditched enclosure which contained no other evidence of domestic activity (Fadden 1976). Whilst those at Farmoor, Oxon. were situated at the edges of fields (Lambrick and Robinson 1979, 34 and 75). The presence of a stylus within the finds assemblage from Leadenham may hint at the existence of a 'villa' site in the surrounding area.
- 6.10 Finds of a personal nature are poorly represented, with a single hobnail identified (Cat. 9). This paucity of personal items reinforces the suggestion that the drying kilns were situated away from the main focus of occupation, where recovery of such items as brooches, toiletry implements and household furnishings would normally be encountered.

Catalogue

Introduction and Methodology

- 6.11 The finds were identified by 'broad term' and assigned a functional category. Individual descriptions of every object submitted for analysis are available in Appendix XI. The catalogue is organised by functional category and within each category by broad term. Where numerous examples of a broad term are present, only a representative sample is included in the following catalogue, although the full quantity recovered is referred to in the accompanying text.

Building Fastenings and Fittings

- 6.12 The best represented finds type was the nail, with 25 examples recovered. The majority of these were incomplete, ten examples surviving as nail shanks only. Amongst those retaining heads, or significant portions of, three basic types could be discerned. The most numerous type was the flat-headed general carpentry nail possessing a square, rectangular or occasionally rounded head. The single complete example (Cat. 1) measured 75mm in length, suggesting that this group of nails equate with Manning's Type 1B, the most commonly

encountered form (1985, 134). Nails of Type 1B accounted for 48% of the nail assemblage.

- 6.13 In comparison, the two remaining forms of nail were poorly represented. A single example (Cat. 2) possessed the triangular head of Manning's Type 2 (1985, 135). Whilst it is not uncommon to encounter this nail form, they are never as numerous as Type 1B. Manning notes that the advantage of this type is that it can be driven completely into the wood, making it invisible from a distance (1985, 135). The final form of nail possesses a T-shaped head, no wider than the shank, with short, stout arms. This form, Manning's Type 3, is less commonly encountered than Type 2 although two examples were found at Leadenham (c.f. Cat. 3), both incomplete.

Context Type	Context nos	Type 1B	Type 2	Type 3	Shank only	Total
Topsoil		4	1		2	7
Subsoil		2			1	3
Quarry pit fill	1440	1				1
Structure 1 demolition fill	1180	1				1
Structure 2 demolition fill	14, 1313				4	4
Structure 2 deposit	1229, 1238, 1312	1		1	2	4
Structure 2 stoke hole fill	1286	3		1	1	5
Total		12	1	2	10	25

Table 9. Occurrence of nail forms

- 1 Nail. Iron. Complete Manning Type 1B nail in two joining pieces. Flat sub-rectangular head, tapering rectangular sectioned shank ending in wedge-shaped tip. Shank bent. L. c. 75mm (straightened). LQL; Structure 2 Stoke hole fill 1286; SF 108.
- 2 Nail. Iron. Incomplete Manning Type 2 nail, damaged triangular head same thickness as shank. Shank rectangular sectioned, tapering to wedge-shaped tip, tip damaged and split. Present L. 75.8mm. LPR; Topsoil 1; SF24.
- 3 Nail. Iron. Incomplete Manning Type 3, head T-shaped, no wider than shank, stout arms. Shank tapering rectangular section, lower shank and tip broken off. Present L. 69.55mm. LQL; Structure 2 Fill 1312; SF 114.

Craft and Industry

- 6.14 Limited evidence for lead-working is represented by spills, scrap or offcuts, and two possible ingots. Lead is very easily melted and cast, and was ideal when fabrication on the spot was desirable. It had a wide variety of uses including plugging, packing and fixing in building construction, for plumbing and roofing as well as the production of objects, for example weights and plumb-bobs. With the exception of spills and one offcut from topsoil and subsoil deposits, evidence for lead-working was restricted to demolition fill deposits within Structure 2 and an offcut from pit/ephemeral feature 1451 (Table 10). The possible ingots, Cats 4 and 5, may have been used as 'tools'.

Similar marks were noted on lead ingots from Coppergate where it was suggested that the ingots had been utilised as supports when cutting other metals (Bayley 1992, 814).

Context type	Context nos	Spills	Ingots	Offcuts
Topsoil	1	10g		
Subsoil				1
Structure 2 demolition fill	14	140.4g	2 (663g)	
Pit/ephemeral feature 1451	1416			1 (13.9g)

Table 10 Lead-working evidence

- 6.15 The remains of two saws were also found within deposits of Structure 2. Although incomplete, Cat. 6 with its tapering blade, appears to be a hand saw. Although the narrowness of this blade is not common, it can be paralleled by an even narrower example from London (Manning 1985, 21). The back sloping teeth on this example indicate that the saw cut on the back stroke as was normal on this type of saw. The form of the handle on Cat. 6 whether riveted or flanged, must remain uncertain. Handsaws are known from deposits spanning the middle Iron Age and Roman periods (Winham 1985; Cunliffe and Poole 1991; Manning 1985, 19-21).
- 6.16 A second saw is represented by Cat. 7. This blade retains a single rivet at one end but as this end appears to be incomplete it is uncertain whether this derived from a handsaw or frame-saw. The former would require two rivets to affix the handle, whilst a frame or bow-saw would have a single rivet at either end. The teeth are too worn to discern if they were symmetrical, the norm on frame-saws or back sloping. Bow-saws were common in the Roman period, with numerous parallels known from both Britain and Germany (Manning 1985, 21).
- 4 * Ingot. Lead. Truncated cone with splayed base. Rectangular slot (25.6mm by 4.4mm) cut through thickness. Basal surface has numerous cut marks. Ht. 34mm; w. 58.7mm; l. 63.5mm; wt. 488gm. LQL; Structure 2 Demolition fill 14; SF 2
- 5 * Ingot. Lead. Sub-rectangular piece of lead of roughly plano-convex section, roughly cast. A rectangular slot (24mm by 6.6mm) is situated approximately in the centre of the ingot. Both the reverse and obverse surfaces have numerous cut marks. L. 60.9mm; w. 59mm; grt. th 11.3mm; wt. 175gm. LQL; Structure 2 Demolition fill 14; SF 3
- 6 * Saw. Iron. Narrow tapering blade with backward sloping teeth, 4 teeth per centimetre. Both ends broken. Blade width 22mm tapering to 10.5mm. L. 195mm. LQL; Structure 2 Demolition fill 14; SF 5
- 7 * Saw. Iron. Incomplete, narrow blade in three joining pieces, both ends broken, but one end retaining a rivet hole and remains of rivet *in situ*. Blade widens slightly at riveted end. Teeth very worn. Present L. 120mm; w. 16.7mm thinning to 14mm. LQL; Structure 2 Stoke hole fill 1286; SF 112

Written Communication

- 6.17 Although sharing some traits with modelling tools, and perhaps tracers (Manning 1985, 11 and 31), Cat. 8 has been tentatively identified as a stylus. The eraser is formed from flattening one end and is only slightly splayed. The point, which appears to be incomplete, is separated from the stem by a shoulder. Unlike most styli however, the stem possesses a rectangular cross-section and the shoulder only expands in one plane. If the identification is correct, this example would most closely fit into Manning's Type 2 styli (1976, 34-5; 1985, 85). A somewhat similar stylus, with a long splayed eraser was found at Baldock in deposits of the late 2nd to early 3rd century (Manning and Scott 1986, 153 and fig. 66 no. 520). Here it was noted that this form of eraser is almost unknown outside of London. A second styli, with flattened rectangular stem and eraser, was found in early 4th-century deposits at Gorhambury, St Albans (Wardle 1990, 150).

8 * Stylus(?). Iron. Incomplete. Possible Manning type 2 stylus, damaged point, separated from stem by thickening, stem rectangular in section, flattened to form eraser. Bent. Present L. 97mm (straightened). LQL; Structure 2 Stoke hole fill 1286; SF 109.

Personal Dress and Adornment

- 6.18 Finds of a personal nature are poorly represented. A single hobnail (Cat. 9) was recovered from demolition fills of Building 1. The remains of hobnailed footwear are more commonly encountered on Roman rural sites from the second half of the 2nd-century into the late 4th-century.
- 6.19 The sole object of copper alloy (Cat. 10) was recovered from subsoil deposits. This is a form of strap loop found widely in England from deposits dating from the late 13th into the early post-medieval period (Egan and Pritchard 1991, 144-45).

9 Hobnail. Iron. Hobnail, pyramidal head with short rectangular sectioned shank. L. 19.2mm. Structure 1 Demolition fill 1228.

10 Strap loop. Copper alloy. Ovoid strap loop with integral external rivet, with rounded knob on apex of frame. L. 19.8mm; external w. 11.8mm; internal w. 8.4mm. LPR, Subsoil; SF 14.

Objects of Uncertain or unidentified function

- 6.20 Most assemblages produce a number of finds which, due to their fragmentary survival, preclude identification of their original form and function. The Leadenham Quarry assemblage is no exception. Four fragments of iron sheet and/or strip were recovered. Two fragments were recovered from topsoil deposits and these are described within the catalogue presented in Appendix XI. The upper fill of quarry pit 1220, adjacent to Structure 1, produced one rectangular sheet fragment, whilst the fill of ditch 1379, lying to the north of Structure 2, yielded a narrow tapering strip.

11 Fragment. Iron. Incomplete. Rectangular shaped fragment. L. 27.8mm; w. 25.7mm; th.4mm. LQL, Quarry pit fill 1224.

12 Fragment. Iron. Incomplete. Narrow, slightly tapering strip, in two joining pieces, one surviving end bent and partially removed. L. 65mm; w. 8.8mm; th. 3mm. LQL; Ditch fill 1380.

Slag and Industrial Residue by Jane Cowgill

- 6.21 A total of seven fragments of material were examined and the assemblage was found to contain three fragments of slag, two fragments of coal and two fragments of ironstone (presented in the catalogue produced in Appendix XII).

The Ceramic Building Materials by John Tibbles

Introduction and Methodology

- 6.22 A total of 22 fragments of ceramic building material weighing 1535 grams was retrieved from ten contexts and was visibly examined using a 10x-magnification lens. Information regarding the dimensions, shape and fabric of the material was recorded and catalogued accordingly (Appendix XIII). It should be noted that the diversity of size and colour within brick and tile caused during the manufacturing process must be taken into consideration when comparing examples within collected assemblages and local typologies. The varying sizes and colours can be attributed to the variation in the clays used, shrinkage during drying, firing within the kiln or clamp and the location of the brick/tile within the kiln. The dating of brick and tile can be highly contentious due to its reusable nature and therefore any date range given is that of known dates where such material has been recorded.

Discussion

- 6.23 The general appearance of the assemblage tends to suggest one of demolition material and the diverse range of brick and tile within the assemblage would have been used in the various aspects of Romano-British building construction. Ceramic building material was considered to be of high status, however, the assemblage recovered from the site suggests that a building of 'high status' was within the vicinity and was robbed for its ceramic building material.
- 6.24 This conjecture is supported by the absence of imbrices from the assemblage and it would appear that only the 'flat' tiles were salvaged (*bessalis/pedalis/tegula*). *Tegulae*, although flanged, were often used inverted to create flat surfaces such as floors (Brodribb 1979, 142). It is possible that the material had been salvaged for reuse by incorporating it within the structures construction as floors, which were then subsequently fired from below the tiled surface (Scott, 1973. 80). Carbon deposits and mortar over the broken edges also tend to support the reuse of the materials.
- 6.25 Although 36% of the assemblage was non-identifiable in form, the date of the material is predominately Romano-British based upon its fabric, of which four broad different types were identified. This suggests that the clay used in manufacture was from four possible sources. From within the unstratified assemblage, based upon the fabric appearance, a single fragment of post-18th-century building material was identified.
- 6.26 The presence of an underfired *tegula* within the gully backfill (1076) demonstrates the presence of tile-making within the vicinity and may be

associated with the construction of a high status building outside the extent of the site.

Flint Artefacts by Dr Ian Brooks

Introduction

- 6.27 Forty-one flint artefacts were recovered from the excavations and from these only five were from secure prehistoric contexts with the rest being recovered from a range of unphased, Roman, subsoil and topsoil contexts.
- 6.28 Because of the low numbers it is intended to regard the collection as a single assemblage and describe it accordingly. The description of the tools follows that of Inizian *et al.* (1992), the cores Clark *et al.* (1960) and the flint colours are defined by the Geological Society of America's Rock-Color Chart (Goddard *et al.* 1948). The flakes were divided into three groups: primary flakes with completely cortical dorsal surfaces, secondary with partly cortical dorsal surfaces and tertiary with uncorticated dorsal surfaces.

The Assemblage

- 6.29 The assemblage consists of fourteen complete flakes, eighteen broken flakes, one core, five worked lumps, a partly polished adze (Fig 19, Cat. 1) and an axe sharpening flake (Cat. 2).
- 6.30 It was only possible to determine the macroscopic character of the flint used in this assemblage in twenty-one of the artefacts as the rest were significantly patinated. A wide range of raw materials were represented with flint ranging from a moderately translucent moderate brown (5 YR 3/4) to an opaque very light grey (N8). Where the cortex survives it is worn and pitted suggesting a derived source for much of the flint.
- 6.31 The flakes consist of one primary flake, four secondary flakes, nine tertiary flakes and eighteen broken flakes. The general shape of the complete flakes is shown in Chart 2. All the flakes are longer than they are wide, indeed four have length/width ratios of greater than 2.5 and are therefore defined as blades. Only one flake has visible edge damage suggestive of significant use. Two flakes also had heat damage as did three broken flakes.

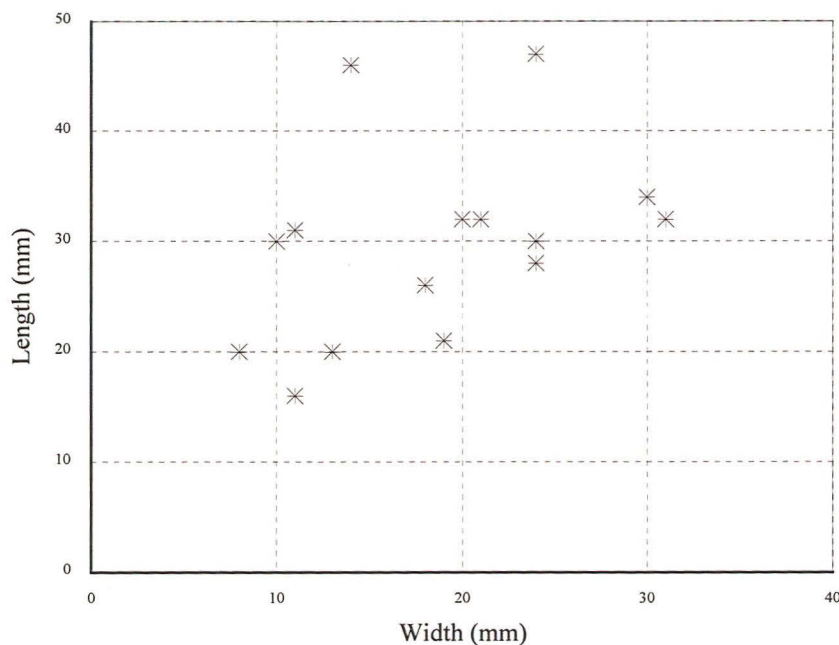


Chart 2. Length/width of all complete flakes

- 6.32 Only one core was recovered, this was a multi-platformed flake core of Clark's class "U". A further five worked lumps were also found. Only two artefacts were of significant stature for independent description. These are detailed in the catalogue below. A summary of the complete assemblage is presented in Table A7.
- 6.33 A further seven artefacts were recovered from the environmental samples processed (see Table A7). Four were small spalls of flint typical of those produced in great numbers during the knapping process. The artefacts were two broken flakes and a secondary flake. One artefact was also heat damaged.

Discussion

- 6.34 There are no flint resources within the immediate area of the site, however, within the larger region a number of potential resources exist. The nearest primary flint source, those directly from chalk, is the Lincolnshire Wolds approximately 30 km to the east and north-east (Swinerton and Kent 1981). This contains considerable flint reserves in two main forms. Of particular interest are the Welton and Burnham Formations (Wood and Smith 1978). The lower, Welton formation, is characterised by the presence of bands of thalassiniodean burrow nodular flint, whereas the Burnham Formation contains tabular and semi-tabular flint bands some of which are markedly carious. The general quality of both flint groups is not good. Wold flint is often opaque, grey in colour and of poor knapping quality, although the nodular Welton Formation flints are sometimes of better quality.
- 6.35 More importantly for prehistoric exploitation there are a number of derived sources also available. The Devensian Tills of Lincolnshire contain considerable flint resources (Kent *et al.* 1980). These vary in quality, but they

include a number of translucent, high quality flint nodules of good knapping quality. Lincolnshire also contains a number of pre-Ipswichian tills (Perrin *et al.* 1979) which also could serve as a potential flint resource. The flint within these till sheets is derived from both the local grey flints and flint from further afield including chalk resources no longer available. The river and beach gravels of Lincolnshire are also potential flint sources as they contain flints derived from both the chalk and till sources within the area. The gravels of the River Trent may also have served as a potential source for the assemblage. Whilst the patinated nature of much of the assemblage makes a determination of source difficult, the unpatinated fragments and cortex survival on some artefacts suggest a derived source was being exploited.

