NAA

EXCAVATION REPORT

GOLDTHORPE INDUSTRIAL ESTATE

GOLDTHORPE

SOUTH YORKSHIRE

NAA 13/131
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GOLDTHORPE INDUSTRIAL ESTATE

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SOUTH YORKSHIRE

prepared for

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EXCAVATION OF A CHANGING LANDSCAPE AT GOLDTHORPE

ARCHAEOLOGICAL EXCAVATION REPORT

EXCAVATION OF A CHANGING LANDSCAPE AT GOLDTHORPE,

SOUTH YORKSHIRE

Summary

This report presents the results of archaeological excavations undertaken in advance of the development of an Aldi Stores distribution centre at Goldthorpe, South Yorkshire. The excavations were undertaken by Northern Archaeological Associates on behalf of Aldi Stores Ltd between December 2012 and March 2013. The site was located within three fields situated immediately to the west of Goldthorpe Industrial Estate.

The earliest archaeological features revealed by the excavations were related to an Early Bronze Age funerary landscape and consisted of three cremation burials. Two of these were located under the area of a stone cairn or barrow, which was positioned near the crest of a north-facing slope at the southern end of the site. Further Bronze Age activity elsewhere on the site, was represented by a number of pits and an oval gully, potentially the ditch around a much smaller barrow, situated in the lower-lying north-west corner of the excavation area.

A late Iron Age or early Roman period field system, comprising a series of ditched enclosures, extended across the entire development area. This extensive field system appeared to have been laid out as a single event, and one of the principal ditches had been diverted around the Bronze Age cairn. Some of the ditches extended beyond the limits of the excavated area suggesting that the site formed part of a much larger complex system of conjoined enclosures. A corner enclosure, identified at the intersection of the four principal ditches of the field system, housed some form of structure in its primary phase. After this structure fell out of use, it was removed and the corner enclosure was reduced in size and used as a stock corral; two rows of parallel posts demonstrated that it was maintained in some form of use into the immediate post-Roman period. Further post-Roman activity included two corn drying kilns, radiocarbon dated to the 5th or 6th centuries. Kilns of this date are nationally very rare making these particularly significant discoveries. Both corn drying kilns were situated within the corner of fields, further indicating that the field system continued in use into the post-Roman period.

Exposed archaeological features which post-dated the post-Roman field system included a 17th or 18th century farmstead limekiln, which lay towards the eastern edge of the development area, medieval ridge and furrow cultivation and a post-medieval enclosure field boundary.

The artefactual assemblage included flint flakes and cores; a range of pottery dating from the early prehistoric to the post-medieval period; a glass fragment; slag; a pivot stone; an iron object; a small quantity of burnt bone and an animal tooth.

INTRODUCTION

The Project

This report presents the results of archaeological excavation undertaken in advance of the development of an Aldi Stores Ltd distribution centre on land to the west of Goldthorpe Industrial Estate, Goldthorpe, South Yorkshire (Figure 1). The work was carried out by Northern Archaeological Associates Ltd in accordance with a Written Scheme of Investigation (WSI) (NAA 2010a) agreed with South Yorkshire Archaeological Services. The excavation commenced in December 2012 and continued until March 2013.

The archaeological work involved the monitoring of all development related groundworks and the recording and investigation of all archaeological remains that were exposed (Plate 1). This report presents the analysis of the results of the archaeological excavation.

Plate 1: General view of site during the monitoring of soil stripping

The Development Background

The archaeological investigations considered by this report relate to the development of the distribution centre with associated loading areas, parking, services and landscaping located in a large field south of Carr Dike, which is a canalised stream that bisects the site (Plate 2). An access road, through a field north of Carr Dike, connects the new distribution centre with Commercial Road and except for some landscape bunds along the north bank of Carr Dike and a number of narrow service trenches, the remainder of this field remained undeveloped.

Plate 2: View along Carr Dike, looking east

The archaeological work was a requirement of planning permission granted in 2007 (2007/1645) and renewed in 2010 (2010/0879). The archaeological potential of the site was recognised initially by earlier investigations, between 2001 and 2003, as part of a different development proposal (Figure 2). An assessment of the archaeological potential was undertaken as part of this development in 2007 (NAA 2007).

Site Description

The development area comprised parts of three agricultural fields immediately west of Goldthorpe Industrial Estate, to the south-west of Goldthorpe village (Figure 1). The site, centred on NGR SE 4470 0350, was partially bounded by Commercial Road to the north, Heather Garth Primary School to the south and agricultural fields to the west. The Carr Dike runs within a drain east to west across the northern part of the site, dividing a large field to the south from smaller fields to the north. The site enclosed approximately 24.18ha of gently undulating agricultural land and lay at an elevation of approximately 28m above Ordnance Datum. The underlying solid geology consisted of Upper Westphalian coal measures of the Carboniferous period (BGS 1977). The soils and drift geology in the area have not been surveyed (SSEW 1983, Jarvis *et al*. 1984). The natural deposits as exposed during excavation comprised sandstone bedrock across the majority of the site overlain by sandy silts in the lower ground adjacent to the dike.

The Archaeological and Historical Background

The archaeological potential of the site was first recognised in a desk-based assessment related to the previous development proposal for the eastern half of the site (Davies and Sayer 2001). This noted that a series of cropmarks relating to an extensive ditched field system extended across and beyond the boundaries of the site. Where these had been investigated within the region, they had proved to be Iron Age or Roman in date. A sample geophysical survey of approximately 50% of the area (Webb 2001), followed by a limited trial trench evaluation (WYAS 2003), confirmed the presence of infilled

ditches. This work revealed a small enclosure, measuring approximately 26m by 22m, with radiating ditches to the north of Carr Dike. To the south of the Dike was a number of field system ditches. A corner enclosure, positioned within the intersection of two of the principal ditches was interpreted as a stock corral. It was clear from this work that the field system extended into the western half of this southern field (Figure 2).

The western half of the site has been the subject of a desk-based assessment (Robinson 2007) and geophysical survey (Biggs 2011). This latter survey confirmed the continuation of the field system and that it extended beyond the site to the south and west. The combined geophysical surveys suggested the division of the land into rectangular fields radiating from a principal north-east to south-west aligned ditch. Toward the southern end of the site, the line of this principal ditch had been diverted before resuming its course, resulting in a localised arc (Figure 2).

Plate 3: Excavation of the Iron Age and Roman field system

More widely, the site is located within a landscape of late Iron Age to Roman settlement enclosures and field systems (Figure 3). These have been recognised, for the most part, as cropmarks, with the nearest being *c*.500m north at Holly Grove Farm (Merrony 1993) and 1.6km to the north-east at Thurnscoe (Neal and Fraser 2004). A number of these, including Thurnscoe, Jump (Robinson forthcoming) and Upper Woodhead Farm, both near Wombwell (Northamptonshire Archaeology 2003), Armthorpe, (WYAS 2004) and Parrot's Corner, Doncaster (NAA 2010b) have been confirmed by archaeological excavation. The site at Holly Grove Farm was also confirmed through geophysical survey and trial trench evaluation, and included at least two enclosures, a droveway and field boundary ditches. Some of these boundary ditches appeared to lead south, across the A635 toward Goldthorpe Industrial Estate and may form part of the same field system revealed within the proposed development area (Figure 4). The site at Holly Grove Farm was undated but at Thurnscoe, just over

1km to the north-east, excavation has revealed a very similar site consisting of a series of Roman enclosures with associated field systems, linked via a trackway (Neal and Fraser 2004). At Armthorpe excavations revealed progressive sub-division of the land from the Iron Age to the late Roman period, with associated droveways, settlement and corral enclosures.

The Excavation

The topsoil and non-archaeological subsoils were stripped by mechanical excavators under constant supervision by archaeologists (Plate 1). A pre-excavation plan of the archaeological remains was produced using sub-centimetre GPS and the features were then sample excavated to the agreed methodology specified within the Written Scheme of Investigation (NAA 2010a). The area north of Carr Dike was subject to limited archaeological investigation as the majority of the area remained unaffected by the development, except for the access road and services; the groundworks for which were monitored by archaeologists.

The archaeological features encountered dated predominately to the late Iron Age and Roman period and were located across the full extent of the development area (Figures 5-11; Plate 3). The features included an extensive field system, which was consistent with the series of linear responses identified during geophysical survey. The field system comprised large fields delimited by four principal ditches, which were orientated north-east to south-west and north-west to south-east. The fields were sub-divided by a series of smaller ditches and the results of the excavation indicated that the entire field system had been laid out contemporaneously, or that the subdivisions were added and that the ditches were cleaned together routinely. An additional corner enclosure, or corral, was identified at the intersection of two of the principal ditches, within which a series of pits were encountered. A small rectilinear enclosure was also identified to the immediate north of the corner enclosure. Radiocarbon dates suggest that the field system was maintained into the immediate post-Roman period and two post-Roman corn dryers were also encountered, both in the corner of fields. Numerous pits were also identified at dispersed locations within the wider fields.

Plate 4: Excavation within the area of the Bronze Age cairn, looking north

Within the south-western part of the development area, the principal field boundary ditch had been diverted around a pre-existing feature in the landscape. Excavation revealed two cremations in this area, one of which was accompanied by an Early Bronze Age collared urn. A number of large stones in the vicinity indicated that a Bronze Age cairn may have occupied this position (Plate 4).

A continuous oval gully was identified in the north-west corner of the development area which also dated to the Bronze Age and may represent the remains of a ditch associated with a barrow.

Exposed archaeological features which post-dated the Roman field system included medieval or post-medieval ridge and furrow cultivation, which survived as shallow linear features, and a limekiln located towards the eastern edge of the development area.

The artefactual assemblage included flint flakes and cores, pottery dating from the Early Prehistoric to the Post-medieval period, a glass fragment, slag, a pivot stone, an iron object, a small quantity of burnt bone and an animal tooth. Bulk soil samples of 40l, where possible, were recovered from appropriate deposits and examined for the presence of palaeoenvironmental material.

A plan of the excavated archaeological features is presented in Figures 5 to 11 and a context register detailing finds and samples information is presented in Appendix G.

EXCAVATION RESULTS

South of Carr Dike

Archaeological features were identified across the full extent of the development area, many of these corresponded to linear anomalies identified by the geophysical surveys (Figure 2). The responses represent a field system based on four principal ditches orientated from north-east to south-west and north-west to south-east (Plate 3). Analysis of the artefactual assemblage confirmed that the field system was established by the late Iron Age or early Roman period and remained in use until at least the 6th or 7th century AD.

The Bronze Age

Funerary Landscape

In the south-western part of the development area, one of the principal ditches of the late Iron Age and Roman field system has been diverted around a pre-existing feature in the landscape. Two cremations and an area of large stones indicated that this ditch was avoiding the remains of a former Early Bronze Age burial cairn (Figure 6).

A pit (212) measured 0.57m in diameter by 0.13m in depth was found to contain the cremated remains of two individuals. The first was that of a mature adult whereas the second was no older than 17 years of age at the time of death (Appendix E). A sample

of the cremated human bone was submitted for radiocarbon dating and returned an Early Bronze Age date range of 2022-1780 cal BC (SUERC-48110).

The other cremation pit (328) was identified 9m to the east of pit 212 and measured 0.43m in diameter by 0.24m in depth. The remains of an Early Bronze Age collared urn were recovered from the fill of the pit (Plate 5), along with the cremated remains of a single individual, for which the age could not be determined. The vessel lay on its side and the upper half had been truncated, presumably by ploughing. As the majority of the cremated bone fragments were found outside of the vessel, it was likely that it had been intended as a grave good rather than as a container for the burial. The radiocarbon date of 1955-1760 cal BC (SUERC-48118), returned from the cremated bone within this pit, confirmed an Early Bronze Age date for the burial. This is therefore a significant discovery as the collared urn is the first to be associated with an Early Bronze Age cremation burial from the coal measure landscape bounded by the Rivers Calder and Don, and the Pennines Gritstone uplands to the west (Appendix B).

Plate 5: Early Bronze Age collared urn associated with cremation burial 328

Charcoal from the fills of both cremations was analysed and revealed that oak was the predominant species used as fuel for the pyre, and that small quantities of hazel were potentially used as tinder (Appendix F).

To the south west of the two cremations, a spread of large stones (340) had been dispersed through ploughing and extended over an area measuring 15.2m by 3.4m. The stones were a mixture of naturally outcropping sandstone, larger quarried stone blocks and a small number of water worn cobbles. They had been compacted into a

band of soft natural silty sand and appear to be the surviving remnants of a cairn probably related to the nearby cremations. A separate spread of large stones (370) to the south-east of this area, may also have formed part of this plough dispersed cairn. The cairn was clearly an existing landscape feature in the later Iron Age or early Roman period when the field system was laid out, but was probably no longer visible by the medieval period as it was overlain by ridge and furrow cultivation. Based on the deviation within the later ditch and the location of the cremations, we can assume that the cairn had a diameter of approximately 20m (Plate 4).

Another potential cremation (227) was identified approximately 160m to the north of the cairn (Figure 9). This comprised a small, and heavily truncated, pit containing some cremated bone. The bone fragments weighed 0.7g and due to the relatively small size of the sample it was impossible to identify whether this was human or animal bone.

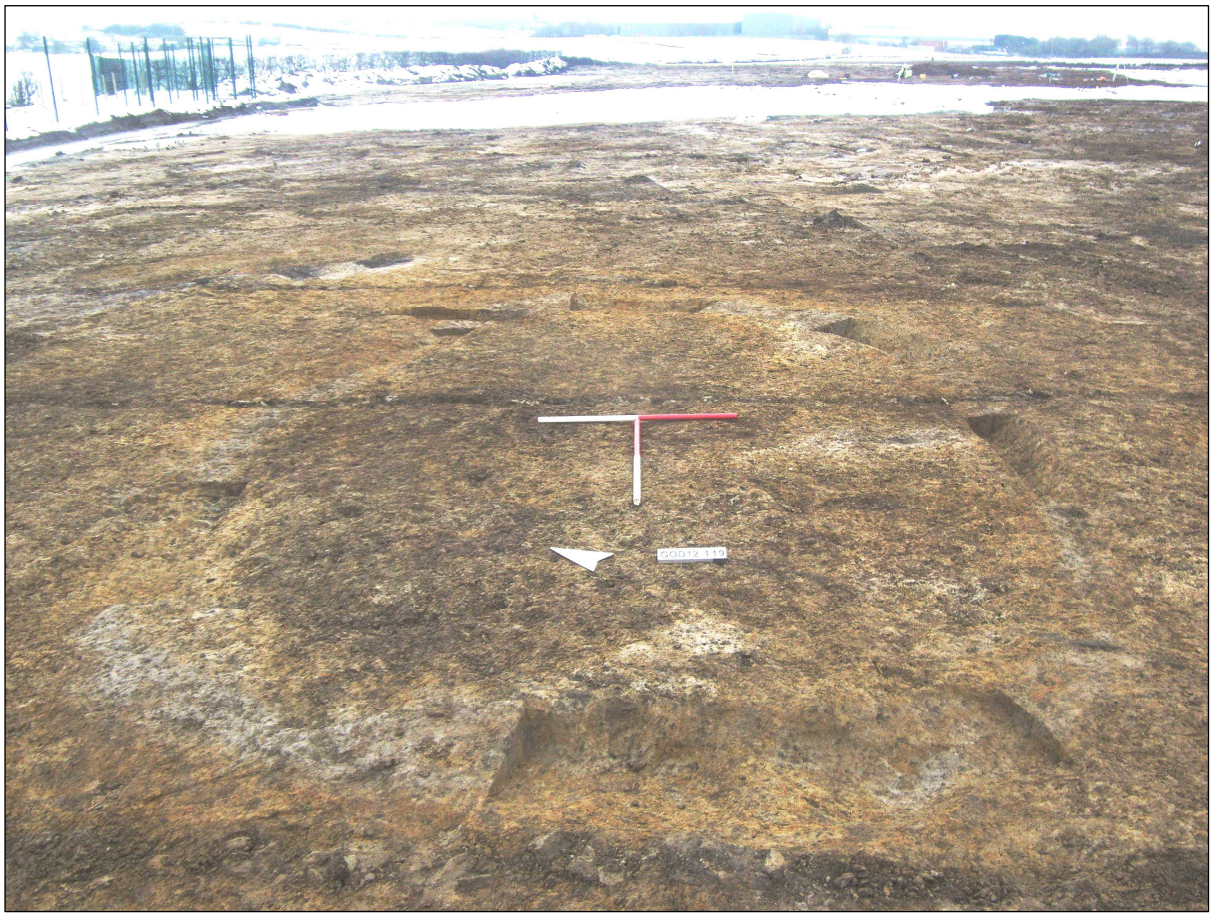

Plate 6: Bronze Age oval gully 119

Gullies

An oval gully (Group number 119; Plate 6) was identified adjacent to the north-western limit of the excavated area (Figure 7a). It measured 5.6m (north-east to south-west) by 4m (north-west to south-east) and had no break in its circuit for an entrance (Figure 7b). The gully had a V-shaped profile around the south-eastern edge but had a concave base elsewhere. It displayed a maximum width of 0.6m with a maximum depth of 0.22m. It was filled by a single deposit of mid-grey silty sand. No finds were recovered and no internal features were identified to indicate its function. A sample of oak charcoal

recovered from the fill of the gully was submitted for radiocarbon dating. This returned an Early to Middle Bronze Age date of 1608-1436 cal BC (SUERC-48109) but it was a single sample from a long lived species and should be viewed with caution. The lack of break in the circuit of the feature might indicate that it was associated with a small barrow-type monument rather than a domestic structure, and thus formed part of the funerary landscape.

A sinuous gully (138), 2.4m in length with a V-shaped profile and a similar fill to gully 119, was identified 0.38m to the south-west of the oval gully and may have been associated with it (Figure 7b).

Pits

Features that may also have been contemporary with gully 119 included two intersecting pits (149 and 151) and a single pit (120). Intercutting pits 149 (0.67m by 0.51m, depth 0.05m) and 151 (0.67m by 0.51m, depth 0.25) were located 2m north of the gully. The relationship between the two pits had been removed by a field drain. Both pits were filled with light grey sandy ash but no finds were recovered. Pit 120 lay 10m south of the gully and measured 2.4m by 1.3m with a maximum depth of 0.18m. The pit was filled with light grey silt but contained no finds.

Two further shallow pits (236 and 426) (Figures 6 and 8) were cut by the field system ditches and evidently pre-dated the late Iron Age or early Roman phase of land enclosure. The proximal end of a narrow blade characteristic of Mesolithic or early Neolithic flint knapping (Appendix A) was recovered from the fill of pit 426, but it could have been residual rather than contemporary with the filling of the pit.

Numerous other pits were identified in dispersed locations throughout the area of field system (Figures 5-11). In three areas, pits were grouped together (Groups 19, 575 and 576). Pit group 19 was situated towards the western edge of the development area (Figure 9) and comprised nine small pits (5, 7, 9, 11, 13, 15, 17, 20 and 23) from which no dateable material was recovered. The pits had similar mid to light brown sandy silt fills and were either circular or oval in plan; the oval pits were larger and aligned north to south. Pit group 575 was located in the south-eastern corner of the development area (Figure 10a) and comprised three pits (88, 468 and 480). Pits 88 and 480 were circular in plan and contained a charcoal-rich silty fill, whereas pit 468 was rectangular and had a stony backfill (Figure 10b; Plate 7), although all three pits contained burnt stones. A fragment of hazel

Plate 7: Pit 88 in Group 575, with rectangular pit 468 in background. Scale 1m

charcoal from fill (89) of pit 88 was submitted for radiocarbon dating and returned an Early Bronze Age date of 2195-1965 cal BC (SUERC-48108). Pit group 576, located in the north-western part of the development area (Figure 7a), comprised seven wide shallow pits (173, 175, 177, 182, 186, 206 and 211) filled by reddish brown clayey sand, four of which were also cut by the field system (ditch group 568).

Samples of oak charcoal taken from the fills of isolated pits 52 and 318 were submitted for radiocarbon dating to ascertain a date for some of the more dispersed pits; both pits were filled with dumps of burnt silty clay. Pit 318 was located just to the north-east of the cairn (Figure 6) and pit 52 was located at the eastern edge of excavation (Figure 10a) adjacent to two short lengths of discontinuous ditch (33, 35, 59 and 61). The samples from pits 52 and 318 returned mid-Bronze Age date ranges of 1413-1262 cal BC (SUERC-48107) and 1609-1447 cal BC (SUERC-48115) respectively. This implies that there must have been fairly dispersed use of the landscape during the Bronze Age period. It is worth noting, however, that not all of the pits were necessarily Bronze Age in date. One pit (458; Figure 10a) which contained Late Neolithic or Early Bronze Age flints, also contained late Iron Age pottery, and pit 546 south of the late Iron Age corner enclosure (Figure 8a) contained a sherd of pottery from the 13th to 14th century AD.

The Late Iron Age to Roman Period

Field system

The field system was formed by four principal ditches which were orientated north-east to south-west and north-west to south-east. The dimensions of these ditches varied from 1.45m to 2.55m in width and from 0.53m to 0.91m in depth and for the most part the ditches were cut into the natural bedrock. The majority of the excavated sections contained a single, mid-brown, silty sand fill but in places, dark-brown, silty sand was observed overlying this, having accumulated in depressions left following the compaction of the original fill; there was no evidence of differential filling suggestive of an earth bank to one side. Some evidence for re-cutting of the principal ditches was observed but only within 20m of the intersection, where the ditches were at their deepest (Figures 8a and 8b; Plate 8).

The areas delimited by principal ditches 561, 567, 568 and 569 were further sub-divided into 11 fields (A – K) of varying dimensions by a series of smaller ditches (Group numbers 559, 560, 562, 563, 564, 565, 566, 573) which generally ran parallel and perpendicular to the larger ditches. Excavation at the intersections, where the lesser ditches joined the principal ditches, confirmed that the field system was contemporaneous or at least these were added and then regular cleaning had removed the evidence. The lesser ditches were also filled by a single fill of mid-brown sandy silt. The dimensions of these ditches varied from 0.80m to 1.55m in width and from 0.24m to 0.38m in depth. Only one definite field entrance was recorded, and this was a 2m wide gap through ditch 564 (Figure 9).

It was probable that the field system was set out in the late Iron Age or very early Roman period as Pre-Roman Iron Age pottery sherds were recovered from low within the primary fills (251 and 243) of the ditches (233 and 242 respectively). These were crucially located at the intersection of the main ditches providing a good date for the

earliest use of the field system. Two joining rim sherds of a jar type prevalent in Lincolnshire from the mid-1st to mid-2nd century AD (Appendix C) were also recovered from the primary fill (280) of principal ditch group 561, where it diverted around the Bronze Age cairn. Further pottery recovered from the fills of the principal ditches in group 568, included 19 sherds of Pre-Roman Iron Age pottery, a Roman base sherd in an oxidised sandy ware and a grey ware jar base, dating from the late 1st to the mid-4th century AD. This dating evidence suggests that the field system was probably open throughout the Roman period. A charred wheat grain recovered from one of the fills (485) of the latest ditch re-cut (484) at the main intersection was submitted for radiocarbon dating. This returned a date range of 436-635 cal BC (SUERC48120), revealing that the principal ditches of the field system were still open into the post-Roman period. A base sherd of 18th century Redware was also recovered from the upper fill (416) of ditch cut 414 (Group 567), but this must have been intrusive. At the point where the four ditches intersected, a shallow deposit (245/520) was observed overlying the main fills of the ditches; this deposit may have accumulated at a time when the ditches still survived as slight earthworks. A fragment of a hearth bottom was recovered from this deposit (520).

Plate 8: Intersection of the principal ditches, with ditch 248 in foreground, looking south-west

Dateable artefacts recovered from the fills of the lesser ditches included pottery, namely a Roman grey ware base from fill 337 of cut 366 (Group 565) and three sherds of Roman oxidised sandy ware from fill 253 of ditch cut 252 (Group 560). One of these sherds displayed roughcast decoration. This indicated a local manufacture as roughcast

beakers have been identified nearby at Rossington Bridge, dating to the mid-2nd century (Appendix C).

Corner enclosure (Figure 8a)

A corner enclosure was identified within the north-eastern corner of Field E. The enclosure was delimited by two concentric curvilinear ditches (Group numbers 570 and 571), which enclosed areas with a radius of approximately 16m and 28m respectively. The interior of the area delineated by the inner ditch (570) had been eroded and filled by a layer of silty sand, indicative of trample within a stock corral. This inner ditch was steep-sided with an average width of 1.4m and an average depth of 0.6m. The ditch contained a single fill of mid-brown, sandy silt, with occasional sandstone fragments and heat-affected cobbles throughout. No finds were present within the ditch fill.

The outer ditch (571) was discontinuous and terminated approximately 10m from ditch 567. This ditch was also steep-sided and was on average 1.85m wide and 0.8m deep. Its fills were generally consistent throughout and comprised an accumulation of dark-brown, sandy silt, overlain by light-brown, silty sand, which appeared to represent an episode of intentional backfilling. Cut 510 also contained a primary fill of 0.02m depth of dark-brown, silty clay.

Within one excavated portion of the outer ditch (cut 516), was a primary fill of mid-brown silty sand that contained a high frequency of large sandstone boulders; this was unlike any other section of ditch excavated elsewhere at the site. It is probable that the stones were derived from a structure in the near vicinity, for which no other trace remained. An unusually large pivot stone (Plate 9) was recovered from the upper backfill (509) of the ditch terminal (507). This stone may have either been from a stone structure, perhaps a gate because of its size, or it was deliberately placed within the ditch terminal as some form of ritual; placed deposits, such as round objects, in ditch terminals as part of the backfilling process is a recognised phenomena within the Iron Age and Roman periods. The underside of the stone had broken off and this had removed the base part of the pivot 'bowl', leaving a hole through the stone. No further finds were present within the excavated fills.

Plate 9: Large broken pivot stone in ditch terminal 507

There had been some re-cutting of these linear ditches indicating the importance of maintaining the boundary in this area. A sample of charred wheat grain from the primary fill of the outer curvilinear ditch was radiocarbon dated to 46 cal BC – 76 cal AD (SUERC-48125), indicating that the corral was created in the late Iron Age or early Roman period, presumably when the system of land division was first laid out.

Along the southern edge of the corner enclosure, to the immediate north of ditch 567, the original ground level had remained relatively undisturbed by the trampling, and therefore survived to a higher level. Two small pits (494 and 511) and two postholes (439 and 535) also survived in this area. The eastern pit (494) was sub-rectangular with near-vertical sides and measured 1.4m by 1.2m with a maximum depth of 1.1m. A sample of charred wheat grain recovered from the fill was radiocarbon dated to 161 cal BC – 50 cal AD (SUERC-48124), suggesting that it was broadly contemporary with the corner enclosure, and the wider land division.

The western pit (511) was much shallower, measuring 1.42m by 1.0m with a maximum depth of 0.21m. The base and sides were lined with brown clay (513) and it was backfilled with yellowish-brown clay (512), suggesting that it was perhaps a clay-lined domestic or industrial feature that also had a clay superstructure. It was possibly related to the stone structure within the coral enclosure and to the two nearby postholes (439 and 535). A small flint flake, typical of Mesolithic or early Neolithic knapping, was recovered from the backfill (512) of pit 511, but this was likely to have been residual. The two postholes (439 and 535), were 4.0m apart and located to either side of the clay-lined pit (511). Posthole 439 measured 0.51m by 0.26m with a depth of 0.19m and posthole 535 was 0.38m in diameter with a depth of 0.12m. A single sherd of pottery / fired clay was recovered from the fill (536) of the southern posthole (535). It is possible that the features described above represent part of the possible structure, the remainder of which has been gradually eroded and removed during the corner enclosure's secondary use as a corral.

Evidence for disturbance, probably attributable to use of the enclosure as a stock corral, was encountered within the area confined to the corner of the principal boundary ditches (567 and 569) and the inner of curving ditches (570). Apart from a narrow area against ditch 567, the original ground level within the interior of this enclosure appeared to have been eroded and reduced, probably by trampling from the corralled cattle. This trampling had created a "bowl" filled by an accumulation of mid-brown, silty sand (555) to a depth of approximately 0.4m.

Five large pits (489, 497, 515, 528 and 530) were cut into the upper surface of the accumulated layer (555) and relate to a later use, suggesting that the corner enclosure was maintained. The pits were in two roughly parallel rows, aligned north-west to south-east, and their centres were 6m apart; the eastern row consisted of three pits (515, 528 and 530) and the western row of two pits (489 and 497). The pits were all broadly the same size, on average 2.0m in diameter and 0.55m deep but contained no finds or deposits to indicate their purpose. It is possible that they were left open, as the two western pits contained a primary fill derived from weathering. A sample of charred barley grain from the fill of pit 528 (529) was radiocarbon dated to 440 – 637 cal AD (SUERC-48126) indicating that the final activity within the corner of this field was post-Roman.

Rectilinear enclosure (Figure 8a)

The remnant of a small rectilinear enclosure survived approximately 15m to the north-east of the corner enclosure described above. It was appended to the south-eastern side of the principal ditch (569) and comprised two ditches (574 and 577), which formed

the south-west and south-east sides of a three sided enclosure. The ditches were between 0.85m by 0.4m in depth and enclosed an area approximately 30m by 20m and open to the north-east. They were generally V-shaped with a flat base and may have formed the support for a fence-line. No finds were present in the brown, silty sand fill of the ditches and no features were identified within the enclosed area. As the ditches forming the enclosure were found to be open contemporaneously with the field system, a late Iron Age / Roman date could be tentatively attributed to this feature.

The Post-Roman period

Corn drying kilns (Figures 8a and 9)

The below ground remains of two corn drying kilns were revealed by the excavation. These date to the post-Roman period and were positioned within corners of the earlier field system. As mentioned there is good evidence to suggest that the field system as a whole was maintained into the immediate post-Roman period and that at least parts of it were still clearly visible as earthworks.

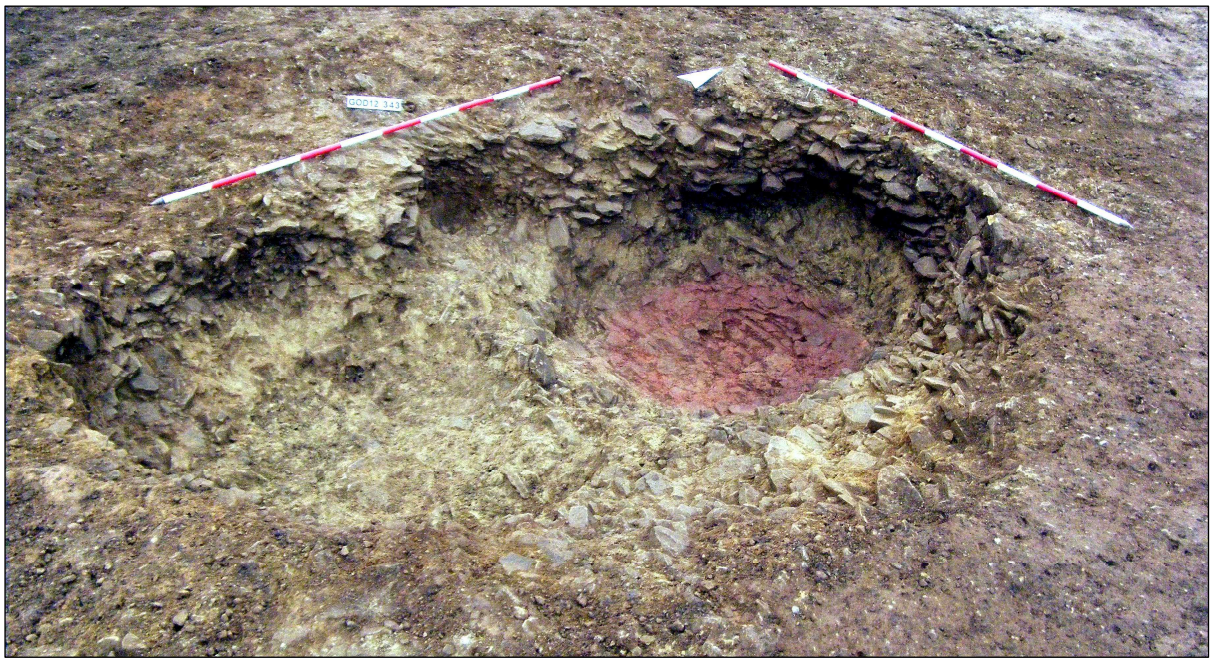

Plate 10: Excavated corn drying kiln 343 showing heat affected northern chamber and posthole 417

A corn dryer (343) was identified in the north-eastern corner of Field D (Figure 9). It was a figure-of-eight shaped kiln composed of two adjoining contemporary chambers which would have formed a fire chamber and a drying chamber. The overall dimension of the structure was 3.4m by 2.94m (Plate 10). A posthole (417) was located against the western edge, where the two chambers adjoined. Both chambers were cut into the natural bedrock leaving a slight ridge of bedrock between them. The northernmost chamber was slightly deeper at 0.98m, and the sides and base of this chamber were scorched by intensive burning, leaving the natural stone heat reddened. There was no evidence for a flue between the chambers, which would have enabled the hot air to flow into the drying chamber on which grain would have been spread across a suspended floor to dry. It was clear that the kiln structure had collapsed during its last use, and had presumably smouldered under the daub of its superstructure. Within the

southern drying chamber, this had caused charring of the grain and a quantity of willow/poplar, which had possibly formed part of a wattle frame or the drying floor.