- 6.36 The general structure of the assemblage would suggest that it is not from a domestic context, the lack of tools, especially scrapers would tend to suggest this. The limited range of flakes, particularly the lack of primary flakes, would also suggest that primary reduction was not being carried out on the site. The tendency toward long flakes and blades may suggest an Early Neolithic component to the assemblage, although there are no diagnostic artefacts other than the partly polished adze to support this.
- 6.37 The presence of the partly polished adze is interesting. The lack of contemporary damage and its recovery from a pit also containing prehistoric pottery (L. Martin pers. comm.) would suggest it may be part of a deliberately placed deposit. Over 500 polished axes have been found in Lincolnshire (May 1976), largely from unsecure contexts, more than a quarter of which are in flint (Moore 1979, 82). The Leadenham adze is on an opaque grey flint typical of the resources of the Lincolnshire Wolds, although the source of this flint is uncertain. No flint mines are known from the Northern Chalk Province with the nearest flint mines being those of the Breckland group in Norfolk including Grimes Graves (Barber *et al.* 1999, 27). Phillips (1989, 45) has suggested that the quarry ditches of the long barrows on the Lincolnshire Wolds may have acted as a source for good tabular or nodular flint, although Barber *et al.* (1999) suggests that Northern Province flint is too brittle for making axes. It is likely that the flint was originally extracted from a till source.
- 6.38 The use of ground stone axes, in Britain, began towards the end of the fourth millennium BC, although the increase in the scale of distribution did not occur until the first half of the third millennium BC (Edmonds 1995, 50). The advantage of polishing is that it removes irregularities which may act as platforms for the removal of flakes during the use of the tool. It also allows for the more efficient resharpening of the tool (Edmonds 1987, 171). The degree of polishing may also reflect the original status of the artefact. The extra effort required to polish the artefact is seen as an indicator of the importance of the artefact. The Leadenham adze would fit into a pattern recognised by Bradley and Edmonds (1993, 50) where axes made of local, or relatively local materials were seldom polished completely.

Catalogue

- 1* A partly polished flint adze 125 mm long, 49 mm wide and 19 mm thick. Fitting into Moore's Class 2 blade polished axes group. (Moore 1979, 84) Only an area 10 mm back from the cutting edge is polished on both the dorsal and ventral surfaces. On the dorsal surface one flake reaches to within 2 mm of the cutting edge suggesting that some resharpening/ maintenance of the tool has taken place. The slight gloss over the body of the tool may be hafting gloss. The tool is densely patinated a yellowish grey (5 Y 8/1), however, post-deposition damage in the form of a small chip on the left hand side suggests the raw material is an opaque, medium light grey flint. LQL; Pit 1277, 1278; SF118
- 2 An axe sharpening flake 28 x 24 x 5 mm with a series of long, sub-parallel, low angle, removals along the distal left sector of the flake. It is on an opaque very light grey (N8) flint with a thin (less than 1 mm) band of dark grey (N3) flint crossing the artefact. LQL; Pit 1012, 1013; SF 100

The millstone fragments by Geoff Gaunt and Sue Watts

Introduction

- 6.39 Three large pieces of milling stone, each comprising roughly a quarter of a stone, were recovered from the fill (1312) of Structure 2. They are considered to represent three separate stones: two upper or runner stones and one lower or bed stone. It is possible Cats 1 and 2 (Fig. 20) may possibly be from a pair of stones. At least one of the stones (Cat. 2) was subsequently used as a whetstone prior to its deposition.

Lithology

- 6.40 The three fragments have identical lithologies, which can be described together as follows - Sandstone, pale slightly yellowish grey (becoming pale brown on 'weathered' surfaces and reddish brown on one wide surface of each fragment, probably originally a bedding-plane surface), fine to medium (and sparsely coarse) grained, up to 2.5mm max. grain width, with subangular to subrounded grains, poorly to moderately sorted, fairly well compacted, with appreciable greyish-white to pale brown degraded feldspar and sparse minute muscovite, thick bedded or massive.
- 6.41 On 'fresh' surfaces the sandstone is shown to be non-calcareous, but 'weathered' surfaces are slightly calcareous due to impregnation with the host (i.e. post-human usage) deposit, presumably derived from soils/subsoils on the Middle Jurassic Lincolnshire Limestone bedrock in the Leadenham area.
- 6.42 A 'fresh' surface on Cat. 2 shows that the reddish-brown colour on one wide (?original bedding-plane) surface results from intergranular staining derived from iron-bearing minerals.

Provenance

- 6.43 All the lithological parameters, and notably the poor degree of sorting and arkosic nature (i.e. presence of appreciable feldspar grains), strongly imply a

sandstone source of 'Millstone-Grit type', i.e. from the Upper Carboniferous Millstone-Grit succession of the Pennines or the basal part of the stratigraphically overlying (and also Upper Carboniferous) Coal Measures. Most such thick-bedded to massive sandstones are medium to coarse grained, however, and it is from these coarser grained sandstones that the vast majority of querns and millstones of 'Millstone-Grit type' sandstone were derived.

- 6.44 In a few areas, though, some of these sandstones are at least partly fine to medium grained. One such area is in south-eastern Derbyshire, from approximately between Bakewell and Baslow southwards almost to Derby. There are four sandstones of 'Millstone-Grit type' in this area which in places are at least partly fine to medium grained. They are, in stratigraphically ascending order, the Ashover Grit (notably the lower beds and near the top), the Chatsworth Grit (notably the lower leaf), the Rough Rock, all in the Millstone-Grit succession, and the Crawshaw Sandstone (notably the lower part) in the basal Coal Measures. Descriptions of these sandstones are given in the two appropriate Geological Survey memoirs (Frost and Smart 1979; Smith *et al.* 1967). On the above-summarised evidence it is concluded that the three fragments are derived from a sandstone in the Millstone-Grit succession or basal Coal Measures and, on grounds of proximity to Leadenham, a locational source in south-eastern Derbyshire is the most probable. Transport from this area of such large and heavy items would presumably be by water down the rivers Derwent and Trent to somewhere near Newark, and then overland.
- 6.45 It is interesting to note that a medium to coarse-grained 'Millstone Grit-type' sandstone was not utilised at Leadenham, in view of the fact that this variety is much more common in the Pennines and was much more utilised for quern and millstone manufacture, even for those found in northern Lincolnshire. It is possible that these sources were not utilised due to the relative distances and costs of transport. Most of the sources of such coarser grained sandstones in the eastern Pennines would necessitate transport down either the Don-Deerne or Aire-Calder-Ouse river systems and then up a long stretch of the Trent against its direction of flow.
- 6.46 Also noteworthy is that the uppermost Jurassic to basal Cretaceous Spilsby Sandstone, which crops out along the foot of the western scarp slope of the Lincolnshire Wolds was not utilised for the Leadenham millstones. This sandstone, the only rock suitable for efficient quern manufacture in Lincolnshire, was nevertheless widely used for this purpose throughout the county and as far south as Essex and Hertfordshire (Ingle 1989), and also sparingly north of the Humber (Gaunt unpublished). This stone may have not been utilised as it may be that the Spilsby Sandstone is of variable hardness and even at its hardest is not as robust as 'Millstone Grit-type' sandstone; it may not, therefore, have been suitable for items as large as millstones. In this context, Dr Ingle (pers. comm.) confirmed that she could not recollect any Spilsby Sandstone fragments that were large enough to be millstones.

Discussion

- 6.47 Their size, each was originally some 79.0-80.0cm in diameter, and weight, *c.* 132kg when complete, indicates that they are millstones rather than querns.

This suggests that they were used for grain milling on a larger scale than would perhaps be expected for domestic use. Although no mill building has been identified, the presence of millstones suggests that the site may have been part of a grain processing complex. Furthermore, the identification of germinated grain suggests that the mill may not only have been used for the production of flour, but also used for grinding malted grain for use in the brewing process. The site can perhaps be compared with the Roman malt house at Stebbing Green, Essex or the mill house at Orton Hall Farm, Cambridgeshire (Bedwin 1999; Mackreth 1996).

- 6.48 It is interesting to note that the millstones appear to have been deposited in Structure 2 in the later 3rd and 4th centuries. This is in keeping with a number of Romano-British mill buildings which were deserted or reused by the late Roman period (Watts 2000, 10).
- 6.49 None of the millstones is dressed, that is they lack the pattern of furrows chiselled in the grinding face which provide a series of cutting edges, enabling a stone, particularly if fine grained, to work more efficiently. However, it is possible that any dressing has worn away. A piece of upper stone found at Longthorpe, Cambridgeshire, for example, still retained a band of radial grooves around the periphery of the grinding face which may be the remains of dressing (Wild 1987, 97-8). The rest of its grinding face had worn into a pattern of concentric grooves. The millstones from Leadenham show a similar concentric pattern. The rings, however, are not as pronounced as those found on some stones from Orton Hall Farm (Spain 1996, 110) and were formed by wear, not deliberately tooled. The concentric rings, together with patches of glazing especially around the edges of the grinding faces, show that the stones saw hard and/or long term use.
- 6.50 The bed stone is identifiable by the fact that the grinding face rises around the eye to give a slightly convex profile. It has a crooked eye or spindle hole with a ridge around the centre suggesting that it was drilled from both sides.
- 6.51 Both runner stones have slightly concave grinding faces. They appear to share two particularly interesting features and when complete are likely to have been identical. Firstly, there is a shallow chase cut across the top of the stone, about 29.0cm wide. Secondly, within the chase are two holes drilled into the top of the stone, each 3.5-3.8cm in diameter and some 6.0-7.0cm deep. The remains of metalwork within one of the holes of Cat. 3 suggests that they were for some form of metal fixing.
- 6.52 It is possible that originally there were two opposite pairs of holes in the top of the stone. At Bromham, Bedfordshire it was suggested that the similarly arranged holes in the top of a large, heavy rotary quern were for an iron frame by which the stone was turned (Tilson 1973, 61-2). Alternatively, they may have been to hold a hopper in place on top of the stone or, given the size and weight of the stone, provided the means by which it was lifted for maintenance or dressing. However, these theories do not explain the presence of a chase across the top of the Leadenham stones. This appears to have been to create a wide, flat surface for something like a timber to sit upon. Such a timber, held in place with one, or more probably two, metal straps, may have been the means by which the stone was turned, either by donkey or perhaps capstan-like by two men. Presumably, the timber would have been wider in the centre

so that a hole could be cut through it to enable the grain to pass through the eye of the stone to be ground. The grain hopper was perhaps pegged directly into the top of the timber or slung from an overhead beam.

- 6.53 However, if the runner stone was turned directly by animal or man power, the speed of rotation would have been very low. Consequently, given the fact that the grinding faces are nearly flat, the output from the stones would have been slow also. Stones with a steeply angled grinding face, such as the Pompeian donkey mills, where the slope facilitates the flow of meal through the stones, work more efficiently at slower speeds than flat stones which have to rely on centrifugal force. Although slow speed and output were not, perhaps, considered a problem at the time, it does suggest that the stones may, in fact, have come from some form of geared mill, which would have enabled them to turn faster. Unfortunately, neither runner stone retains evidence of rynd chases indicating how it was attached to the spindle and whether it was driven from above or below.
- 6.54 Although the exact form of the mill and drive to the millstones must remain conjecture for the moment, the discovery of three millstone fragments from Leadenham adds to the growing list of mill sites in Roman Britain and shows that they were far more common during the Roman period than was once thought.

Catalogue

- 1* Millstone Fragment, millstone grit. Approx. quarter lower or bed stone. Possible pair with Cat. 2. Original diameter of stone *c.* 79.0cm. Original diameter of eye *c.* 8.0cm. Shape of eye suggests it was drilled from both sides. Very smooth, almost flat grinding face, rising slightly around eye. No dressing. Some concentric scoring. Periphery of underside is more roughly finished than around eye, where more evidence of tooling can be seen. Scoring on side of stone suggests secondary use as a whetstone, after the stone had been broken. L. 51.0cm; W.26.0cm; Th. 14.5cm at eye, 11.0cm at edge; original wgt of stone *c.* 144kg. LQL, Structure 2, 1312; SF 116
- 2* Millstone Fragment, millstone grit. Approx. quarter upper or runner stone. Possible pair with Cat 2. Original diameter of stone *c.* 79.0cm. Original diameter of eye *c.* 8.0cm. Evidence of tooling within eye. Slightly concave grinding face. No dressing but clear evidence of quite coarse concentric wear. Stone worn, particularly around edge. Top of stone quite rough but has a wide chase cut across the centre which is lower than the rest of the top. There is also the remains of a hole, 6.0cm deep and originally *c.* 3.5cm in diameter. L. 54.4cm; W.39.5cm; Th. 12.0cm at eye, 12.7cm at edge; original weight of stone *c.* 139.5kg; LQL, Structure 2, 1312, SF 117
- 3* Millstone fragment, millstone grit. Just over quarter upper or runner stone. Original diameter of stone *c.* 80.0cm. Original diameter of eye *c.* 11.0cm maximum, reducing slightly towards grinding face. Slightly concave grinding face. No dressing but has evidence of concentric wear, particularly towards centre. Slight glazing around periphery. Basically a flat top but has a wide chase cut *c.* 0.3-0.4cm deep across centre of stone, within which are 2 holes, both *c.* 3.8cm in diameter, although neither is exactly circular but has a flat face on the outside. One has the remains of a metal strap, 2.7cm wide and 0.3-0.4cm thick, still leaded in place. The other is empty, 7.0cm deep with evidence of chiselling within. Evidence of tooling across top of stone and also around sides. L. 53.5cm; W.36.5cm; Th. 11.0cm at eye, 12.5cm at edge; original weight of stone 134kg; LQL, Structure 2, 1312, SF121

7. Environmental Record

The Human Remains by Mouli Start

Introduction and methodology

- 7.1 Material was presented to the author for examination from four contexts (SK1 (016 and 017), 1222 and 1248). Each of the contexts was analysed using appropriate osteological techniques and if the remains were human, osteological techniques were applied following international standards outlined by Buikstra and Ubelaker (1994). Given the fragmentary and incomplete nature of the remains, it was often only possible to apply one ageing or sexing technique.
- 7.2 Rather than detail all osteological techniques usually applied to human remains in this section of the report, references for which methodologies could be applied are presented in the following text along with the results of analyses for each context.

Results

SK1 Inhumation, Context 016 Prime Adult (≈26-45 years), unknown sex

- 7.3 Of the four contexts presented for analysis SK1 comprised the largest amount of bone, although it would be considered a fragmentary and incomplete inhumation by any standards.

Inventory

- 7.4 Several incomplete bone fragments represented the remains of the left side of the lower body (sacrum, pelvis, femur, tibia and fibula). A single fragment of the left arm (distal ulna) was also identified. The only bone positively identified from the right side of the body was a right thumb (first metacarpal). Several bone fragments were too small to allow a secure identification as to which side of the body they originated from. These include remains from the arm and hand (fragments of humerus and 2 manual phalanges), and from the leg and foot (tibia and metatarsals). It is stressed that these fragments could have come from either the left or right limbs. A few bone fragments were too small to allow a positive identification to skeletal element.

Demography

- 7.5 The incomplete and fragmentary nature of these remains introduced severe limitations to age-at-death determination and sex estimation. Fortunately part of the auricular surface (the joint surface between the sacrum and pelvis) remained intact and an osteological age-at-death determining technique is based on observations of bony change at this joint (Lovejoy *et al.* 1985). The

auricular surface fell into either the 3rd or 4th category in Lovejoy *et al.*'s (1985) eight phase ageing technique for adult skeletons, and this corresponds to a chronological age of 30-39 years.

- 7.6 Confirmation of the adult age came from leg bones (tibia and fibula) that were fused because this is complete after age 20 – 23 (Schwartz 1995).
- 7.7 The problems with assigning a specific age-at-death to skeletal remains are well documented (Chamberlain 1994; Molleson and Cox 1993; Saunders 1992). In order to avoid introducing bias or error into an analysis, broad age categories are usually employed and 016 should be considered a 'prime adult' broadly corresponding to a biological age of 26-45.
- 7.8 Sex estimation of adult skeletons is based mainly on macroscopic observation of a number of traits in the skull and pelvis (Buikstra and Ubelaker 1994) and metric measurements at various sites in the skeleton (Steele and Bramblett 1988). In the case of this example only a single observation (sciatic notch in the pelvis) was possible and this was strongly female. Since any estimation of sex must be based on the combination of a number of observations, SK 1 must be considered to be of unknown sex.

Other

- 7.9 No pathology was observed in the remains. As already mentioned, this inhumation was very fragmentary and incomplete – less than 10% of the whole skeleton was available for analysis. Generally preservation was poor, some fragments could not be washed because they were so friable. More specifically cortical integrity was poor (the surface of the bones did not survive well). All of these factors combined to limit the analyses that could be applied to SK 1, and the lack of observation of pathology should not be taken for its absence in the living individual. These factors also negated any meaningful non-metric or metric analyses.

SK1, Grave fill, Context 017, probably originating from individual 016

Inventory

- 7.10 All of the fragments from 017 large enough to allow a positive identification to skeletal element originated from the right lower leg (femur, tibia and fibula). Additionally a small fragment of a foot bone (metatarsal shaft) was identified although it was not possible to determine whether this originated from the left or right foot. Again a few bone fragments were too small to allow a positive identification to skeletal element.

Demography

- 7.11 Both the distal femur and proximal tibia from 017 were fully fused. Fusion at these sites occurs at 20-23 (Schwartz 1995) and therefore we can securely say that these bones originated from an adult skeleton. It was not possible to determine a more specific age-at-death or a sex estimate from the available skeletal evidence.

Other

- 7.12 Given that context 017 is the grave fill it seems a very reasonable assumption that these originated from the same person. There are no doubled skeletal elements when 016 and 017 are compared to suggest that the remains of more than one individual is present. There are also no developmental or morphological inconsistencies between the two contexts.

Context 1222, Fill of quarry pit 1220, femur fragment 13+ years

Summary

- 7.13 The skeletal remains from this context consist of a single shaft fragment from a right human thigh bone (femur). Both epiphyseal ends of the bone were missing and therefore it was not possible to rely on fusion patterns to determine the age-at-death of the person from which this bone came. However, observations of size and robusticity allow the conclusion that the individual from whom this bone came must have been older than 13 years. No other osteological analyses could be applied to this bone fragment.

Context 1248, non-human burnt bone

- 7.14 This context was thought on excavation to be the remains of a human cremation burial. However, these remains *do not* originate from a human being. The author consulted A Hammon (Hammon pers. comm.), an animal bone expert at the University of Sheffield, for confirmation and results are presented in Table 11.

Spit	Comment
0-0.02m	1/3 of the fragments identified as deer antler remaining 2/3 of fragments not positively identified to species
0.02-0.04	Fragments not positively identified to species
0.04-0.06	Fragments not positively identified to species
Bagged fragments	Fragments not positively identified to species

Table 11. Results of observations of context 1248

- 7.15 In addition, the colour and surface texture of these bone fragments is not typical of cremated bone. Surface texture remains largely intact and shows none of the cracking or warping diagnostic of cremated bone. Predominant colours were dark greys and browns suggesting lower burning temperatures than that typical for cremations: less than 525° as opposed to 645°+ (colour and temperature observations after Shipman *et. al.* 1984).

The Animal Bone by Jane Richardson

Introduction

- 7.16 The excavations at Leadenham Quarry produced 1707 animal bone fragments from prehistoric, late Roman and post-medieval features. Unfortunately, too few bones came from prehistoric and medieval deposits to allow any meaningful analysis, but 90% of the assemblage was assigned to the Roman occupation of the site. The condition of the bones also varied by phase and this further influenced the groups of bones that could be studied.

Method

- 7.17 The recording of erosion, fragmentation, gnawing and burning allowed bone condition and preservation to be assessed. As the total assemblage was small, all bone fragments were identified where possible to species, species group (such as sheep/goat) or a lower order category such as 'cattle-sized' (Table A11). Age data were considered and butchery marks were noted. With the exception of a dog skeleton, no metrical data were recorded as the assemblage was too fragmented.
- 7.18 To facilitate analysis, the animal bones were typically assigned to one of three phases: Neolithic (Phase 1), Late Roman (Phase 3) or post-medieval (Phase 4). A small proportion of bone was unstratified or came from discrete features with no datable artefacts.

Results

Bone preservation

- 7.19 Bone condition varied according to phase with the bones in poorest condition and displaying the most eroded bone surfaces coming from prehistoric features. Dense and undamaged bones were typical of Roman deposits, while medieval bones were only slightly weathered. Burnt bones were most common from prehistoric features (13%), present in the Roman assemblage (6%), but absent from medieval deposits. Damage due to gnawing, however, was only recognised on Roman (2%) and medieval bones (4%).

Prehistoric bone

- 7.20 The animal bone assemblage from prehistoric features consists of only 67 bone fragments (Table A8). Of these, over 70% were unidentified to element or species and this reflects the poor state of preservation (Section 6.3.1). The domestic animals, pig (15%), sheep/goat (9%) and cattle (3%) were present (Table A9) and despite the absence of butchery marks, probably indicate the consumption of pork, mutton and beef. Unfortunately, the assemblage was too small to provide any age data and no assessment of the utilisation of secondary products could be made.

Late Roman bone

- 7.21 The Late Roman assemblage consists of 1544 bone fragments. It is hoped that this offers a statistically valid body of data with which to interpret animal husbandry practices and economic processes (see van der Veen and Fieller 1982, 296).
- 7.22 The faunal assemblage is dominated by cattle bones (43%), with sheep/goat providing a secondary meat source (7%). Pig bones are a rare occurrence and apparently contributed little to the diet. Dog bones, however, are particularly prevalent, although 103 of the 197 bones came from one male skeleton and a further 31 bones represent neonate puppies. The male dog is described as brachymel (after Teichert 1987) with relatively stout, bowed legs and an estimated shoulder height of 290mm. There is scant evidence for the butchery of dogs and horses in the Roman period and the consumption of these species may have been regarded as taboo (Toynbee 1973, 185; King 1991, 17). Instead, dogs would have been used to guard the property or assist in hunting, while horses were used to transport people and goods. Despite its uses, the dog population was probably controlled, as at least two neonate puppies were deposited within Structure 2 and a further two were deposited in Pit 1220.
- 7.23 Epiphyseal fusion and dental wear data have been used to assess slaughter patterns and the targeting of secondary products from cattle and sheep. The fusion data for cattle indicate the availability of prime meat from sub-adult animals with around a third of the population reaching (osteological) maturity. These older animals may indicate the presence of a breeding herd, although traction cattle were probably targeted also. Intensive milk production is unlikely, however, as a cull of unwanted calves was not in evidence (Table 10). Dental data were limited, but indicate two sub-adult animals and three adult individuals. Unfortunately, fusion data were extremely scarce for sheep/goat (and dental data non-existent) and only the presence of sub-adult animals was identified. These animals were presumably slaughtered for their meat.
- 7.23.1 All butchery marks are exclusive to bones from Late Roman deposits and they indicate carcass preparation and consumption. With the exception of one sheep-sized rib, all butchery damage was restricted to cattle (and cattle-sized) bones. This reflects the more rigorous dismembering needed to reduce a larger carcass. Nevertheless, only 2% of cattle bones were thus marked and this dearth may reflect the skill with which carcasses were reduced.
- 7.24 All body parts of cattle and sheep/goat are represented in the assemblage. These indicate that entire carcasses were processed on site with the disposal of primary butchery waste as well as meat-rich joints.
- 7.25 In addition to the domestic animals, numerous bones of rodents and amphibians (most likely frogs) were identified. While wood mouse and field vole indicate the presence of rough grassland and perhaps woodland, water vole and frogs indicate the presence of a slow moving body of water.

Post-medieval bone

- 7.26 The post-medieval assemblage consists of only 47 bone fragments, all from Context 1224 within the upper fill of Pit 1220. Cattle (and cattle-sized) bones account for 79% of the assemblage, with sheep/goat and horse represented by a few bone fragments. One bird bone fragment was identified as domestic fowl-sized. These bones presumably represent the disposal of domestic waste, although further interpretation is impossible given the small sample size.

Conclusions

- 7.27 Although faunal remains were recovered from prehistoric, Late Roman and post-medieval deposits, only the assemblage from Late Roman features was of sufficient size to provide insights into dietary preferences and animal husbandry practices.
- 7.28 The high cattle – low sheep percentages identified from the Late Roman levels are indicative of a ‘Romanised’ site (King 1989, 53), and given the supposition that the ancillary structures of a villa have been excavated here, this ‘Romanised’ diet is to be expected. The high percentage of pig that is also associated with ‘Romanised’ sites (King 1989, 54), however, was not observed from the excavations at Leadenham.
- 7.29 The inhabitants of this late Roman site apparently utilised cattle, sheep and pig for prime meat, while the presence of adult cattle suggests a breeding population and perhaps traction animals. The presence of all body parts suggests on-site slaughter, although the possibility that livestock were exported on the hoof to urban sites such as Lincoln cannot be discounted. Certainly, later Roman Lincoln has produced large cattle bone assemblages that may be associated with livestock trading (Dobney *et al.* 1996, 57-58).

The archaeobotanical remains by Ruth Young

Introduction

- 7.30 The shape and construction of two of the Roman structures (Structures 1 and 2), suggested that they had been used as corn-drying kilns. The analysis and interpretation of the archaeobotanical assemblage recovered from these and other features is intended to help in both the testing of this hypothesis, and in determining the possible function of other structures, such as groups of post-holes (Structures 3 and 5) and a pit alignment (Group1).
- 7.31 Seven samples were taken from contexts within Structure 1 (Context 1242, Samples 222, 223, 224 and 225) and Structure 2 (Context 1286, Samples 226, 227 and 228). The main post-hole group (Structure 3 and nearby post-holes) was also sampled (Contexts 1040, 1048, 1056 and 1102). Other samples were taken from discrete features containing datable artefacts as well as from other features of archaeological significance. Table A12 lists all the contexts from which botanical samples were quantified, and the phase to which these contexts have been assigned.

Methods

- 7.32 Both Archaeological Services WYAS and Archaeological Project Services carried out sampling during excavations. On-site sampling comprised a minimum of ten litres of soil collected from every discrete feature or layer within buildings whenever possible. In total, 66 soil samples were selected for processing, although not all of these samples contained botanical remains.
- 7.33 Where possible, five litres of these samples were processed using an Ankara-style flotation machine, with a 300 micron sieve. All of the fine sieved material was sorted, identified and quantified, and Table A13 lists these identifications by context. Table A14 summarises the presence of mollusc shells, weed seeds and charcoal from samples that contained organic material, but no cereals.
- 7.34 Wood charcoal was also recovered during flotation, and selected amounts from Structures 1 and 2 have been identified in an attempt to identify any possible fuel use. Table A15 summarises the relative amounts of wood charcoal recovered from different areas and structures across the site.

Results

- 7.35 Tables A13 and A14 show the total amounts of archaeobotanical material (excluding wood charcoal) recovered and examined from Leadenham Quarry. *Triticum spelta* (spelt wheat) clearly dominates the whole assemblage, and although some *Triticum dicoccum* (emmer wheat) and small quantities of *Hordeum vulgare* (barley) were also identified, spelt wheat was the main cereal crop in use at this site. Chart 3 shows the relative amounts of grain from each sample and context (nb. contexts with less than 20 identified grains have been excluded from the histogram). Context 1225 (fill of pit 1220) contained the greatest single concentration of grain, while five out of the seven samples associated with Structures 1 and 2 also had significant quantities of spelt. In addition, Contexts 1040 (fill of post-hole 1037), 1056 (fill of post-hole 1053), and 1221 and 1222 (fills of quarry pit 1220) also contained significant amounts of cereal grain. Contexts 1042 (fill of post-hole 1041) and 1248 (fill of pit 1246) yielded much smaller amounts of cereal grains (Table A13).

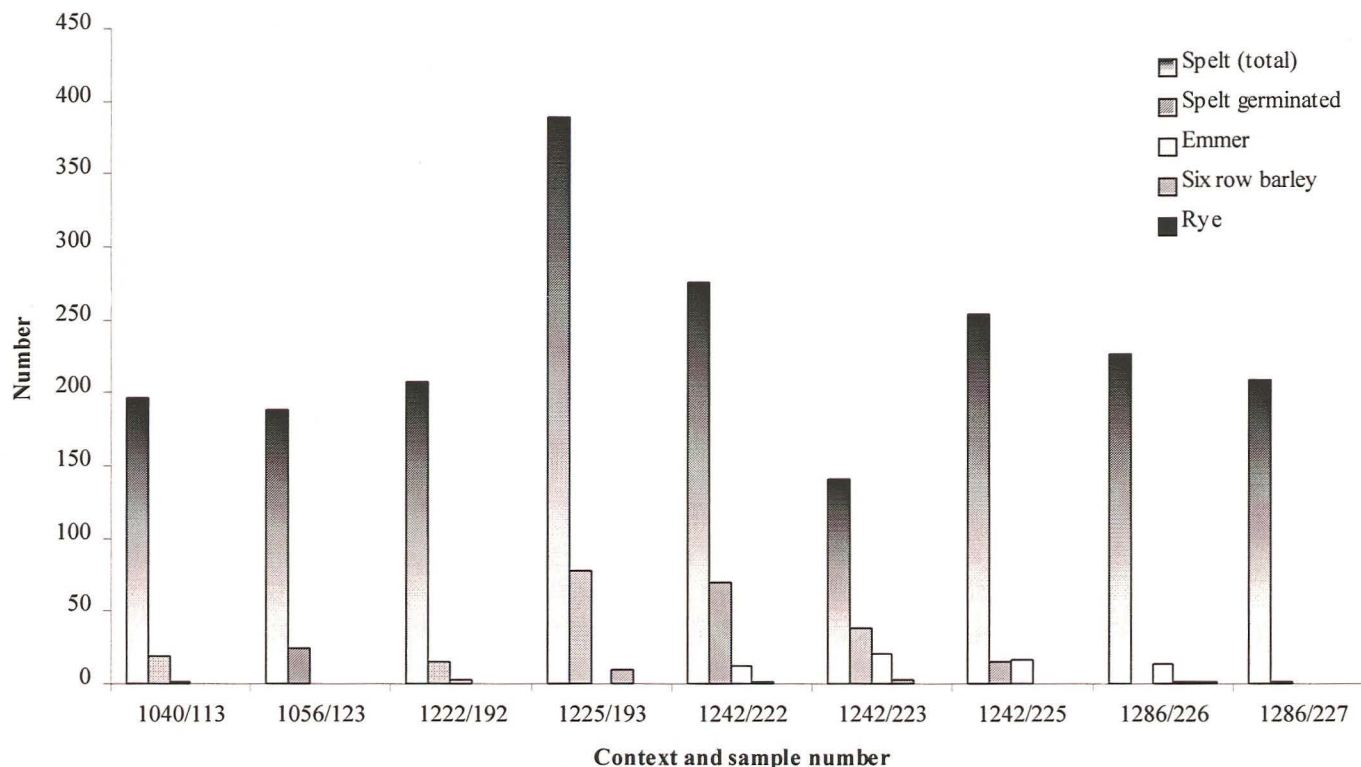


Chart 3. Number of cereal grains by context

7.36 Germinated grain also makes up a significant proportion of the identified spelt wheat from the majority of samples containing more than fifty identified grains (see Pl. 4). From five samples containing spelt, (1242/222; 1242/223; 1225/193; 1040/113 and 1056/123) more than 10% of the grains (33%; 31%; 23%; 11% and 13% respectively) had germinated, and two further samples (1242/225 and 1222/192) contained between 7% and 9% germinated grain. Context 1242 is the primary fill of a flue associated with Structure 1 and Contexts 1225 and 1222 are part of the fill of quarry pit 1220. Context 1056 is a post-hole fill from the post-hole structure (Structure 3).

7.37 Two samples (1286/226 and 1286/227) contained significant quantities of spelt wheat, but with no germinated grain present. Context 1286 is a fill within Structure 2. This gives an immediate contrast between the components of the archaeobotanical assemblages from Structures 1 and 2 for which the function of corn-drier has been suggested.

7.38 The ratios of glume bases to grains is, in all samples where both are present, much less than one, indicating that the assemblages represent the cleaned product (van der Veen 1992, 82), rather than sieving residue, or complete ears and spikelets. Similarly, although weed seeds are present in many of the contexts, the ratio of weeds to grains is low, suggesting that the cereal had been cleaned prior to deposition. Where weeds have been recorded within a sample containing cereal grain, the size of the weeds is compatible with their inclusion in processed and cleaned material. Two samples (1013/116 and 1072/130) had significant numbers of weeds, predominantly *Carex* spp. or

sedges, and in only one of these (1013/116) were cereal grains (unidentified fragments) present in very small numbers. Context 1013 is the fill of a possible natural feature or pit, and 1072 is the fill of a pit. A number of other samples contained small numbers of mixed weeds and mollusc shells (see Table A14).

- 7.39 Wood charcoal was also recovered from almost all of the samples, although only three samples contained more than ten fragments of wood charcoal, and these were 060/004 (fill of Quarry pit 0047) and two samples from Context 1286 (fill of the stokehole in Structure 2) (Table A15).