Plate 11: Lower fills within corn drying kiln 343

The primary fill (346) of the southern chamber, was light-brown, silty sand, containing up to four thin bands of charcoal and charred grain; the most substantial lens of charred material sat on the top of the silty sand. The primary fill (345) of the northern, chamber, was burnt, dark-reddish, silty sand, containing burnt stone fragments and charcoal, along with a quantity of charred grain (Plate 11). Analysis of the abundant quantity of grain recovered from these two primary fills revealed that barley was the most prevalent cereal being processed, followed by bread wheat and oat (Appendix F). The charcoal assemblages from the primary fills were dominated by oak, with hazel and heather in smaller quantities, indicating the type of species used as fuel. The largest fragments of charcoal were recovered from the primary fill (345) of the northern or fire chamber and these were identified as timbered willow/poplar.

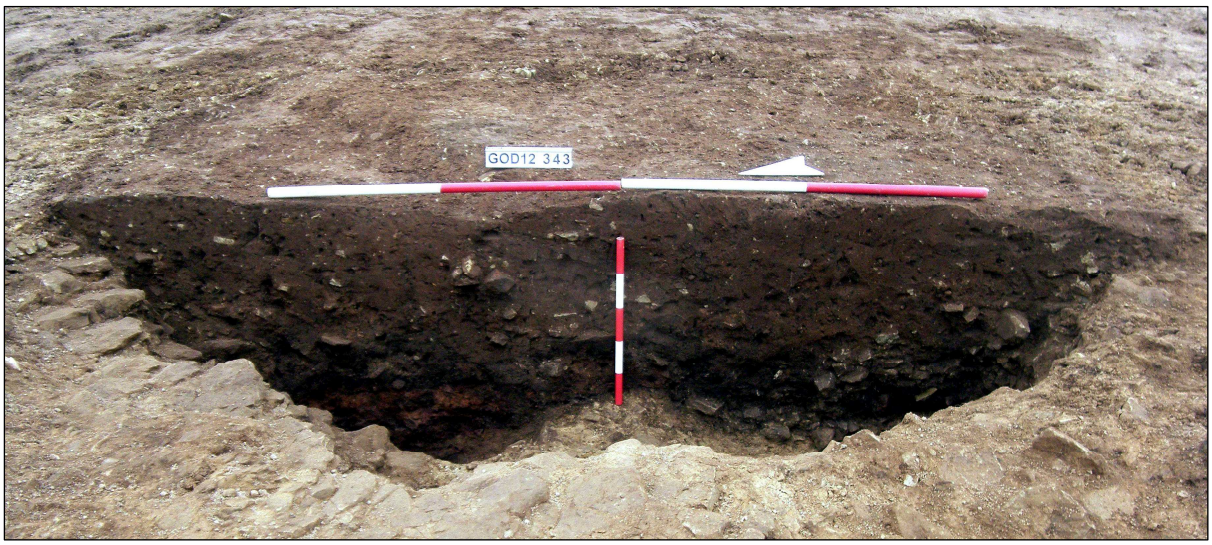

Plate 12: Corn drying kiln 343, showing possible daub upper fill 344

Charred grain was also present within the upper fill (344) of the kiln but in much reduced quantities. This upper fill was reddish-brown, silty sand. It was homogenous throughout both chambers and presumably represents the collapsed superstructure or backfill (Plate 12). There was no discernible structure related to this fill, and if there had been a flue between the two chambers then no remains of this structure survived.

Little evidence for the above ground form of the kiln had survived later truncation. A posthole (417) was identified within the western edge of the kiln pit, just on the northern side of where the two chambers adjoined (Plate 10). The posthole had a diameter of 0.39m and a depth of 0.34, and its fill (422), of light yellowish-brown sand, was distinct from the backfill (344) within the kiln chambers. The deep, circular chambers of the figure-of-eight shaped kiln, were located within a wider, but shallower, roughly rectangular cut, within which the superstructure was presumably housed. This outer cut was approximately 4m long by 3m wide, and extended 0.60m to the south of the kiln.

Samples of charred barley grain from each of the primary fills of both chambers were submitted for radiocarbon analysis. The resulting dates for fills 345 and 346 were 331-533 cal AD (SUERC-48116) and 422-561 cal AD (SUERC-48117) respectively which revealed that the corn dryer almost certainly dated to the post-Roman period.

A charred grain recovered from the fill of ditch 297 adjacent to the corn dryer was also radiocarbon dated and this returned a date of 540-644 cal AD (SUERC-48114), relatively comparable with the dates at the latter end of the range obtained from the fills of the corn dryer. Its presence within the ditch may be attributed to wind-blown deposition from the corn dryer (Appendix F), but it was just as likely that the field system was maintained through the 5th and into the 6th century, and possibly beyond.

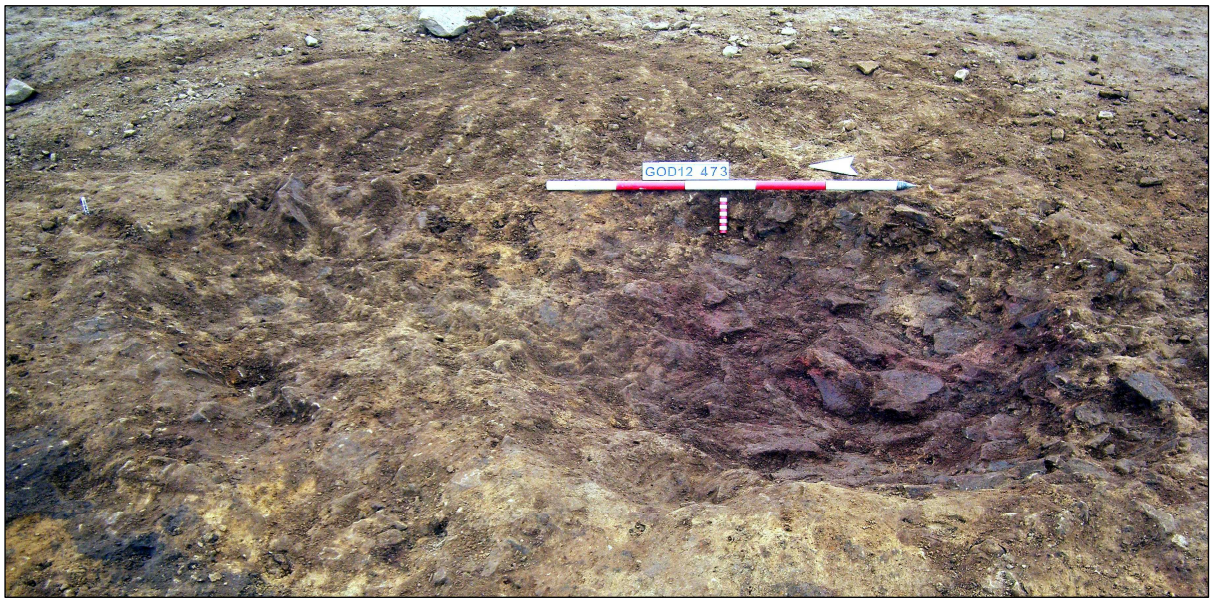

Plate 13: Corn drying kiln 473, showing heat affected southern chamber. Scales 1m and 100mm

The other corn drying kiln (473) was located in the north-eastern corner of Field A, to the west of the corner formed by the intersection of the two principal fieldsystem ditches (568 and 567), and opposite to the stock corral (Figure 8a). The subsurface

remains, which also consisted of two-chambers, measured 2.8m by 1.4m, but heavy truncation had left a maximum depth of only 0.25m; there was no surviving evidence of any above ground elements to the superstructure (Plate 13). The base of the deeper southern chamber had been scorched. The fills (474 and 475) were composed of brown, silty sand and contained a large quantity of charred grain, identified as barley, wheat and oat (Plate 14). The radiocarbon analysis of a charred barley grain from this feature returned an early post-Roman date of 432-598 cal AD (SUERC-48119), which suggests that the two corn driers were broadly contemporary. Analysis of the charcoal from this feature revealed that oak, hazel, willow/poplar and heather had potentially been used as fuel. The distal end of a narrow blade, characteristic of Mesolithic or early Neolithic flint knapping (Appendix A), was recovered from the primary fill (474), but must have been residual.

Plate 14: View of fills within kiln 473. Scales 1m and 0.25m

The medieval landscape

During the medieval period, the site formed part of a more extensive open field system, containing broad ridge and furrow cultivation. Subsurface remains of this survived as shallow linear furrows (04) across the full extent of the excavation area. The furrows were orientated north to south, approximately 1.0m in width and spaced 7.0m apart. By the medieval period, the Early Bronze Age cairn (340/370) was no longer visible in the landscape and the presence of furrows indicates that area was under plough. The backfills contained sherds of residual Iron Age to Roman pottery as well as pottery dating from the 15th to the 18th centuries. The curving ditch of the plough headland was also identified along the northern boundary of the field, south of Carr Dike (100, 152, 153 and 154). The ditch broadly respected Carr Dike, suggesting the stream is also a long standing landscape feature. Part of an iron vessel with short integral legs and a sherd of 13th to 14th century pottery were present in the fill (157) of the plough headland.

A large oval pit (632) had been cut into an infilled ditch (364; Group 561) of the Iron Age to post-Roman field system at the point south of the Bronze Age cairn (Figure 6). It was aligned north to south and measured 6.90m by 4.50m and was 0.83m deep. Its function and date were unclear but its base was iron-panned, and it was filled by deposits of greyish brown clay (361), yellowish clay (360) and finally reddish brown clay (359).

Post-medieval features

A circular kiln (381; Plate 15) was situated towards the eastern edge of the excavation (Figure 10). It measured 2.25m in diameter by 0.75m in depth, and was steep-sided. A flue had been bored through the sandstone bedrock, creating a roughly squared chamber. The kiln was filled by seven ashy, burnt deposits (402, 403, 404, 405, 406, 407 and 408), which had built-up during the use of the feature. The uppermost fill (380), mid-brown, sandy clay, represented the demolition backfill. The kiln had been subjected to high temperatures as the lower levels of the rock-cut sides were vitrified and the natural sandstone surrounding it was reddened by heat, by as much as 300mm from the kiln chamber. A brown-glazed coarseware base sherd from a 17th to 18th century pancheon or bowl, was recovered from the quinary fill (405). The fact that the rock-cut sides were vitrified, indicated that the kiln was un-lined; a clay lining may be expected for a pottery kiln. The lack of wasters and small size of the feature, also indicate that it was not used for firing ceramic vessels (Appendix D). Burnt imported limestone (possibly dolomite) was present in most of the fills, particularly the lower ones, but not in great quantities, suggesting that the feature was perhaps a small farmstead limekiln. The underlying geology, of iron-rich sandstone, is acidic and the fields would have needed a regular spreading of lime to neutralise it (Appendix D).

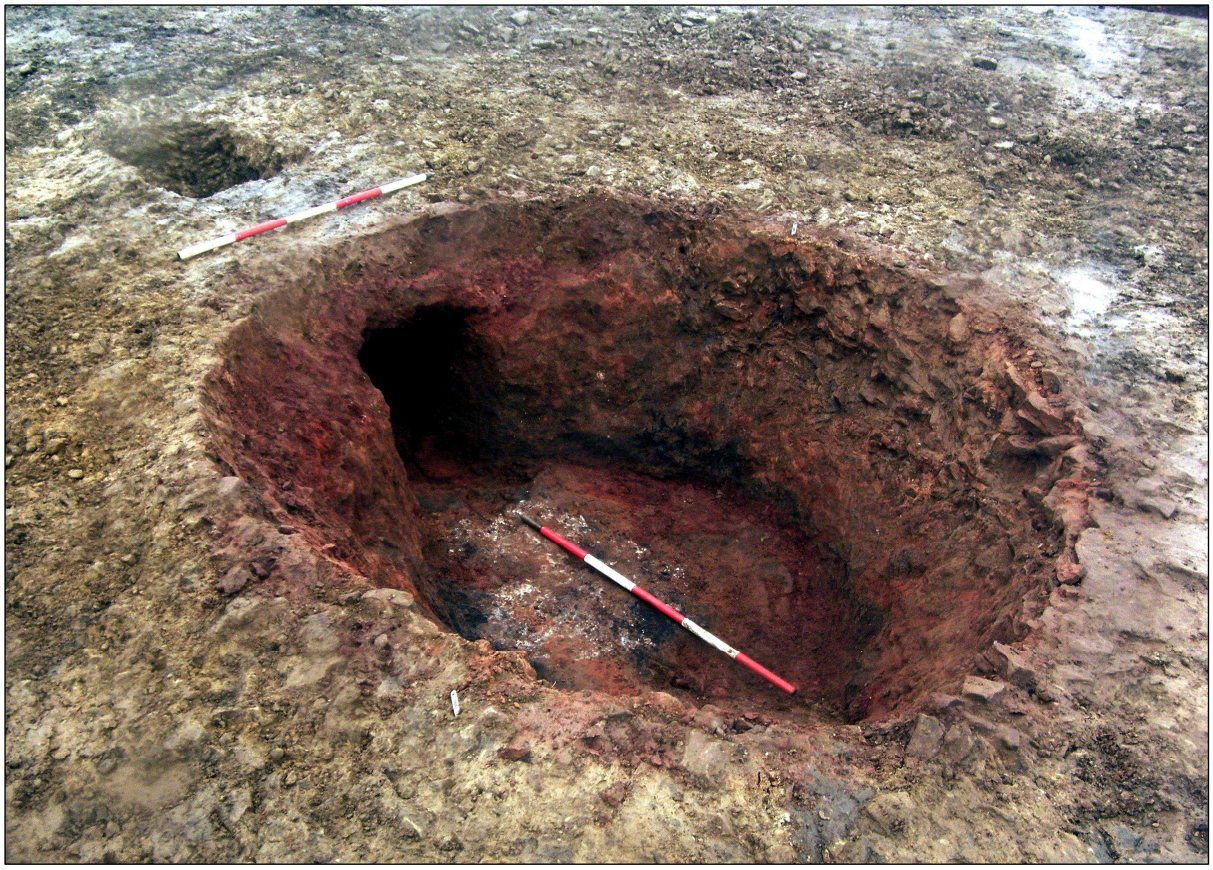

Plate 15: Post-medieval lime kiln 381

Two parallel, north to south linear anomalies, were revealed in the western part of the site by the 2011 geophysical survey. Excavation proved that they represented shallow ditches associated with a field boundary recorded on historic Ordnance Survey mapping from 1854 to 1956. Re-cuts were noted within the ditches and the berm

between them contained small, pit-like features, resulting from hedgerow roots. The boundary ran the full length of the current field from north to south, cutting the infilled medieval furrows and headland. Finds recovered from this feature comprised a residual sherd of Iron Age / Roman pottery, from fill 199 of field ditch 185, and a sherd of 18th century pottery from fill 203 of a hedgerow root hole 202 (not illustrated).

The archaeological features described above were overlain by a deposit of subsoil (02), which represented a relict post-medieval ploughsoil. The subsoil was composed of red / brown silty sand and varied in depth from 0.1m to 0.3m adjacent to Carr Dike. The subsoil was overlain by an average of 0.3m of dark-brown, sandy silt topsoil (01), from which a flint flake and core, one sherd of Roman pottery and eleven sherds of medieval and post-medieval pottery were recovered (Appendix C).

North of Carr Dike

The geophysical survey of the eastern part of the site (Webb 2001) identified a small rectilinear enclosure in the northern field, measuring approximately 26m by 22m, with an associated field system radiating from it (Figure 5). This field remained undisturbed apart from the creation of an access road connecting the new distribution centre with Commercial Road and a number of narrow service trenches associated with contractor's compound. During these limited groundworks elements of the field system were identified within the cut trenches, represented by ditches 188, 291, 311 and 314. No finds were recovered from the fills of these ditches. It is possible that the enclosure formed the settlement area associated with the field system to the south of Carr Dike.

DISCUSSION

The results of the archaeological investigations at Goldthorpe Industrial Estate have revealed a changing rural landscape from the Early Bronze Age through to modern times. The site is located on well-drained, agricultural land, and to the south of Carr Dike. The gentle north-facing slope, at a height of between 32m and 23m AOD, has formed the focus of field systems from the late Iron Age through to the Roman and into the immediate post-Roman periods. North of Carr Dike, the land rises steeply up to an elevation of 28m OD and the enclosure revealed by the geophysical survey, suggests associated settlement making use of the vantage point.

Dating and phasing

A combination of pottery analysis and radiocarbon dating reveals activity within the site at Goldthorpe from the Early Bronze Age through to the post-medieval period. Finds of Mesolithic and Neolithic flint within later deposits, suggest that occupation of the landscape was probably occurring earlier than the Bronze Age.

Bronze Age

A number of Bronze Age features were identified. The earliest dated remains included the two cremations (212 and 328), associated with the cairn and dated to the Early Bronze Age (2022-1780 cal BC (SUERC-48110) and 1955-1760 cal BC (SUERC-48118)

respectively). These provide a date and context for the monument which would have formed a focal point for subsequent Bronze Age and later activity in the vicinity. It is apparent that the cairn was still extant at least into the late Iron Age / early Roman period, when the field system was laid out, as one of the ditches (561) was diverted around its eastern side (Plate 16).

Plate 16: Aerial view of cairn showing stone spreads, with the later ditch (marked by the excavated sections) curving around its perimeter

A group of pits (575) was present approximately 200m due east of the cairn, one of which was also radiocarbon dated to the Early Bronze Age. A fragment of hazel charcoal recovered from the fill of pit 88 returned a date range of 2195-1965 cal BC (SUERC-48108) which meant that it, and probably by association the pits in the group, was broadly contemporary with the cremations.

The oval gully (119), which possibly represented the remains of a small barrow, was identified in the north-western corner of the excavation area. It was situated approximately 350m to the north of the cairn and was located on lower ground, from where the cairn would have been visible. A sample of oak charcoal from the fill of the gully returned an early to mid-Bronze Age date range of 1608-1436 cal BC (SUERC-48109). Its form and date would suggest that it was also a funerary monument, possibly placed to respect the earlier cairn, which at that time would have been a very prominent and spiritually important local landscape feature.

A number of pits were identified in dispersed locations across the excavation area, of which two were radiocarbon dated. Pit 318, which was located adjacent to the cairn, returned a date range of 1609-1447 cal BC (SUERC-48115), which meant that it was broadly contemporary with the oval gully (119). Pit 52, which was located approximately 200m north-east of the cairn, returned a slightly later mid-Bronze Age date of 1413-1262 cal BC (SUERC-48107). This date range indicated the likelihood that other undated pits present in the excavation area also date to the Bronze Age.

Iron Age and Roman

It was evident from the relationship between the field system and the Bronze Age cairn that the former post-dated the latter. Finds recovered from the primary fills of the extensive field system ditches indicated an origin in the late Iron Age / early Roman period. However, no suitable material for radiocarbon dating was present within the excavated primary fills of the linear ditches to categorically support this, although a sample of charred wheat grain obtained from the primary fill of the outer curvilinear corner enclosure ditch (510) was radiocarbon dated to 46 cal BC – 76 cal AD (SUERC-48125). As this curving ditch formed part of a corner enclosure, which took advantage of the intersection of the principal ditches, it must be assumed that the main ditches were in place prior to the inception of the enclosure.

Post-Roman

The field system was maintained over an extensive period of time. A charred wheat grain recovered from one of the fills (485) of the latest ditch re-cut (484) at the main intersection, was radiocarbon dated to 436-635 cal AD (SUERC-48120). This indicates that the principal ditches of the field system continued in use into the post-Roman period.

Two post-Roman corn dryers (343 and 473) were identified within the eastern corner of two fields, providing further evidence that the field system was maintained and present as earthworks when the corn dryers were constructed. No dateable finds were recovered from the fills of the corn dryers but three radiocarbon dates were obtained. The resulting dates from the westernmost corn dryer (343) were 331-533 cal AD (SUERC-48116) and 422-561 cal AD (SUERC-48117) and the date from the other dryer (473) was 432-598 cal AD (SUERC-48119). Further evidence that activity within the field system was maintained into the post-Roman period was also provided by a radiocarbon date of 440 – 637 cal BC (SUERC-48126) obtained from a charred barley grain within one (528) of a group of five later pits within the corner enclosure (570). Taken together, the evidence suggests that the field system continued in use into the 5th and possibly the 6th centuries AD.

Goldthorpe's Changing Landscape

The prehistoric landscape

The analysis of cropmarks identified in South Yorkshire has revealed a wide spread of potential prehistoric monuments in the region, although very few of these have been confirmed through excavation (Figure 12).

The excavation at Goldthorpe has provided evidence for a funerary landscape dated to the Early Bronze Age period. As a prominent local monument, the burial cairn appears to have formed a focus for other activity dating to the Bronze Age, including a further possible small oval barrow and a number of pit groups across the excavation area. Unfortunately, it was not established if the cremation burial with accompanying collared urn was the primary burial upon which the cairn was built or whether it was a later insertion; it was significant however as the only example of an Early Bronze Age collared urn accompanying a cremation burial in the coal measures landscape within the region.

The cairn and small barrow were clearly not isolated funerary monuments within the wider landscape. An extensive geophysical survey undertaken just to the north of Goldthorpe Industrial Estate, at Bolton House Farm (Webb 1997), identified a circular enclosure which has also been interpreted as a Bronze Age barrow, although this has not been tested by further work. This potential barrow is located approximately 0.4km from the excavated cairn. The local topography was clearly utilised so that the two sites would have been inter-visible on opposing gradual rises in the landscape. Webb (1997) also identified a potential barrow through geophysical survey at Scorcher Hills to the north of Doncaster.

At Brodsworth, approximately 8km to the north-east of Goldthorpe, another circular cropmark enclosure was identified. It covered an area of 3.7 hectares and, as at Goldthorpe Industrial Estate, appeared to be respected by Iron Age or Roman field boundaries (Roberts 2010).

Further north, on the magnesium limestone belt at Ferry Fryston, West Yorkshire, an extensive excavation of a prehistoric landscape revealed, amongst the earlier features, a late Neolithic henge and a number of timber circles and hengiform monuments, which provided an initial ritual focus in the landscape (Roberts 2005). Six round barrows were also fully excavated, and radiocarbon dating revealed that the barrows were Late Neolithic to Early Bronze Age, which is broadly contemporary with the earliest phase of activity at Goldthorpe.

Similarly at Green Howe, North Deighton, an Early Bronze Age mound was constructed in an area of earlier occupation. The burial sequence included several inhumations capped by a small mound, satellite graves and a further mound, and ended with an inserted collared urn cremation (Manby, Moorhouse and Ottaway 2003). At Newton Kyme Henge, a similar sequence of ring-ditch cropmarks and an inhumation burial accompanied by a food vessel was excavated (Heron and Wilson in prep.).

The construction of the M1-A1 Link Road enabled a transect of the coal measures to be investigated. At Swillington Common, pit features associated with possible grooved ware and collared urn were identified (Howell 2001) and at Manor Farm, a collared urn cremation within a ring ditch was encountered. These sites are informative as the soils of the coal measures rarely produce cropmarks.

At Mitchell Laithes Farm, Ossett, archaeological remains that ranged in date from the earlier Neolithic through to the post-Medieval period, indicated a similar continuity of

activity within the landscape as that recorded at Goldthorpe. During the Early Bronze Age period, a round barrow was constructed which overlay three pits containing the cremated remains of three individuals and a fourth burial, comprising a cremation within the remains of an inverted collared urn, was recovered from a small pit nearby (Speed in prep.). All of these burials produced radiocarbon dates between 1920 and 1680BC which again make them broadly contemporary with the cremations at Goldthorpe.

Similarly at Bell Hill, near Leeds, evidence of human activity spanning the period from the early Prehistoric to the post-Medieval was also encountered. Potential Bronze Age activity on the site was represented by the remains of two round barrows and associated pits (NAA 2008). No cremation or burial pits were identified within the areas enclosed by the ring ditches of the round barrows but two possible cremations were encountered nearby. One of the cremations was contained within an Early Bronze Age collared urn and the second burial contained sherds of a bucket-barrel urn within the fill of the pit.

On the millstone grit uplands, most field monuments were subjected to 19th century digging with scarce documentation. The best antiquarian work is the Blackheath Cross ring-work, Todmorden (Roth 1906), where a 27m diameter earth bank was discovered enclosing a cremation cemetery in which most of the cremations were accompanied by collared urns. In traditional woollen industry and mining areas, all improvable land up to the 300m contour was enclosed during the 18th and 19th centuries and this was accompanied by stone clearance for wall building so survival of earlier sites is scarce. Exceptions are Bradley Moor, where a long cairn associated with a cluster of round cairns, was identified (Raistrick 1931), and Baildon Moor, where carved rocks, cairns, stone circles and ring-works survive. Nearby at Harden Moor, a ring cairn was also identified with cremation burials, one in a Primary Series collared urn and others inserted into the bank (Longworth 1984). Not all late 3rd to early 2nd millennium burials were covered by mounds. Cremations associated with food vessels have been found on Pule Hill, Marsden (Manby 1969) and at Stanbury, West Yorkshire, where a discrete pit containing an Early Bronze Age funerary deposit was found. Within the pit was a large, inverted, collared urn that contained the cremated remains of a young male, together with a stone battle-axe, a bone belt-hook and pin, a pair of copper alloy earrings, and an accessory vessel. The burial was accompanied by two further collared urns, one of which was near complete. The two radiocarbon dates obtained have provided a fairly tight date range of 1960–1780 cal BC (NAA 2012).

Between the Rivers Holme and Little Don, along the millstone grit coal measures, there is an apparent gap in the Early Bronze Age monument distribution. Some barrows and ring-works stand on the ridges between the valleys of the Don and Rother, most of which were excavated in the 19th century. More recent excavations have taken place at Crow Chin Cairn. Of the two turf built mounds of the Lodge Moor barrow group, Sheffield, one had collared urn cremations set into it (Bartlett and Henderson 1957). In general, the paucity of surviving remains on the eastern side of the Pennines due to destruction by enclosure and urbanisation around Sheffield, contrasts with the many concentrations of prehistoric sites on the Derwent East Moors, to the west in Derbyshire.

Apart from the pits at Goldthorpe, which have been dated either through radiocarbon dating or by association, there is no evidence for Bronze Age settlement at the site. The nearest known settlement from this period is located approximately five miles to the north of Goldthorpe at South Elmsall, where excavation in the vicinity of a series of cropmarks, revealed evidence for Bronze Age and early Iron Age roundhouses and rectilinear structures. Two of the roundhouses were located within an area enclosed by a contemporary palisade trench (WYAS 2010).

The field system

The late Iron Age to Roman period field system excavated at Goldthorpe forms part of the widespread agricultural system that has been identified across South and West Yorkshire (Plate 17). This system has been mapped as cropmarks as a result of an extensive program of aerial photography (Riley 1980) and has been confirmed in some cases through geophysical survey and excavation.

Plate 17: View north east along principal boundary ditch 561, with the earlier cairn in the foreground

In order to provide a descriptive framework, Riley defined three different types of field system across his study area; the brickwork, nuclear and irregular plan fields. The brickwork plan was the most ubiquitous and comprised long boundaries with short cross boundaries dividing the strips into fields which are up to three hectares in size. The nuclear plan fields were composed of a small, well-defined enclosure, forming the 'nucleus' of a block of fields radiating from it. It was assumed that the enclosure represented the farmstead at the centre of the associated field system. The irregular plan

fields were more or less rectangular in shape, but arranged without an obvious order. In some cases they were identified near streams or on low ground and often had lanes running through them (Riley 1980). However, more recent work by Adrian Chadwick and others has shown that these typological categories are perhaps too simplified and that actual land allotment was more mixed. He proposes an 'attenuated' type as a more appropriate term for landscapes that were fixed by major long linear boundaries, and that this would equally fit many of the established typologies (Chadwick 2010, 180).

The results of the geophysical survey at Goldthorpe Industrial Estate (Webb 2001 and Stratascan 2011; Figure 2) indicated that the field system in this area radiated from a small sub-rectangular enclosure, which measured approximately 25m by 20m and was situated on the higher ground on the north side of Carr Dike. The enclosure itself was not subject to excavation, but the two ditches radiating from the east and west of it, were investigated during the construction of an access road and the excavation of service trenches. It is debatable whether the extensive field system encountered south of Carr Dike is part of the 'nuclear' field plan, radiating from the possible settlement or an 'attenuated' landscape structured from one of the principal linear ditches or boundaries. However, the north-east to south-west aligned principal boundary ditch (569) did turn slightly at its junction with ditch 573 to head almost directly northward towards the ditch projecting from the south-western corner of the small enclosure. This suggests that they are part of the same field system and the slight difference in the alignment in plan may be due to the local topography.

A comparable nuclear field system was identified through aerial photography at Hesley Hall, Rossington, approximately 22km to the east of Goldthorpe (Riley 1980, 46). The aerial photograph revealed a similar sub-rectangular enclosure with field boundary ditches radiating from it. This nuclear field system was crossed at an acute angle by the Roman road from Lincoln to Doncaster implying a field system earlier than the road (Garton 1987); an early Roman or pre-Roman date for this field system is a closely comparable example to the origin of the field system at Goldthorpe Industrial Estate.

It was possible to calculate the average size of the fields constituting the nuclear settlement at Hesley Hall, as the full extent of seventeen fields was visible on the aerial photograph. The usual field size is between 1.0 and 1.6 hectares, which is a little smaller than the brickwork plan fields (Riley 1980, 19). At Goldthorpe Industrial Estate, the complete dimensions of only two of the Fields (F and G) could be ascertained within the stripped area, these measured 1.4 hectares and 0.9 hectares respectively (Figure 5). This is reasonably consistent with the averages suggested by Riley above, although Fields F and G appear to be smaller than the other fields surrounding them, so the average field size for this site was larger.

It is likely that the field system excavated during the current phase of works formed part of the same system identified approximately 500m to the north, at Holly Grove Farm. These cropmarks were investigated in 1992 in response to the upgrade of the A635 by-pass around Goldthorpe (Figure 4). South Yorkshire Archaeology Service conducted a program of fieldwalking, geophysical survey and excavation, which identified at least two enclosures, a droveway and field boundary ditches. Following excavation, the site at Holly Grove Farm remained undated and it was suggested that the lack of dateable material indicated a pre-Roman Iron Age date for the site (Merrony 1993). The field

system investigated at Goldthorpe Industrial Estate follows the same alignment as the field boundary ditches investigated at Holly Grove Farm, supporting the likelihood that the two sites were part of the same wider field system complex.