Discussion

Cereals

- 7.40 Previous studies of corn-driers from Romano-British sites have ranged from the declaration that it is "probably the most easily identifiable agricultural structure found in Roman Britain" (Morris 1979, 5), through to the suggestion that such structures were inefficient and unnecessary for the drying of cereals (Reynolds and Langley 1979, 40-41). Finch Smith (1987) assesses the arguments by both Morris, and Reynolds and Langley, and argues that while the latter suggest that such structures were too small for fast and efficient grain drying, such aims are recent, and need not necessarily have been those of Romano-British farmers. Following her analysis of the archaeobotanical material from twenty-one sites, however, van der Veen (1989) has suggested that the function of the structures called corn-driers can be elicited from the composition of the archaeobotanical assemblages. Five possible activities, and the type of material associated with each was given (*ibid.*, 303-4), and these models were then applied to the assemblages from Leadenham.
- 7.41 There are a number of reasons for drying crops that have relevance to spelt wheat, the dominant cereal at Leadenham Quarry. As glume or hulled wheats, both spelt and emmer need to be thoroughly dried before threshing for the most efficient separation and removal of waste (Morris 1979, 5; van der Veen 1989, 303). It has also been noted that fully ripened and processed grains need to be completely dry prior to milling, as soft grains will not be ground efficiently, and can even clog up milling equipment (Morris 1979, 6; van der Veen 1989, 303). The use of heat to ripen grains has also been discussed at some length. Rather than harvesting taking place due to climatic constraints, it has been suggested that early harvesting may have occurred because the straw of under-ripe grain has greater nutritional value as fodder. Alternatively, spelt in particular has a brittle spikelet stem, and so less grain would be lost if harvested early (Morris 1979, 6). Under ripe, or milk-ripe wheat may also be deliberately harvested for use as certain human foods, and is dried or smoked (van der Veen 1989, 303). That spelt is most commonly a winter sown crop, and the attendant possible problems in ripening the grain in poor weather has also been put forward as a reason for the increase in the number of noted corn-driers (Finch Smith 1987, 62; Morris 1979, 19). Drying grains has also been demonstrated as an effective way of preventing insect and fungal damage (Morris 1979, 5; van der Veen 1989, 303).

- 7.42 In terms of the Leadenham Quarry material, the very low ratios of glume bases to grains indicate that this material had been processed before being introduced into Structures 1 and 2 (van der Veen 1992, 82). The absence of significant numbers of distorted or twisted grains also indicates that the majority of the grains was fully ripe before being dried (Morris 1979, 7-8). A further possible interpretation of the archaeobotanical material, however, relates to the relatively high proportion of germinated grains in relation to the total number of grains. Malting of grains for brewing purposes has been suggested as a possible use of the corn-driers, and one that would require a large number of germinated grains. While van der Veen (1989, 305) says that more than 75% of grains would be expected to show germination, compared to a high of 33% from Leadenham, this is higher than the percentage of germination expected in food crops, which is given as 15% (*ibid.*, 304).
- 7.43 As Structures 1 and 2 have been interpreted as corn-driers, it is interesting to compare the nature and composition of the samples from each. Both are dominated by spelt wheat, but only in samples from Structure 1 have germinated grains been recorded. In two of the samples from Structure 1 (Context 1242, Samples 222 and 223), 31-33% of the total recorded grain showed clear signs of germination. This is more than double the rate van der Veen indicated as acceptable in grain drying or maturing assemblages (1989, 304). There is no significant difference in the weed assemblages from either structure, and the chaff indicates a cleaned product was present from both. On the basis of the proportion of germinated grains alone, therefore, it is possible that these two structures were being used for different functions. Structure 1 may have been used for the germination of grain for malting, and subsequent brewing, while Structure 2 may have been used to dry grains, possibly to facilitate milling, prevent crop degeneration, or to enhance the prospects of long term storage. Of course, it is also possible that these structures were multi-functional and only the final activity was recorded in the archaeobotanical record.
- 7.44 Of the wood charcoal recovered from these two structures, Structure 2 (Context 1286) contained more charcoal than the samples from Structure 1 (see Table A15). Within Structure 1, numbers of charcoal fragments greater than 5 but less than 10, were noted from both samples 222 and 225 from Context 1242, while the other samples from this context contained less than 5 fragments. Charcoal fragments from both structures have been examined, and while oak (*Quercus* spp.) is present, there is also a mixture of hazel (*Corylus* spp.), alder (*Alnus* spp.) and birch (*Betula* spp.). These smaller trees or shrubs may have been used as fuel for the driers, although a 'background noise' of wood charcoal should also be expected. None of these types was uncommon in this region during the Roman period.
- 7.45 Within Structure 1, samples were taken at different points within the flue (Context 1242). These show some spatial variation both in terms of the amount of cereal grain present, and in the proportion of germinated to non-germinated grains. The greatest numbers of grains were recovered in Sample 225 (from the west end traverse flue), Sample 222 (from the northern end of the main (axial) flue and Sample 223 (at the southern end of the main (axial) flue). Sample 224 (from the east end traverse flue) did not have significant concentrations of grain, or other plant material, but all samples had been

cleaned. The highest proportions of germinated grain were noted in Samples 222 and 223, and this concentration of germinated grain within a particular area raises some questions about the function of the structure. It is also interesting that within Structure 2, the samples are all much more homogeneous in terms of their composition.

- 7.46 Given the proximity of Quarry pit 1220 to Structure 1 (both assigned to the Roman period), it is possible that the significant quantities of grain recovered from this pit represent waste from Structure 1. Within the fill of the pit, Context 1225 (Sample 193) has a lot of grain, with 23% showing clear signs of germination and Context 1222 (Sample 192) also has grain, of which 9% shows signs of germination. Context 1221 (Sample 194), however, had only a small amount of identified grain, with no signs of germination. This variability in the amount of grain, coupled with a similar weed assemblage, and chaff component, is similar to the composition of the samples from Structure 1.

Weeds: habitat requirements

- 7.47 Buttercup, plantain, nettle, dock, brome, fat hen, goosefoot and goosegrass are all possible indicators of disturbed land. Further, brome, fat hen, goosefoot, goosegrass, plantain, buttercup and some species of nettle are associated with grassland. Of the identified weeds here, only brome and wild carrot are associated with arable or cultivated land, while sedge species are associated with marshland, or bogs (Carruthers 2000, 185-6). This combination of weeds from predominantly open and grassland habitats may suggest, therefore, that plant material from open fields, in addition to the cereal crops, was being brought onto site and into the oven structures. This may have been in conjunction with fuel, and Carruthers, (2000, 194) links the presence of sedge seeds within a grain drier with the use of hay from damp meadows to fire the dryer. The presence of a relatively large number of sedges from Context 1013 (fill of Pit 1012) may be more indicative of the presence of a water source close to the site. The remaining seeds occur in low numbers, and these may be considered as the 'background' material expected from any rural site. They certainly do not occur in sufficient quantity and in conjunction with any of the cereal rich deposits, to be interpreted in terms of crop processing procedures (van der Veen 1992, 81-2).

Conclusion

- 7.48 The model developed by van der Veen has shown that distinguishing the function of corn-driers on the basis of the associated archaeobotanical remains is not always possible, although multiple functions can be indicated. This is certainly true in the case of the archaeobotanical assemblage from Leadenham Quarry. The presence of spelt shows the importance of this crop, almost to the exclusion of all other cereals, although whether the grains were present in the corn-driers for fumigation, drying prior to milling, or as part of the malting process for brewing is not entirely clear. It may be that certain samples can be differentiated, with those containing a low proportion of germinated grain representing samples that are being dried prior to storage or milling (Structure 2), while those with significantly higher proportions of germinated grains

representing malting (Structure 1). The recovery of large millstone fragments from Structure 2 (Context 1312) certainly supports the interpretation of this structure's use for the preparation of grains for efficient milling.

8. Discussion and Interpretation

- 8.1 Analysis of the form, structural nature and artefact assemblages of the features identified are discussed in this section and interpretations have been put forward as to what the archaeology is representing.
- 8.2 The earliest dated feature on the site was the pit alignment (Group 1), which from the securely stratified pottery, both of Grooved Ware and Peterborough Ware types and the discovery of a flint adze within pit 1277 date it to the Neolithic (Allen and Brooks this volume). There are examples of pit alignments across Lincolnshire, which have been in the main identified by aerial reconnaissance, specifically during the national mapping programme. Analysis of these pit alignments shows that the most common form in Lincolnshire is the single alignment (Boutwood 1998), similar to that observed during excavations at Leadenham.
- 8.3 The longest pit alignment known in Lincolnshire extends for 1090m and is situated to the east of Leadenham at Brauncewell. A further pit alignment was excavated at Long Bennington, to the south-east of Leadenham, however, no dating evidence was produced.
- 8.4 Pit alignments in Britain have produced dates from the Neolithic to Roman periods. There are four main contexts in which they are found: settlements, rectilinear field systems, dispersed boundaries and pit defined structures (Boutwood 1998). Pit alignments have been found close to Neolithic mortuary enclosures and barrows.
- 8.5 The size and artefactual material recovered from the Leadenham example suggests that it is not forming a major landscape boundary but more of a discrete feature, possibly with a ritualistic significance. It should be considered, however, that heavy truncation has occurred on the site, with its use over time as an agricultural area. Agrarian activity such as ploughing, manifested by the medieval ridge and furrow recorded on the site, would have significantly reduced the size of these pits.
- 8.6 As discussed by Allen (this volume) the deposition of decorated and unabraded Grooved Ware pottery, alongside Fengate pottery into pits 010 suggests a special deposition. It is interesting to note that the pottery assemblage was recovered from the south-western and north-eastern limits of the excavated feature, which may in itself indicate a special significance. In addition, deposition of the flint adze within pit 1277 supports the theory that this represents a deliberate action rather than a loss, indicating a ritual monument, possibly associated with a ceremonial site to the north-east. Unfortunately, any continuation of this monument and associated activity has been destroyed by previous quarrying operations to the east, undertaken before the advent of Planning Policy Guidance 16 (PPG16).
- 8.7 Potential evidence to suggest occupational activity in the Neolithic is represented by a number of features that contained pottery thought to be Neolithic or prehistoric in date (Allen this volume). Hearth 1449 and post-

holes 1027, 1029, 1037 and 1091, all contained small quantities of this pottery and in the case of post-hole 1037 formed part of a sub-square or sub-rectangular four or six post structure. A significant spelt wheat assemblage was recovered from all six post-holes forming this structure, indicating that the pottery is more than likely residual within the fill. Spelt wheat is a crop commonly associated with Iron Age and Roman agriculture, with only one excavated example of this crop known from a Neolithic context (Jones 1996).

- 8.8 No further dating evidence was recovered from these features and although this pottery could have been deposited in the Neolithic, it is more probable that it is residual within the fill.
- 8.9 A significant gap in the continuity of activity is then witnessed. A single fragment of potentially Iron Age pottery recovered from the very southern extent of the site, within pit 1014, is the only trace of occupation within this period. The lack of further Iron Age material or earlier Roman artefacts suggests that the site remained virtually unoccupied until at least the mid-3rd century AD.
- 8.10 It is in this period that it appears a major settlement was established within the vicinity and the remains identified during this excavation possibly represent ancillary buildings to this settlement.
- 8.11 The linear feature (025) and associated quarry pits flanking its sides, may indicate the former site of a trackway or driveway, linking a settlement to one of the main Roman artery roads such as Ermine Street. Quarry pits are often identified flanking Roman roads and would have provided the material used for metalling to provide a hardwearing surface. Although no metalled surface was identified on this site, it is apparent that heavy truncation has been observed across the whole site, which may have removed the main traces of this trackway now represented by a small ditched and rutted feature. Alternatively the quarry pits could have been used for building material which was then transported along this trackway to its destination, an interpretation which is preferred in this instance. Supply routes that linked the country to the towns, have been found to be, in the main, lightly or not metalled at all (Whitwell 1998).
- 8.12 Further quarry pits were identified in the central western area of the site in the vicinity of Structure 1 and may have provided the building material for the construction of this feature. Structure 1 itself appeared to have been placed within a shallow pit, which may have formally been used for procuring building material. This structure with its T-shaped feature, with its associated bulbous pit contained within a rectangular stone building has been interpreted as a corn-drying oven. At Welton Wold (Morris 1979, p.18) five of the corn-driers had sunken floors, similar to this structure. The more elaborate form of Structure 2, has been identified as a further oven.
- 8.13 Corn-driers are generally characterised by their form (T-shaped flue or derivations of it), association with carbonised grains and further driers or agricultural features. They occur, in the main, in or adjacent to villas or stone built aisled buildings and are assumed to be 3-4th century features (Morris 1979). The interpretation of the two Leadenham examples as corn-driers is due to them falling into this categorisation, with a *terminus post-quem* for the

filling and demolition in the mid-3rd-4th century, a characteristic form and the recovery of substantial charred grain assemblages contained within their flues.

- 8.14 Little evidence was found to indicate how the superstructure of Structures 1 and 2 was formed, and this material rarely survives (Morris 1979). It is therefore only surmised how the material to be dried was placed within the structure. Structure 2 may provide some indication as to how material was laid out over the surface of the drier. Capping stones were found both *in situ* and within the backfill of the building which suggest that the flues would have been capped along their length with small gaps which would have enabled the heat to circulate. A large capping stone was found broken, but probably *in situ* above the fire box and other larger stones recovered from this fill would have covered the area of the main flue (axial) with smaller stones along the secondary flues (traverse).
- 8.15 Unlike Structure 1, this structure does not appear to have been encased within a building. No drainage gullies, post-holes or foundations were identified, although the heavy truncation of the site may explain this lack of evidence. Experiments have been undertaken which have shown that unenclosed structures are susceptible to changing winds on exposed sites (Morris 1979) and may therefore not have been as reliable as those within structures.
- 8.16 The difference in form of Structures 1 and 2 may be attributed to technological innovation in the attempt to increase efficiency (Morris 1979). Alternatively it may indicate functional variability (Young this volume).
- 8.17 The carbonised material found within the driers may give us an indication of why two different forms, which are apparently contemporaneous in date, appear on the Leadenham site (indicated by the pottery assemblage within the backfill of the driers, Darling this volume). A high proportion of the carbonised material recovered from Structure 1 consisted of germinated spelt wheat (Pl. 4; Young this volume), whilst in contrast the assemblage from Structure 2 was devoid of any germinating grains. This suggests malting was taking place within Structure 1 and drying within Structure 2 (Young this volume).
- 8.18 The germination of grain for malting requires it to be steeped or sprinkled with water, spread thinly on a floor and left to germinate (chitting), then dried to halt germination (van der Veen 1989). This process requires a lower temperature than that for drying grains for milling, as the grain could be harmed by over heating (Morris 1979). The lower temperature reached by the T-shape drier would have been more applicable to this process, whilst the H-shaped drier would have provided the higher temperatures demanded for the drying of grain. The recovery of three large millstone fragments within the demolition deposits of Structure 2 indicates the milling of grain in the vicinity (Watts this volume). The size and weight of these millstones would have made them very difficult to transport and therefore, it is unlikely that these stone have been moved far from their original working place. Although no mill building was identified during the excavations, it is possible that the metalled surface identified to the south of the H-shaped drier may have been utilised as a threshing and grinding area.

- 8.19 A similar example was revealed at Catsgore (Somerset), where an H-shaped corn-drier was associated with an area of paving slabs. The recovery of a small quern in one corner of the floor indicated that it may have been used for threshing/grinding (Morris 1979, 18). Millstones have also been found at Hibaldstow (North Lincs.) inside and outside Roman buildings that contained ovens, and provide evidence for household milling (Finch Smith 1987).
- 8.20 It should be considered, however, that the surface area available for drying in T-shaped ovens is thought to be limited and only allows for the processing of small quantities of material. The larger drying area of the H-shape drier would have been more pertinent for the laying out of germinating grain. The absence of germinating grain within Structure 2 does not necessarily indicate that it was not used for this purpose as only the last firing is thought to be represented by the archaeobotanical material deposited (Young this volume).
- 8.21 It could, however, indicate that the drying of crops was of greater economic importance to the owners of the driers than the production of malt. Alternatively the driers could have been multi-purpose, as discussed by Young (this volume) and this may be represented by the series of deposits identified within quarry pit 1220. Three deposits within this pit were composed of charred grain material and each showed a varying quantity of germinated grains (Young this volume). These deposits could have accumulated from material being emptied from Structure 1, due to their close proximity and may indicate different uses at different periods for the corn-drier.
- 8.22 The two different forms observed at Leadenham could feasibly represent two phases of development as indicated at Catsgore where an H-drier replaced a T-shaped oven, at Orton Longueville (Cambs.) where an H-shaped drier was replaced by a developed T-shaped drier and at Barnack (Cambs.) where a H-shaped dryer was thought to have been replaced by an L-shaped one (Simpson, 1993). Although no stratigraphic evidence was recovered, the pottery assemblage from Structures 1 and 2 appears to indicate that they were abandoned at a similar time and most probably working in conjunction with one another.
- 8.23 The substantial size of these features implies production on more than a domestic level, as do the millstones recovered (Watts this volume). The small assemblage of domestic material recovered from the site, included a possible stylus (from Structure 2) and parchment ware vessel (from quarry pit 1220), potentially denoting fairly high status losses and indicating a settlement of some standing. Along with the corn-driers, this tentatively suggests the location of a 'villa' complex in the vicinity.
- 8.24 The term 'villa' means farm, and Rivet's definition of a villa is 'a farm that is integrated into the social and economic organisation of the Roman world (Branigan and Miles 1989). Many villa sites have been identified in Lincolnshire (over 200 potential known examples), along and at the base of the Limestone escarpment (Whitwell 1992), although many of these sites have been interpreted from surface finds. The production of a distribution map (Fig. 22) based on the gazetteer produced by Eleanor Scott (1993) shows this pattern clearly and confirms that the majority of identified villa sites are located along the uplands of the limestone escarpment, as is the Leadenham site.