A number of further cropmark sites in the area have been confirmed and dated by archaeological excavation. Approximately 1.6m to the north, at Thurnscoe, a settlement comprising a sequence of ditched rectilinear enclosures linked to a trackway and field system elements, was confirmed as a Roman period farmstead, occupied from the 2nd to the 4th century AD (Neal and Fraser 2004; Figure 3). The droveway and field boundary ditches excavated at Thurnscoe were found to be of similar dimensions to those identified at both Goldthorpe Industrial Estate and at Holly Grove Farm, indicating that they too formed part of a widespread field system across this area.

The overall evidence from cropmark sites which have been excavated across South Yorkshire and Nottinghamshire suggests, however, that the field system was not imposed upon the landscape in a single phase but was gradually expanded and altered during both the late Iron Age and the early Roman period (Chadwick 2010). At Dunston's Clump in Nottinghamshire (Garton 1987), the field system was found to originate in the late Iron Age but had enclosures appended to it in the 1st century AD and continued in use into the 3rd century AD. Similarly at Armthorpe in South Yorkshire (Figure 3), it was proposed that although the first definitive enclosure of land was dated to the 2nd century AD, elements of the field system may have been associated with earlier apparently, unenclosed late Iron Age activity, given the potential for largely aceramic occupation at this time (Richardson 2008). The field system at Armthorpe also revealed evidence for modification in the late 3rd to 4th century AD, confirming the continued use of such sites from the late Iron Age through to the late Roman period. Approximately 5km to the west of Goldthorpe, excavations at Jump, revealed a late Iron Age / Roman period enclosed farmhouse, including a rectangular dwelling which was replaced during the Roman period by field boundaries and droveways (Figure 3). In the light of this combined evidence, an origin in the very late Iron Age should be considered for the field system at Goldthorpe Industrial Estate.

Late Iron Age / Roman corner enclosure (Figures 5 and 8a)

The enclosure located at the south-western corner of Field E took advantage of the intersection of the principal field boundary ditches. The excavations suggest that it was potentially long-lived, with at least three phases of use. Of the two ditches enclosing the corner (570 and 571), the outer (571) was possibly related to the earliest phase of activity. The presence of large sandstone boulders in the primary fill of a section (516) of this outer ditch, suggests that the enclosure may have contained some form of stone structure. An unusually large pivot stone, recovered from the terminal of this outer ditch (571), may also be indicative of a nearby structure (Plate 9). It is likely that this primary phase was contemporary with the laying out of the field system, and a charred wheat grain from the fill of one of the pits (494) was radiocarbon dated to the late Iron Age (160 cal BC to 50 cal AD). This is comparable with the small, late Iron Age / Roman farmstead identified at Jump, where a rectangular building was identified within a sub-rectangular ditched, and possibly banked, enclosure (Robinson 2007; Figure 3).

Following the removal of the building, the area of the corner enclosure was reduced by the infilling of the outer ditch (571) and the cutting of the inner ditch (570). It is likely that at this stage, the enclosure became a stock corral, although there was no obvious causeway across the ditch leading into the interior of the enclosure. The ground level within the enclosure was reduced by trample and this worn area formed a 'bowl', the extent of which was limited to the area enclosed by the inner curving ditch (570) and the intersection of the principal boundary ditches (567 and 569). The worn area was filled by an accumulation of 0.4m of silty, trampled material.

The final phase of activity comprised the cutting of five large, shallow pits through the layer of trampled material described above. No finds were recovered from the fills of the pits to indicate their function, but a charred barley grain from the fill of one (528) was radiocarbon dated to 440-637 cal AD. This places this last phase of activity within the immediate post-Roman period and corresponds to the dating evidence obtained from the corn dryers, one of which (473) was located directly opposite the corner enclosure in the field to the west.

A comparable corner enclosure originating in the late Iron Age was encountered at Ferrybridge, West Yorkshire. Investigation of this feature (Roberts 2005), revealed that the enclosure expanded in size through the Roman period, whereas the enclosure at Goldthorpe was reduced.

Post-Roman corn drying kilns (Figures 8a and 9)

The drying kilns were located in the corners of fields so that grain did not have to be transported over long distances and was simply dried in the fields in which they were grown; freshly harvested grain needed to be dry before milling. The form of the corn drying kilns was similar to Roman key hole-shaped examples, with the fire set in one chamber, which was linked by a flue, to a second chamber, where the grain was laid over a suspended floor for drying. However, the Goldthorpe examples both had conjoined chambers with no obvious connecting flues, so these must have been incorporated into the structure in a way that has left no trace. Unfortunately from the two kilns there was little evidence for a superstructure; a post hole was located on one side of the better preserved kiln in Field D (343). The fire chambers were deep in both kilns and clay formed the bulk of the upper infill deposits. This clay presumably resulted from the collapsed daub superstructure, which would have been domed over the drying chamber, and presumably vaulted over the fire chamber, with an open end to create a draw.

There was probably little immediate impact on the lives of those within rural communities following the end of Roman administration in Britain (Chadwick 2010, 442). This was manifest at Goldthorpe with the maintenance, at least partially, of the field system and corner enclosure into this immediate post-Roman period, supporting the suggestion of continuity of the long established rural-based economy. The need to dry grain following harvest would have been an essential part of this economy, as it traditionally had been throughout the later prehistoric and Roman periods. Evidence for corn drying kilns in the post-Roman period is nationally rare, making the 5th to 6th century Goldthorpe corn dryers an important discovery. Of the few post-Roman corn dryers so far recorded elsewhere in Britain, the majority date to slightly later in the

period than those at Goldthorpe (Figure 14). The closest parallels are to be found at Poundbury in Dorset, where five, 5th century corn dryers were identified (Monk and Kelleher 2005) and at Hilary Breck, Wallasey where a 6th century example has recently been discovered (Museum of Liverpool, 2014). A dump of charred grain found near to a corn dryer in Alchester, Oxfordshire, sealed early Anglo-Saxon pottery suggesting that the corn dryer was in use into the 5th century (Hamerow 2012, 146).

A number of early medieval corn dryers were also identified at a settlement site in Hoddom, Dumfriesshire and the earliest group on this site dated to the 7th century AD (Lowe 2006). These differed from those at Goldthorpe as they were housed within rectangular timber buildings. A number of more comparable freestanding keyhole pit kilns set within an enclosure, were also identified, but these were dated to the 12th century AD and were therefore much later than the corn dryers at Goldthorpe. Late post-Roman corn dryers have also been identified at Stafford, Feltham, Rehold and Springfield Lyons; a possible post-Roman corn dryer at West Heslerton is yet undated (Appendix F).

Goldthorpe in a post-Roman context

During the 5th and possibly into the 6th centuries, when the corn dryers were in use, Goldthorpe was located within the independent Brittonic Kingdom of Elmet, rather than under direct Anglo-Saxon rule. Archaeological evidence that Elmet had already been established by the late 5th century has been found in the form of an inscription on a stone grave memorial in Llanelhairn, Gwynedd, North Wales. The inscription reads *Aliortus Elmetiaco Hic Iacet,* i.e. *Here lies Aliortus of Elmet* (Westwood 1876-79, 179). It has been demonstrated that the *Hic Iacet* formula was in use for a short period of time, terminating by the end of the 5th century (Knight 1996, 111) and therefore providing a date for the Llanelhairn inscription. Bede describes in his *Historia Ecclesiastic,* the final expulsion of the British king Ceretic from his Kingdom of Elmet, as it was annexed by King Edwin of Northumbria in AD 616. This indicates that for a period of approximately two centuries after the Roman period, this area of Yorkshire enjoyed independence, making it the most enduring of Yorkshire's post-Roman British territories.

It has been estimated that Elmet covered a region bounded by the Pennines to the west, the Rivers Don and Sheaf to the south, the Kingdom of Deira to the north and the Humberhead Levels to the east (Manby, Moorhouse and Ottaway 2003). This reconstruction was based on known topographical features and also by the survival of placenames with P-Celtic origins and the affix *'in Elmet'* (Jones 1975, Faull 1977 and Higham 1993; Figure 13).

Recent excavations have identified some activity in the local area dating specifically to this period, although it is sparse. These include water management features dating from the 5th to 6th century at Wellgate, Conisbrough (Andy Lines (SYAS) pers. comm.).

Slightly further north at Parlington Hollins (Figure 13), two sunken-featured buildings were excavated as part of the M1-A1 Link Road project (Roberts, Burgess and Berg 2001). Radiocarbon dates obtained from part of a pig skeleton from the backfill of one structure and from a piece of antler from the other, indicated that they had been

backfilled between the mid-5th and mid-7th century AD. A large quantity of residual Roman period finds within the structures reflected their location within a series of Roman enclosures and the continuity of settlement from the later prehistoric period right through to the post-Roman period.

An extensive Anglo-Saxon settlement and cemetery was excavated at West Heslerton in the Vale of Pickering, elements of which dated to the early post-Roman period. As at Goldthorpe, it appeared that this phase of post-Roman occupation formed a continuation of the Roman period settlement of the site. The cemetery at West Heslerton is estimated to have contained about 350 burials, which were dated to between *c*.AD 450 – *c*.AD 650 and spanned the first half of the life of the settlement (Powlesland 2003).

Later Anglo-Saxon period remains are slightly more prevalent in the area surrounding Goldthorpe (Figure 14). The nearest church of this period is the Church of St. Peter at Conisbrough and others are located further north at Dewsbury, Pontefract, Ledsham, Bramham and Bardsey. Finds of post-Roman period sculpture within churches have also been noted in Thornhill, Aberford and Otley. Excavated sites in the area include an Iron Age / Roman period enclosure re-used for Anglo-Saxon burials at Mexborough, a 7th to 8th century linear cemetery at Adwick-le-Street, and some 10th to 11th century kilns at Laughton (A. Lines (SYAS) pers. comm.).

Post-medieval kiln

The kiln identified at Goldthorpe was dated to the 17th or 18th century and contained a brown-glazed, coarseware base sherd from a pancheon or bowl, found securely stratified from one of its lower fills. The structure has been interpreted as a limekiln and contained small pieces of imported dolomite limestone and burnt lime in the basal fill (Plate 15). This identification was further confirmed by the lack of pot wasters, the small size of the feature and the fact that it was not lined with clay, as would have been usual in a pottery kiln (Appendix D). Limekilns have been used in England since the introduction of lime-burning by the Romans, mainly for the production of mortar. In Roman or medieval contexts, the kilns are usually found adjacent to the structures for which they are providing lime mortar but from the mid-18th century, kilns were usually situated away from contemporary buildings due to the unpleasant smoke and volatile nature of the quicklime (English Heritage 2011). Towards the end of the medieval period, lime was also produced for use in agriculture, as it neutralised acidic soils and improved the structure of heavy clay soils. For this purpose, limekilns were often located within the fields that the lime was being produced for, in order to save on transportation.

Two similar kilns were found at Roebuck Hill, Jump approximately 5km to the west of Goldthorpe. A single sherd of pottery recovered from these features indicated an 18th century date, however, the presence of slag suggested that they were associated with the preliminary stages of iron-ore roasting rather than lime burning (Robinson forthcoming). Similarly, at Woodhead Open Cast Site, Wombwell, approximately 8km to the south-west of Goldthorpe, three post-medieval iron-ore roasting kilns were also identified (Northamptonshire Archaeology 2003). Further afield, a broad scatter of post-

medieval limekilns have been found at Tickhill, Cawthorne, Warmsworth, Thorpe Salvin and Anston, indicating the prevalence of such features in the region.

CONCLUSIONS

The construction of the regional distribution centre by Aldi Stores Ltd has provided an important opportunity to investigate a multi-period archaeological landscape over a large area to the west of Goldthorpe Industrial Estate. In addition, the excavation has provided further validity to other archaeological investigative techniques, such as aerial photographic evidence and geophysical survey, within the coal measures region.

The results of the investigations have confirmed that this landscape has been utilised since at least the Early Bronze Age through to the present day. By the Bronze Age period the evidence suggests a cleared and open landscape within which funerary monuments were being constructed. These monuments include the remains of a cairn or barrow that contained at least two cremation burials. Down slope from this was a possible second barrow and a number of pits, which included at least one other cremation burial.

By the late Iron Age, a field system consisting of ditched enclosures was found superimposed on the landscape across the site of the development and extending as far north as Holly Grove Farm, with a possible settlement north of Carr Dike. The earlier Bronze Age landscape still imposed itself on the layout of the later field system, with one of the field boundary ditches deliberately diverted around the cairn. The field system was long-lived, being maintained throughout the Roman period and, significantly, into the centuries following the end of Roman Britain. Within the medieval period the site was part of an open field system with ridge and furrow cultivation and by the later post-medieval period it was part of an enclosure landscape, and remained as such until the construction of the distribution centre.

The archaeological investigations have produced important evidence, particularly in relation to demonstrating the continuation of activity spanning a period of approximately 2,500 years (c. 1,900 BC to AD 600) from the Early Bronze Age through to the post-Roman period. The results are an important addition to our knowledge base, providing further understanding of Bronze Age funerary landscapes, as well as Iron Age and Roman field systems within the region. They have also provided an interesting insight into the respect shown by the late Iron Age or early Roman community, who set out the field system, to the monuments of their ancestors.

However, it is the post-Roman occupation that is of particular interest since, especially within this region, it is a period very under represented in the archaeological record. Of particular significance, are the two 5th to 6th centuries corn drying kilns which are rare survivors and are of national importance. The corn dryers were positioned within corners of the fields created in the late Iron Age, suggesting the community maintained a local agricultural economy, including production and processing, that continued into the 5th and 6th centuries. This community utilised the long-established enclosure landscape and continued a way of life established approximately 600 years earlier. In addition, the fossilisation of the late Iron Age and then Roman field system suggests a

degree of continuity in territorial land ownership; it was unlikely that this was a fortuitous re-use of an abandoned Roman field system, but simply the maintenance of long established working farmland. This evidence for a settled and unchanged rural economy in the years following the collapse of the Roman Empire is therefore an exciting discovery and should, perhaps where there is opportunity, prompt review of previous fieldwork and provide a basis for future research.

The excavation has provided significant archaeological evidence for a landscape of change and continuity since the Early Bronze Age and has contributed to our understanding of the form and chronologies of these landscapes, which within the region are predominately recorded as undated cropmark sites only. It was the unexpected discovery that the field system, and related farming practices lasted into the 5th or 6th centuries AD, a period of at least 600 years, which is of particular significance. In addition, the two post-Roman corn drying kilns are of such rarity, that the excavations at Goldthorpe have produced nationally significant results.

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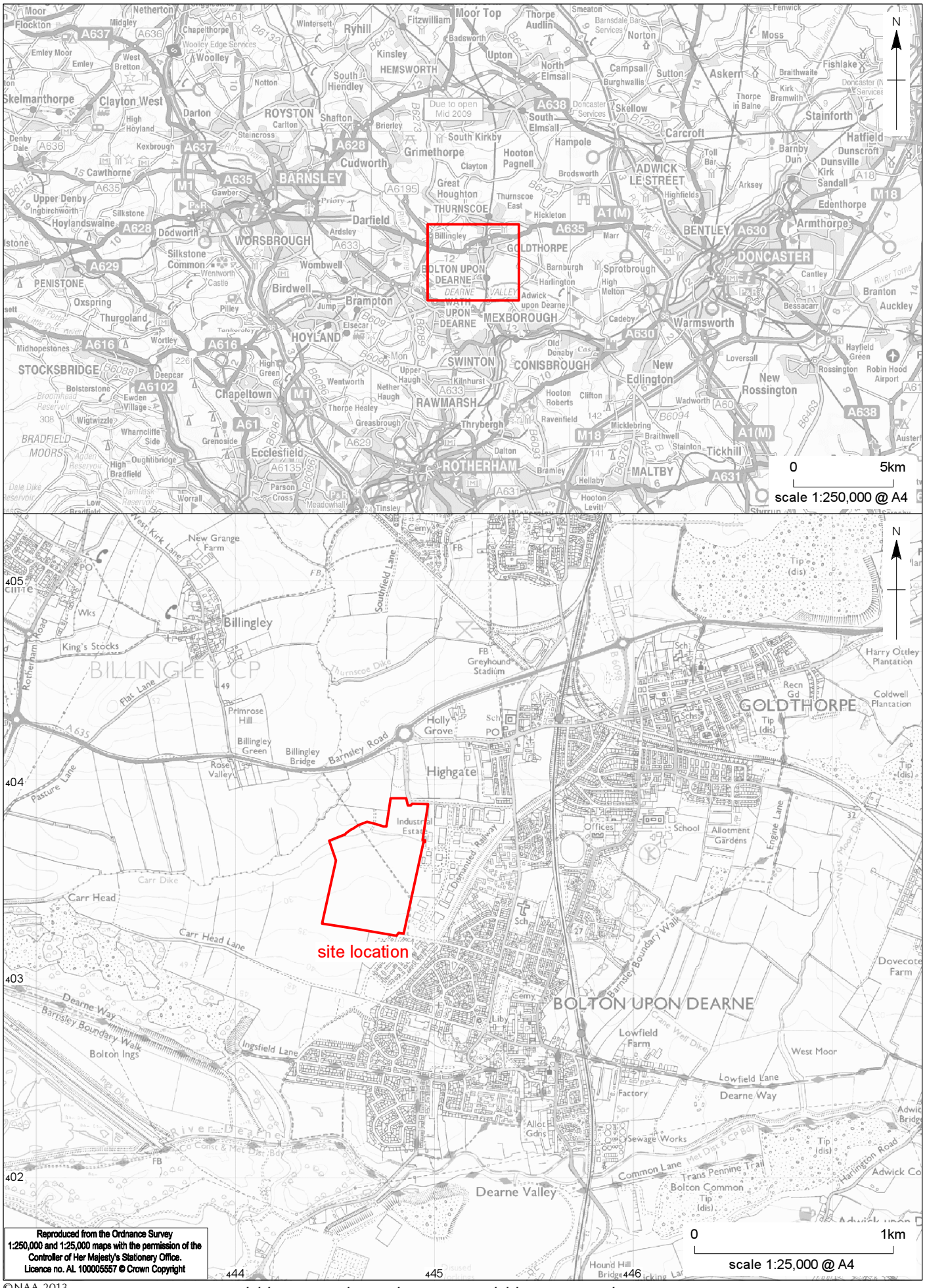


Goldthorpe Industrial Estate, Goldthorpe: site location *Figure 1*

Based on the Ordnance Survey 1:10,000 map with the permission of the Controller of Her Majesty's Stationery Office. Licence no. AL 100005557 © Crown Copyright

Based on geophysical survey data supplied by: STRATASCAN ref: 2984/P1/A survey date: 11/11 © Copyright originator

Based on geophysical survey data supplied by: WYAS ref: Webb, 2001 (Figure 2) © Copyright originator

0 250m

scale 1:5000 @ A4

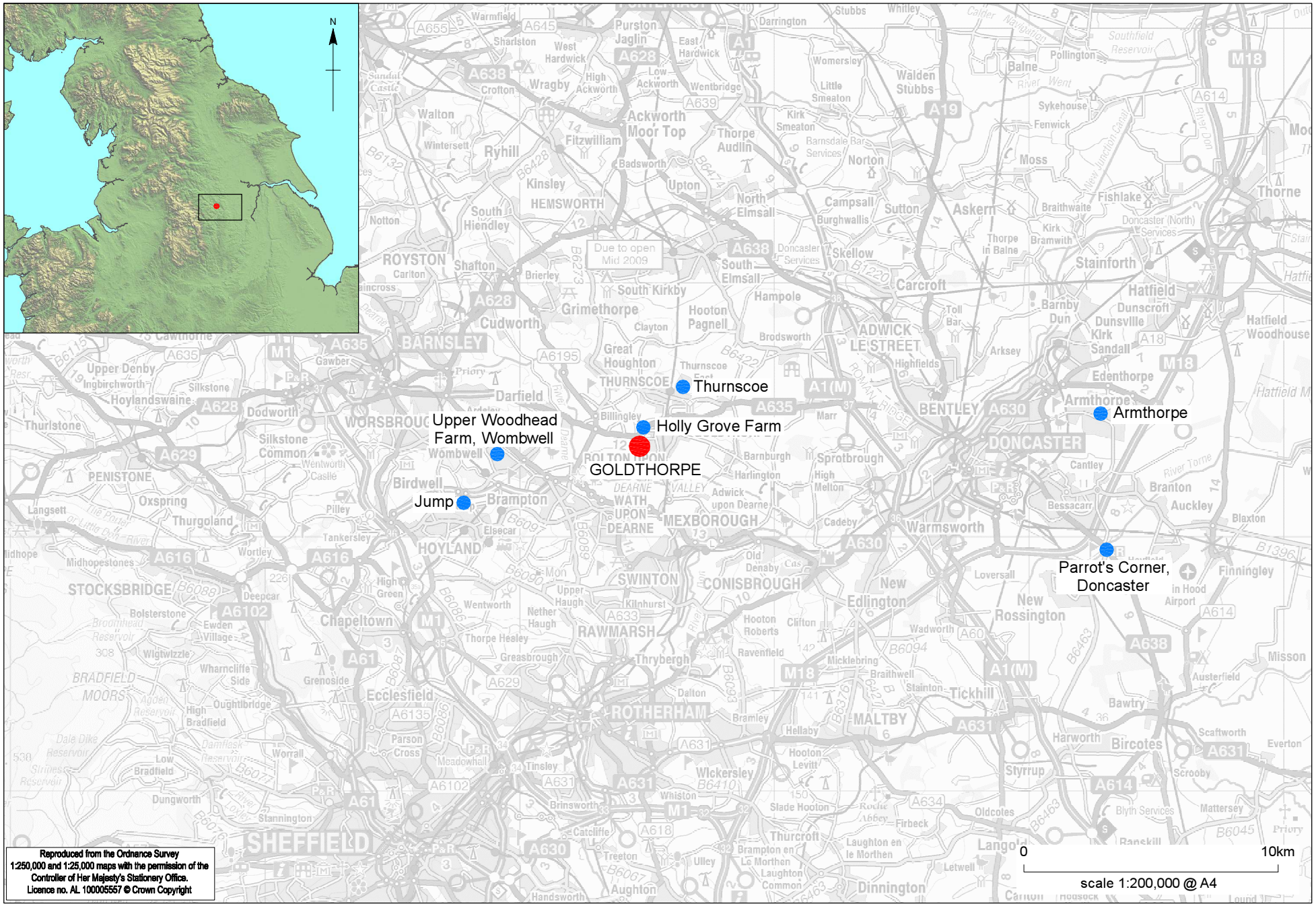
KEY

development boundary

archaeological excavation

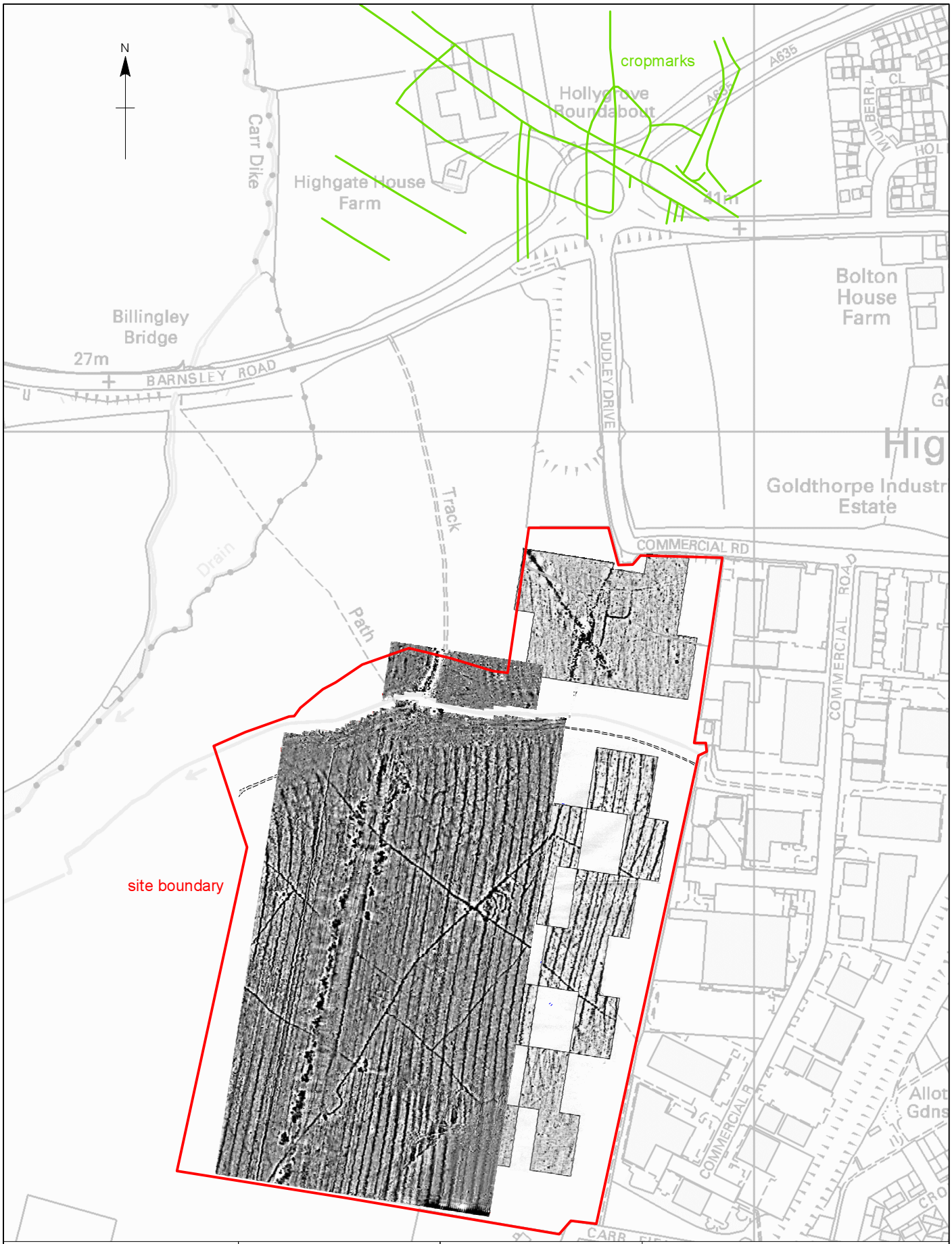
Goldthorpe Industrial Estate, Goldthorpe: results of geophysical survey and archaeological excavation

Figure 2



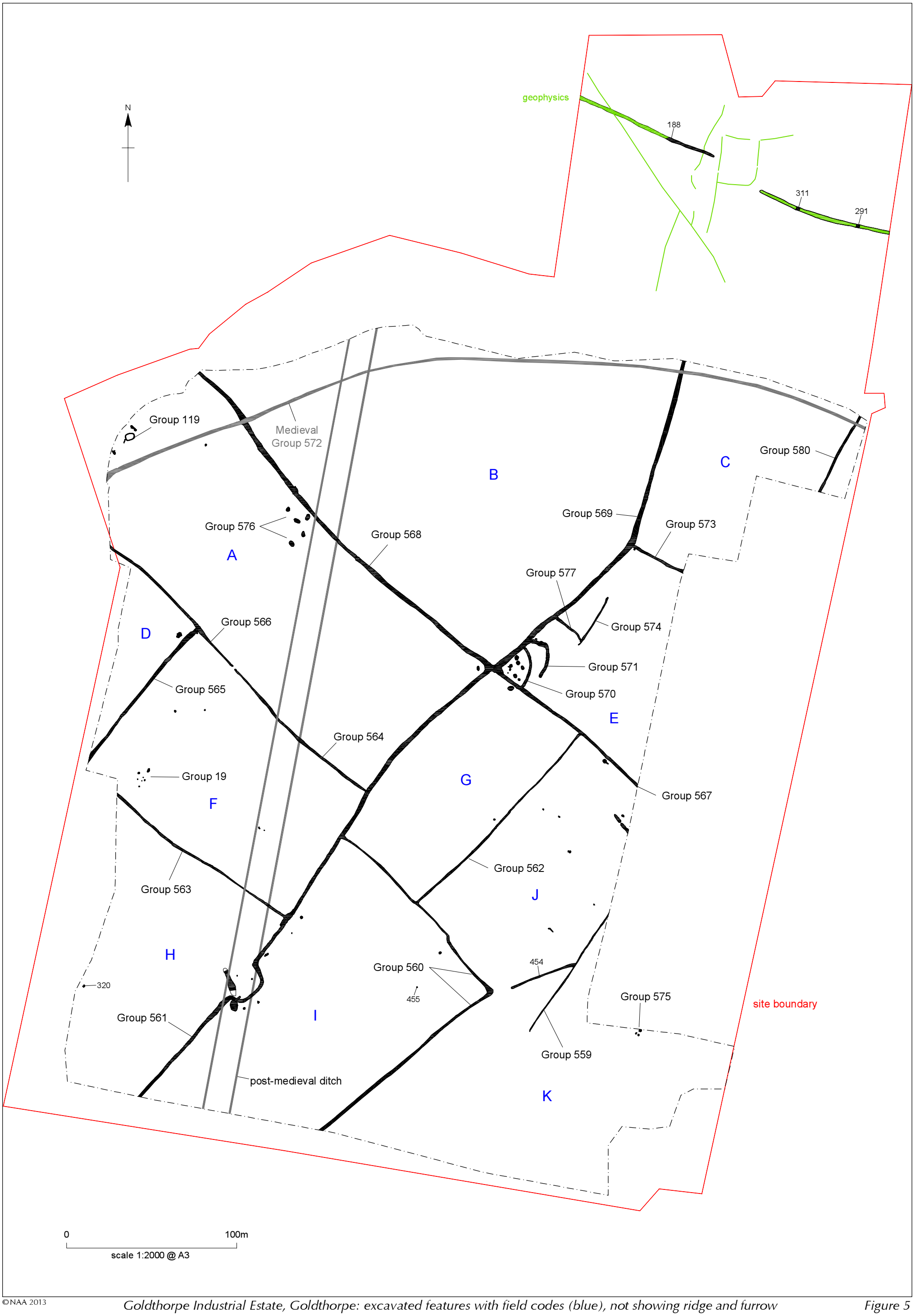
Goldthorpe Industrial Estate, Goldthorpe: late Iron Age/Romano-British settlement enclosures and field systems confirmed through excavation

Figure 3



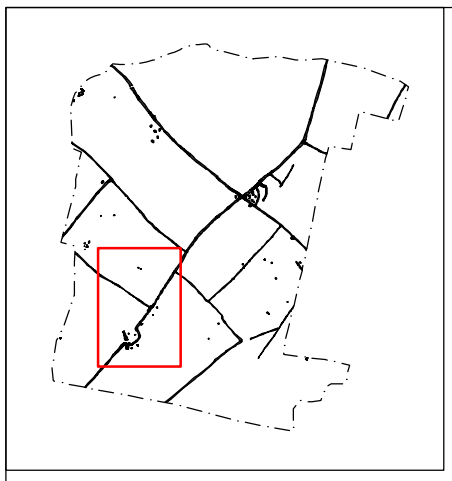
Goldthorpe Industrial Estate, Goldthorpe: cropmarks at Holly Grove Farm in relation to the geophysical survey

Figure 4



Goldthorpe Industrial Estate, Goldthorpe: excavated features with field codes (blue), not showing ridge and furrow