- 8.25 In general the identification of *tesserae*, with building material has been taken to be the deciding factor in establishing the location of villa sites. Although no *tesserae* was identified from the Leadenham excavations, a small building material assemblage was recovered. The lack of a significant assemblage that would be expected from a villa site, does not necessarily indicate that the corn-driers at Leadenham did not form part of a villa, however, it should be considered a possibility.
- 8.26 The main complex could be located a distance away from these structures. At Norton Disney and Winterton villas (Lincs.) the main living quarters were found to be separated from the aisled buildings which would have accommodated the labourers, where carts could be stored and rooms could be used for drying corn (Whitwell 1998).
- 8.27 This division between occupational and production areas within a complex could account for the lack of occupational debris at Leadenham. The Roman pottery assemblage recovered was fairly small and represented, in the main, food preparation and serving (Darling this volume), indicating production and preparation rather than occupational activity.
- 8.28 If this site does fall within the bounds of a villa complex, any evidence for the main house may have been destroyed during previous quarrying operations to the east and south of the site. However, the trackway at the southern end of the site suggests that it may be running towards the west in an area yet to be disturbed and may potentially contain the preserved remains of the villa.
- 8.29 The location of the corn-driers on the top of the slope would not have necessarily provided a very sheltered occupational area, but would have been the ideal location for ensuring a constant wind supply demanded by the driers. It would seem more feasible that the occupational area was positioned slightly down slope and the ideal location would be to the north-west of the site where a water supply would have been provided by the several springs which emanate from the slope face.
- 8.30 The trackway may have been used to link the site to a local arterial road, such as Ermine Street, for the transportation of goods to market or possibly to satisfy military supply needs. The size of the millstone fragments from Leadenham, may indicate some link with the military. Larger millstones have generally been recovered from military or urban sites, though some evidence has been found for larger millstones on small farm sites in Gloucestershire and Somerset (Morris 1979).
- 8.31 Evidence for on-site storage of grain may be represented by Structure 3, either a six or four-post feature, which may have some association with the corn-driers. Four-post structures were used in the Iron Age and Roman periods and have been interpreted as storehouses, possibly granaries (Gent 1983).
- 8.32 The storage of grain on raised platforms was recommended by the classical writers Pliny and Columella (Morris 1979). The six post-holes forming Structure 3 were all filled with charred grain, one of which, 1040, contained a substantial quantity of germinated spelt wheat. Few excavated examples of four-post structures have recovered a significant sample of grain from the fills (Gent 1983), so the assemblage produced from Leadenham may be of some importance in understanding the use of these structures. The recovery of this

grain assemblage adds further strength to the argument that these were associated with the driers to the north.

- 8.33 As previously discussed, only one post-hole (1037) produced any dating evidence, which is inconclusive. This structure therefore has to remain unphased, although it is probable that it is contemporaneous with the Roman activity to the north. A second post-structure (Structure 4) was identified, however, no grain assemblage or dating evidence was recovered from the fills. It is probable that this structure is contemporaneous with Structure 3.
- 8.34 Pit 1178 may also be associated with the corn-driers and may represent a grain storage pit, however, no clay lying was identified which is generally expected within pits of this type.
- 8.35 The only evidence for settlement/occupation on the site is in the form of Structure 5, a possible round-house with a central post. These features are a common structural form on sites dating from the Neolithic to Romano-British periods and as no dating evidence was recovered from this feature, it again has to remain unphased.

9. Conclusions

- 9.1 The excavations at Leadenham quarry produced evidence suggesting it was part of a Neolithic ritual landscape and evidence of Roman activity (dating to the mid-3rd-4th century) possibly indicating the site of a villa in the near vicinity.
- 9.2 It is unfortunate that previous quarrying opportunities have destroyed any potential features associated with the pit alignment, although the discovery of this monument and its associated assemblage adds to the small number of Neolithic sites known in the county.
- 9.3 The discovery of the corn-drying kilns and associated artefactual assemblage provides tentative evidence for the location of a villa complex. These ancillary buildings appear to be part of a production centre, which may have been providing goods for supply to the markets and military in the city of Lincoln.
- 9.4 If a villa does survive at the site the expectation would be that it was a 'minor villa' (English Heritage 1989). Further archaeological investigations would be required to establish if this site could be added to the list of villa sites known along the limestone uplands.
- 9.5 As the possibility exists that a villa complex survives in the locality it is imperative that unintrusive archaeological techniques are applied to the surrounding area prior to any further development. This would establish if a villa site or smaller settlement exists in the remaining area to the north and west of the current quarrying operations, suggested by the position of the corn-driers.

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Soil Survey of England and Wales, 1993, Soils of England and Wales, Scale 1:250 000, map and legend

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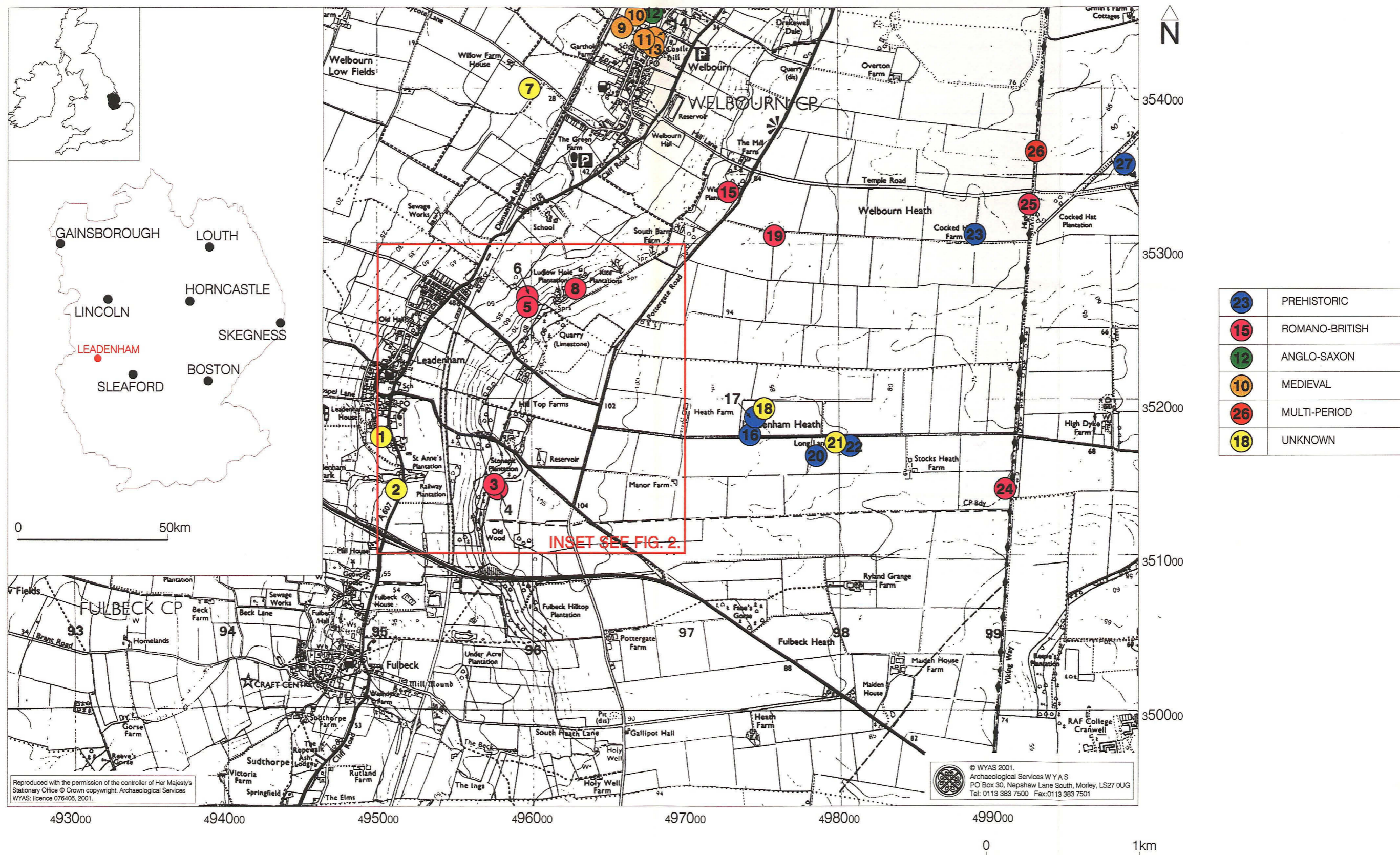


Fig. 1. Site location showing position of catalogued sites and finds

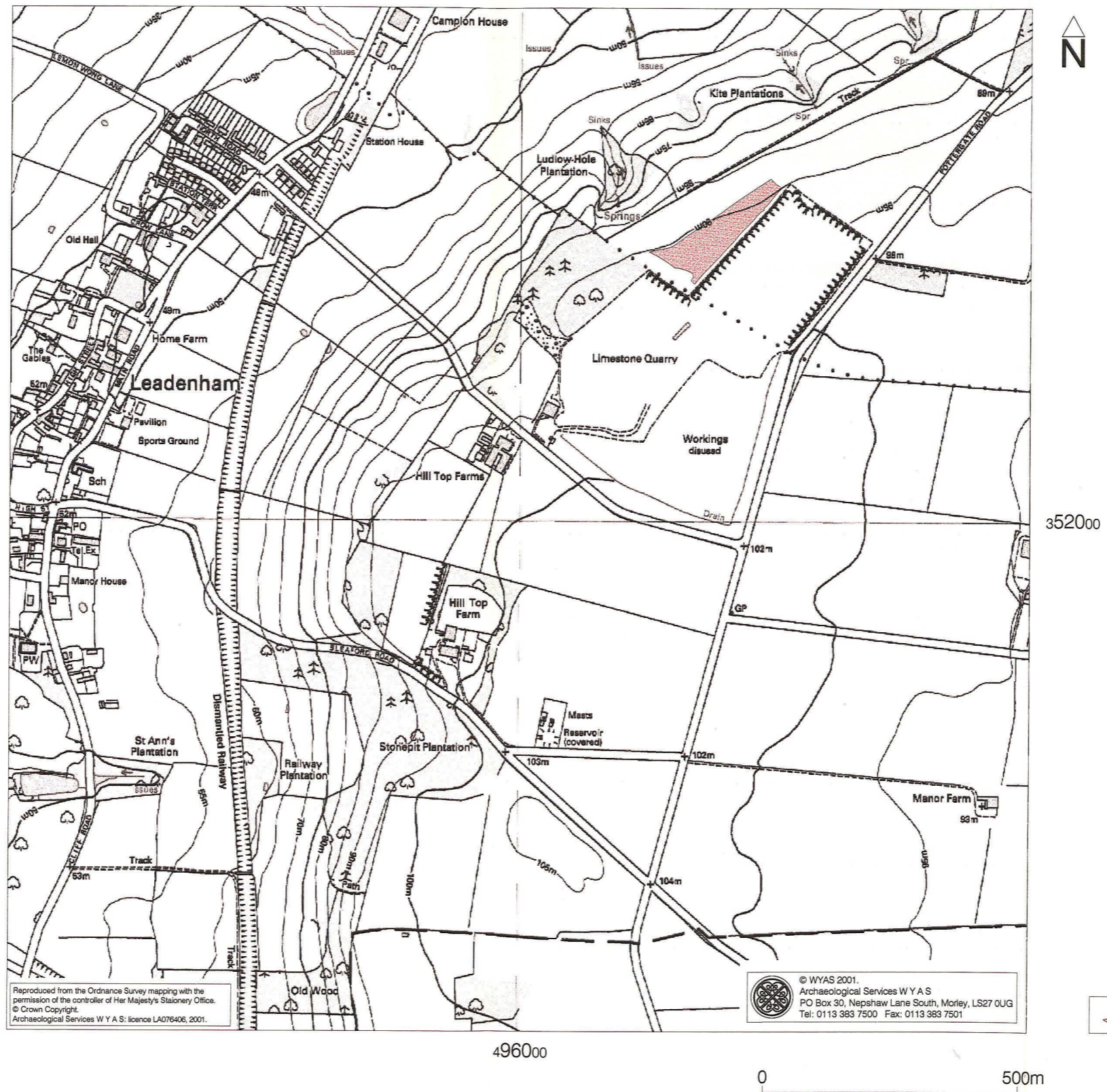


Fig. 2. Site location

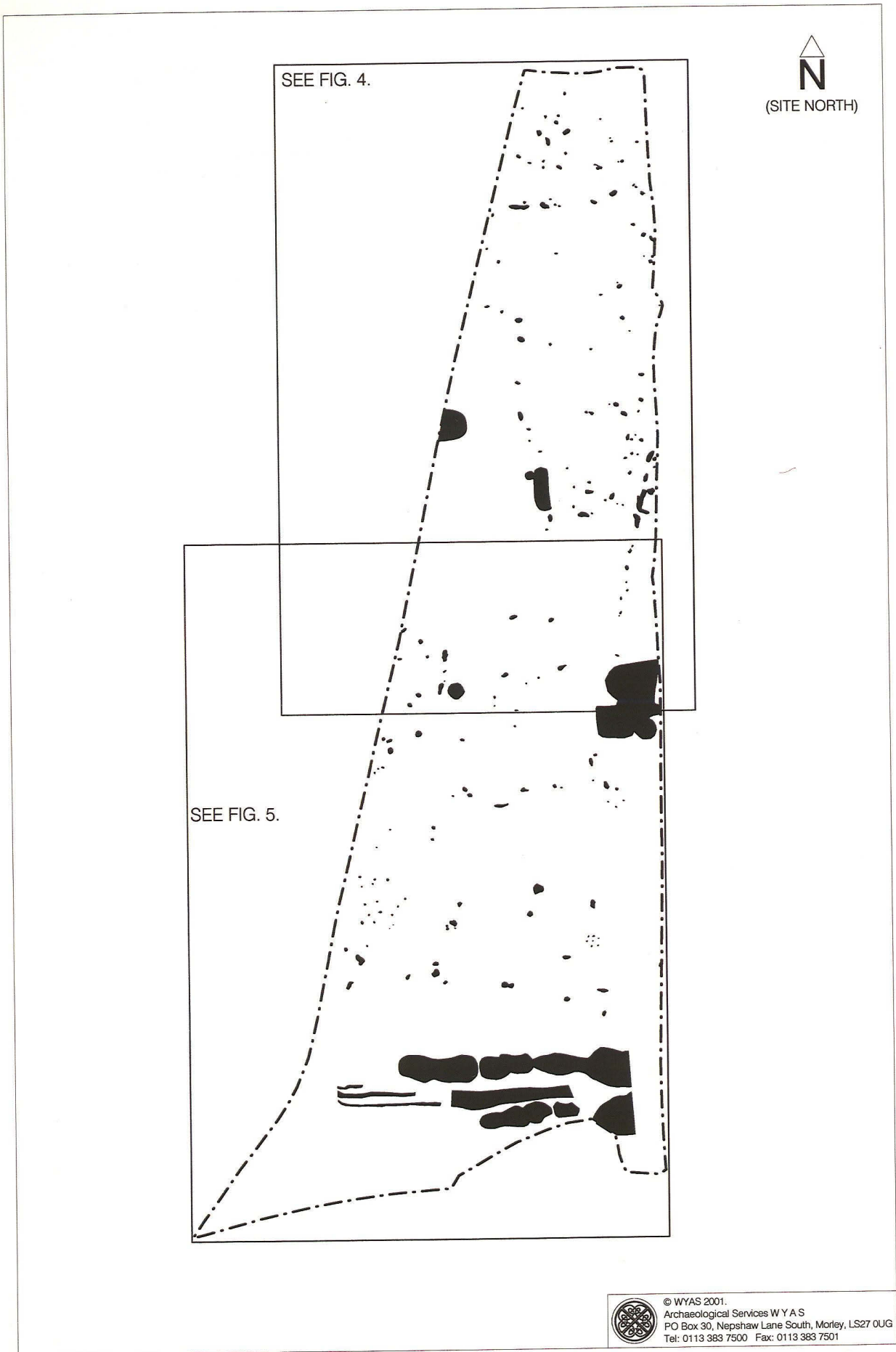


Fig. 3. Detailed site location plan

0 50m

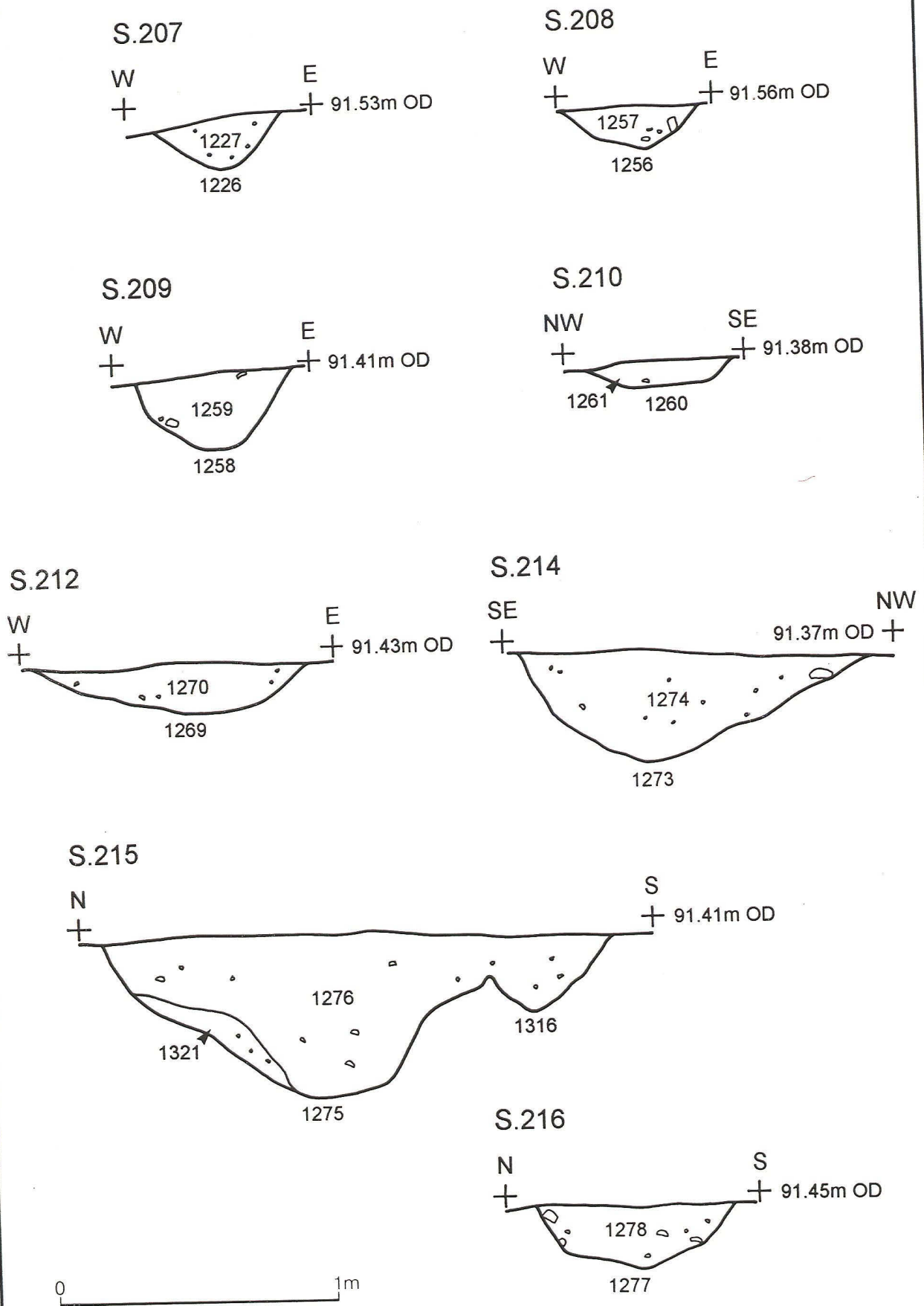


Fig. 6 Phase I: Sections; Group 1 pit alignment

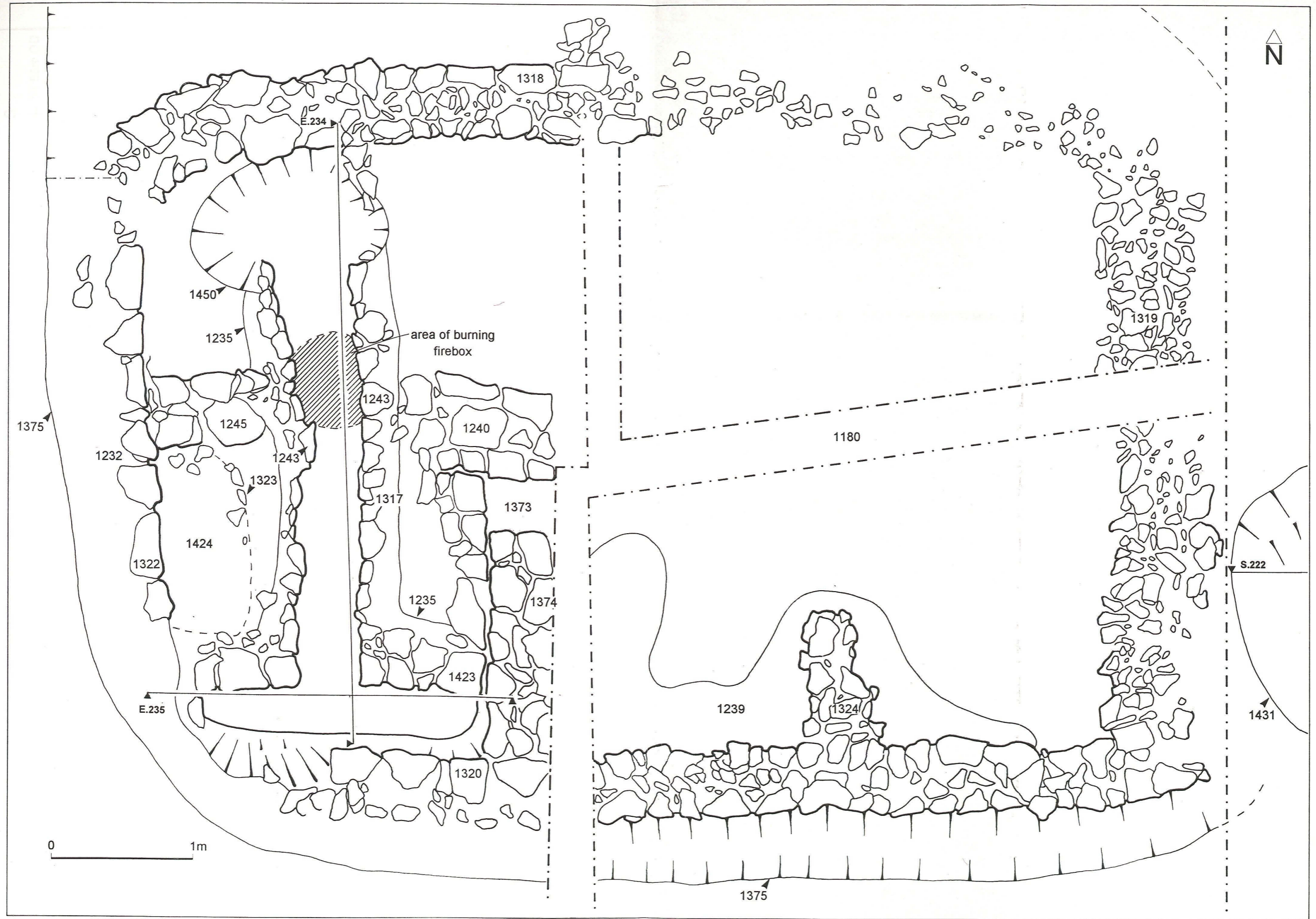


Fig. 7 Phase 3: Plan of Structure 1

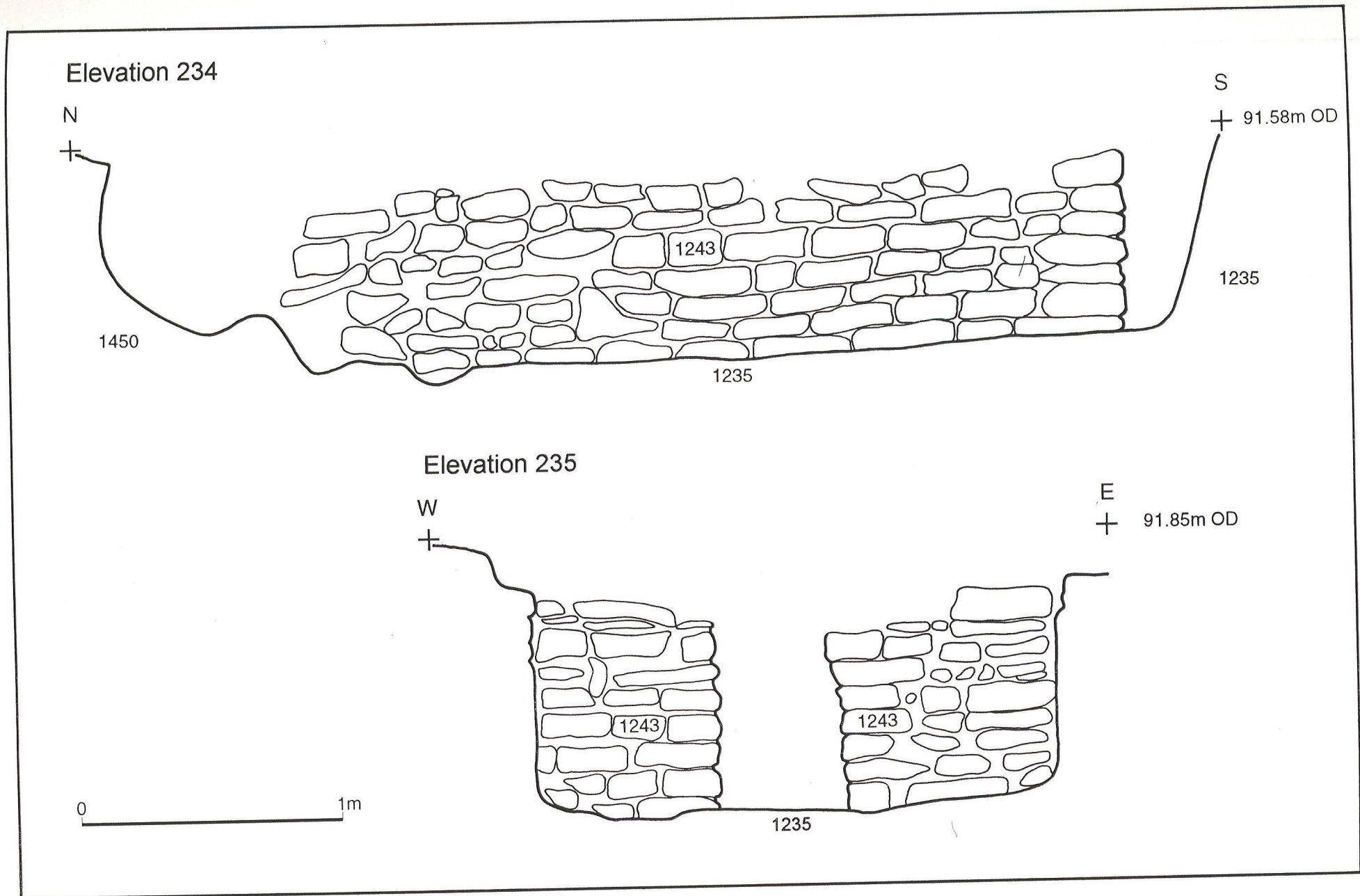
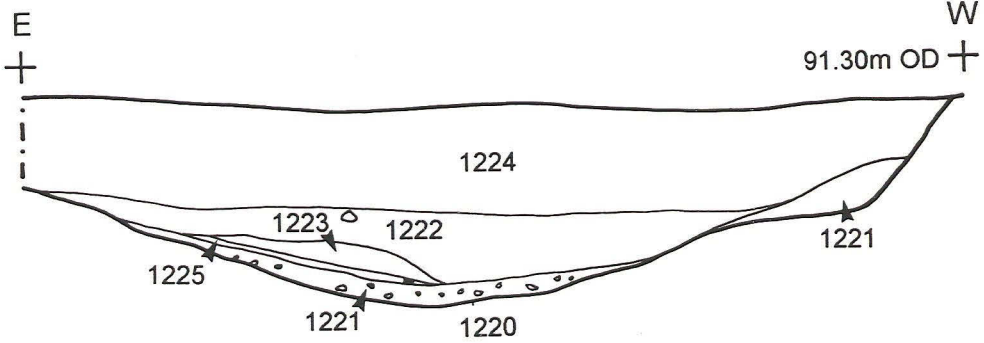
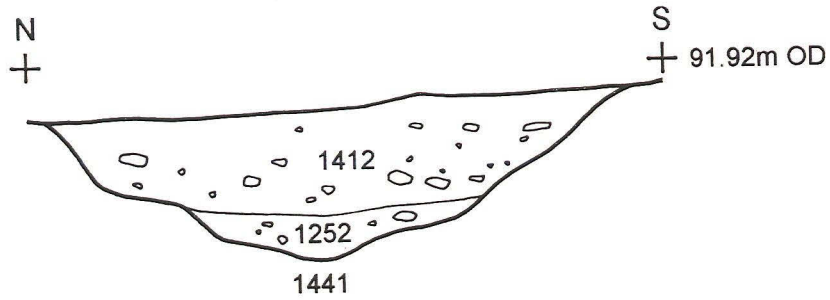