Figure 5



N

0 20m

scale 1:400 @ A3

355

357

s.6c

275

238

260

Group 563

258

s.6d

274

254

252

234

Group 560

225

97

90

Group 561

287

289

220

378

236

218

373

216

214

318

557

278

342

cremation 212

s.6a

cremation 328

s.6b

s.6e

263

367

s.6f

340

364

366

354

266

372

265

370

362

339

351

377

Section 6a

N S 32.18m OD

213

212

ash and charcoal

Section 6b

N S 32.21m OD

0

329

350

328

0 1m

sections 6a-b scale 1:25 @ A3

Section 6c

N S 29.70m OD

276

275

Section 6d

N S 31.50m OD

273

274

Section 6e

W E 32.02m OD

252

270

263

0 1m

sections 6c-f scale 1:50 @ A3

Section 6f

E W 32.23m OD

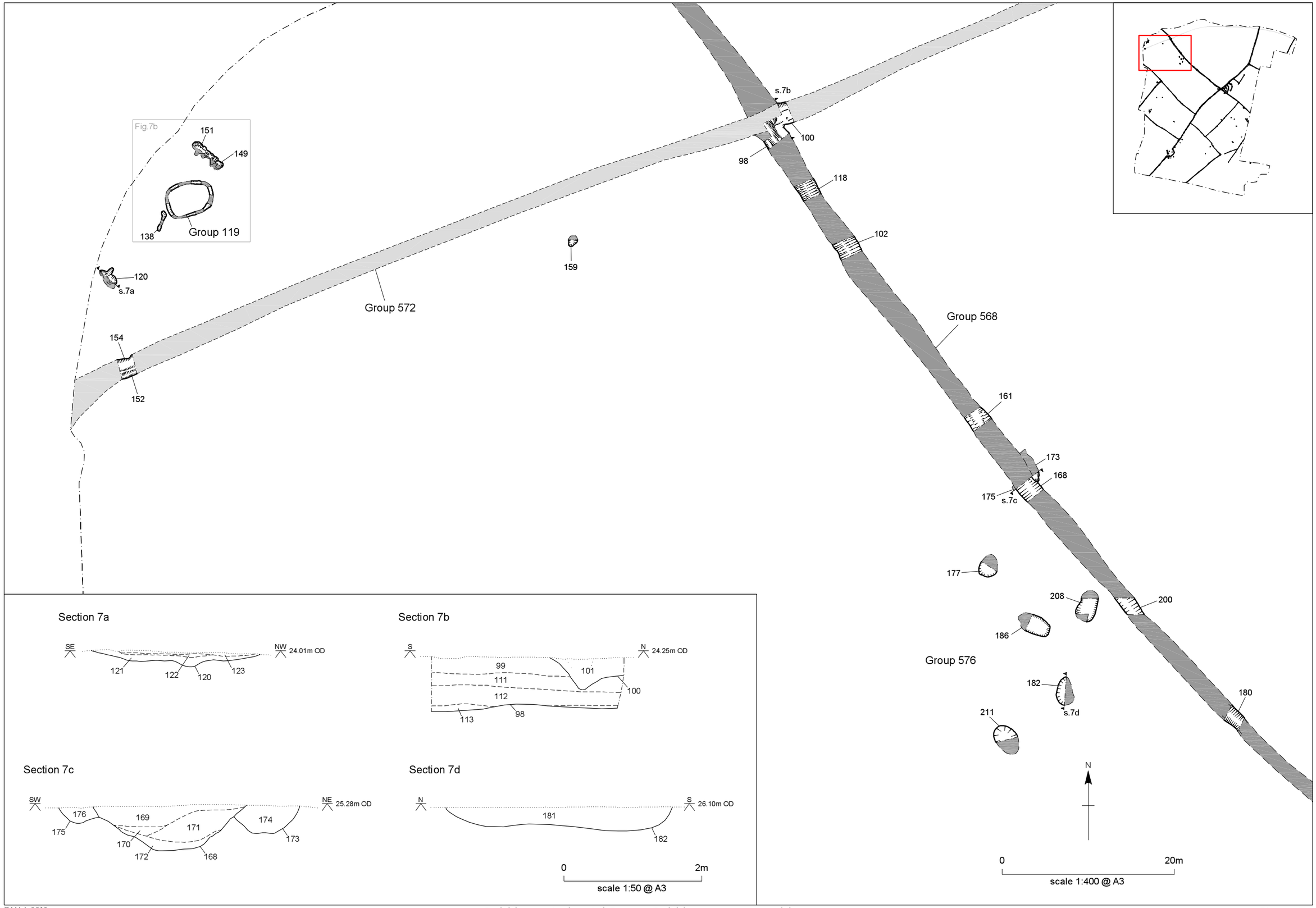
368

furrow 04

367

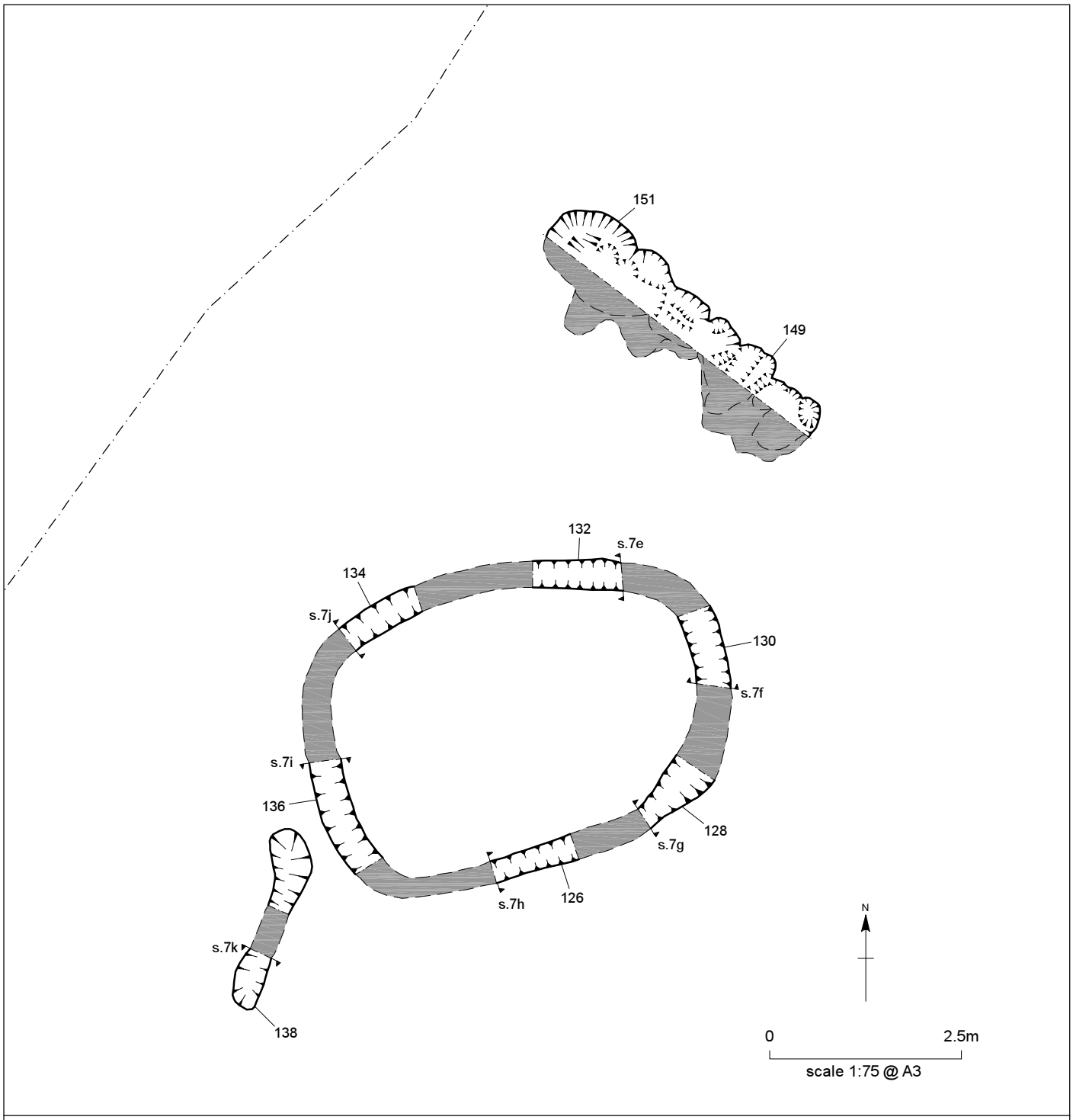
Goldthorpe Industrial Estate, Goldthorpe: excavated features

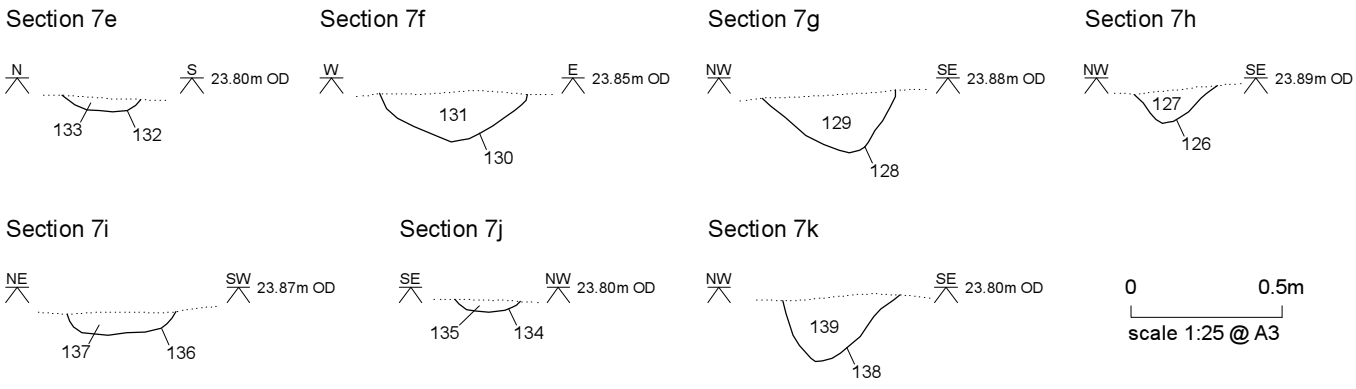
Figure 6



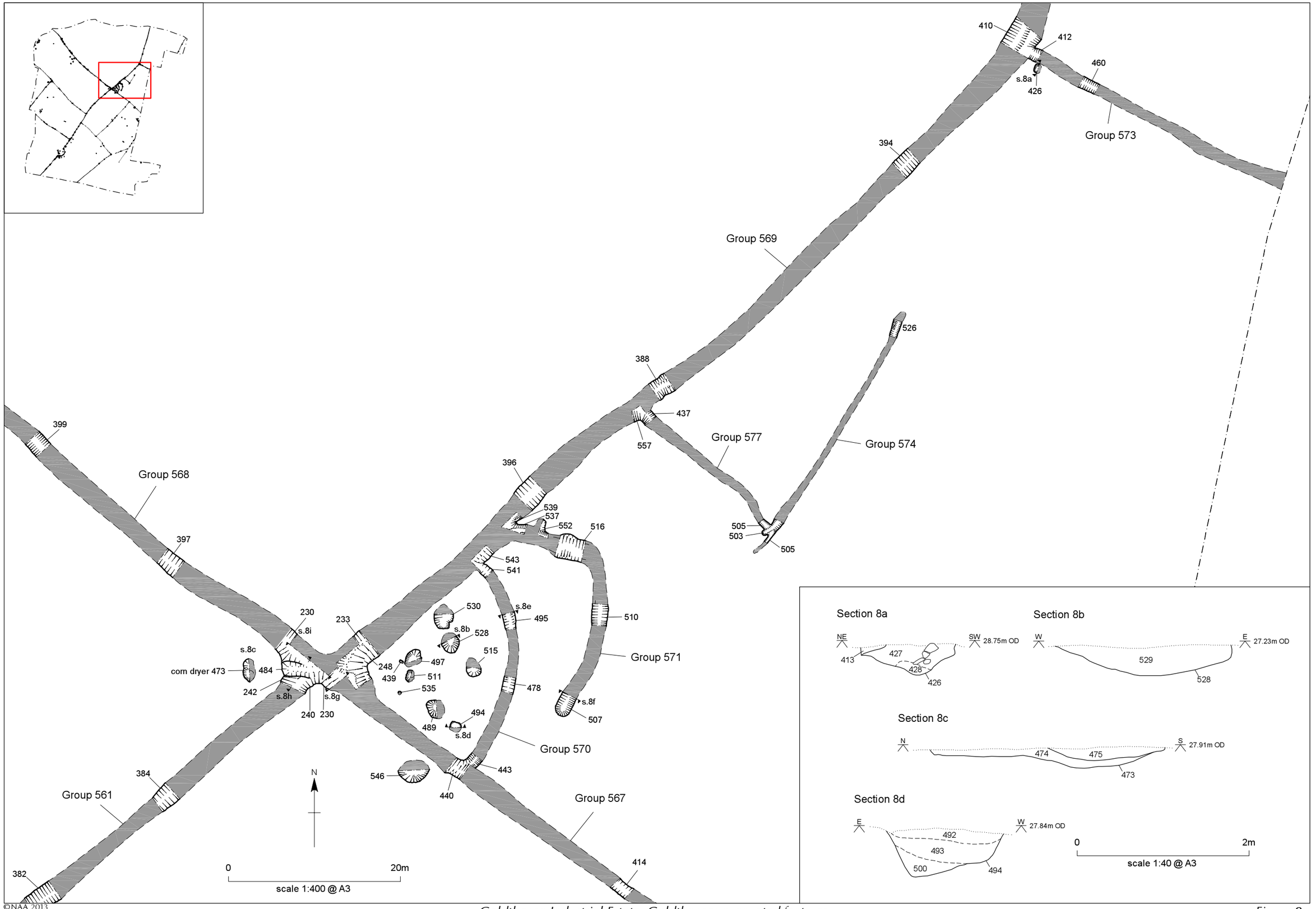
Goldthorpe Industrial Estate, Goldthorpe: excavated features

Figure 7a



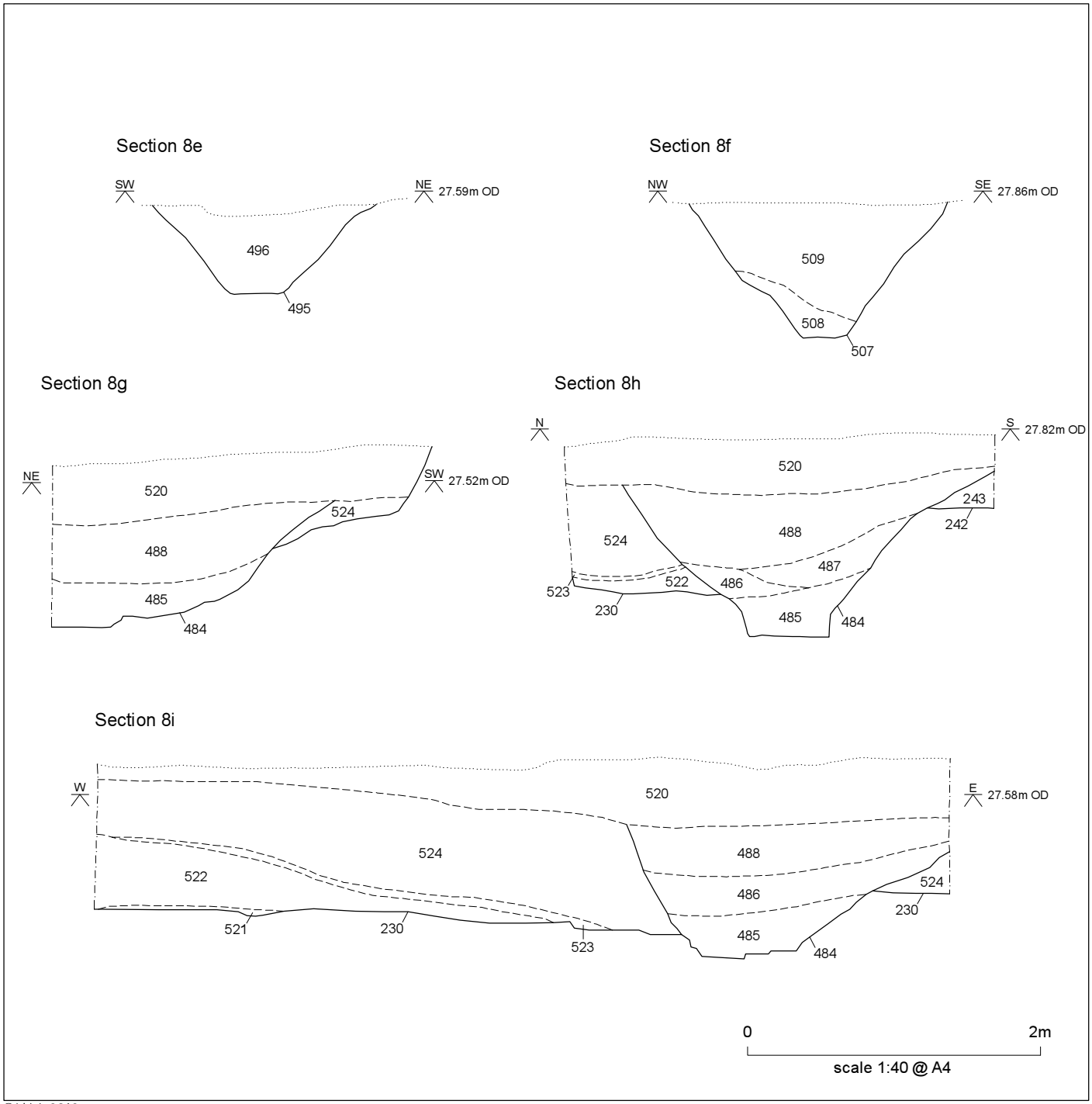


Goldthorpe Industrial Estate, Goldthorpe: excavated features *Figure 7b*

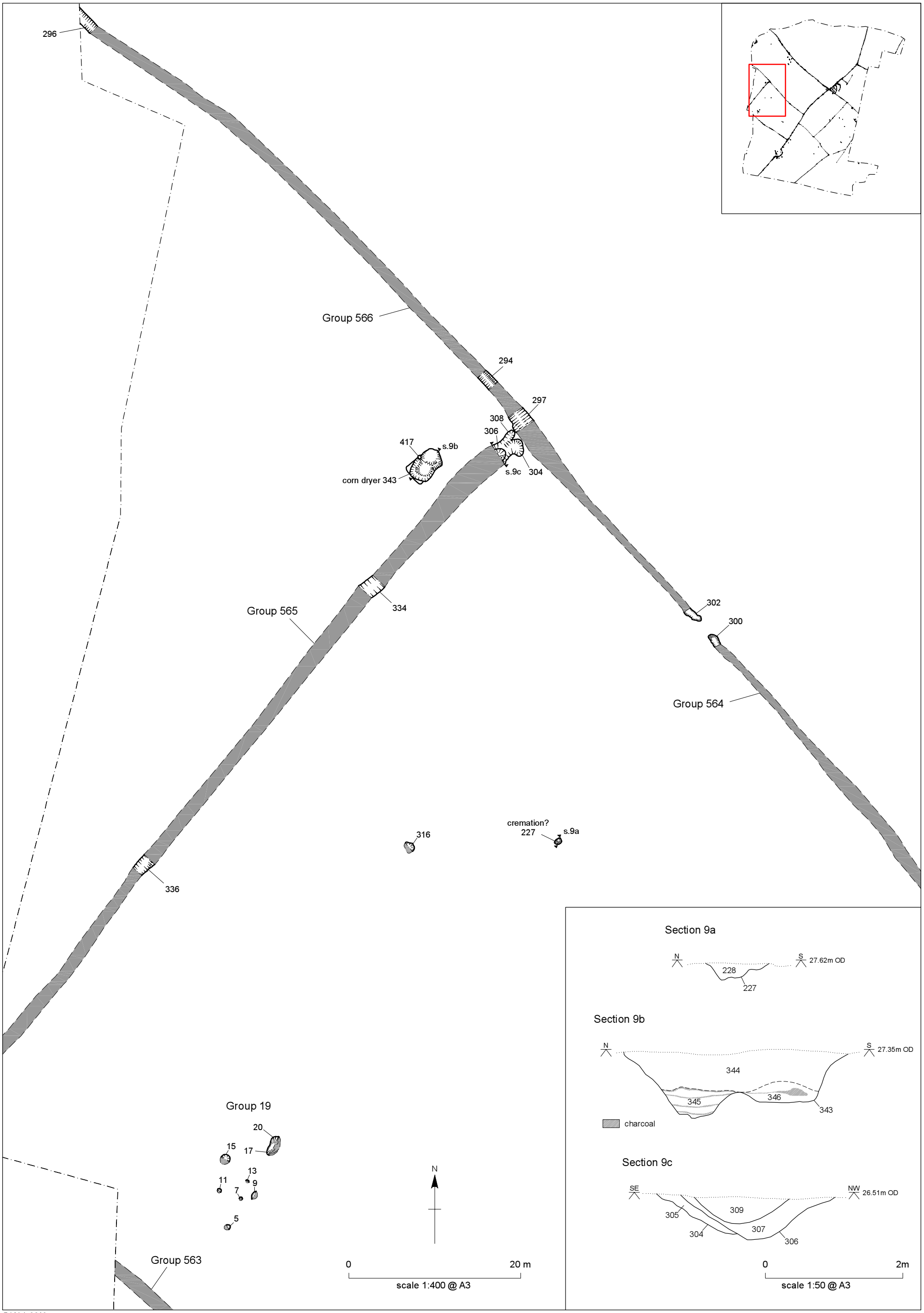


Goldthorpe Industrial Estate, Goldthorpe: excavated features

Figure 8a

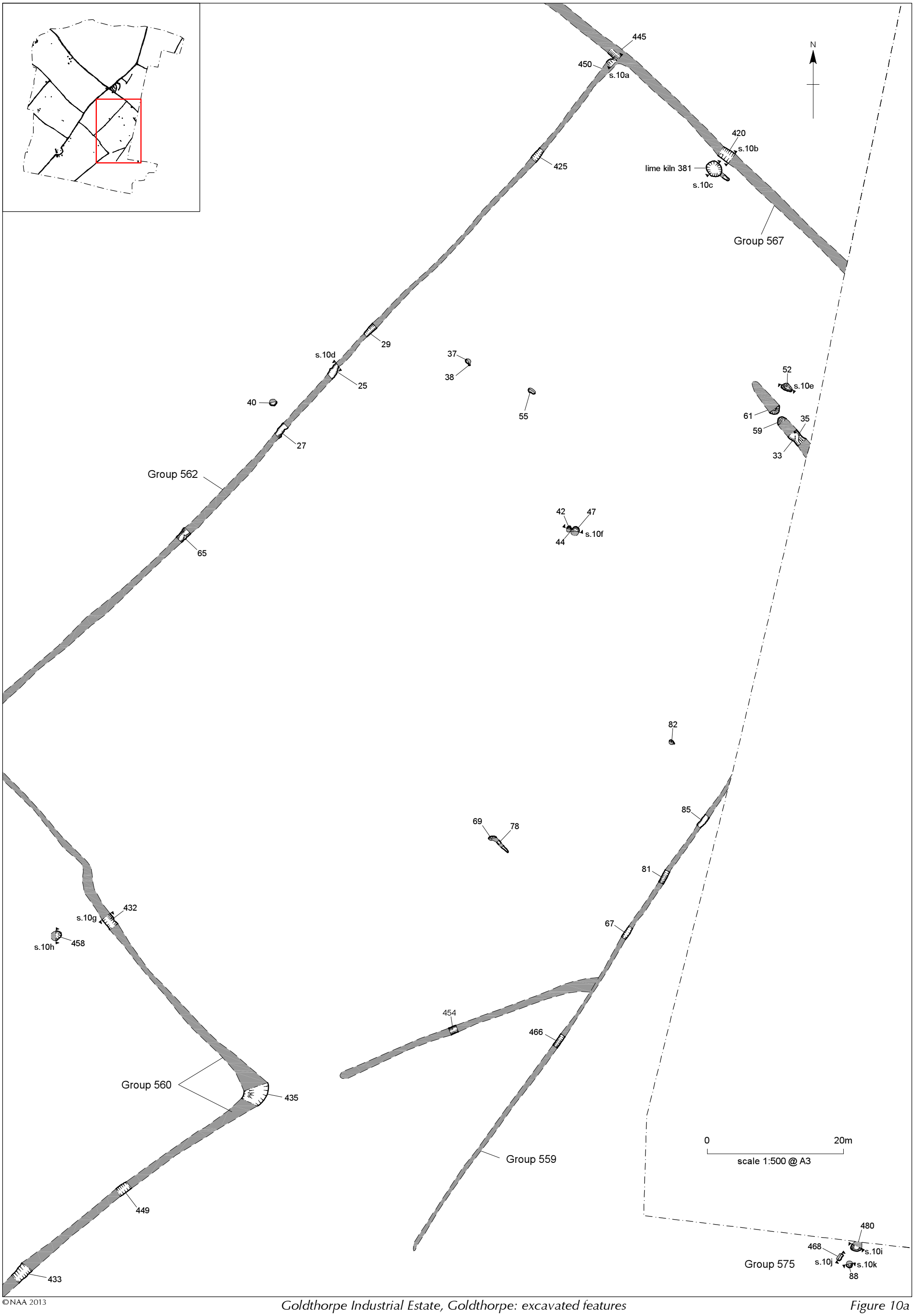


Goldthorpe Industrial Estate, Goldthorpe: excavated features *Figure 8b*



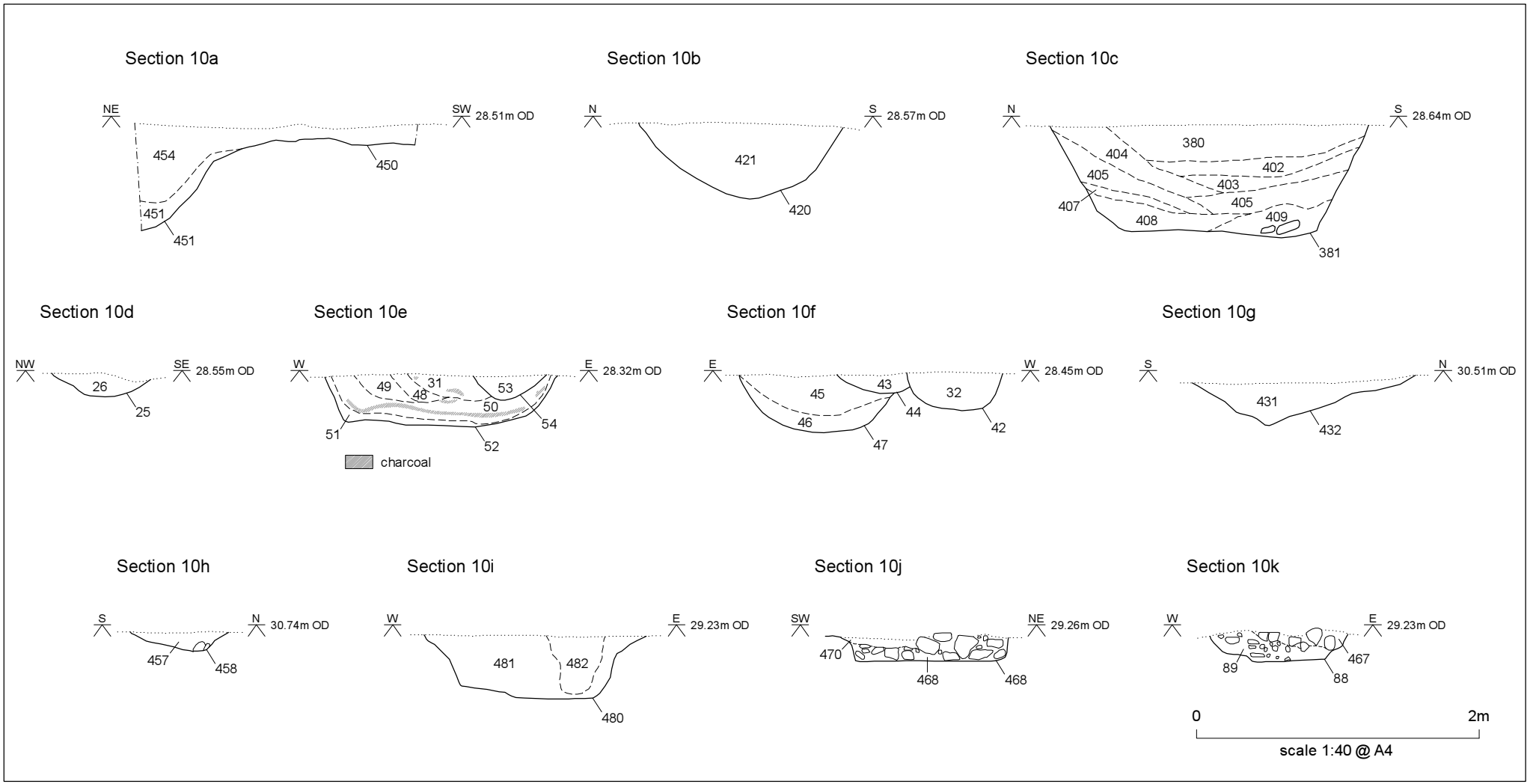
Goldthorpe Industrial Estate, Goldthorpe: excavated features

Figure 9



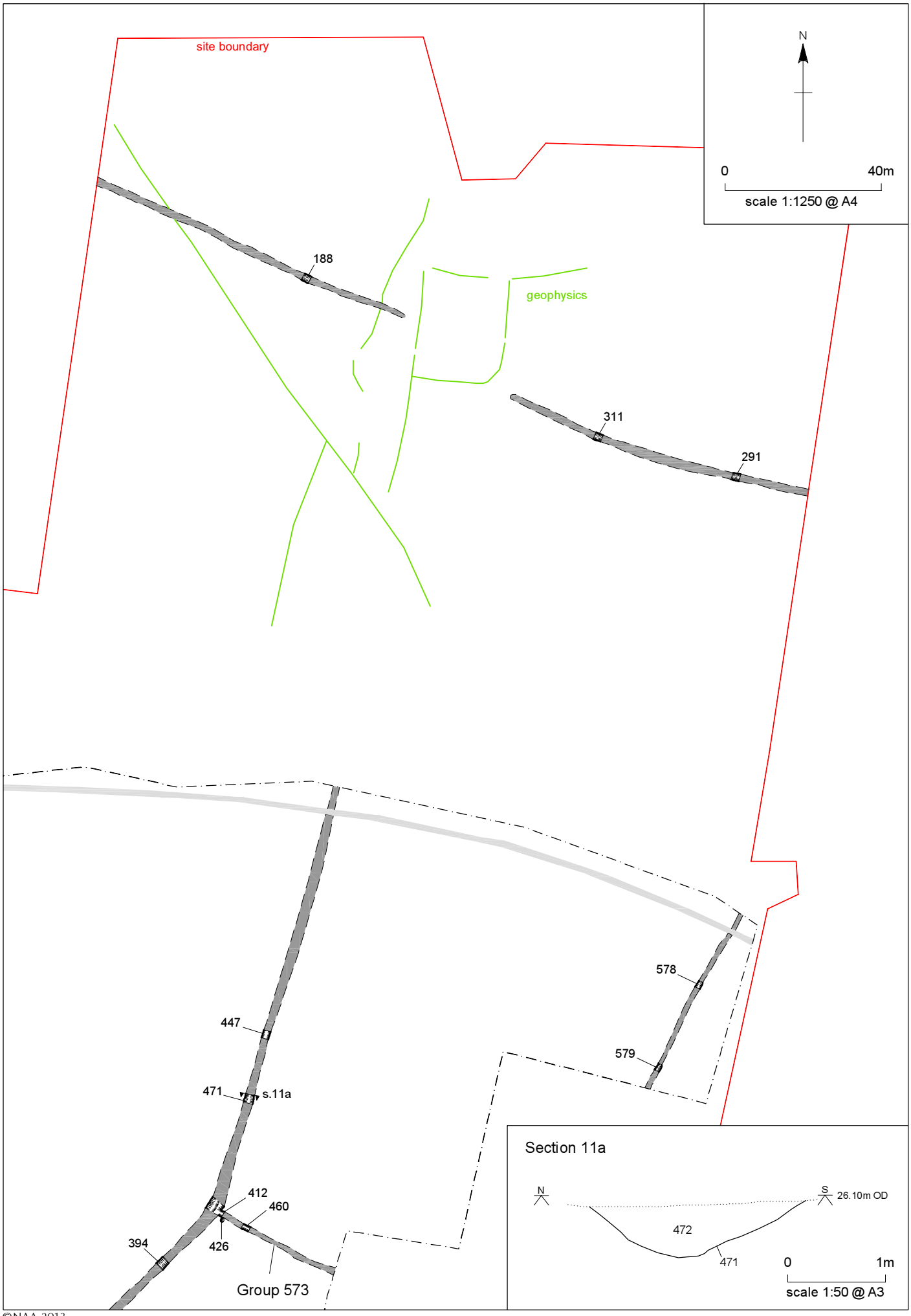
Goldthorpe Industrial Estate, Goldthorpe: excavated features