Fig. 8 Phase 3: Elevations of Structure 1

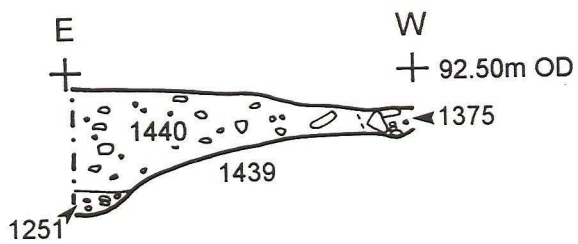
S.205



S.221



S.222



0 2m

Fig. 9 Phase 3: Sections through quarry pits 1220, 1441 and 1439

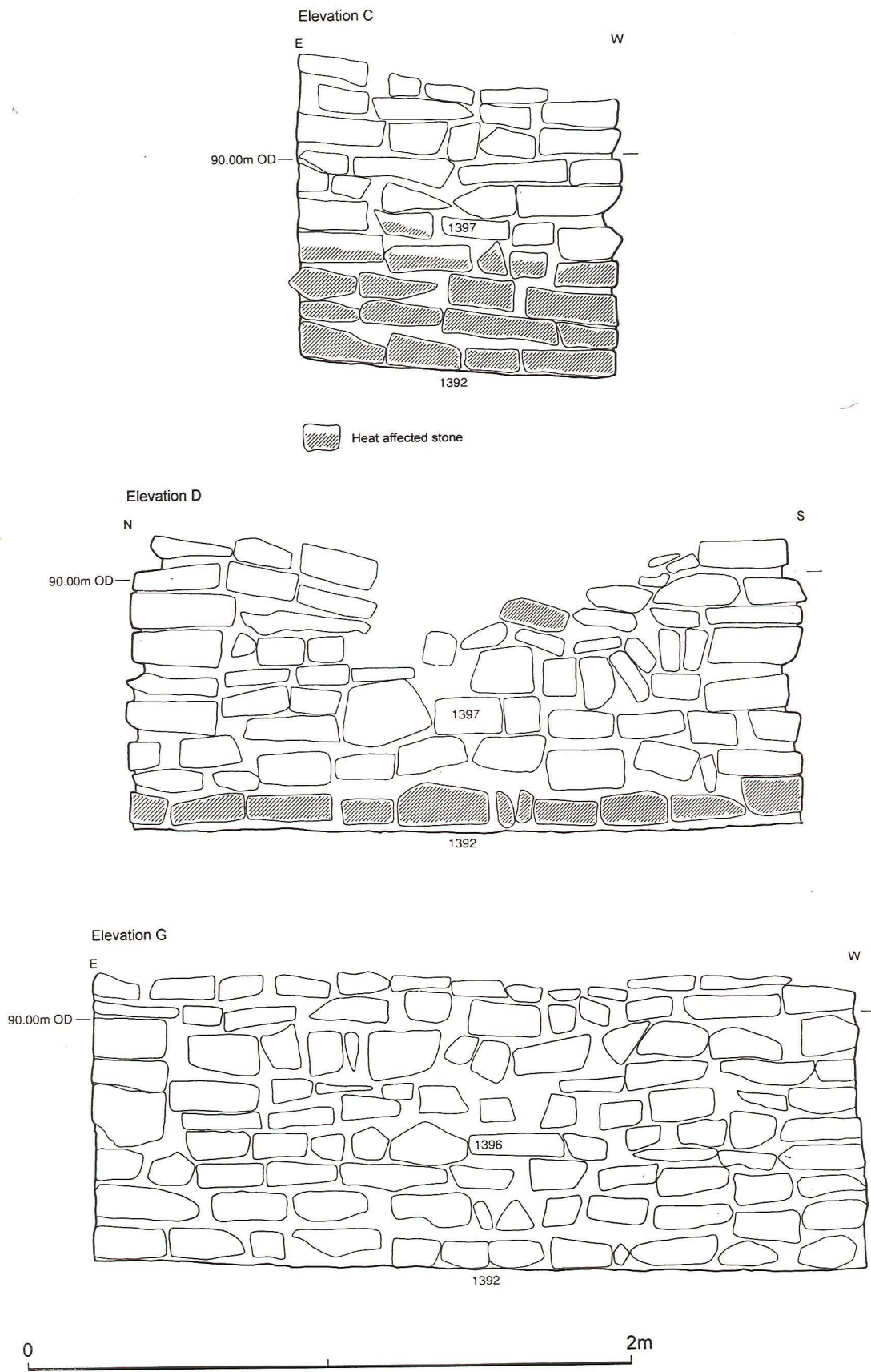


Fig. 11 Phase 3: Elevations of Structure 2

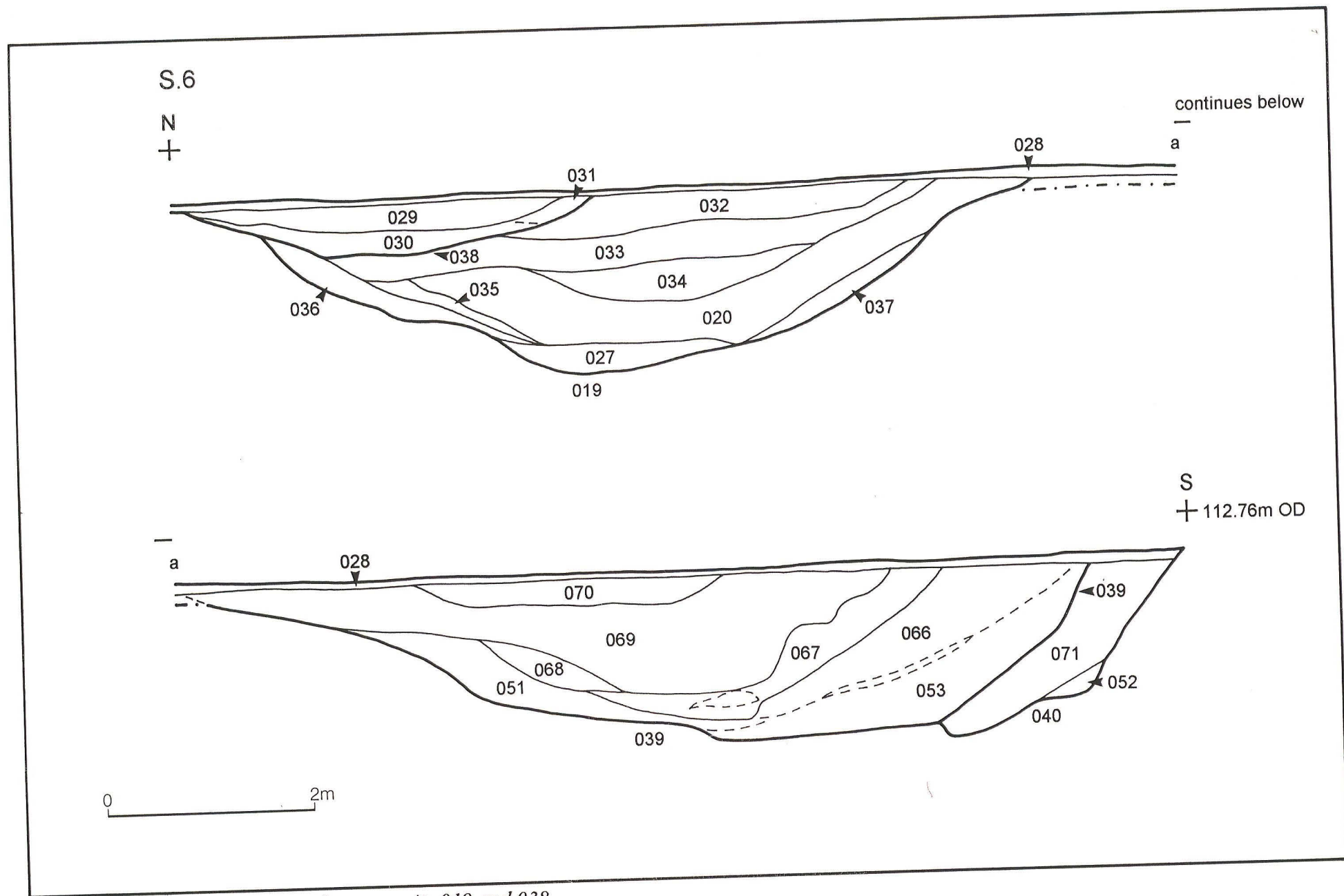


Fig. 12 Phase 3: Sections through quarry pits 019 and 038

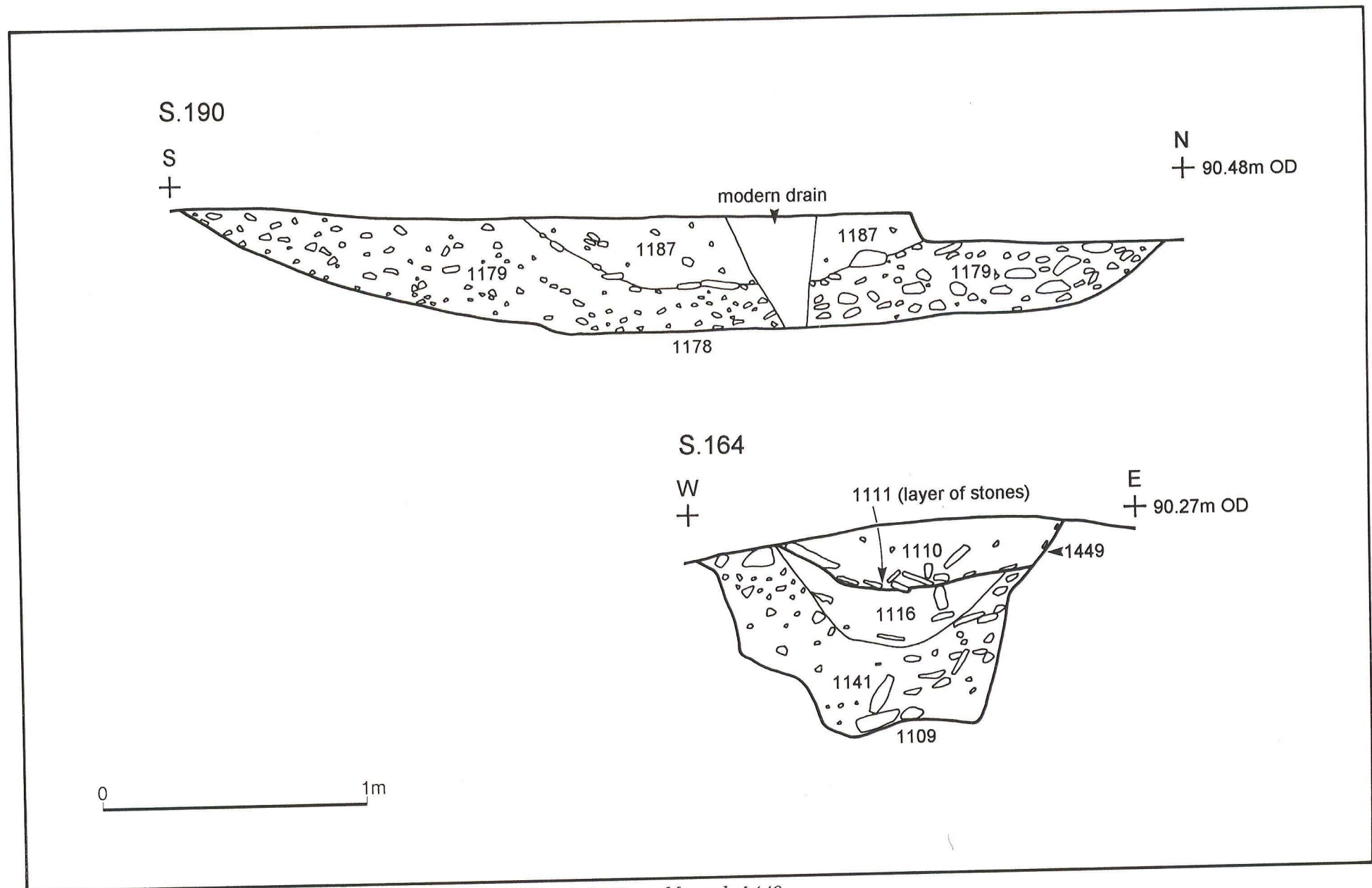


Fig. 13 Phase 3 and unphased: Sections through pit 1178, pit 1109 and hearth 1449

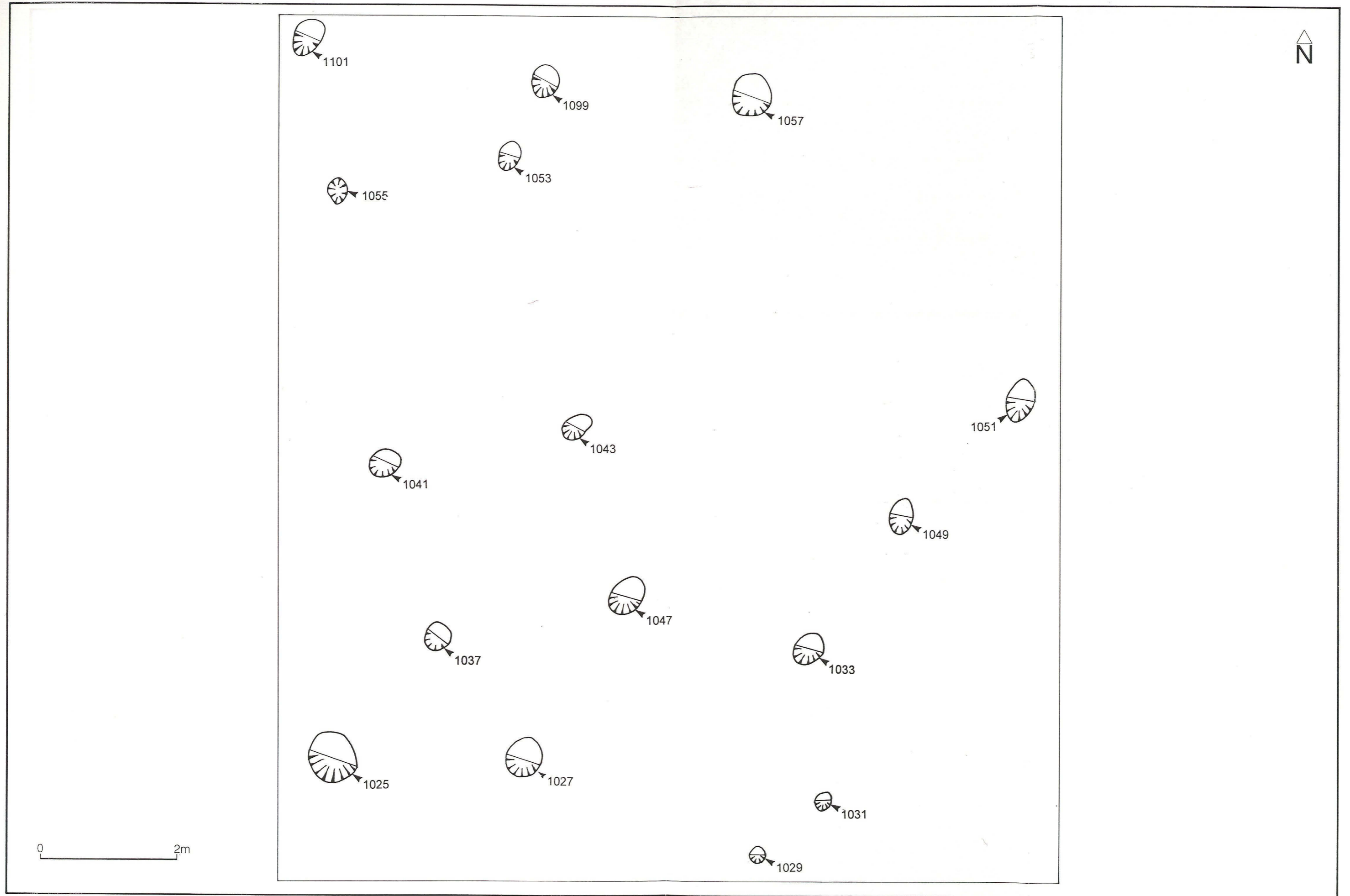
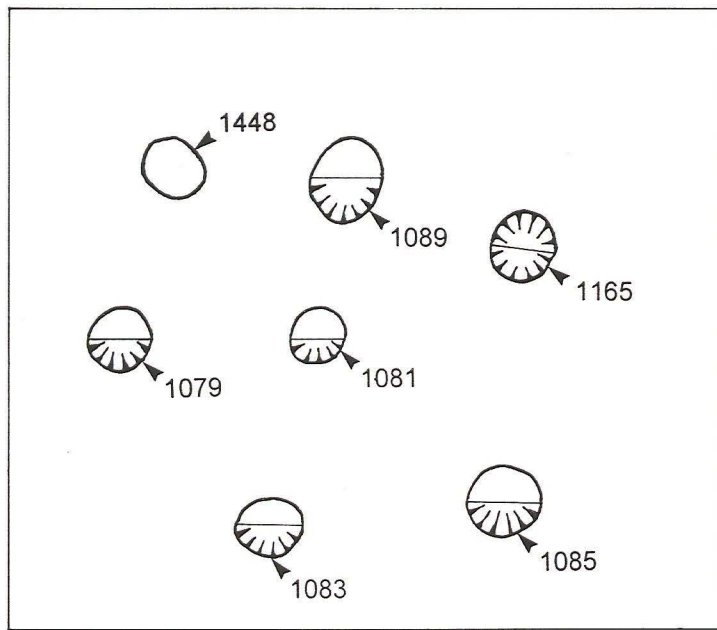


Fig. 14 Unphased: Plan of Structure 3 and Group 2 post-holes



0 2m

Fig. 15 Unphased: Plan of Structure 5

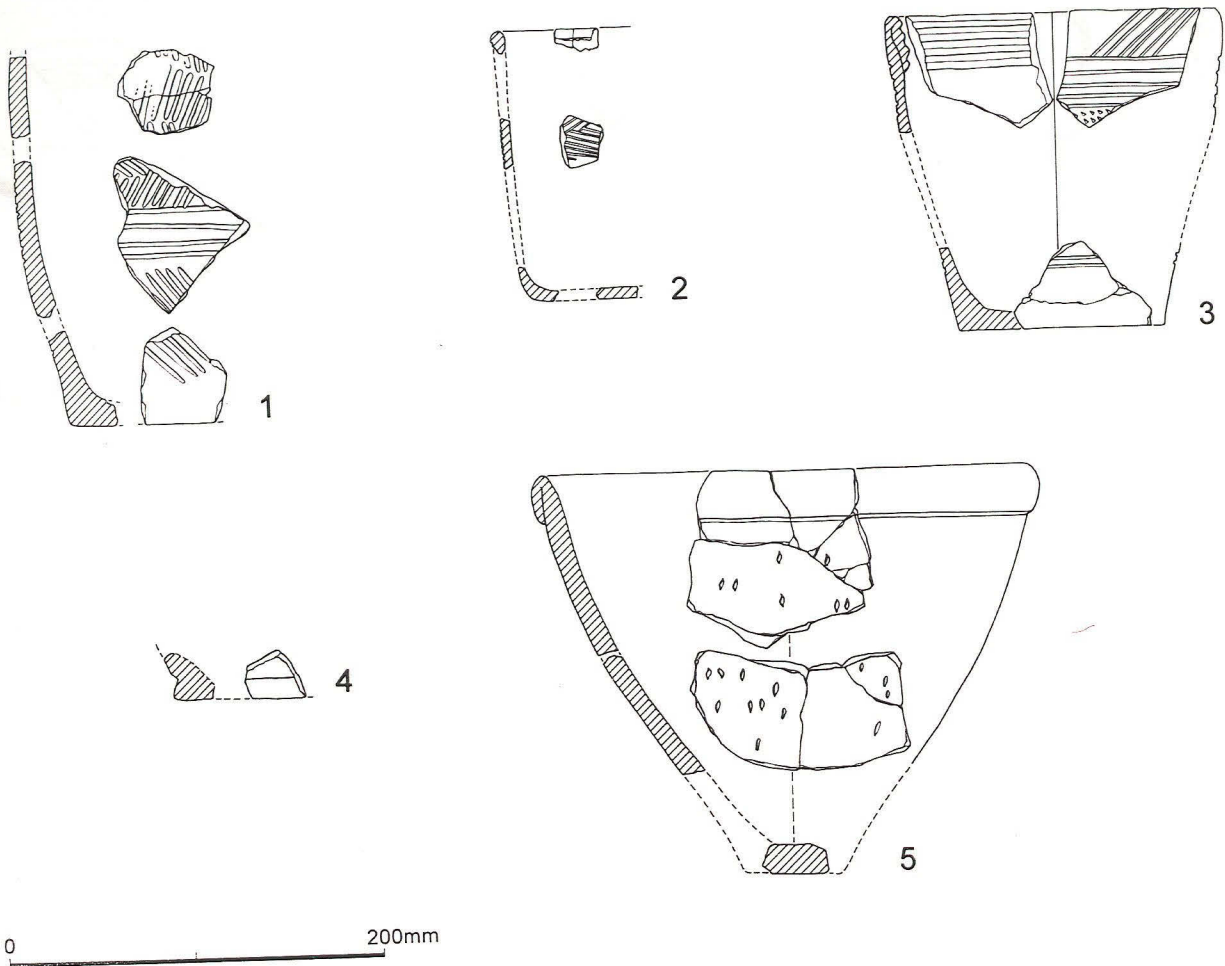
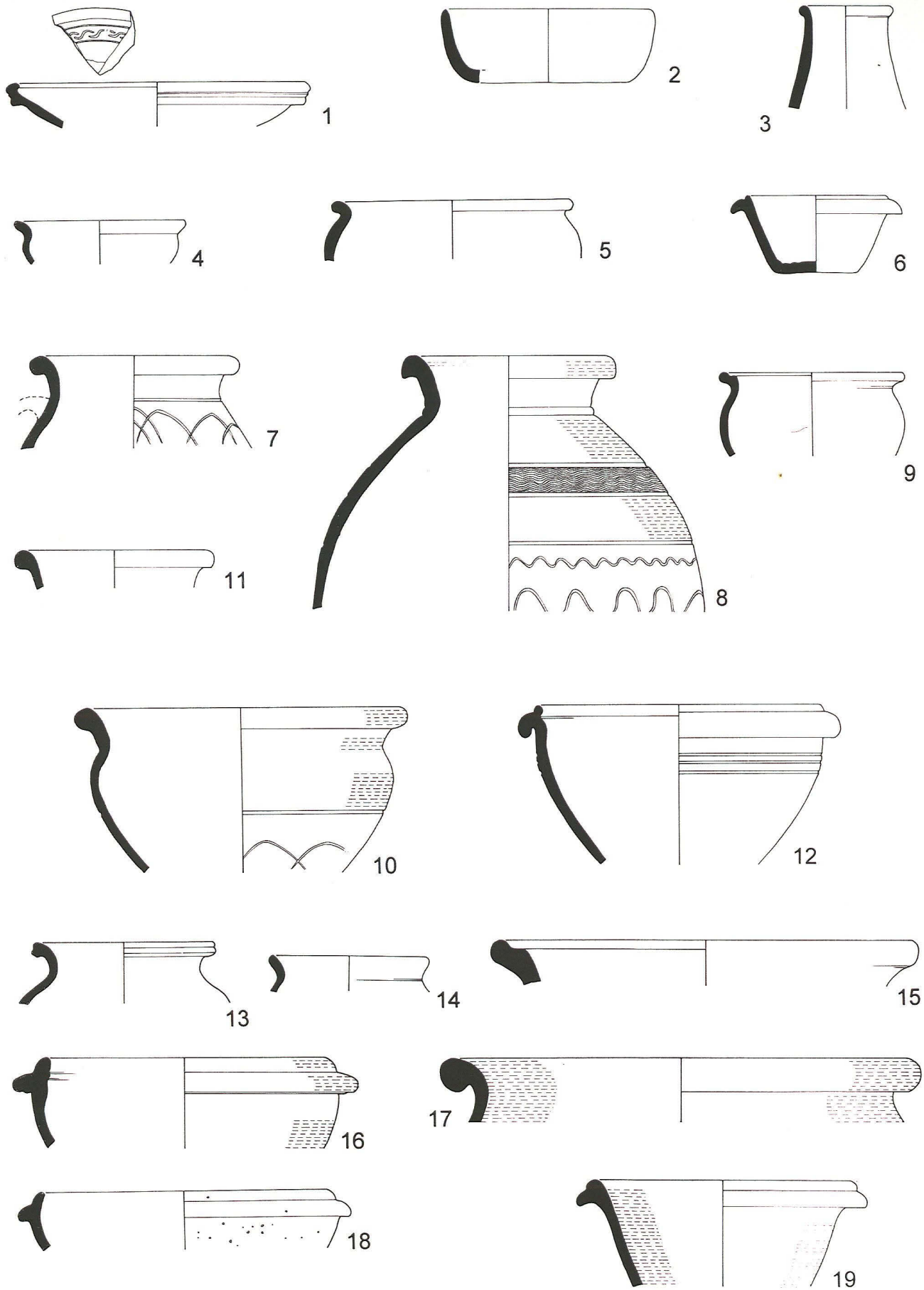
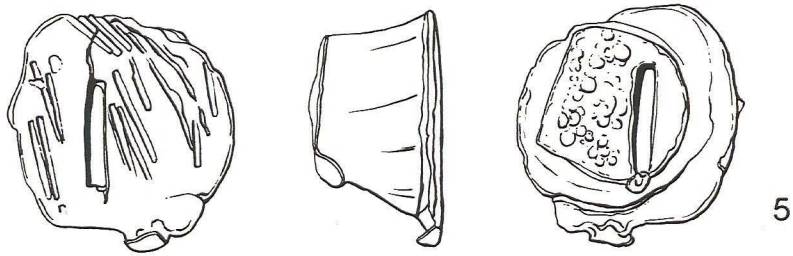
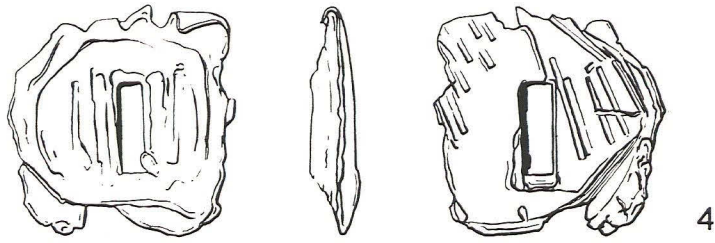


Fig. 16 Prehistoric pottery illustrations

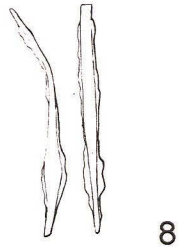
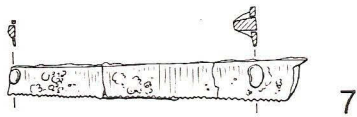


0 200mm

Fig. 17 Roman pottery illustrations

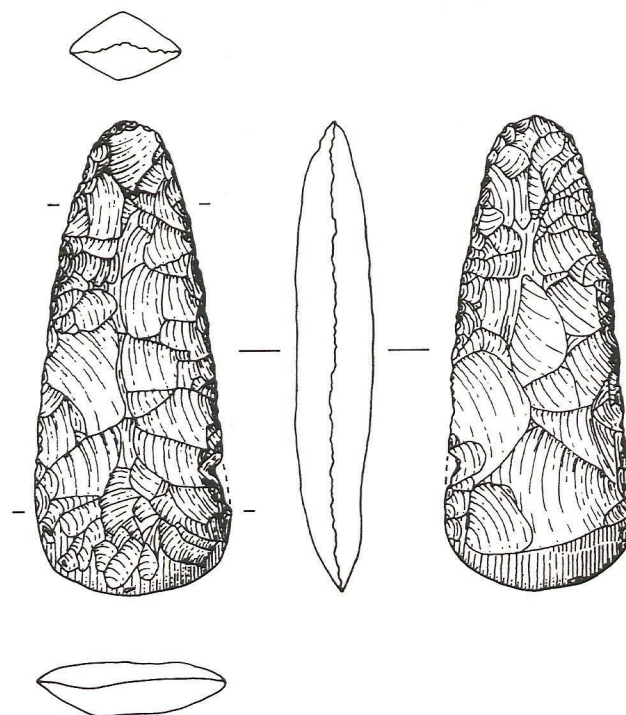


0 100mm



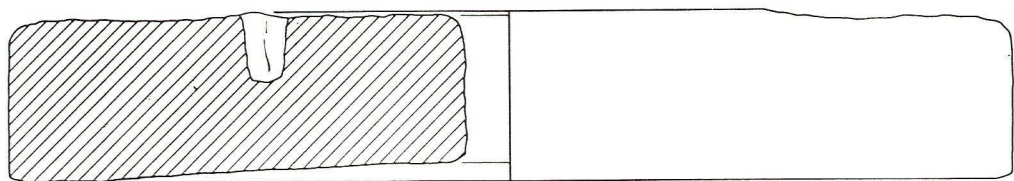
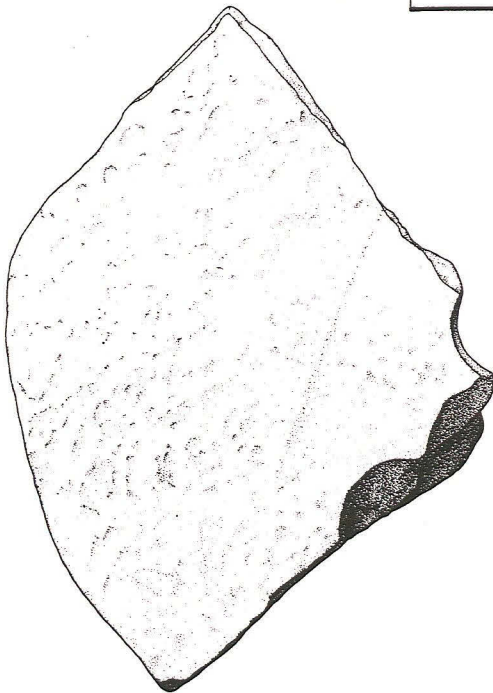
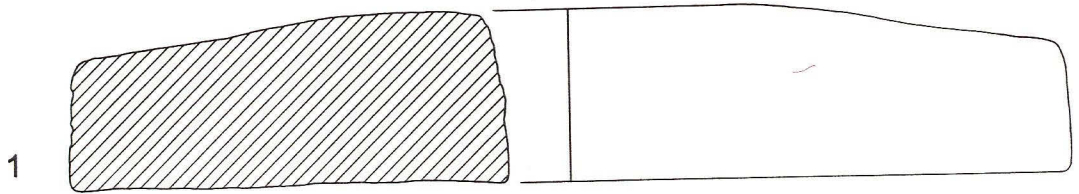
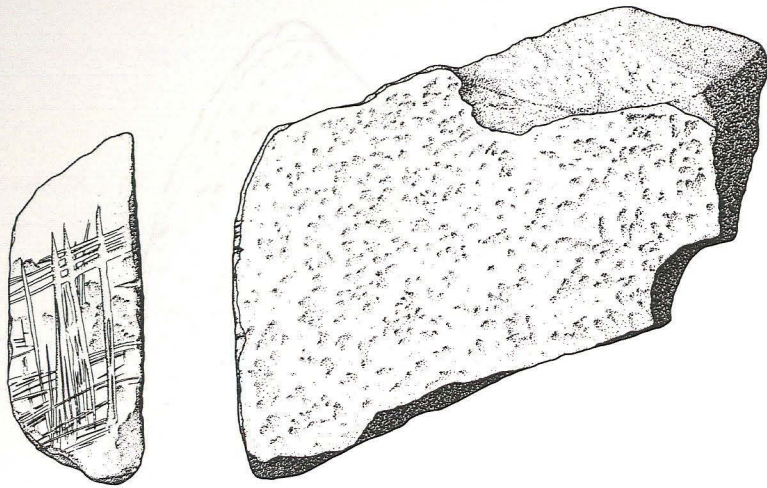
0 200mm

Fig. 18 Metalwork illustrations



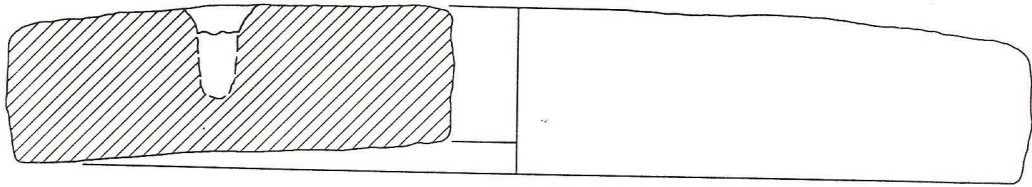
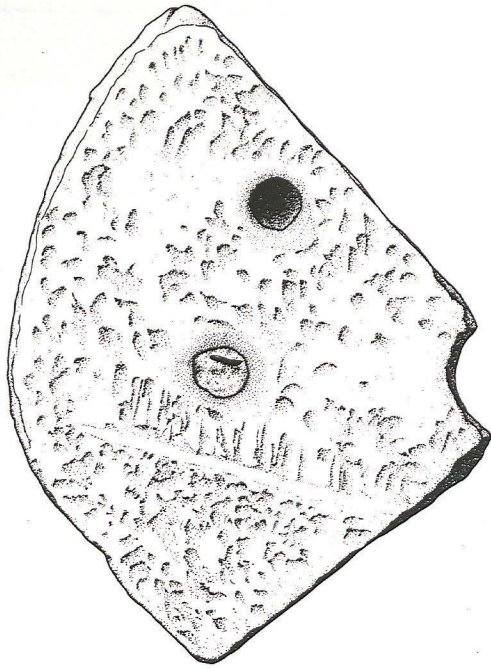
0 100mm

Fig. 19 Flint adze illustration



2

Fig. 20 Millstone illustrations



3



Fig. 21 Millstone illustration

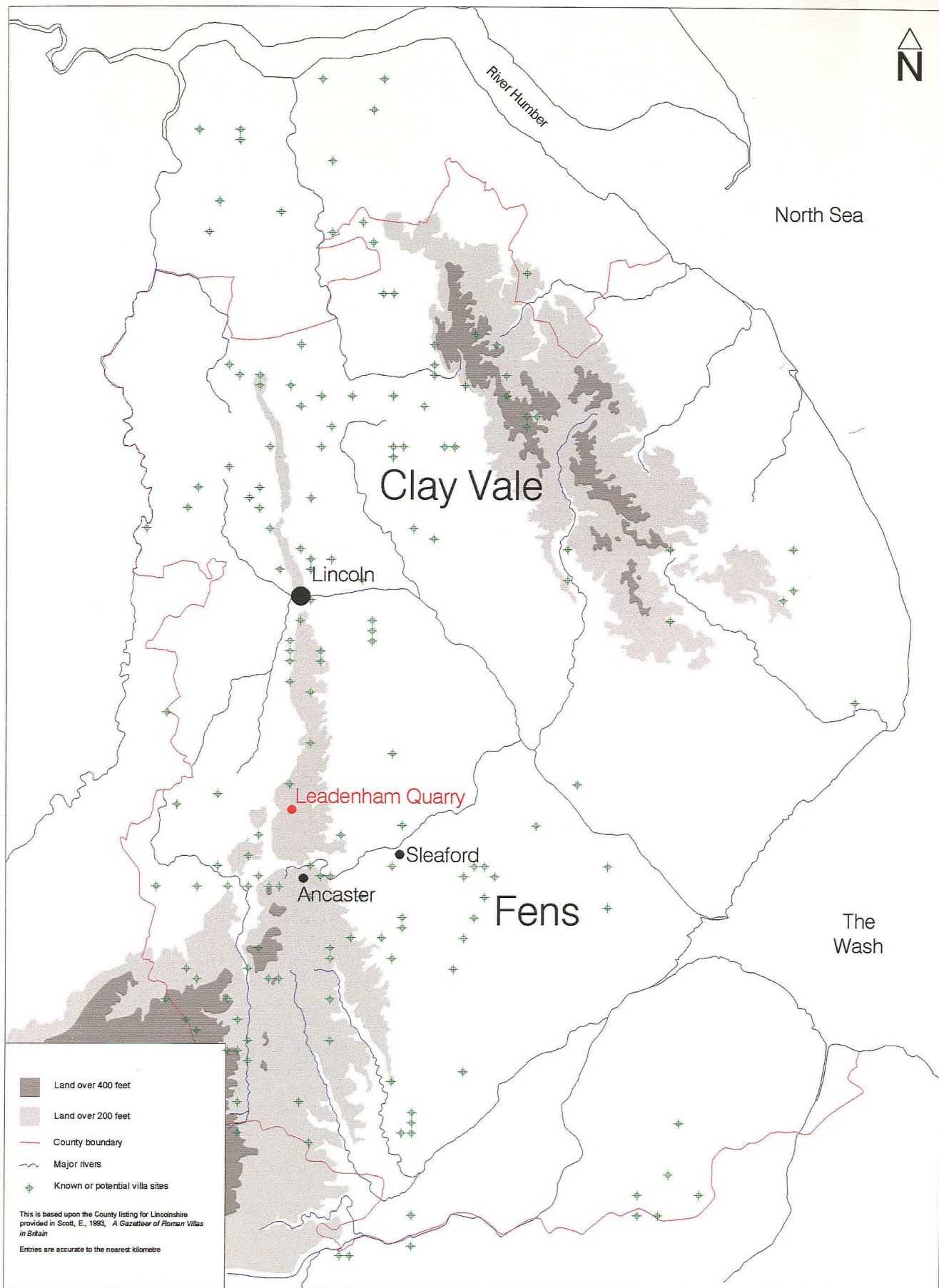


Fig. 22. Distribution of known and potential villa sites in Lincolnshire



Pl. 1 View of Group 1 pit alignment, looking north-east



Pl. 2 Structure 1 under excavation, looking north-east



Pl. 3. Structure 1, fully excavated, with quarry pit 1440 in the background, looking east



Pl. 4. View of germinating spelt wheat grain, recovered from Structure 1, Scale c. 6:1



Pl. 5 Structure 2 under excavation, looking south



Pl. 6 Structure 2 fully excavated, looking east



Pl. 7 Detailed view of Structure 2, fully excavated, looking west