Figure 10a

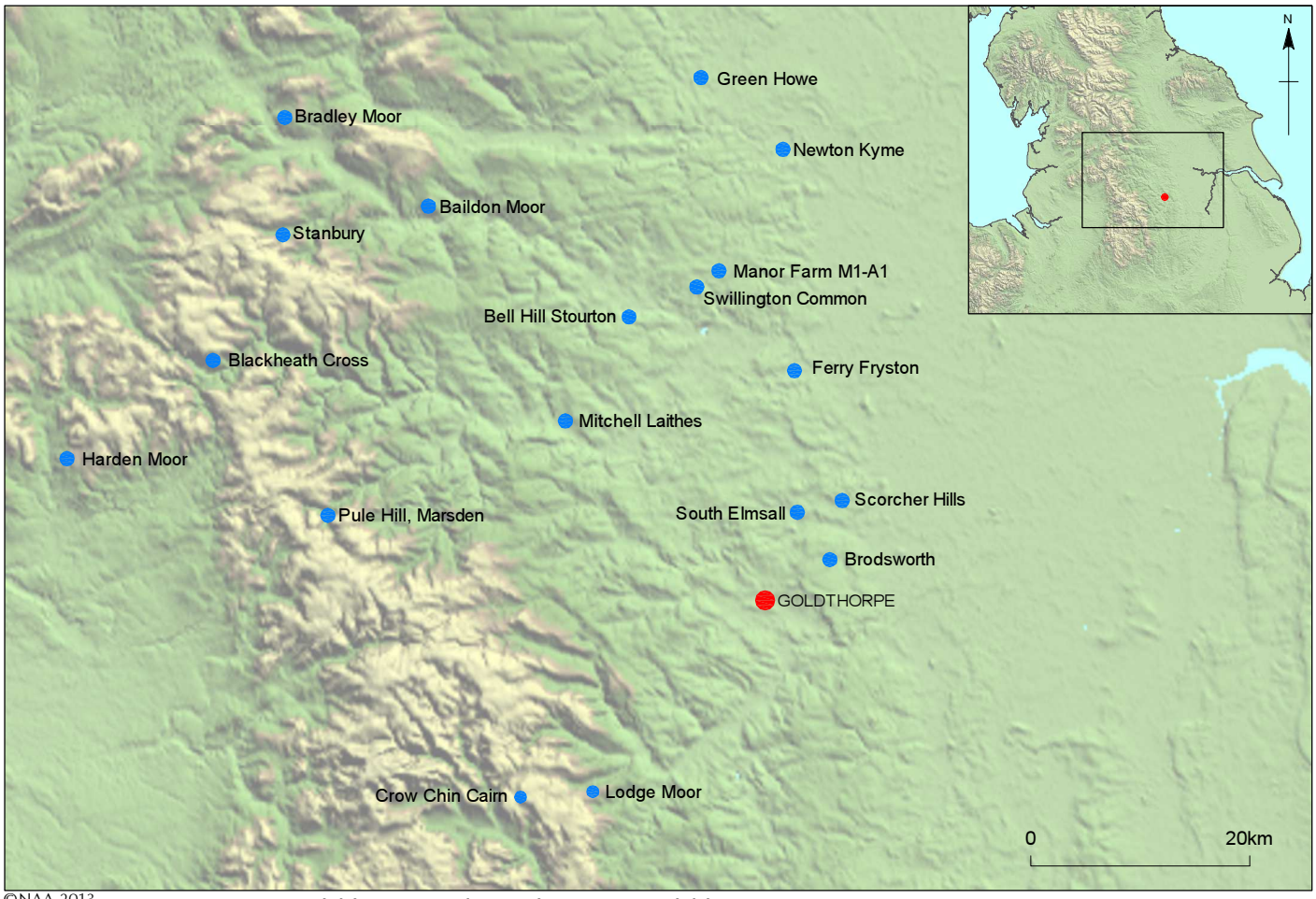


Goldthorpe Industrial Estate, Goldthorpe: excavated features

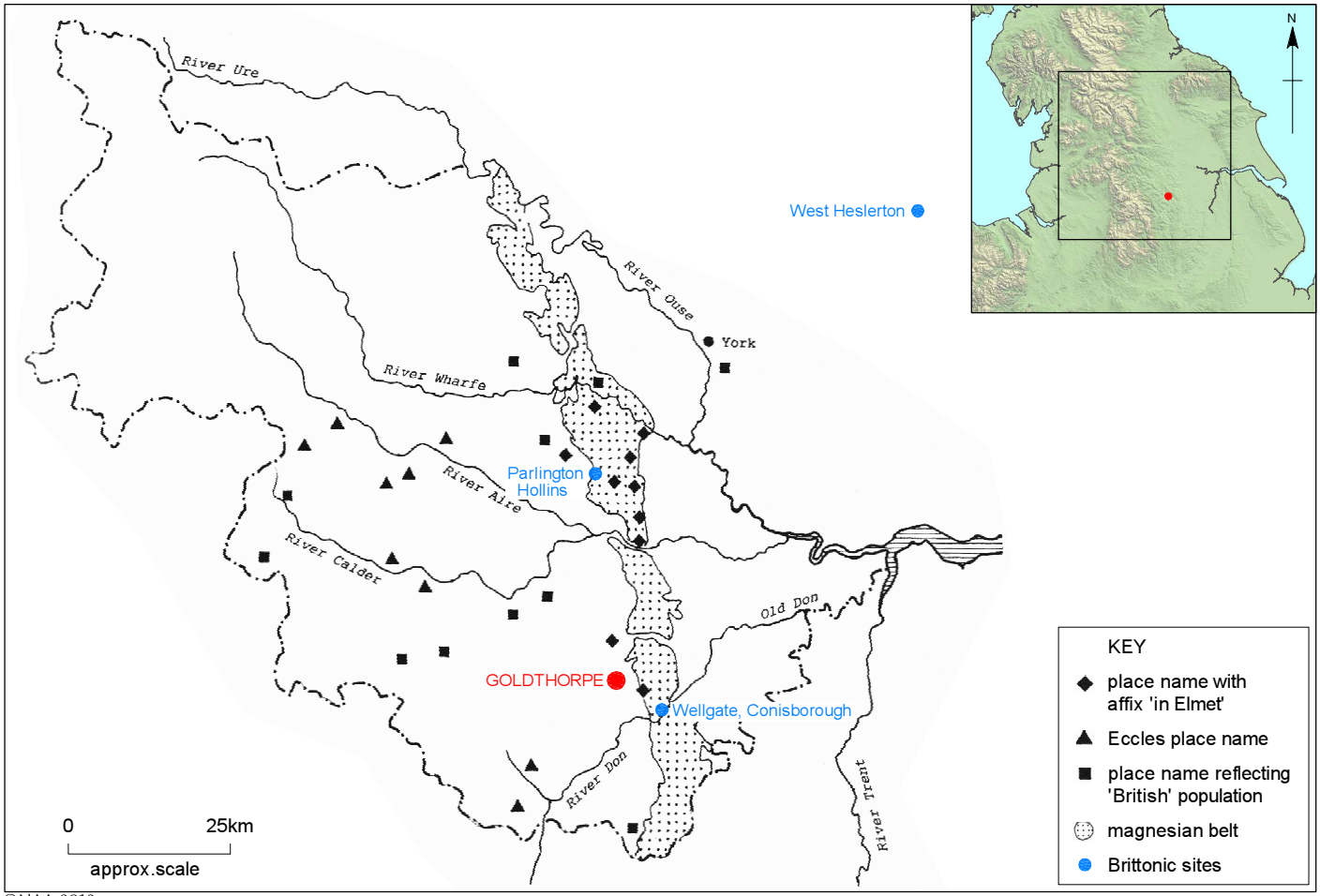
Figure 10b



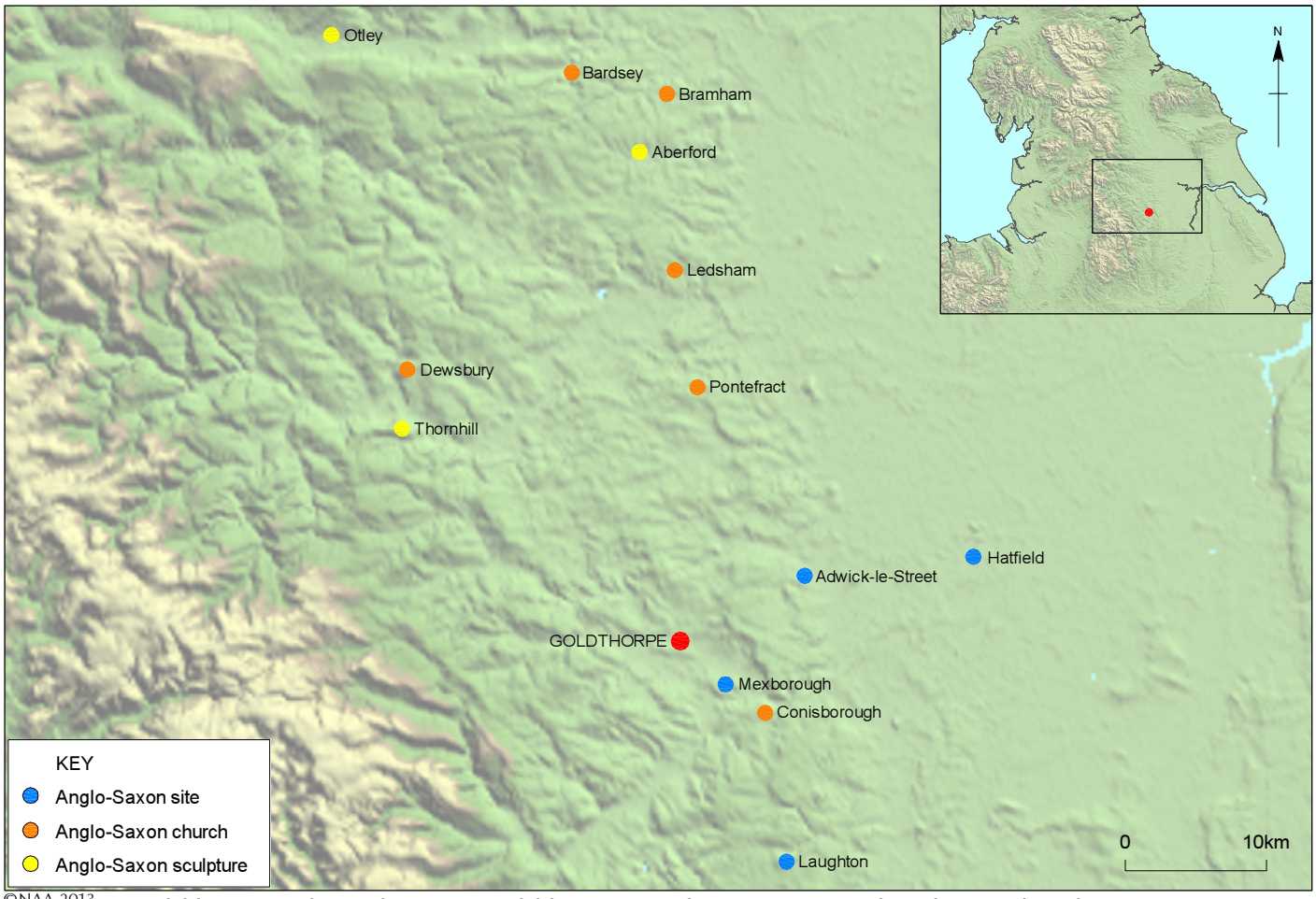
Goldthorpe Industrial Estate, Goldthorpe: excavated features *Figure 11*



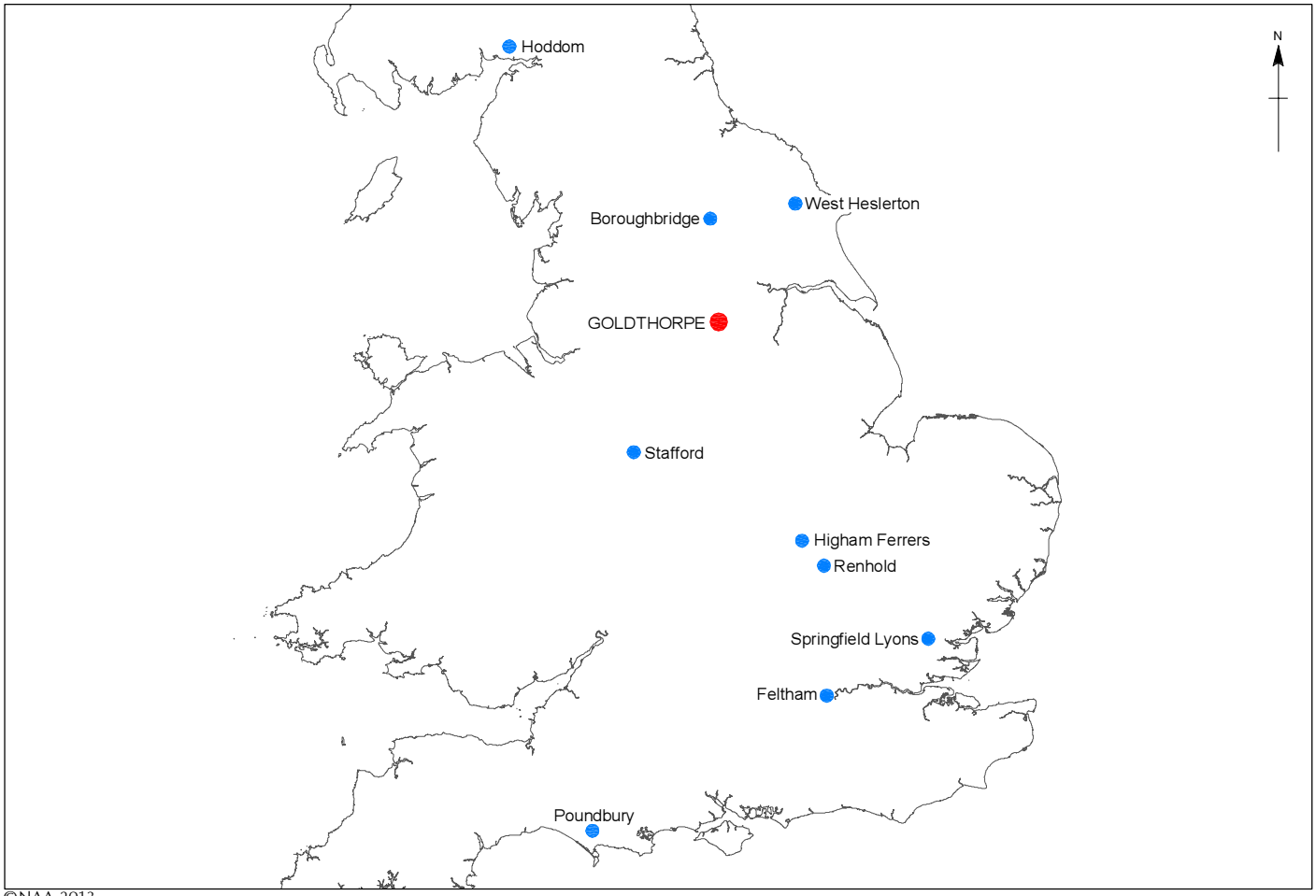
Goldthorpe Industrial Estate, Goldthorpe: Bronze Age sites *Figure 12*



Goldthorpe Industrial Estate, Goldthorpe: the possible extent of the post-Roman territory of Elmet *Figure 13*



Goldthorpe Industrial Estate, Goldthorpe: Anglo-Saxon sites, churches and sculpture *Figure 14*



Goldthorpe Industrial Estate, Goldthorpe: post-Roman period corn dryers *Figure 15*

APPENDIX A

WORKED STONE

Peter Rowe

Introduction

This report describes a collection of nine lithics, hand-collected during the archaeological excavation. All of the lithics are knapped. There are no natural occurring pebbles or pebble fragments.

Methodology

All material was inspected by eye and with supplementary use of a hand-lens (x20 or x40). All material was logged on a Microsoft Excel spreadsheet. For each item the following variables were described: -

SITE INFORMATION

Context No.	The context number.
Flint No.	A unique number assigned for the purposes of the catalogue
Quantity	This is usually '1' and is present to allow calculations.

RAW MATERIAL

Material	Whether flint, agate, quartz etc.
Material colour	A description of the colour of the raw material, usually 'brown' or 'white'.
Cortex	A description of the amount of cortical surface, expressed as a percentage
Cortex colour	A description of the colour of the cortex, usually 'white', 'cream' or 'reduced'.
Patina	A description of the amount of patination, expressed as a percentage.
Patina colour	A description of the colour of the patina, usually 'white' or 'grey'.

TECHNOLOGY

Type	The type of artifact, e.g. 'flake', 'blade', 'debitage', 'core', 'burnt fragment' 'natural' or tool types such as 'scraper', 'arrowhead', 'fabricator'.

Size	Individual measurements have not been taken at this stage. Sizes are stated in 5mm increments e.g. 20-25mm being the maximum dimension or in case of flakes, maximum length.
Reduction Sequence	Whether from the 'primary', 'secondary' or 'tertiary' stage of knapping. The term 'thermal' is also used to note heat fracture.
Platform	The type of platform (where present), based on Andrefsky's scheme (Andrefsky 2005, 96-77), i.e. 'cortical', 'flat', 'complex' or 'abraded'.
Bulb	A description of the bulb of percussion (where present), recorded as 'pronounced' or 'diffuse'.
Fracture Type	The type of termination, i.e. 'feathered', 'step', 'hinged' or 'overshot'. Based on the types described by Cotterell and Kamminga (1987, 701).
Interpretation	This column is used to indicate if an item has additional working, e.g. 'edge use' or 'retouch'.
Working	A description of the working e.g. 'abrupt', 'invasive' etc.
DAMAGE	
Burnt	This column uses an ordinal scale to describe the exposure to burning an item has received. 0 = unburnt; 1 = lightly fired (surface sooting, light crazing); 2 = fired (surface and interior patination, surface cracks, but still retaining its original form); 3 = heavily fired (complete surface and interior patination, pot lid fractures, shattering, original form cannot be determined).
Damage	A free text column to describe any other forms of damage, e.g. 'plough', 'frost', 'edge chipping'.
INTERPRETAION	
Period	Where an artefact is chronologically distinctive then the period is noted.
Notes	A free text field to record any further observations, i.e. if items refit.

Raw Material

The lithic material is entirely of flint. Quartz, chert and other stone types are absent.

The flint is fairly homogenous. It appears to be of decent quality with good fracture characteristics. The colour of the raw material is generally a pale brown or dark brown. Where cortex is present it is well reduced by glacial or wave action. The source of this material is likely to be the local glacial tills of the Yorkshire coast. These have been noted as having excellent knapping properties (Durden 1995, 410).

The flint can be patinated with a light 'milky' stain giving the flint a grey appearance. When backlit the thinner edges of these pieces are usually translucent revealing the original brown coloured flint.

Technology

The nine knapped pieces forming this assemblage are set out by type in Table A1.

Table A1: Composition of lithics by knapped form

Knapped Form	Quantity
Blade fragment	2
Core	1
Flake	4
Flake fragment	1
Gun Flint	1
Total	9

CHRONOLOGICALLY UNDIAGNOSTIC PIECES

Two flakes were recovered from the topsoil (context 1). One of these is a small pointed flake. The other is a flake fragment (distal end) with light retouch. Neither item is chronologically diagnostic.

EARLIER PREHISTORIC (MESOLITHIC TO EARLY NEOLITHIC)

The proximal end of a narrow blade was recovered from sample AA taken from the primary fill (context 428) of a small pit (context 426). This has a prepared platform and diffuse bulb of percussion characteristic of Mesolithic or early Neolithic flint knapping. The blade is snapped below the bulb, this is likely to be damage rather than deliberate in this instance, having a fresh appearance.

Likewise the distal end of a further narrow blade was recovered from context 474 (primary fill of pit 473). The break cuts a pre-existing patina on this piece suggesting post-depositional damage.

Also in this category is a small flake from sample AA of context 512 (secondary fill of pit 511). This has the careful platform curation typical of Mesolithic or early Neolithic knapping. A more robust flake (unstratified) also demonstrates knapping characteristics typical of this period.

LATER NEOLITHIC/EARLY BRONZE AGE

Pit 458, produced two flints from its fill (context 457). A small sub-square core with multiple removals from at least three platforms was present. The platforms are not curated and crushing and hinged fractures are apparent. Also in the pit was a small thin flake with cortical platform, again the platform has not been curated. These pieces would suit a date from the Later Neolithic or early Bronze Age.

HISTORIC

A single gun flint (context 385 – ditch fill) of a high quality translucent brown flint was noted. It has the imperial measurement of 5/8ths of an inch making it suitable for a standard pistol, musket or rifle. The item is likely to date from the 18th century onwards and is of a type still in use by hobbyists today.

Conclusion

Although a small residual assemblage, this collection has a number of items of intrinsic interest. The lithics reveal prehistoric exploitation of the landscape in the Mesolithic or early Neolithic periods. Three of the pits (426, 473 and 511) contain lithics of this date, although these could of course be residual and have not been found in significant quantities. A pair of flints from context 457 (fill of pit 458) lack the curated platforms seen in the earlier material and would suit a date from the later Neolithic or early Bronze Age.

The gunflint from context 385 is likely to be an 18th or 19th century import from one of the principal historic knapping areas such as Brandon. It was found in the fill of a ditch of the Roman field system and must be intrusive.

APPENDIX B

EARLY PREHISTORIC POTTERY

T. G. Manby

Introduction

The surviving vessel consisted of a vertical profile segment of a collared urn, the result of horizontal truncation as it lay on its side in the burial pit that has produced sharp freshly broken edges. Total weight of fragments 510g. Although fragmented by pressure there is a full profile after re-joining and a small number of non-joining fragments recovered amongst the interior filling. There remains 40% of rim and collar circumference and 55% of the base. Received in washed condition, the interior of the lower body retained stripes of a sandy encrustation. The assemblage was examined in accordance with the guidelines set-out in the Prehistoric Ceramic Research Group's published handbook:- The Study of Later Prehistoric Pottery: General Guidelines for Analysis and Publication (2011) Occasional Papers Nos. 1 and 2. 3rd Edition.

Description

Tripartite Profile Collared Urn. Large fragment, full profile and detached sherds. Dimensions:- 15.4 to 15.6cm high; 14cm Diameter Rim; 8.2cm. diameter base Wall thickness 9.5mm. at the lip and generally 8mm. through-out the profile.

Simple rim with slightly expanded internal bevel. Straight collar with a sharply angled lower edge, vestigial internal moulding. A shallow angled neck down to a rounded shoulder merging into the straight inward sloping body profile, simple base angle. Base has flat under surface, internally slightly convex.

Exterior: Compact orange toned grey tone, the latter increasing in extent on the neck and collar and in places over the base angle on to the flat base.

Interior – Rough, orange-buff to grey brown. Horizontal wipe marks over most of interior. Faint finger-tip pressing along the shoulder angle and around the interior of the collar.

Fabric: Hard, gritty, hackly fracture and oxidised through-out the thickness of the wall.

Temper

Showing in the surfaces are profuse angular and sub-angular off-white limestone fragments varying in size up to 7mm. across. Also some sparse angular ironstone, sandstone and shale <2mm.

Decoration

Twisted cord 'maggot' impressions in alternating horizontal rows of diagonals showing variable spacing of numbers of imprints in alternating rows so that some do not form a true herringbone arrangement. There are four and in one place five rows of imprints on the collar; the neck has five rows with the lowest row dipping down below the shoulder in one place then rising to squeeze out the row above.

Classification

In current typo-chronological schemes the Goldthorpe Urn can be assigned to Ian Longworth's - Form IIIB and the Primary Series (Longworth 1984, 6-7), having the 'Early Traits' of: simple flattened lip, straight collar profile, Herringbone motif repeated on collar and neck and use of whipped cord impressions.

In Colin Burgess's realignment of Longworth's typological Traits' (figure 1) the Goldthorpe Urn has only the two 'Early Traits' of: short line motifs repeated on neck and collar, and whipped cord impressions (Burgess 1986, 344-348). With so few of the designated 'Early Traits' this can be assigned to his 'Middle' Group of Collared Urn development. .

In size the Goldthorpe Collared Urn is in the lower end, of both Primary and Secondary Series with dimensions of 100 to 200mm high, (Longworth 1984, 33, figure 19 and 32). There are precise parallels to the profile and herringbone motif, in different techniques, amongst the extensive regional collared urn series of both Yorkshire and the northern Midlands; such as those of Longworth's Primary Series:-

Grassington, N.Yorks.	Longworth No. 1152, Pl. 12(e). Cord line and 'maggot'
Goodmanham B. 84. E.Yorks.	Longworth No. 692, Pl. 33(a). Incised
Pickering, 10 miles NE.	Longworth No. 1237, Pl. 33(d). Incised
Harston. Leics.	Longworth No. 855, Pl. 8(c). Incised
Cossington, B2. Leics.	Longworth No. 851, Pl. 27(c). 'Maggot'
Beeley, Derbys.	Longworth No. 1152, Pl. 12(e). 'Maggot'
Stoke-on-Trent, Staffs.	Longworth No. 1418, Pl. 12(a). Cord line

Association

Collared urns are the most widely distributed across the British Isles of the designated Early Bronze Age ceramic types. There are a small number of inhumation associations and non-burial contexts of occupational and ritual character, but the majority of Collared Urns have been associated with cremation burials, either as a container inverted over or upright containing the bone deposit; or in an accessory role placed beside the cremation deposit (Longworth 1984, 47-48 and 76-78). The Goldthorpe burial is the latter class, where the accessory vessel is a small collared urn standing beside the cremation deposits, or laid on its side, or if originally upright had fallen over during the infilling of the pit. These in some instances contain small amounts of cremated bone and charcoal The apparently empty instances may have held organic substances. Comparable cremation deposits accompanying small urns occur in eastern Yorkshire in the Corp's Land Barrow, Hutton Cranswick (Longworth 1984, 210. No. 715-727) and the Wykeham Moor Barrow (Brewster 1973, 86-92), and in other regions, such as Weldon, Northamptonshire (Jackson 1974).

Significance

Collared Urns are numerous from Yorkshire burial contexts, principally found during barrow and cairn excavations on the uplands of the North York Moors, the Wolds and the Central

Pennine Gritstone watershed ridges (Manby et al 2003, 64). The majority of collared urn finds relate to the survival of barrow mounds that were the attraction for antiquarian and archaeological excavation, especially in upland areas that were marginal. Prehistoric burial sites have rarely been survived in the Coal Measure areas of the southern and central Pennines (Manby 1968, 69 and 95-106) where medieval and post-medieval agricultural practices combined with intensive industrial and mining activities have been an constant destructive cause of landscape features during the 18th to 21st centuries (Manby et al 2003, 98-99).

This Goldthorpe Collared Urn cremation is the first Early Bronze Age burial to be recovered from extensive Coal Measure landscape bounded by the Rivers Calder and Don, and the Pennines Gritstone uplands to the west. Fragments of three Collared Urns (Vyner 2013), came from the infill of a pit feature at Pasture Lane, Mexborough, recently excavated by West Yorkshire Archaeology Service. The nearest finds of Collared Urns all as containers of cremations have come from east of the Coal Measures on the Magnesian Limestone Belt; in the Ferrybridge barrow (Greenwell 1877, 372; Longworth 1982, No. 1594-5, Pl. 244(c) and 84(b), and found between Brodsworth and Woodlands (Longworth 1984, No. 1407, Pl. 246(b)). Also further east in the central lowlands there are the Collared Urn burial finds on the river terrace at Doncaster, St. Sepulchre Gate and The Holmes (Longworth 1984, No. 408 and 409; Manby 1974,26-27, figure 1 and 2). To the southwest in the Gritstone uplands at Bradfield, Barnside Common (Longworth 1984, No. 1405 and 1406, Pl. 41(c-d), and at Sheffield, Crooks (Longworth 1984, No.1410 and 1411, Pl. 99(a-b) the single cremation was held by the large pairs of associated urns.

Dating

Collared Urns first appear in use as cinerary containers or accompanying human cremated bone deposits late in Period 2, 2300-2050 cal BC of Stuart Needham's Bronze Age periodisation scheme (Needham 1996, 127-130). The initial development of this ceramic tradition is considered to have been south of a Humber-Mersey line, as the 'Early' Collared Urn series are numerous finds in the East Midlands, Wales and South-western England (Burgess 1986, 348-349). With the early group Collared Urns scarce finds in Yorkshire, the adoption of Collared Urn ceramic and burial tradition is considered to be a chronologically later spread northwards through northern England into Scotland, and westwards into Ireland, during Period 3, 2050-1700 cal. BC. This has support from the intensive radiocarbon chronological programmes, principally utilising cremated bone, under taken in Scotland (Sheridan 2003 and 2007, 163 -165) and Ireland (Brindley 2007, 282-286), which provide results in a range of c.1900-1600 cal. BC, for Collared Urn cremation associations.

The chronological status of Early Bronze Age burial and ceramic traditions across the Yorkshire and Northern England regions requires refinement both in terms of associations and application of scientific dating. There are currently available a very limited number of precise radiocarbon determinations obtained on short life material for the Collared Urn series from Yorkshire (Richardson and Vyner 2011, 50), and for North-Eastern England (Millson *et al*. 2011, 34). However, in terms of the regional status the Goldthorpe Collared Urn burial may be assigned to early in the Second Millennium BC or Early Bronze Age 3 approximately 2050-1700 cal BC (Manby *et al* 2003, 61-64). This was confirmed, and further refined, by radiocarbon dating; the cremated bone sample from the cremation associated with the Collared Urn produced a date of 1955-1760 cal BC (SUERC-48118).

Acknowledgement

The writer thanks B. E. Vyner for drawing attention to the Mexborough Pasture Lane pottery.

APPENDIX C

LATE PREHISTORIC, ROMAN, MEDIEVAL AND LATER POTTERY

Chris Cumberpatch and Ruth Leary

Introduction

The pottery assemblage from the excavation was examined by the author on 25th and 26th July 2013. The assemblage consisted of 86 sherds of pottery weighing 797g representing a maximum of 74 vessels. The details of the assemblage are summarised in Table C1. A preliminary assessment of the assemblage identified a number of sherds from context 329AA as of early prehistoric type and they have been noted as such in Table C1. These sherds were separated and are the subject of a separate report by Terry Manby (see Appendix B). Sherds from contexts 4, 183, 199, 253, 280 and 337 were identified as of Roman type and have been dealt with by Ruth Leary. The remaining material (48 sherds weighing 535g and representing a maximum of 42 vessels) are the subject of reports by Chris Cumberpatch.

The pottery

The pottery assemblage consisted of three distinct components; hand-made pottery of later prehistoric type, Roman, and medieval and later wares. The elements will be discussed separately.

THE HAND-MADE POTTERY (CHRIS CUMBERPATCH)

Twenty-nine sherds of hand-made pottery weighing 120g and representing a maximum of 24 vessels were recovered from contexts 1, 4, 162, 243, 251 and 457. All of the vessels were hand-made (i.e. without the use of a wheel or turntable) and three distinct fabric groups were represented. The fabrics were classified using a scheme based upon that widely employed to classify hand-made pottery in East and North Yorkshire, the details of which have been discussed in detail elsewhere (Cumberpatch 2013).

The sherd from context 1 was one of two rim sherds identified in the assemblage. It was distinguished by its fine fabric and burnished finish. The rim was entirely plain and vertical in orientation suggesting that the vessel had been of a simple open jar or beaker shape. A fine curving line on the external surface seemed to be deliberate and probably represents part of a decorative motif, something that is rare but not unknown on pre-Roman Iron Age pottery in East Yorkshire (Cumberpatch, unpublished) but is currently unknown in South Yorkshire. There is a chance that this sherd post-dates the Roman occupation and could be of early or mid-Saxon date. Saxon pottery is even rarer in South Yorkshire than is pottery of later prehistoric type and seems in most cases to be of local origin with the result that distinguishing between the two in the case of small non-diagnostic sherds is difficult. Similar fine quartz tempered fabrics were present in contexts 4, 243 and 251 with the sherd from context 243 having a smoothed external surface.

The sherds from context 162 were all similar in character and may well come from the same vessel. The soft, vesicular fabric appears to have been tempered with shell rather than calcite and a source in Lincolnshire is thus more likely than one in East or North Yorkshire. Although all of the shell had been removed in solution, some of the vesicles showed a ridged profile

from the ridged surface of the shell fragments. The surviving rim fragments indicated that the rim was of a curving, everted shape forming part of a small jar.

The sherds from context 457 were unusual even in the context of hand-made pottery where diversity in fabric type is a regular feature of assemblages. The soft, friable light buff fabric contained sparse pale grey rounded inclusions which resembled grog although the colour was not typical of the hand-made wares generally.

In the wider context of pre-Roman or Roman period hand-made wares, the assemblage is an important one, given the general scarcity of pottery of this type and date in South Yorkshire. Both quartz and shell tempered fabrics are known from other sites in South and West Yorkshire (Cumberpatch 2013; Table 3) although in all cases the quantities are low in comparison with sites in Lincolnshire and East Yorkshire.

THE ROMAN POTTERY (RUTH LEARY)

The assemblage of Roman pottery consisted of twelve sherds weighing 187g representing a maximum of eight vessels. The details are summarised in Table C1.

The sherds from contexts 183, 199 and 337 are described in the data table but the sherds from contexts 253 and 280 can be described in greater detail.

Context 253 produced three small scraps in an oxidised sandy fabric. Two were undiagnostic but the third bore roughcast decoration. The fabric indicates local manufacture and there was some evidence for the production of roughcast beakers at Rossington Bridge (Buckland *et al*. 2001) where everted rim roughcast beakers have been given a mid-2nd century date.

Context 280 produced two joining rim sherds from a 'native' everted rim jar with a shoulder groove of North Lincolnshire/Trent Valley type. This early 'native' ware has a leathery brown fabric with some vesicles and inclusions consisting of possible clay pellets or mudstone grains. The group is well-known in the Trent Valley and in Lincolnshire and has a fabric characterised by a high degree of variability in the relative quantities of calcareous filler, sand and grog inclusions. The rim was formed by folding the body back inside on itself to form an everted rim with an internal overhang. This method is typical of jars made in Lincolnshire, particularly around the Trent Valley from the mid-1st to mid-2nd century AD. Similar vessels were in use from the mid-1st century until the mid-2nd century AD at Lincoln (Darling 1984; nos. 21 and 26) and are present in a Trajanic pit and a ditch dating to pre-AD 130 at Doncaster (Buckland and Magilton 1986; nos. 17 and 149-152) suggesting a pre-Hadrianic date range.

THE MEDIEVAL AND LATER POTTERY (CHRIS CUMBERPATCH)

The medieval and later pottery assemblage ranges in date from the later 13th century to the 18th century. The earliest component consists of Coal Measures Whiteware (contexts 1 and 157) dating to between the later 13th and later 14th century (Cumberpatch 2004). A sherd in an unidentified quartz tempered gritty fabric from context 549 seemed to be of a similar date although it may be slightly earlier.

Late medieval pottery included two sherds of an unidentified later medieval Gritty ware (context 1) while the end of the medieval tradition was represented by sherds of Midlands Purple type ware (in rather different fabrics) from contexts 1 and 4. The sherd from the latter context was a typical strap handle and neck from a jug or handled jar.

Context 1 also included a sherd in an unidentified reduced sandy fabric while a small abraded fragment in a micaceous sandy fabric from context 203 was of possible medieval date.

Late post-medieval to early modern pottery was represented by sherds of Redware (context 1) and Redware type (contexts 1 and 416). These were all from open dishes or bowls. Broadly contemporary sherds included a sherd of Slipware (context 203), unusually representing wheel-thrown rather than a press-moulded dish. Utilitarian wares included a sherd of Yellow Glazed Coarseware (context 1), Brown Glazed Fineware (context 4) and Brown Glazed Coarseware (context 416). Brown Glazed utilitarian wares are common from the late 17th century to the early 20th century but both the examples from Goldthorpe were of distinctively early types.

The absence of later 18th and 19th century pottery (introduced onto fields as part of manuring practices) is an unusual feature of the assemblage and might indicate that the area was not cultivated at this time; a surprising amount of land in South Yorkshire remained uncultivated until the mid-20th century when ancient woodlands were cleared and upstanding archaeological features were levelled. Documentary and cartographic research may cast further light on this aspect of the site.

Table C1: Catalogue of the pottery

Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes
1	H2 Quartz	1	6	1	Rim	Hollow ware	Thin impressed curving line ext; burnished ext	PRIA – Roman	Hard black fabric w/ abundant fine quartz up to 0.3mm; could possibly be post-Roman
1 Topsoil	Coal Measures Whiteware	1	31	1	Base	Hollow ware	U/Dec	LC13th – LC14th	Hard, fine Coal Measures Whiteware
1 Topsoil	Coal Measures Whiteware type	1	6	1	Rim	Hollow ware	U/Dec	LC13th – LC14th	Everted, angular rim; softer than is typical but w/ the usual range of quartz and red grit incs
1 Topsoil	Late Medieval Gritty ware	1	19	1	BS	Hollow ware	U/Dec	LC14th – C15th	Buff/pale orange w/ abundant quartz, red grit and rounded rock frags
1 Topsoil	Late Medieval Sandy ware	1	12	1	BS	Hollow ware	Thin dark slip ext	C15th – C16th	Very hard, dense, semi-vitrified orange fabric w/ moderate, well-sorted quartz grit
1 Topsoil	Midlands Purple type ware	1	14	1	BS	Hollow ware	Patchy purple glaze int and ext	MC15th – C16th	Hard, dense dull orange to grey fabric w/ no visible inclusions
1 Topsoil	Reduced Sandy ware	2	10	1	BS	Hollow ware	Thin green glaze on int surface	Medieval	Heavily abraded sherd w/ fresh break
1 Topsoil	Redware	1	12	1	BS	Dish/bowl	Clear glaze int; rilled ext	C17th – EC18th	Soft sandy red fabric
1 Topsoil	Redware	1	8	1	BS	Dish/bowl	Rilled ext	C17th – EC18th	Heavily abraded int; no surface surviving
1 Topsoil	Redware type	1	25	1	Base	Hollow ware	U/Dec	C17th	Flat base
1 Topsoil	Yellow Glazed Coarseware	1	21	1	Rim	Dish/bowl	White slip int under clear (yellow) glaze	C17th – C18th	Clubbed rim
4 Furrows	Midland Purple type ware	1	99	1	Rim and handle	Jug/jar	Patchy purple glaze int and ext	C15th – C16th	Strap handle; medieval style in a hard dense fabric w/ abundant quartz and round red grit up to 0.5mm
4	Brown Glazed Fineware	1	11	1	BS	Hollow ware	Brown glaze int and ext	C17th – C18th	Bright orange fabric w/ moderate quartz and red grit up to 0.5mm
4	Greyware	3	14	1	BS	Everted-rim jar	U/Dec	MC2nd-MC3rd	Sherds from South Yorkshire grey ware jar with start of everted rim
4	H2 Quartz	2	4	2	BS	Hollow ware	U/Dec	PRIA – Roman	Hard fine black fabric w/ abundant fine quartz up to 0.2mm
157	Coal Measures Whiteware	1	24	1	BS	Hollow ware	U/Dec	LC13th – LC14th	Hard, fine Coal Measures Whiteware
162	H4	2	36	2	Base	Hollow ware	U/Dec	PRIA – Roman	Soft, abraded vesicular brown fabric
162	H4	3	12	1	Rim	Hollow ware	U/Dec	PRIA – Roman	Everted rim in a soft brown vesicular fabric
162	H4	13	31	13	BS	Hollow ware	U/Dec	PRIA – Roman	Abraded BS in a soft dull orange to brown vesicular fabric w/ shell vesicles
162	H4	1	5	1	BS	Hollow ware	U/Dec	PRIA – Roman	Abraded BS in a soft dull orange to brown vesicular fabric
183	Greyware	1	99	1	Base	Jar	U/Dec	LC1st -MC4th	South Yorkshire grey ware jar base

199	Oxidised Sandy ware	2	2	1	BS	Hollow ware	U/Dec	Roman	Scraps of oxidised ware with abundant quartz - this is likely to be from the South Yorkshire kilns
203	Micaceous Sandy ware	1	2	1	BS	Hollow ware	U/Dec	Late Medieval?	Unidentified fine orange sandy fabric w/ sparse muscovite and rare red grit incs
203	Slipware	1	6	1	BS	Dish/bowl	Trailed white slip int	C18th	Thrown dish
243	H2 Quartz	1	3	1	BS	Hollow ware	Smoothed ext	PRIA – Roman	Hard, fine black to dull orange fabric w/ abundant fine quartz up to 0.2mm
251	H2 Quartz	3	60	1	Base	Hollow ware	U/Dec	PRIA – Roman	Hand-made vessel in a black reduced fabric w/ moderate/abundant fine sub0-angular quartz
253	Oxidised Sandy ware	3	1	3	Flakes	U/ID	U/Dec	Mid C2nd	See text for description
280	Early "native" ware	2	26	1	Rim	Jar	U/Dec	MC1st-MC2nd	See text for description
337	Greyware	1	45	1	Base	Hollow ware	U/Dec	Roman	South Yorkshire grey ware jar base
405	Brown Glazed Coarseware	1	46	1	Base	Pancheon/bowl	Thin red slip ext; brown glaze int only	C17th – C18th	Bright orange fabric w/ sparse red grit and quartz up to 0.4mm
416	Redware type?	1	5	1	BS	Dish/bowl	Glazed int; knife trimmed ext	C18th	Could be slipware but flaked and abraded int
457	H2 Grog	3	13	2	BS	U/ID	U/Dec	PRIA – Roman	Very soft, friable light buff fabric w/ sparse pale grey grog-like incs
549	Gritty ware	1	14	1	Base	Hollow ware	U/Dec	C13th – C14th	Reduced fabric w/ oxidised int and ext margins; moderate/abundant quartz up to 0.5mm
329 AA	Early Prehistoric?	3	21	1	Base	Hollow ware	U/Dec	Early Prehistoric	FAO TM
329 AA	Early Prehistoric?	2	6	2	BS	Hollow ware	Cord impressed decoration	Early Prehistoric	FAO TM
329 AA	Early Prehistoric?	16	37	16	BS	Hollow ware	U/Dec	Early Prehistoric	FAO TM
329 AA	Early Prehistoric?	2	8	2	BS	Hollow ware	Cord impressed decoration	Early Prehistoric	FAO TM
329 AA	Early Prehistoric?	3	3	3	BS	Hollow ware	U/Dec	Early Prehistoric	FAO TM
	Total	86	797	74					

APPENDIX D

INDUSTRIAL RESIDUES

Jane Cowgill

Recording Methodology

A total of 2156g (80 pieces) of fired and vitrified earth, 566g of 'stone' and a single piece of slag were submitted for recording. They were all identified by visual examination, sometimes with the aid of a x10 binocular microscope, and recorded on a pro-forma recording sheet. This information was entered directly into the three catalogues below. Three samples of magnetic matter were also examined and these were scanned on a petri dish using the microscope but nothing of note was recorded.

Table D1: Catalogue of the fired and vitrified earth

Context	Find	Type	Count	Weight (g)	Comments
31	AA	Fired earth	6	182	Low fired silty-clay ?natural; buff curved surface; reduced back; lump maximum of 47mm thick.
406	AA	Vitrified earth	62	72	Small fragments of sand and iron-rich orange/ brown natural; many vitrified; no obvious surfaces.
406	AA	Vitrified earth	5	1226	Some pieces join. Vitrified right-angled fragments but probably spalled pieces from a once flat surface. Sand and iron-rich orange/ brown natural – some pieces of ironstone large.
408	AA	Vitrified earth	6	670	Flat vitrified surface – possibly once a right-angle but one side low fired; sand and iron-rich orange/ brown natural.
536		Fired clay	1	6	Smooth oxidised surface made from a silty clay that had probably been wedged. Structural fragment.

Discussion

The pieces from contexts 406 and 408 are a sub-sample of the material recovered from kiln 381 (Ross 2013, Plate 6). The 'kiln-type' structure was similar to a pottery kiln in shape being circular (2.25m in diameter), with a surviving depth of 0.75m and a flue that extended 1.5m from the south-eastern side. It was steep-sided and the lower levels of the sides were vitrified and reddened by heat (Ross 2013, 6). These pieces suggest that the feature had been cut into the natural sandy and iron-rich sub-soil and was not clay lined as would be expected if it had been a pottery kiln; the lack of pottery wasters and small size of the feature given the post-Medieval date also argue against an interpretation of it being used for the firing of ceramic vessels. The temperatures attained in the feature were, however, quite high for the soil to become vitrified and partially slagged, although the presence of the ironstone would have lowered the temperature required for the sand to vitrify.

Table D2: Catalogue of the stone

Context	Sample	Type	Weight (g)	Comments
380	AA	Stone	34	Mainly small pieces labelled 'Chalk/ Dolomite'.
406	AA	Stone	22	Mainly small pieces labelled 'Chalk/ Dolomite'.
408	AA	Stone	484	Mainly small pieces labelled 'Chalk/ Dolomite'.
550	AA	Stone	26	Mainly small pieces labelled 'Chalk/ Dolomite'.

Discussion

All these sub-samples were recovered from kiln 381, which is also discussed above. The bags containing the 'stone' were labelled as 'chalk/ Dolomite', however, this author is not a geologist and so the opinion of DJ Rackham was sought and he has given the following opinion but states these can only be deemed as 'thoughts' rather than 'fact'. The 'stone' is creamy white to occasionally pinkish in colour and has a very fine chalky texture.

The closest source of Dolomite on the British Geographical Survey (BGS) on-line records suggests it occurs *c*.5km to the west of the excavated site and therefore it would appear that this material if correctly identified is alien to the Goldthorpe area. The 'stone' was tested with mild hydrochloric acid and 'fizzed' to varying degrees, with some pieces giving a strong reaction but the BGS report states that Dolomite only reacts mildly. A tentative interpretation of this 'stone' is that it could be some form of lime (perhaps originally Dolomite), possibly processed, i.e. burnt, in the kiln. Limestone needs to be burnt at 900°C to ensure a high quality lime is produced, known as Quicklime or Lumplime which is very volatile and dangerous before it is slaked (combined with water) (Gervis and Gervis 2011, 13). This quality of lime may not have been required, however, if it was not being used for structural work.

The archaeology suggests that the land under excavation had been in arable cultivation for some time (late Iron Age to Post-Medieval) and with an underlying geology of iron-rich sandstone it would have been prone to becoming acidic and therefore would need regular spreadings of lime to neutralise it. If the 'stone' is processed lime and its source Dolomite, the transportation distance may be deemed problematical but Quicklime is a dangerous material and moving the stone may well have been deemed much safer than moving the burnt lime. If this hypothesis is correct then perhaps kiln 381 could be proposed as being a small farmstead limekiln.

Table D3: Catalogue of the slag

Context	Find	Type	Count	Weight	Comments
406	AA	Slag	-	<1g	Tiny pieces of vitrified and magnetised ironstone.
408	AA	Slag	-	<1g	Tiny pieces of vitrified and magnetised ironstone.
549	AA	Slag	-	<1g	Tiny pieces of vitrified and magnetised ironstone.
520		Hearth Bottom	2	160g	Charcoal fuel; glassy top with hearth lining on base – residue from single episode of iron smithing? Probably both pieces are from a single piece of smithy waste but so encrusted with corrosion products it is difficult to establish.

APPENDIX E

THE HUMAN REMAINS

Malin Holst

Summary

York Osteoarchaeology Ltd carried out the osteological analysis of the three cremated bone assemblages from Goldthorpe Industrial Estate. Two of the burials were located in the south-western corner of the development site and may have been under a ploughed out Bronze Age cairn. All three of the burials were un-urned, but seem to have been placed within purpose cut cremation pits. One of the burials contained a Bronze Age collared urn, which appeared to be a grave good rather than a funerary urn, as there was almost no bone in the backfill. Two of the burials were radiocarbon dated to the early Bronze Age

The quantity of bone recovered from the burials varied considerably, from 0.7g to 566.3g, representing a small percentage of the mean quantity of bone recovered from modern cremations. All three burials were very well cremated. Two burials appeared to contain the remains of a single individual, while the third appeared to be a double burial. Due to heavy fragmentation and the small quantity of bone in each of the burials it was only possible to broadly determine the age of the two individuals in the double burial; the first was at least 40 years of age when they died and the second was a non-adult, no older than 17 when they died. Sex could not be estimated for any of the individuals, indeed, one of the burials could not even be positively identified as human.

Pathological analysis of the remains revealed that one of the individuals suffered from mild degenerative joint disease in the joints of the fingers and elbow, while a second individual had a benign neoplastic growth on their skull, which would have been symptomless.

Table E1: Summary of cremated bone assemblages

Feature no.	Burial contexts	Feature type	Period	Burial type	Artefacts and inclusions	Bone colour	Preservation	Weight (g)	Percentage of expected quantity of bone
[212]	(213)	Pit	2022 – 1780 cal BC	Un-urned	None	White	Good	566.3	34.83%
[227]	(228)	Pit	Unknown	Un-urned	None	White	Moderate	0.7	0.043%
[328]	(329 inside urn) (329 outside urn) (350)	Pit	1955 – 1760 cal BC	Un-urned*	Bronze Age Beaker	White	Moderate	395.75	24.34%

AIMS AND OBJECTIVES

The assessment aimed to identify whether all cremated human bone recovered from the burial was human. The analysis then aimed to determine age, sex, minimum number of individuals interred as well as any manifestations of disease from which the individuals may have suffered. Additionally, information was sought regarding the cremation techniques.

METHODOLOGY

The cremated bone was sieved through a stack of sieves, with 10mm, 5mm and 2mm mesh sizes. The bone recovered from each sieve was weighed and sorted into identifiable and non-identifiable bone. The identifiable bone was divided into five categories: skull, axial (excluding the skull), upper limb, lower limb and long bone (unidentifiable as to the limb). All identifiable groups of bone were weighed and described in detail.

Osteological analysis

Osteological analysis is concerned with the determination of the demographic profile of the assemblage based on the assessment of sex, age and non-metric traits. This information is essential in order to determine the prevalence of disease types and age-related changes. It is also crucial for identifying gender dimorphism in occupation, lifestyle and diet, as well as the role of different age groups in society.

PRESERVATION

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition. Preservation of human remains is assessed subjectively, depending on the severity of bone surface erosion and post-mortem breaks, but disregarding completeness.

Preservation was assessed using a grading system of five categories: very poor, poor, moderate, good and excellent. Excellent preservation implied no bone erosion and very few or no post-depositional breaks, whereas very poor preservation indicated complete or almost complete loss of the bone surface due to erosion and severe fragmentation.

The bone from Burials [227] and [328] had been preserved in moderate condition, while the bone from Burial [212] survived in good condition (Table E2). All three of the assemblages exhibited loss of surface detail, worn edges and a powdery texture to varying degrees. Warping and bone cracking, which occurs commonly during the cremation process, was evident in Burials [212] and [328] and may relate to the larger fragment size of the majority of the cremated bone in these assemblages compared to Burial [227] (Table E3).

Table E2: Summary of osteological results

Cremation no.	Preservation	MNI	Species	Age	Sex	Weight (g)	Period
[212]	Good	2	Human	Adult (probably 40+) Non-adult (< 17)	-	566.3	Bronze Age?
[227]	Moderate	1	Unidentified	-	-	0.7	Unknown
[328]	Moderate	1	Human	Adult?	-	395.75	Bronze Age

Two of the cremated bone assemblages contained bone fragments that were 10mm in size or larger (Table E3). In each burial the largest quantity of bone was derived from a different sieved fraction; Burial [212] largely contained fragments measuring between 5-10mm, while 100% of the bone from Burial [227] was recovered from the 2mm sieve, and the majority of bone from burial [328] was evenly distributed between the 10mm and 5mm sieved fractions. Bone can fragment during the cremation process, for example as a result of movement when the pyre

collapses, during any tending of the pyre, if it was moved while still hot, or as the bone was collected from the pyre (McKinley 1994a). However, work by McKinley (1994) has demonstrated that the fragment size of cremated bone is frequently the result of post-cremation processes. This is because skeletal elements retrieved from modern crematoria tend to be comparatively large before being ground down for scattering or deposition in the urn (ibid).

Table E3: Summary of cremated bone fragment size

Cremation Burial	10mm (g)	10mm (%)	5mm (g)	5mm (%)	2mm (g)	2mm (%)	< 2mm (g)	< 2mm (%)	Weight (g)
[212]	122.7	21.7	288.7	51.0	137.6	24.3	17.3	3.0	566.3
[227]	0.0	0.0	0.0	0.0	0.7	100.0	0.0	0.0	0.7
[328]	195.7	40.4	195.7	40.4	62.55	15.8	13.8	3.5	395.75

In the case of all three burials it is unclear whether post-depositional or post-burning disturbance of the bone caused the fragmentation and erosion. If Burials [212] and [328] were placed under a Bronze Age funerary monument, which has since been destroyed, it is likely that they too underwent some degree of post-depositional disturbance.

The quantity of cremated bone recovered from the cremation burials at Goldthorpe Industrial Estate varied in weight from 0.7g to 566.3g (see Tables E1 and E3), with an overall mean weight of 320.9g. All three burials yielded much less than the expected quantity of bone weight produced by modern crematoria, which tends to range from 1000.5g to 2422.5g with a mean of 1625.9g (McKinley 1993). Burial [227] weighed only 0.7g, which accounts for less than 1% of the expected mean quantity of bone from modern cremations. Unsurprisingly the largest quantity of bone was recovered from the double burial [212], which weighed 566.3g, but still only accounted for a less than 35% of the expected mean quantity of bone for a single cremation. Wahl (1982, 25) found that archaeologically recovered remains of cremated adults tend to weigh less (between 250g and 2500g) as a result of the commonly practised custom of selecting only some of the cremated bone from the pyre for inclusion in the burial, thereby representing a symbolic, or token, interment. It is possible that the burials from Goldthorpe Industrial Estate represent token burials and that only a portion of the individual's remains were necessary for interment.

According to McKinley (1989), the body requires a minimum temperature of 500° Celsius over seven to eight hours to achieve complete calcination of the bone. This process of calcination appears to have occurred with the Goldthorpe Industrial estate bone assemblages, as the bones were very well burnt, causing the complete loss of the organic portion of the bone and producing a white colour.

It was possible to identify between 60 % and 85% of the skeletal elements in all three cremation burials (Table E4), with an average of approximately 75% of bone being identifiable. However, the degree of fragmentation and small quantity of bone recovered from Burial [227] meant that the bone could not even be positively identified as human.

Table E4: Summary of identifiable elements in the cremation burials

Cremation Burial	Skull (g)	Skull (%)	Axial (g)	Axial (%)	UL (g)	UL (%)	LL (g)	LL (%)	UIL (g)	UIL (%)	Total ID (g)	Total ID (%)	Total UID (g)	Total UID (%)
[212]	89.8	15.9	21.6	3.8	34.8	6.1	75.3	13.3	121.3	21.4	342.8	60.5	223.5	39.5
[227]	0.2	28.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	57.1	0.6	85.7	0.1	14.3
[328]	97.3	24.6	18.3	4.6	46.3	11.7	62.8	15.9	80.2	20.3	304.9	77.0	90.85	23.0

In all three burials the majority of identifiable bones comprised of unidentifiable long bone shaft fragments. The skull was also well represented in burials [212] and [328], forming the second largest portion of identifiable bone fragments. Since the cranial vault is very distinctive and easily recognisable, even when severely fragmented, it often forms a large proportion of identified bone fragments in cremated remains (McKinley 1994a).

Minimum number of individuals

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure during osteological assessments of inhumations in order to establish how many individuals were represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements, such as the hip joints and cranial elements.

It is not possible to calculate the MNI for cremation burials, because only a token selection of bone from the pyre tends to be buried. Double burials can be identified only if skeletal elements are duplicated, or if skeletons of different ages are represented in one burial. In this instance, burial [212] was identified as a double burial, containing hand phalanges belonging to both an adult, probably aged 40 years old or older based upon pathological alterations identified amongst the remains, and a non-adult, no older than 17 years of age. The remaining two burials appeared to contain a single individual.

Assessment of age

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). Age estimation relies on the presence of the pelvis and uses different stages of bone development and degeneration in order to calculate the age of an individual. Age is split into a number of categories, from foetus (up to 40 weeks *in utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately as over the age of seventeen).

Age could not be determined in burial [227], because the ageing criteria, which are normally used, did not survive in the assemblage. Little more could be gleaned from the remains of burial [328], however it was felt that based upon the robusticity and morphology of some of the fragments the individual was probably an adult and this was supported by the identification of pathology in this burial that normally only occurs in mature adults. Only burial [212] contained skeletal elements useful in determining age; the presence of two fully developed distal hand phalanges (finger bones) suggested that one of the individuals was at least an adult (>17years), however, mild degenerative joint disease, recorded on the articular surfaces of the phalanges may suggest that the individual was considerably older, at least 40. The presence of

an unfused proximal hand phalanx suggests that the second individual was no older than 17 years old (Table E4).

Sex determination

Sex determination is usually carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex in both males and females relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood.

None of the contexts contained any skeletal elements which were sexually dimorphic.

Metric analysis

Stature depends on two main factors, heredity and environment; it can also fluctuate between chronological periods. Stature can only be established in skeletons if at least one complete and fully fused long bone is present, but preferably using the combined femur and tibia. The bone is measured on an osteometric board, and stature is then calculated using a regression formula developed upon individuals of known stature (Trotter 1970).

Cremated bone shrinks at an inconsistent rate (up to 15%) during the cremation process and it was therefore not possible to measure any of the bones from these burials.

Non-metric traits

Non-metric traits are additional sutures, facets, bony processes, canals and foramina, which occur in a minority of skeletons and are believed to suggest hereditary affiliation between skeletons (Saunders 1989). The origins of non-metric traits have been extensively discussed in the osteological literature and it is now thought that while most non-metric traits have genetic origins, some can be produced by factors such as mechanical stress (Kennedy 1989) or environment (Trinkhaus 1978).

Non-metric traits were not identified in any of the burials.

Pathological and dental analysis

The analysis of skeletal and dental manifestations of disease can provide a vital insight into the health and diet of past populations, as well as their living conditions and occupations, oral hygiene, as well as information about environmental and congenital conditions. Although burials [212] and [328] contained 40 tiny fragments of tooth root between them, no dental pathology could be observed.

Neoplastic disease

A fragment of parietal bone (cranial vault) from Burial [328] exhibited a small rounded raised lesion of dense bone measuring approximately 5mm in diameter. The lesion was thought to be a benign neoplastic growth (Roberts and Manchester 2005). An ivory osteoma is the most likely diagnosis given that they are most frequently found on the frontal and parietal bones, and consist of nodules of dense lamellar bone (Roberts and Manchester 2005, Ortner 2003). Ivory osteomas are usually entirely symptomless (Roberts and Manchester 2005).

Degenerative joint disease

The term joint disease encompasses a large number of conditions with different causes, which all affect the articular joints of the skeleton. Factors influencing joint disease include physical activity, occupation, workload and advancing age, which manifest as degenerative joint disease and osteoarthritis. Alternatively, joint changes may have inflammatory causes in the *spondyloarthropathies*, such as sceptic or rheumatoid arthritis. Different joint diseases affect the articular joints in a different way, and it is the type of lesion, together with the distribution of skeletal manifestations, which determines the diagnosis (Rogers 2000, Roberts and Manchester 2005).

The most common type of joint disease observed tends to be degenerative joint disease (DJD). DJD is characterised by both bone formation (osteophytes) and bone resorption (porosity) at and around the articular surfaces of the joints, which can cause great discomfort and disability (Rogers 2000).

A moderate degree of osteophytic lipping was evident on a number of skeletal elements recovered from Burial [212]; six distal articular surfaces of proximal or intermediate hand phalanges (finger bones), two proximal articular surfaces of distal hand phalanges and a fragment of trochlea (elbow) all exhibited DJD. Such lesions would probably have caused the individual a level of discomfort and reduced mobility within the affected joints.

Funerary ritual

Burial [328] could be confidently dated to the Bronze Age, due to the inclusion of Bronze Age pottery within the burial and was radiocarbon dated to 1955 – 1760 cal BC. Burial [212] was also radiocarbon dated to the early Bronze Age (2022 – 1780 cal BC).

All three burials were placed in small pits. It was clear that Burial [328] had been heavily truncated prior to its discovery. Included within the top fill of the burial was early Bronze Age collared urn; the urn lay on its side and rather than a funerary urn, it appears to have been a grave good, with the majority of the cremated bone from the burial located outside the urn, in the basal fill. Burials [212] and [227] were unaccompanied by grave goods.

Discussion and summary

The osteological analysis of the three early Bronze Age cremated bone assemblages has revealed that all of the cremated bone was very well burnt, which would suggest that the cremation process had been proficiently completed.

Two of the cremation burials appeared to contain the remains of a single individual, while burial [212] contained an adult and a non-adult. Only the individuals within burial [212] could be aged broadly. The first appeared to be at least an adult (>17years), but was considerably older when they died (at least 40), while the second individual was no older than 17 years of age when they died. It is likely that the individual from burial [328] was an older adult based on the pathology noted. Sex could not be estimated for any of the individuals, indeed, the bone in one of the burials could not even be positively identified as human.

All three burials contained less than the mean quantity of bone expected from modern cremations, suggesting that only a portion of the individual's remains were necessary for interment, or that later disturbances resulted in the truncation of at least burial [328].

Pathological analysis of the remains revealed that one of the individuals suffered from mild degenerative joint disease in the joints of the fingers and elbow, while a second individual had a benign neoplastic growth on their skull, which would probably have been symptomless.

APPENDIX F

THE BIOLOGICAL REMAINS

Lynne Gardiner

Summary

The sampling strategy undertaken during the excavation at Goldthorpe yielded 60 environmental samples taken primarily for the retrieval of palaeoenvironmental material. These samples originated from corn dryers, cremations, pit fills and ditch fills

The small quantity of charred animal bone did not warrant analysis.

The flots and charcoal from the residues were assessed for their suitability for further analysis. Nineteen samples were apposite; these included the grain from both corn dryers (343 and 473). The refloating of the corn dryers' fine fractions yielded a total of 7774 identifiable charred plant remains and, including the indeterminate grains, weighed a combined 83.4g. They presented a grain-per-litre count varying from eight (344AA) to 151 (346AA). Corn dryer 343 contained oat (Avena sp.), two-row barley (Hordeum vulgare ssp. distichon), naked wheat (Tritcum nudum), bread wheat (Triticum aestivum ssp. aestivum) and a minimal quantity of charred plant remains; with only oat, two-rowed barley and bread wheat present in corn dryer 473. The radiocarbon dates returned for these two features assigned them to the early 4th to the late 6th century AD, but predominately in the range of the 5th to 6th century AD.

The charcoal from the cremations contained oak charcoal with hazel and indeterminate buds. The presence of the buds may infer seasonality of cremation for 213AA and 228AA to spring-time. The larger weights of charcoal from 213AA and 228AA compared to smaller weights of the samples from 328 could suggest different post-burning pyre handling techniques.

The majority of the charcoal assemblage was difficult to identify due to taphonomic factors, primarily caused by mineralisation. This may also account for the lack of charred grain from the site out-with the corn dryers.

The corn dryers' data should be published in a regional or scientific journal, such as Yorkshire Archaeological Journal or Environmental Archaeology; because of their date, these are potentially of regional and perhaps national importance.

Introduction

The results of the excavation are presented above. This report presents the results of the assessment and analysis of the palaeobotanical and charcoal remains in accordance with Campbell *et al*. (2011) and English Heritage (1991).

Methodology

The bulk environmental samples were processed at the NAA laboratory. The colour, lithology, weight and volume of each sample was recorded using standard NAA *pro forma* recording sheets. cf. Table F1. The samples were processed with 500 micron retention and flotation meshes using the Siraf method of flotation (Williams 1973). Once dried, the residues from the retention mesh were sieved to 4mm and the artefacts and ecofacts removed from the larger

fraction and forwarded to the relevant specialists. The smaller fraction was not examined and has been retained.

The samples from the two corn drying kilnss (343 and 473) were subjected to a refloat of their fine fractions. This allowed the recovery of charred plant material that did not float during the initial processing. This was undertaken using bucket flotation, but still employing the 500 micron capture mesh.

The flot, plant macrofossils and charcoal were retained and scanned using a stereo microscope (up to x45 magnification). Any non-palaeobotanical finds were noted on the *pro forma* recording sheet.

The abundance of seeds, grains and charcoal fragments were noted and assessed for their suitability for analysis. All samples with more than twenty objects defined as charred plant material were considered. These encompassed the fills from the two corn dryers 343 and 473, with the addition of ditch fills (299AA and 496AA). The charcoal from the cremations was examined further, as well as features with more than 20g of charcoal collected during the sorting process. All the remaining samples were deemed appropriate for assessment only, however this data is included in Tables F1 and F2.

The assessment of the animal bone was undertaken using Hillson (1992) and Schmid (1972). The plant remains and charcoal were identified to species as far as possible, using Cappers *et al*. (2006), Cappers and Neef (2012), Hather (2000), Jacomet (2006) and Schoch *et al*. (2004). Nomenclature for plant taxa followed Stace (2010), whilst grain followed Cappers and Neef (2012).

Results

Animal bone

Only small fragments of calcined bone were presented as preservation was poor. A fragment (1g) of a cattle molar from the primary fill (346) of corn dryer 343, a very small piece (<1g) of rib from a medium-sized mammal (such as a sheep/goat or dog) from 395 (fill of ditch 396) and small fragments (6g) of long bone from the fills of corn dryer 474; the primary fill, 473, contained 6g whilst the secondary fill, 475 contained <1g.

There was no further information to be gained from examining the animal bone further and the assemblage can be discarded.

Palaeobotanical and charcoal remains

Uncharred plant remains were common throughout the samples. These included goosefoot (*Chenopodium* sp.), ivy-leaved speedwell (*Veronica hederifolia*), common chickweed (*Stellaria media*), elder (*Sambucus nigra*) and common fumitory (*Fumaria officinalis*). These would not have been able to survive the aerobic soil conditions, thus deemed intrusive, as were earthworm and nematode capsules, beetles and ants' eggs.

The results of the identification and the charcoal data can be seen in Tables F3, F4 and F5.

The identification to species for oat (*Avena* sp.) is very difficult as it requires the presence of the floret bases to be able to differentiate between the common oat (*Avena sativa*), bristle oat (*A.*

strigosa) and wild oat (*A. fatua*). The lack of floret bases at Goldthorpe allowed no distinction between the cultivated and weed type, hence the assigning of *Avena* sp.

The barley assemblage presented straight grains only, thus identified as two-rowed barley (*Hordeum vulgare* ssp. *distichon*).

Corn Dryers

The quantities of grain discussed in this report compare the total amounts recovered from both the initial float and the reflot. A breakdown can be seen in Tables F6 and F7 and Figures. F1 and F5.

CORN DRYER 343 (344AA, 345AA AND 346AA)

The upper fill (344AA) contained the least amount of charcoal and charred plant material. Two-rowed barley grains were the most abundant with 214 identified. Naked wheat (Triticum *nudum*), possibly bread wheat (*T. aestivum* ssp. *aestivum*), presented only 71 grains. Oat grains were least abundant with only seven grains identified. There was a significant amount of indeterminate grains as their preservation was poor which showed either charred endosperm or suffered from severe abrasion. There were eight identifiable GPL (grains per litre) within this sample. The charcoal weighed 8.8g with only 25% identified. The most prevalent was hazel, then oak, willow/poplar with some birch and heather present.

The lower fill from the northern end of the feature (345AA) yielded 4242 identifiable grains. With barley grains totalling 2844, bread wheat 815 grains and 583 oat grains. The indeterminate grains from this sample were not counted because of the very large quantity presented; however, the weight of the identifiable grains was 29.2g with the indeterminate grains weighing 21.3g. There were 129 identifiable GPL. This sample also contained the greatest amount of charred weed seed and chaff; however, these were minimal in quantity with goosefoot (*Chenopodium* sp.), sedges (*Carex* sp.), ribwort plantain (*Plantago lanceolata*) and grass (Poceaea sp.) all being presented. There was one oat floret base and two lemmas from Avena sativa which suggested that the oat grains present in this sample may be the cultivated common oat. Also present were two very small fragments of rachis internodes that could not be assigned to species. This sample yielded the greatest amount of charcoal from the feature with 62g present, of which half was identified. Willow/poplar was the most prevalent species, with the largest, timbered willow/poplar fragment measuring 55mm x 90mm x 25mm. Oak was also present, with lesser amounts of heather, ash and hazel.

The sample from the southern side (346AA) contained 1959 barley grains, 449 wheat grains and 229 oat grains totalling 2637 identifiable gains. The weight of the indeterminate grains was 0.7g compared with 18.7g of identifiable ones. There were 151 identifiable GPL. Two common oat lemmas and a small fragment of rachis internode were also present. Nearly 30g of charcoal was recovered from this sample, with 25% identified. Oak was the most abundant, with hazel, heather and willow/poplar in lesser amounts.

CORN DRYER 473 (474AA AND 475AA)

Two samples originated from this feature. The primary fill was 474 and the secondary fill was 475. Collectively the samples from them yielded 1373 grains. This data is presented in tables F8, F9 and F10.

The greatest quantity of grain from sample 474AA was bread wheat with 170 grains. There were 144 barley grains, with only one oat grain present; these yielded 15.8 GPL. A further 400 grains were indeterminate due to the unfavourable preservation as most were charred endosperm, this would have increased the GPL to 38. The 2.1g of charcoal present provided evidence for oak, hazel, willow/poplar and heather with two hazelnut shell fragments also.

The sample from 475AA yielded 229 grains of two-rowed barley, 81 wheat grains and eight oat grains; producing an identifiable GPL count of 18. Indeterminate grains totalled 369, which would have taken the GPL to 38. The 2.1g of charcoal was identified and included oak, hazel, willow/poplar and possible *Prunus* sp.

No chaff or other plant parts were present in these two samples.

The Cremations (213AA, 228AA, 329 AA and 350AA)

The charcoal was abundant in 213AA and weighed more than 50g. A small sub-sample of 5% was examined for species identification. A significant proportion of this was identified as oak, with a tentative identification of one fragment as hazel. Thirteen charred buds were also presented but could not be identified to species.

Nearly 65g of charcoal was recovered from 228AA along with a few charred plant remains. Only 5% of the charcoal was identified, oak being the only species present. This sample also had thirteen charred buds, and yielded three false-oat grass (*Arrhenatherum elatius*) tubers and two charred naked wheat grains.

About 10g of charcoal was recovered from sample 329AA, with about half being examined. Oak was the predominant species with a couple of hazel fragments evident too. One, very badly preserved, wheat grain was also present.

Sample 350AA yielded about 10g of charcoal with half selected for identification. The dominant species was oak with two fragments of hazel present.

Field system ditch fill 299AA

There were twenty straight barley grains, presenting a GPL of one.

The Pits (and a ditch fill)

GROUP 119 (140AA, 144AA AND 150AA- PIT FILLS)

The identification of the charcoal for these pits were abandoned at *c*.5% as it became evident that the charcoal had undergone some process of petrifaction and was also heavily silted, both processes making identification impossible. The fragments that could be identified were of timbered oak.

ISOLATED PITS- SOUTH-WEST (319AA AND 338AA)

The charcoal from both pits was subjected to an indiscriminate sub-sampling method that encompassed both large and the smaller fragments. Sample 319AA had charcoal weighing in at 39g of which 25% was identified. The larger fragments (e.g. 27mm x 30mm x 17mm) had ring-counts of close to twenty. All the fragments were identified as oak and all were timbered.

The charcoal from 338AA weighed 63g and 5% was identified using the same indiscriminate sub-sampling method as 319AA. All identified charcoal was oak, however the rings were so closely spaced that establishing ring-counts were difficult in all but a few cases, with the largest showing eleven.

ISOLATED PIT- SOUTH-EAST (89AA)

This sample yielded 262g of charcoal. However, it was much mineralised and identification was abandoned after attempting to exam *c.*50 fragments. The species that were identified were a mixture of hazel, maple, heather and oak.

ISOLATED PIT- EAST (31 AA) AND DITCH (496AA)

The sample from pit 52 (31AA) yielded 50g of charcoal, half of which was selected for identification. The charcoal had undergone some petrifaction and was very difficult to identify. Oak and hazel were the only two species identified.

Sample 496AA yielded eleven barley grains and one oat grain, which gave a GPL count of 0.3. Oak, hazel and heather charcoal was recovered from this sample.

ISOLATED PIT-WEST (317AA)

The 32g of charcoal was sub-sampled. The most prolific species identified was oak, with a very rare occurrence of willow/poplar.

ISOLATED PIT- NORTH-WEST (160AA)

A small percentage of charcoal fragments were identified. They were all timbered oak. A few pieces showed glassy surfaces.

Discussion

The corn dryers

The dates returned from radiocarbon dating (early 4th century to late 6th century AD) make these corn drying kilns rare examples. This may be due to the lack of any published data for that period. Van der Veen (1989, 315) considers corn dryers to be a 'largely Roman phenomenon.' The recorded corn dryers (kilns/malting ovens) from the early medieval period tend to be much later in the period such as late Saxon ovens in Stafford (Moffett 1994, 61) whilst the possible malting kiln and possible corn dryer from West Heslerton, North Yorkshire remain undated (Carruthers and Hunter, unpub.). Hamerow (2012, 151) listed others; Feltham (Middlesex), Renhold, Water End West and Springfield Lyons, but these were all mid- to late-Saxon. Poundbury, Dorset may have the closest parallels because it had five post-Roman, 5th century, corn dryers (Monk and Kelleher 2005, 78). The lack of (published) sites, which was also noted in Hall and Huntley (2007, 94), imparts greater significance to the Goldthorpe kilns.

Grain was dried for various reasons; when needed for next year's seed crop, drying malt and prior to grinding and milling (Fenton 1997, 375). Pest control should also be considered (van der Veen (1989, 303), although insect damage was not evident on the Goldthorpe grain. The paucity of any germinated grain at Goldthorpe suggested these kilns were not used for malting, therefore more likely to have been utilised for either drying for seed, storage or pre-milling. The

climate in this period was becoming cooler and wetter (van der Veen (1992, 5) so drying grain for storage would have been essential.

Barley was the most prolific taxa from corn dryer 343, with the greatest portion originating in 346AA, cf. Figure F2. Carruthers and Hunter (2001, 8-9) inferred that barley was main cereal throughout the early medieval period. The preference of bread wheat over emmer (*Triticum turgidum* ssp. *dicoccon*) or spelt (*T. aestivum* ssp. *spelta*) increased throughout the medieval period (Hall and Huntley 2007, 93) and oat became a considered crop during the Roman period (Carruthers and Hunter 2001, 10).

The charred layers present in kiln 343 may have been the rakings from the kiln floor. The northern or fire chamber (346AA) had significantly lower volume of charcoal and only one dump of grain, which suggested that this directly related to the last time it was used. The southern or drying chamber, with its four visible charred layers, may indicate the accumulation soot, ash and grain between firings. It was likely that these deposits were allowed to accumulate under the suspended floor of the drying chamber pit (345AA) before, when necessary, being cleaned out. Sample 345AA had the greatest weight of indeterminate grains compared with the others from corn dryer 343, cf. Figure F3. The indeterminate grains may be present due to high heats and the constant agitation of maintaining the fire, as the grains would be mixed causing breakage and introducing oxygen to re-ignite them.

The upper fill (344AA) may represent the collapse or final back filling of the corn dryer when no longer required. The grain is much less concentrated, a GPL of eight, whilst the indeterminate grains were significantly less prolific in this sample, cf. Figure F3. The identified charcoal saw the introduction of other species not seen in 345AA and 346AA and may reflect the clearing up of the area surrounding the kiln after it was de-commissioned.

The charred plant assemblage from corn dryer 473 was clean, with no chaff or weed seeds present. The secondary fill (475AA) yielded more wheat grains (as a percentage) than barley, this changed in the primary fill (474AA) where barley was the dominant cereal grain. However, the primary fill had a greater percentage of indeterminate cereal grain then the secondary fill (114 in 474AA and 229 in 475AA). It may have been possible that the indeterminate cereal grain may have been wheat as some of them were a squat, rounded grain; however, the grains are so badly damaged that this cannot be positively stated. There was less charcoal in the lower, primary fill and the predominance of hazel and willow/poplar over oak may indicate fire-starting. What remained represents the last few firings of the corn dryer. The charcoal was very small and a significant amount of really badly charred endosperm would be indicative of a thorough raking-out between repeated firings. This kiln was heavily truncated (pers. comm. G. Brogan) and may be the reason as to why the grain count was lower than the better preserved kiln 343. The almost equal presence of indeterminate grain, cf. Figure F5, suggested that these fills were similar, the slight difference being highlighted in Figures F4 and F6, where the distribution of wheat and barley was evident, and may indicate the presence of two different firings for drying grain.

Overall, the lack of oat is noticeable throughout the graphs. Two hypotheses exist, the first that oat was not being used for a food-stuff for humans, thus not requiring drying and, secondly they may have entered the assemblage as a weed, although the numbers from 345AA and 346AA show they are not significantly less than wheat. That the assemblage was virtually devoid of weed seeds and chaff inferred that crop processing activities occurred at some distance before reaching the dryers.

The two drying kilns shared similarities, beyond just their shape. The only charred hazelnut shell fragments from the site were present in all the lower fills of the dryers. The lower fills all had oak dominating the charcoal assemblage with hazel and heather present in smaller quantities, whilst the upper fills contained additional species.

Ethnographic examples of the construction of corn dryers show that the drying floor was constructed of wooden cross bars (kiln trees) with a few inches space between them. They are then topped with a few inches of straw and sacking then covered with the grain placed on the surface (Fenton (1997, 376). The largest fragment of charcoal from the corn dryers' charcoal assemblage measured 90mm x 55mm x 25mm and was from the lower fill of the fire chamber 343 (345AA), which contained timbered willow/poplar. This may have been fuel, but it is also possible that during the collapse of the structure part of a 'kiln tree' of willow/poplar had charred and fallen into the fire chamber.

The Cremations

The dominance of oak within the charcoal assemblage was typical for cremations (McKinley 1994b, 82). Oak provides a longer-burning, higher-heat fuel for the pyre and could have been sourced locally. The presence of the very small amounts of hazel and buds suggested that these were part of the ignition process for the pyre as they would make excellent tinder. Seasonality of cremation may also be inferred from the buds as they implied that the cremations (213AA and 228AA) were undertaken during spring, or at the least, that the fuel for the pyre was collected during spring-time. The large weights of charcoal from single-filled contexts (213AA and 228AA) suggested a different handling technique for the collection of the cremated remains from the pyre from that of 328 (329AA and 350AA), as there was a significantly lower weight of charcoal presented.

The other features

FIELD SYSTEM- DITCH FILL 299AA (WITH NOTES CONCERNING 485AA)

The presence of a single cereal taxa suggested that its presence may be attributed to aeolian deposition from corn dryer 343, as the radiocarbon dates were similar, and not relate to the construction of the ditch.

This may also be implied for the ditch intersection close to corn dryer 473 (485AA) as their radiocarbon dates were also similar. This sample was not suitable for further analysis as there were too few grains. It could be postulated that the post-Roman corn dryers were placed with respect to the existing Roman field boundaries as palynological studies have shown a continuation of land use from the Roman period into the early medieval period (Hamerow 2012, 144).

THE PITS (AND A DITCH FILL)

Charcoal from four of the nine pits selected for analysis had undergone some process of petrifaction. This was probably due to a chemical reaction occurring within the soils and made positive identification difficult. This affected the charcoal from 31AA, 89AA, 140AA and 150AA.

Two pits (150AA and 319AA) contained only charred oak, with 319AA yielding timbered fragments larger than 10mm. The wood species from the remaining two analysed samples (pit fill 213AA and ditch fill 496AA) also included hazel (213AA) and heather (496AA).

All the species identified from the charcoal assemblage would be available locally and probably represent nothing more than waste discard.

Conclusion

The corn drying kilns from Goldthorpe are significant rare survivors and should the information retrieved from them will be published in either a regional or scientific journal such as the *Yorkshire Archaeology Journal* or *Environmental Archaeology*. They highlight a continuity of grain-handling and processing from the Roman period into the 5th or 6th centuries, and the quantity of grain is significant, especially in light of the absence of an existing cereal corpus from this period.

The grain from the corn drying kilns, 344AA, 345AA, 346AA, 474AA and 475AA, will be retained. All the flots and other charred plant material may be discarded.

The charcoal assemblage was badly preserved and the limited information that it could provide has been retrieved. This assemblage will be discarded.

Acknowledgements

I wish to thank Jacqui Huntley and Wendy Carruthers for their assistance during the search for examples of early medieval corn dryers, and also to Wendy, for the unpublished report on the West Heslerton plants.

Table F1: Sample data (Analysed samples highlighted)

C	SC	TQ	CP	TP	MP	PW	PV	CS	Components (sorting)	SW	SV	SW>	SV>
31	AA	4	Dark reddish brown	Friable	Silty sand	39	32.25	Red + reddish brown	Stone>1cm 30%: stone<1cm 40%: sand 30%	10824	8650	7925	6350
32	AA	2	Pale reddish yellow	Slightly plastic	Clayey silt	18	17	Pale yellow	Stone< 1cm 60%: sand 40%	1199	900	777	600
43	AA	2	Pale brownish yellow	Slightly plastic	Clayey sandy silt	19	15.5	Reddish brown	Stone<1cm 5%: sand 95%	2703	2400	1048	1100
66	AA	4	Dark reddish yellow-brown	Friable	Silty sand	43	37	Very pale yellowish brown	Stone>1cm 30%: stone<1cm 40%: sand 30%	6231	4400	4239	3000
68	AA	4	Pale yellowish grey	Very slightly plastic	Clayey sandy silt	43	34	Yellowish brown	Stone<1cm 20%: sand 80%	1832	1200	270	300
83	AA	4	Mid yellowish brown	Slightly plastic	Clayey silt	41	32.5	Yellowish brown	Stone>1cm 10%: stone<1cm 60%: sand 30%	4167	3000	2329	1600
89	AA	6	Mid greyish yellow	Friable	Silty sand	68.5	53.25	Pale yellowish brown + red	>20cm stone(red) 30%: stone 10-20cm 20%: stone1-10cm 30%: sand 20%	17857	15400	15762	16500
127	AA	4	Dark yellowish brown	Friable	Silty sand	37.25	30.5	Yellowish brown	Stone>1cm 10%: stone<1cm 60%: sand 30%	3044	2000	1307	900
131	AA	4	Pale yellowish grey	Friable	Silty sand	38.5	34.5	Pale yellowish brown	Stone<1cm 20%: sand 80%	1597	1000	511	300
133	AA	2	Pale brownish yellow	Friable	Clayey sandy silt	17	15	Very pale yellowish brown	Stone<1cm 10%: sand 90%	933	500	298	100
137	AA	4	Pale yellowish brown	Slightly plastic	Clayey silt	43	35.5	Yellowish brown	Stone<1cm 10%: sand 90%	1412	900	511	500
139	AA	4	Pale brown	Very slightly plastic	Clayey sandy silt	37	32.25	Dark yellowish brown	Stone>1cm 10%: stone<1cm 20%: sand 70%	1092	600	428	300
140	AA	1	Dark greyish brown	Friable	Clayey sandy silt	7.5	6.5	Pale greyish brown	Stone<1cm 20%: sand 80%	636	500	316	300
144	AA	2	Pale grey	Friable	Sandy silt	15	9	Yellowish brown	Stone<1cm 40%: sand 60%	1536	1200	667	700
150	AA	3	Pale greyish yellow	Very slightly plastic	Clayey sandy silt	31.5	26.75	Dark yellowish brown	Stone>1cm 10%: stone<1cm 10%: ?charcoal 80%	1269	1000	479	500
160	AA	4	Dark brown	Friable	Sandy silt	37	37	Black	Stone>1cm 5%: stone<1cm 15%: sand 20%: charcoal 60%	7055	6900	4062	3200
167	AA	4	Pale brownish	Very	Clayey	46	38	Very pale	Stone>1cm 30%: stone<1cm 40%: sand	6645	5500	4991	4300

C	SC	TQ	CP	TP	MP	PW	PV	CS	Components (sorting)	SW	SV	SW>	SV>
			yellow	slightly plastic	sandy silt			yellowish brown	30%				
172	AA	4	Dark reddish brown	Friable	Clayey sandy silt	46.5	37.25	Very pale yellowish brown	Stone>1cm 30%: stone<1cm 30%: sand 40%	11529	8900	6363	5600
179	AA	1	Pale yellowish brown	Friable	Silty sand	12	10	Pale greyish brown	Stone>1cm 20%: stone<1cm 40%: sand 40%	3241	2800	2493	2400
190	AA	4	Pale greyish brown	Plastic	Clayey silt	43.25	39.25	Yellowish brown	Stone<1cm 20%: sand 80%	1048	600	263	300
192	AA	4	Dark yellowish brown	Very slightly plastic	Clayey sandy silt	36	34	Yellowish brown	Stone<1cm 20%: sand 80%	1749	1100	586	400
213	AA	4	Reddish brown	Loose	Sand	42	28	Pale yellowish brown	Stone>5cm 10%: stone 1-5cm 40%: stone<1cm 20%: sand 20%: burnt bone 10%	14965	1200	9890	7800
228	AA	6	Dark yellowish brown	Loose	Sand	65	46	Dark brown	Stone>1cm 40%: stone<1cm 30%: sand 30%	18665	16100	11187	8600
262	AA	4	Pale yellowish brown	Slightly plastic	Sandy clayey silt	43	33.5	Very pale yellowish brown	Stone>5cm 50%: stone1-5cm 10%: stone<1cm 20%: sand 20%	5443	4500	4742	3500
264	AA	4	Dark brownish yellow	Slightly plastic	Clayey sandy silt	40.5	36.25	Very pale yellowish brown	Stone>1cm 40%: stone<1cm 30%: sand 30%	4967	4000	3555	3100
278	AA	4	Mid yellowish brown	Very slightly plastic	Clayey sandy silt	53	38.5	Very pale yellowish brown	Stone>1cm 40%: stone<1cm 30%: sand 30%	7152	5400	5143	3900
299	AA	2	Dark reddish brown	Friable	Silty sand	20	19	Pale brown	Stone>1cm 10%: stone<1cm 50%: sand 40%	4285	3300	2466	2000
307	AA	2	Reddish brown	Friable	Silty sand	21.5	17.25	Very pale yellowish brown	Stone>1cm 40%: stone<1cm 30%: sand 30%	9003	6500	7529	5500
317	AA	1	Dark brownish black	Friable	Sandy silt	10	9	Pale grey + black	Stone>1cm 50%: stone<1cm 30%: sand + charcoal 20%	3065	2100	2346	1500
319	AA	4	Dark reddish brown	Friable	Sandy silt	43.5	39.75	Very pale yellowish grey	Stone>1cm 20%: stone<1cm 40%: sand 40%	7461	5500	4878	3800
321	AA	4	Pale reddish yellow	Friable	Silty sand	40	31.5	Brownish red	Stone>1cm 50%: stone<1cm 30%: sand 20%	20707	15900	18380	13300
329	AA	2	Reddish brown	Loose	Sand	28	18	Pale yellowish brown	Stone>5cm (angular and flat) 20%: stone1-5cm 20%: stone<1cm 20%: sand 30%: burnt bone 10%	4616	3100	3371	2300
338	AA	4	Reddish yellow brown	Friable	Sandy silt	40	36	Very pale yellowish brown	Stone>1cm 20%: stone<1cm 40%: sand 40%	7894	4800	3774	2000

C	SC	TQ	CP	TP	MP	PW	PV	CS	Components (sorting)	SW	SV	SW>	SV>
344	AA	4	Dark reddish brown	Friable	Silty sand	39.25	35.25	Very pale yellowish brown	Stone>1cm 40%: stone<1cm 30%: sand 30%	10042	8200	7537	6500
345	AA	4	Dark reddish brown	Friable	Sandy silt	46.5	32.75	Reddish brown	Stone>1cm 50%: stone<1cm 30%: sand 20%	18137	14300	15862	12700
346	AA	2	Yellowish brown	Friable	Sandy silt	22	17.5	Pale yellowish brown	Stone>1cm 60%: stone<1cm 20%: sand 20%	8688	7800	7854	7300
350	AA	1	Dark brown	Loose	Sand	15	10	Greyish yellowish brown	Stone>1cm 10%: stone<1cm 30%: sand 50%: burnt bone 10%	2260	1800	1360	1200
380	AA	4	Reddish brownish yellow	Friable	Sandy silt	44.25	34.25	Dark yellowish brown + red	Stone>5cm 25%: stone1-5cm 25%: stone<1cm 25%: sand 25%	15077	13100	13118	11600
406	AA	4	Brownish red	Friable	Silty sand	39.5	31	Red+ yellowish brown	Stone>1cm 50%: stone<1cm 20%: sand 30%	14188	13000	12111	11300
408	AA	4	Dark brownish red	Friable	Silty sand	43	36.75	Red + reddish brown	Fired clay + FCP >5cm 25%: fired clay + FCP1-5cm 25%: fired clay + FCP<1cm 25%: sand 25%	15971	1400	11303	10400
421	AA	4	Dark red yellowish brown	Friable	Silty sand	42	39.25	Very pale yellowish brown + black	Stone + coal >1cm 40%: stone + coal <1cm 40%: sand 20%	9750	7900	6375	5000
427	AA	3	Pale yellowish brown	Friable	Silty sand	31	28.25	Dark yellowish brown + red	Stone>1cm 30%: stone<1cm 40%: sand 30%	8453	5800	5449	4000
427	AB	1	Pale yellowish brown	Friable	Silty sand	10	7.5	Dark red	Stone>1cm 60%: stone<1cm 30%: sand 10%	3426	2800	2880	2400
428	AA	3	Dark yellowish brown	Friable	Sandy silt	35	27.75	Very pale yellowish brown + red	Stone>1cm 40%: stone<1cm 40%: sand 20%	8389	6300	5836	4400
436	AA	4	Greyish brown	Plastic	Sandy clayey silt	43	38.25	Dark reddish brown	Stone<1cm 5%: sand 95%	1831	1400	167	200
474	AA	2	Dark reddish brown	Friable	Sandy silt	24	18	Yellowish brown	Stone>1cm 20%: stone<1cm 50%: sand 30%	4084	2800	2498	1700
475	AA	2	Dark reddish brown	Friable	Silty sand	20	19	Reddish brown	Stone>1cm 30%: stone<1cm 30%: sand 40%	4140	2800	2658	1900
485	AA	4	Pale brownish yellow	Friable	Silty sand	45	31.5	Very pale yellowish brown	Stone>1cm 50%: stone<1cm 30%: sand 20%	22098	18300	20048	16700
490	AA	2	Reddish brown	Slightly plastic	Clayey sandy silt	21	17.5	Pale brown	Stone>1cm 20%: stone<1cm 40%: sand 40%	4663	3300	3374	2400
492	AA	4	Yellowish brown	Friable	Silty sand	45	34.25	Dark yellowish brown	Stone>1cm 40%: stone<1cm 40%: sand 20%	13507	9900	10581	7900

C	SC	TQ	CP	TP	MP	PW	PV	CS	Components (sorting)	SW	SV	SW>	SV>
496	AA	4	Dark red yellowish brown	Friable	sandy silt	44.5	37.5	Very pale yellowish brown	Stone>1cm 40%: stone<1cm 30%: sand 30%	13452	10300	9679	7700
498	AA	2	Pale yellowish brown	Friable	Sandy silt	20	18	Very pale brownish yellow	Stone>1cm 30%: stone<1cm 50%: sand 20%	6571	5100	4939	3900
506	AA	1	Pale yellowish brown	Friable	Sandy silt	11.5	9.5	Pale yellowish grey	Stone>1cm 40%: stone<1cm 40%: sand 20%	3782	2600	3069	2200
512	AA	1	Pale yellowish brown	Very slightly plastic	Clayey sandy silt	12	10	Yellowish brown	Stone>1cm 20%: stone<1cm 20%: sand 60%	953	600	615	400
513	AA	4	Pale brownish yellow	Friable	Silty sand	49.75	34.5	Yellowish brown	Stone>1cm 50%: stone<1cm 30%: sand 20%	13429	11000	11338	9400
514	AA	4	Dark yellowish brown	Friable	Silty sand	42	35.25	Yellowish brown	Stone>1cm 40%: stone<1cm 40%: sand 20%	8519	6200	5368	3900
519	AA	1	Yellowish brown	Friable	Fine sandy silt	6	4.5	Very pale yellowish brown	Stone>1cm 10%: stone<1cm 50%: sand 40%	1010	500	672	300
529	AA	4	Yellowish brown	Friable	Silty sand	41.5	32.25	Dark yellowish brown	Stone>1cm 40%: stone<1cm 30%: sand 30%	10391	8000	7261	5700
531	AA	4	Pale yellowish brown	Friable	Silty sand	44.75	36.75	Dark yellowish brown	Stone>1cm 40%: stone<1cm 40%: sand 20%	13583	9800	10339	7500
549	AA	4	Reddish brown	Friable	Silty sand	48	36.75	Very pale yellowish brown	Stone>1cm 30%: stone<1cm 30%: sand 40%	6990	5100	4385	3200
550	AA	1	Dark brownish red	Loose	Silty sand	4.5	5	Red + black	Stone + coal >1cm 40%: stone + coal <1cm 30%: grit + coal 30%	2254	2100	1786	1600

Key: C-context, SC-sample code, TQ=number of tubs in sample, CP=colour of pre-processed sediment, TP= texture of pre-processed sediment, MP=matrix of pre-processed sediment, PW=weight (kg) of pre-processed sediment, PV= volume (l) of pre-processed sediment, CS=colour of sorted residues, SW= weight (g) of dried residues, SV= volume (ml) of dried residues, SW>= weight (g) of residues >4mm, SV>= volume (ml) of residues >4mm. NB the texture of all dried residues were 'loose'.

Table F2: Flot data (analysed samples highlighted)

C	SC	Description	WF	Ch	Vh	Trig	Sm	Sn	Fo	Components	EWC	BC	NC	AE
31	AA	Fill of pit 52	20	yes	-	-	-	-	yes	Very fine rootlets 20%: charcoal 60%, rhizomes (20%)	3	1	-	-
32	AA	Fill of pit 42	0.5	yes	-	-	-	-	yes	Very fine rootlets 99%: seeds (u/c) 1%	-	-	-	-
43	AA	Fill of pit 44	2.7	yes	yes	-	-	-	-	Modern plastic 10%: very fine rootlets 80%: sand 10%	-	-	-	-
66	AA	Fill of pit 65	5.3	yes	-	yes			yes	Very fine rootlets 60%: comminuted charcoal 40%	4	-	-	-
68	AA	Fill of ditch 67	1.3	yes	-	-	-	-	yes	Coal chips 5%: sand 5%: very fine rootlets 90%	1	-	-	-
83	AA	Secondary fill of posthole 82	2.4	yes	-	-	-	-	-	Plant detritus 50%: very fine rootlets 50%	-	-	-	-
89	AA	Primary fill of pit 88	25	yes	-	-	-	-	yes	Very fine rootlets 50%: ants' eggs 20%: comminuted charcoal 10%: sand 20%	2	-	-	yes
127	AA	Fill of ring gully 126	<0.1	yes	-	yes	-	-	-	Very fine rootlets 80%: uncharred plants remains 10%: sand 10%	5	-	-	-
131	AA	Fill of ring gully 130	2	yes	-	yes	-	-	-	Very fine rootlets 30%: plant matter 5%: ants' eggs 65%	5	1	2	yes
133	AA	Fill of ring gully 132	<0.1	yes	-	-	-	-	-	Very fine rootlets 70%: uncharred plants 20%: sand 10%	-	-	-	-
137	AA	Fill of ring gully 136	0.5	yes	-	-	-	-	-	Very fine rootlets 95%: sand 5%	7	-	-	-
139	AA	Fill of gully 138	2.1	yes	-	-	-	-	-	Ants eggs 60%: very fine residues 40%	7	-	-	yes
140	AA	Secondary fill of pit 149	0.3	yes	-	-	-	-	-	Very fine rootlets 80%: comminuted charcoal 20%	-	-	-	-
144	AA	Secondary fill of pit 149	0.3	yes	yes	-	-	-	-	Plant detritus 90%: comminuted charcoal 10%	2	-	-	-
150	AA	Fill of pit 151	1.2	yes	-	-	-	-	-	Very fine rootlets 10%: plant detritus 85%: ants' eggs 5%	4	-	-	yes
160	AA	Fill of pit 218	69.9	-	-	-	-	-	yes	Charcoal 100%	-	-	-	-
167	AA	Fill of ditch 218	4.1	yes	-	-	-	-	yes	Comminuted charcoal 50%: very fine rootlets 50%	3	-	-	-
172	AA	Fill of ditch 168	1	yes	-	-	-	-	yes	Coal chips 5%: very fine rootlets 95%	-	-	-	-
179	AA	Fill of ditch 180	0.3	yes	yes	-	-	-	-	Very fine rootlets 90%: comminuted charcoal 10%	1	-	-	-
190	AA	Secondary fill of ditch 188	2.4	yes	-	yes	-	-	-	Very fine rootlets 30%: ants' eggs 70%	-	-	-	yes
192	AA	Primary fill of ditch 191	0.6	-	-	yes	-	-	-	Very fine rootlets 100%	-	-	-	-
213	AA	Fill of cremation pit 212	4.9	-	-	-	-	-	-	Fine rootlets 60%: charcoal 35%: sand 5%	5	1	-	-
228	AA	Possible cremation 227	50.9	-	-	-	-	-	-	Charcoal 70%: fine rootlets 25%: sand 5%	-	-	-	-

C	SC	Description	WF	Ch	Vh	Trig	Sm	Sn	Fo	Components	EWC	BC	NC	AE
262	AA	Fill of ditch 263	1.2	-	yes	yes	-	-	-	Very fine rootlets 90%: comminuted charcoal 10%	-	-	-	-
264	AA	Fill of ditch 265	8.4	-	-	-	-	-	-	Very fine rootlets 50%: comminuted charcoal 50%	-	-	-	-
276	AA	Fill of ditch 275	7.1	yes	yes	-	-	-	yes	Very fine rootlets 75%: comminuted charcoal 25%	2	-	-	-
299	AA	Secondary fill of ditch 297	2.1	-	yes	yes	-	-	yes	Very fine rootlets 20%: comminuted charcoal 80%	2	-	-	-
307	AA	Fill of ditch terminal 306	1.5	-	yes	yes	-	-	yes	Sand 5%: very fine rootlets 90%: comminuted charcoal 5%	4	-	-	-
317	AA	Fill of pit 316	17.1	-	-	-	-	-	yes	Comminuted charcoal 99%: seeds (u/c) 1%	-	-	-	-
319	AA	Fill of pit 320	79.7	-	-	-	-	-	yes	Sand 20%: charcoal 80%	7	-	-	-
321	AA	Fill of pit 318	7.8	yes	yes	yes	-	-	yes	Sand 30%: rhizomes 10%: comminuted charcoal 30%: very fine rootlets 30%	1	-	-	-
329	AA	Cremation pit 328	1.8	-	yes	-	-	-	-	Fine rootlets 60%: charcoal 30%: sand 10%	5	-	-	-
338	AA	Fill of pit 339	79.7	-	-	-	-	-	-	Charcoal 100%	3	-	-	-
344	AA	Secondary fill of pit 343	26.1	yes	yes	yes	-	-	yes	Very fine rootlets 5%: charred remains 95%	3	-	-	-
345	AA	Red primary fill of 343	96.2	yes	yes	-	-	-	yes	Charred grain 85%: charcoal 10%: sand 5%	1	-	-	-
346	AA	Black primary fill of 343	145	yes	yes	yes	yes	-	yes	>2mm fraction charcoal 50%; charred grain 50%, 1-2mm fraction comminuted charcoal 95%, charred grain 5%, <1mm fraction comminuted charcoal 100%	4	1	-	-
350	AA	Cremation pit 308	9.5	-	-	-	-	-	-	Fine rootlets 50%: charcoal 40%: sand 10%	2	-	-	-
380	AA	Upper backfill of kiln 381	3.3	-	yes	-	-	-	-	Fine rootlets 80%: coal 20%	1	-	-	-
406	AA	Quaternary fill of kiln 381	11.7	yes	yes	-	-	-	yes	Very fine rootlets 90%: coal 10%	6	3		-
408	AA	Secondary fill of kiln 381	27.1	-	-	-	-	-	-	Sand 10%: very fine rootlets 40%: coal 50%	-	-	-	-
421	AA	Fill of ditch 420	11.8	-	yes	-	-	-	-	Very fine rootlets 50%: comminuted charcoal 50%	1	-	-	-
427	AA	Secondary fill of pit 426	2.6	yes	-	-	-	-	-	Very fine rootlets 60%; sand 10%: comminuted charcoal 30%	-	-	-	-
428	AA	Primary fill of pit 426	4.5	yes	yes	-	-	-	-	Very fine rootlets 90%: comminuted charcoal 10%	1	-	-	-
436	AA	Fill of ditch 435	1.3	yes	-	-	-	-	yes	Very fine rootlets 90%: comminuted charcoal 10%	-	-	-	-
474	AA	Primary fill of pit 473	50.6	yes	-	-	-	-	yes	Very fine rootlets 40%: comminuted charcoal 20%: charred grain 40%	3	-	-	-
475	AA	Secondary fill of pit 473	21.9	yes	yes	yes	-	-	yes	Sand 5%: comminuted charcoal 15%: very fine rootlets 40%: charred grain 40%: ants' eggs 5%	3	-	-	yes

C	SC	Description	WF	Ch	Vh	Trig	Sm	Sn	Fo	Components	EWC	BC	NC	AE
485	AA	Fill of ditch 484	1	yes	-	-	-	-	-	Very fine rootlets 90%: comminuted charcoal 10%	-	-	-	-
490	AA	Primary fill of pit 489	0.7	yes	yes	yes	-	-	yes	Very fine rootlets 95%: coal 5%	2	-	-	-
492	AA	Tertiary fill of pit 494	9.1	yes	yes	yes	-	-	yes	Very fine rootlets 50%: comminuted charcoal 40%: rhizomes 10%	4	-	-	yes and live ants
496	AA	Fill of ditch 495	31.2	yes	yes	-	-	-	yes	Very fine rootlets 80%: comminuted charcoal 15%: sand 5%: ants' eggs 1%	1	-	-	yes
498	AA	Primary fill of pit 497	1.3	yes	yes	-	-	-	yes	Very fine rootlets 80%: seeds/fruits 10%: comminuted charcoal 10%	1	-	-	-
506	AA	Fill of pit 439	0.6	yes	yes	-	-	-	yes	Sand 5%: very fine rootlets 90%: comminuted charcoal 5%	4	-	-	-
512	AA	Secondary fill of pit 511	0.3	yes	yes	-	-	-	-	Very fine rootlets 80%: sand 10%: ants eggs' 10%	1	-	-	yes
513	AA	Primary fill of pit 511	0.7	yes	yes	-	-	yes	yes	Very fine rootlets 80%: rhizomes 10%: comminuted charcoal 10%	3	-	-	-
514	AA	Fill of pit 515	12.4	yes	yes	-	-	-	yes	Chenopodium album 70%: very fine rootlets 20%: comminuted charcoal 10%	1	-	-	-
519	AA	Primary fill of ditch 510	0.8	yes	-	-	-	-	yes	Very fine rootlets 50%: comminuted charcoal 50%	-	-	-	-
529	AA	Fill of pit 528	6.8	yes	-	-	-	-	yes	Sand 40%, ants' eggs 10%: comminuted charcoal 10%: very fine rootlets 40%	-	-	-	yes
531	AA	Fill of pit 530	1.6	yes	yes	-	-	-	-	Very fine rootlets 50%: rhizomes 20%: comminuted charcoal 30%	1	-	-	-
549	AA	Fill of pit 543	7.5	yes	yes	yes	-	-	yes	Cinder 30%: very fine rootlets 50%: comminuted charcoal 20%	2	-	-	-
550	AA	Primary fill of kiln	293.8	-	-	-	-	-	-	Cinder/coke 99%: charcoal/fine rootlets 1%	2	-	-	-

Key: C=context, SC=sample context, R?= any remaining residues?, WF= weight (g) of flot, CPR= charred plant remains, AMS?= (whe=wheat, bar=barley, hb= human bone, haz=hazel) indicated which has been sent to SUERC, CI= charcoal weight (g), Ch= Chenopodium sp., Vh= Veronica hederifolia, Trig= trigonoumous seed, Sm= Stellaria cf. media, Sn= Sambucus nigra, Fo= Fumaria officinalis, EWC= earthworm capsules, BC= beetle components, NC= nematode capsules, AE= ants' eggs

Table F3: Charcoal: fragment counts (actual)

C	SC	Wt	%	Quercus sp.	Corylus avellena	Calluna vulgaris	Acer sp.	Salix/populus	Fraxinus excelsior	Betula sp.	Prunus sp.	hazelnut frag	Indet.	indet. buds
				Oak	Hazel	Heather	Maple	Willow/poplar	Ash	Birch	Prune			
31	AA	51.5	50	9	3	-	-	-	-	-	-	-	-	-
89	AA	262	5	1	1	1	2	-	-	-	-	-	3	-
140	AA	21	5	2	-	-	-	-	-	-	-	-	12	-
150	AA	104	5	10	-	-	-	-	-	-	-	-	1	-
160	AA	462	5	27	-	-	-	1	-	-	-	-	2	-
213	AA	49	100	55	1	-	-	-	-	-	-	-	3	13
228	AA	64.7	5	89	-	-	-	-	-	-	-	-	1	13
317	AA	32	5	29	-	-	-	1	-	-	-	-	-	-
319	AA	45	25	30		-	-	-	-	-	-	-	-	-
329	AA	32	5	28	2	-	-	-	-	-	-	-	-	-
338	AA	83	5	30	-	-	-	-	-	-	-	-	-	-
344	AA	11	25	6	30	1	-	5	4	2	-	-	-	-
345	AA	69.4	50	15	1	11	-	27	4	-	-		3	-
346	AA	32.7	25	27	19	2	-	5	-	-	-	4	7	-
350	AA	5	25	26	1	-	-	-	-	-	-	-	3	-
474	AA	6	75	22	17	1	-	10	-	-	-	2	8	-
475	AA	2	100	5	10	-	-	6	-	-	1	-	1	-
496		4.5	100	15	2	4	-	-	-	-	-	-	2	

Table F4: Charcoal presence in other samples

C	SC	Wt
66	AA	0.4
139	AA	9
144	AA	56*
167	AA	<0.1
179	AA	<0.1
262	AA	<0.1
276	AA	0.3
299	AA	<0.1
307	AA	<0.1
321	AA	6.2
406	AA	<0.1
421	AA	0.1
427	AA	<0.1
428	AA	<0.1
492	AA	<0.1
498	AA	<0.1
513	AA	<1
514	AA	<1
519	AA	<0.1
529	AA	1
531	AA	0.6
549	AA	<1
550	AA	2.9

C=context, SC= sample code, Wt= weight (g), *=not examined, mineralised.

Table F5: Charred plant remains (all)

		Avena sp. Oat	*Avena sativa* floret bases	*Avena sativa* lemma	*Hordeum vulgare* ssp. *distichon* Two-rowed barley	*Triticum* sp. Wheat	*Triticum* nudum Naked wheat	*Triticum aestivum* ssp. *aestivum* Bread wheat	indet. Cerealia	Rachis internodes	*Arrhenatherum elatius* tubers False Oat-grass	*Chenopodium* sp. Goosefoot	*Carex* sp. Sedges	*Plantago lanceolata* Ribwort plantain	Poceaea seed Grass seed
228	AA						2				3				
229	AA				20										
329	AA					1									
344	AA	7			209		71		311						
345	AA	582	1	2	2844			815		2		2	12	4	2
346	AA	218		2	1695			386		1					
474	AA	1			114			170	401						
475	AA	8			229			81	369						
496	AA	1			11										

Table F6: Corn dryer 343: showing GPL, quantities, percentages and totals

GPL	C	*Avena* sp.	*Tritcum* sp.	*Hordeum* sp.	Total	Refloat added
8	344	7	71	208	286	2%
	344/2	0	0	6	6	
	total	7/ 2%	71/ 24%	214/ 74%	292	
129	345	580	745	2784	4109	3%
	345/2	3	70	60	133	
	total	583/ 14%	815/ 19%	2844/ 67%	4242	
151	346	218	386	1695	2299	2%
	346/2	11	63	264	338	
	total	229/ 8%	449/ 17%	1959/ 75%	2637	

Table F7: Corn dryer 343: breakdown by weight (g)

		Avena sp.	*Tritcum* sp.	*Hordeum* sp.	Indet Cerealia
WEIGHT	344	<0.1	0.6	1.5	1.3
	344/2	0	0	0.1	<0.1
	345	2.7	6	19.5	21.3
	345/2	<0.1	0.6	0.4	<0.1
	346	1.3	3.3	11.5	0.7
	346/2	<0.1	0.5	2.1	<0.1

Table F8: Corn dryer 473: showing GPL, quantities, percentages and totals (inc. indet. grain)

GPL		*Avena* sp.	*Tritcum* sp.	*Hordeum* sp.	indet	
38	474		99	16	228	343
	474/2	1	71	98	173	343
	total	1/ <1%	170/ 25%	114/ 17%	401/ 58%	686
38	475	8	74	199	343	624
	475/2	0	7	30	26	63
	total	8/ 1%	81/ 12%	229/ 33%	369/ 54%	687

Table F9: Corn dryer 473: showing GPL, quantities, percentages and totals

GPL	C	*Avena* sp.	*Tritcum* sp.	*Hordeum* sp.		Refloat added
15.8	474		99	16		60%
	474/2	1	71	98		
	total	1/ <1%	170/ 60%	114/ 40%	285	
18	475	8	74	199		12%
	475/2	0	7	30		
	total	8/ 3%	81/ 25%	229/ 72%	318	

Table F10: Corn dryer 473: breakdown by weight (g)

		Avena sp.	*Tritcum* sp.	*Hordeum* sp.	Indet Cerealia
WEIGHT	474	0	0.9	0.8	1.4
	474/2	<0.1	0.6	0.6	0.8
	475	0.1	0.7	1.6	2
	475/2	0	0.1	0.2	0.2

Fig. 1: Corn dryer 343: Distribution of grain (actual).

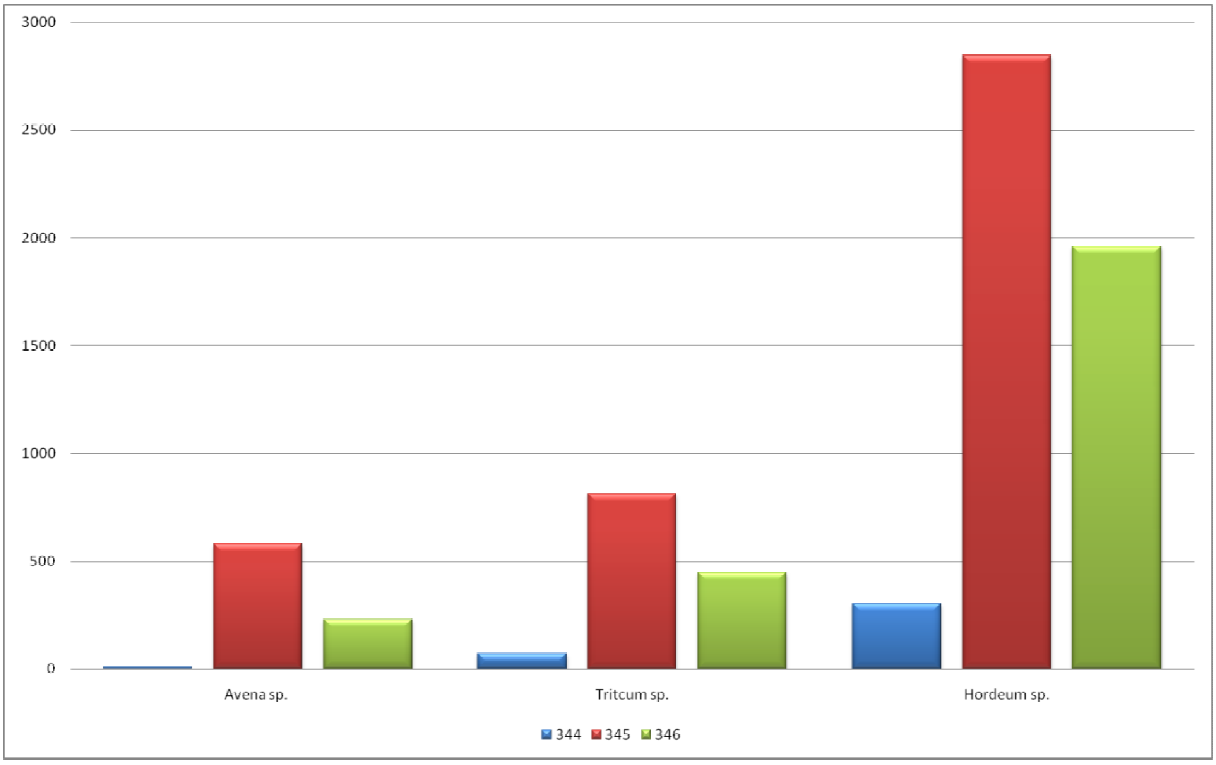


Fig. 2: Corn dryer 343: Frequency by weight (including indet. Cerealia).

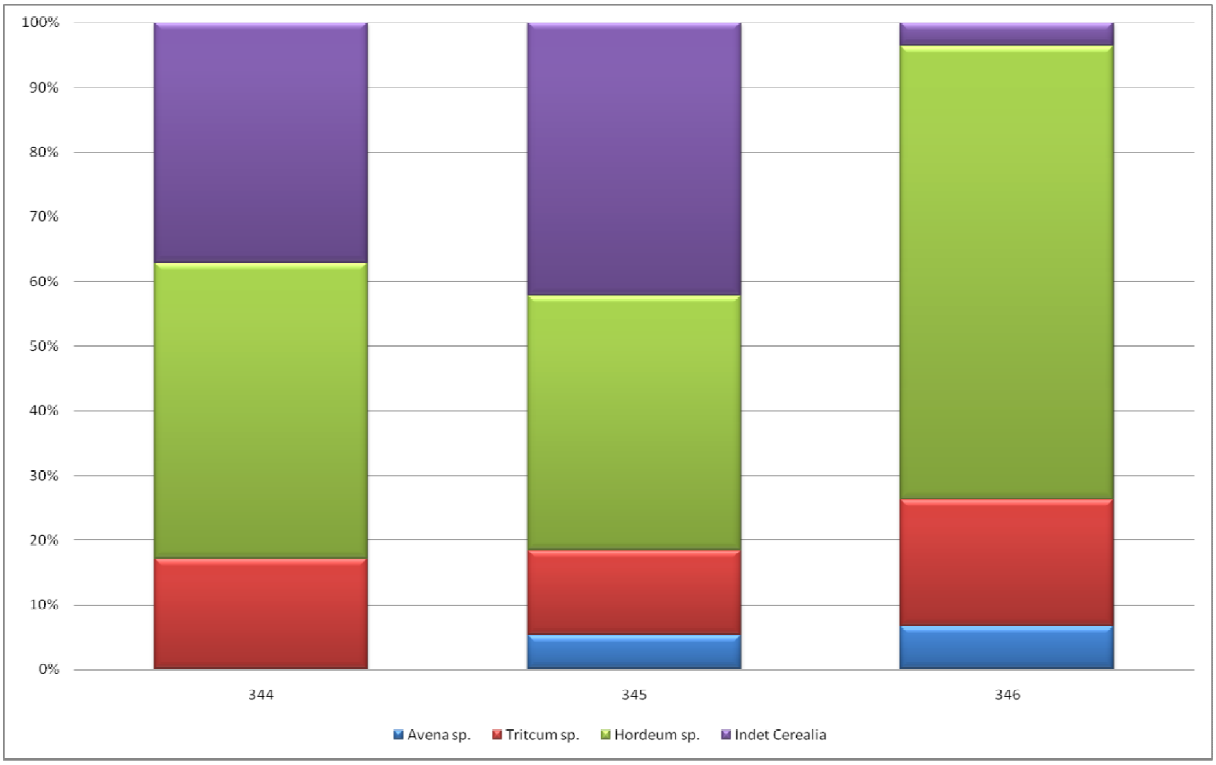


Fig. 3: Corn dryer 343: Frequency of distribution by weight.

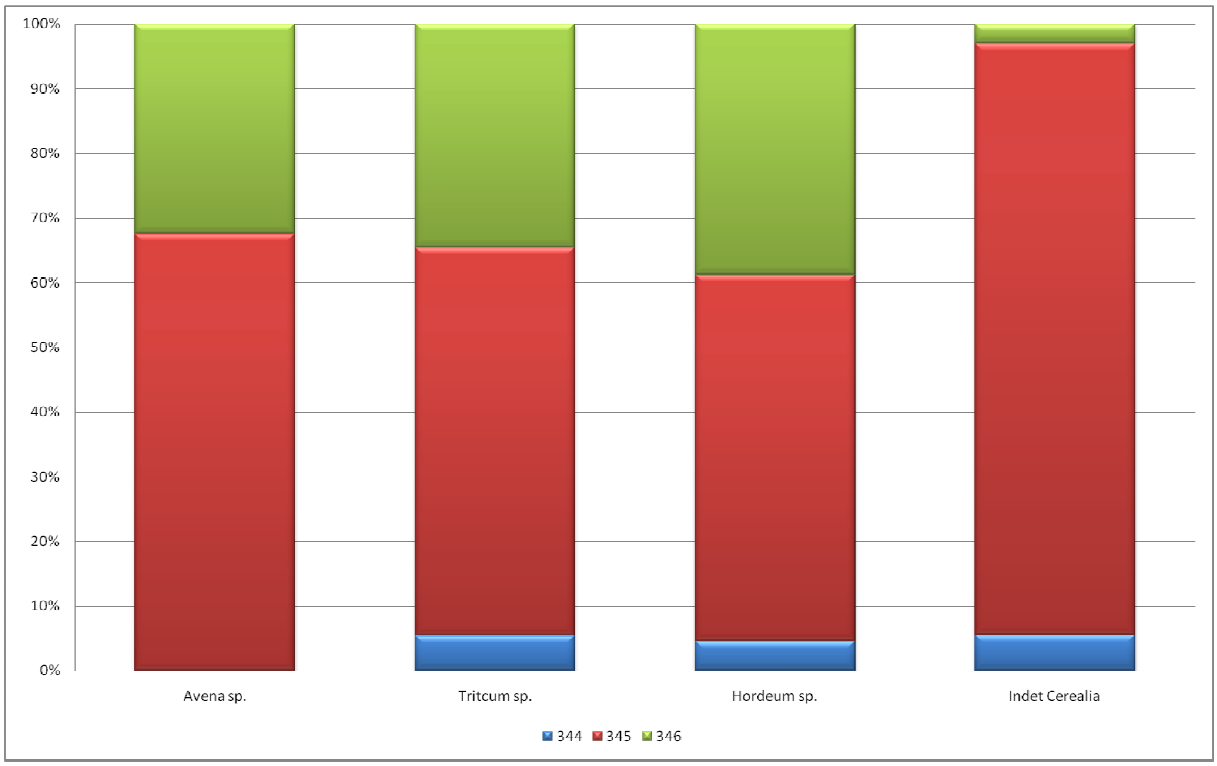


Fig. 4: Corn dryer 473: Distribution of grain (actual).

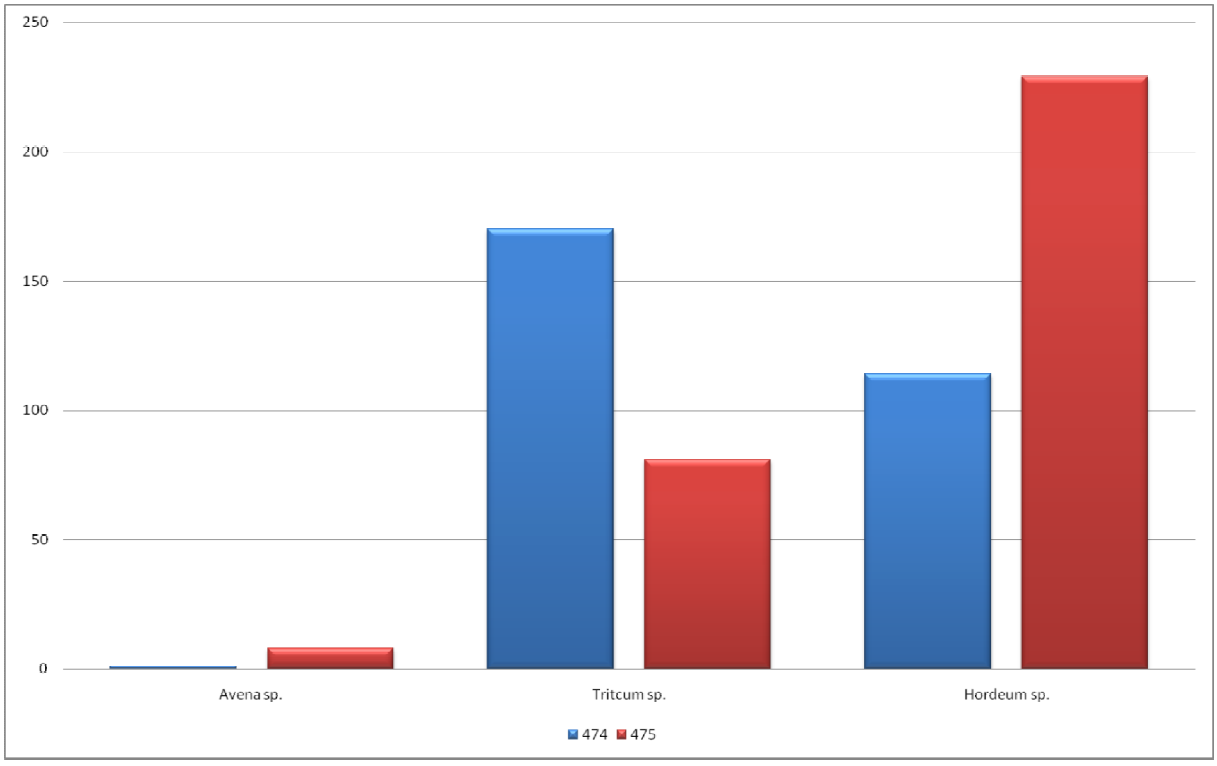


Fig. 5: Corn dryer 473: Frequency by weight (including indet. Cerealia)

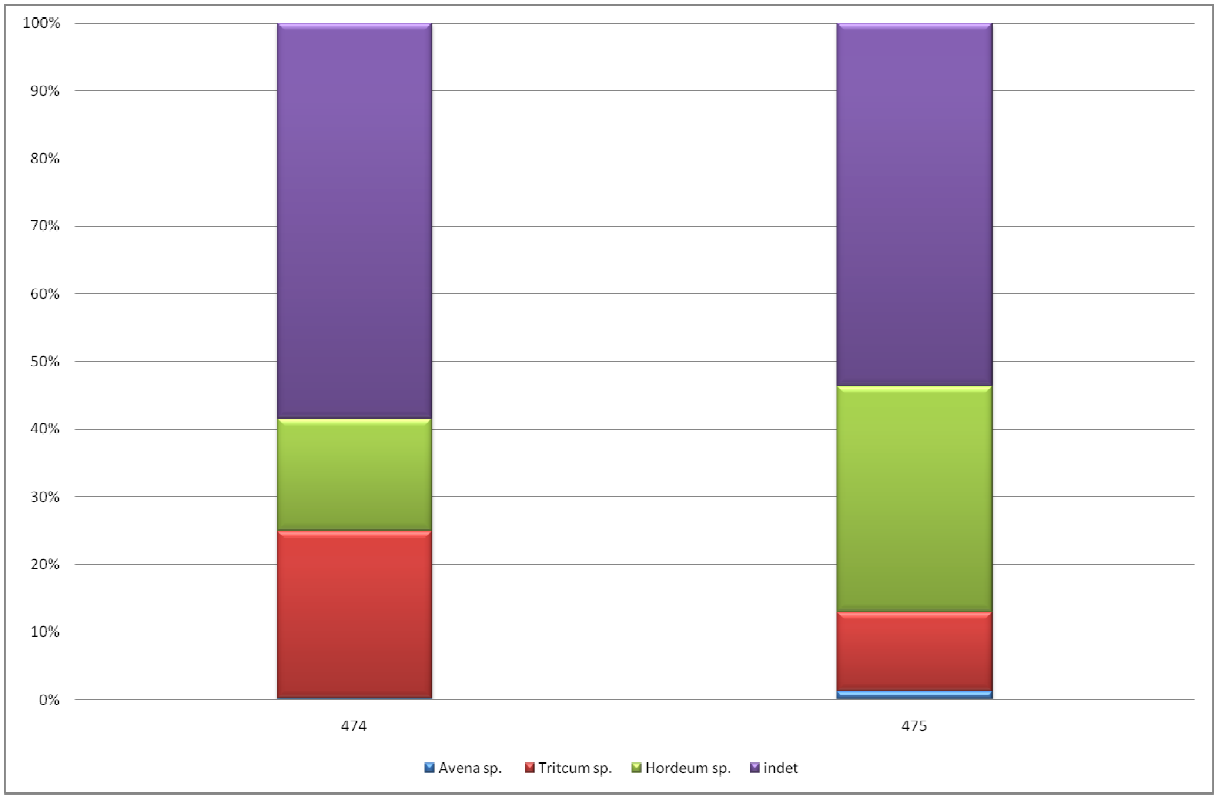
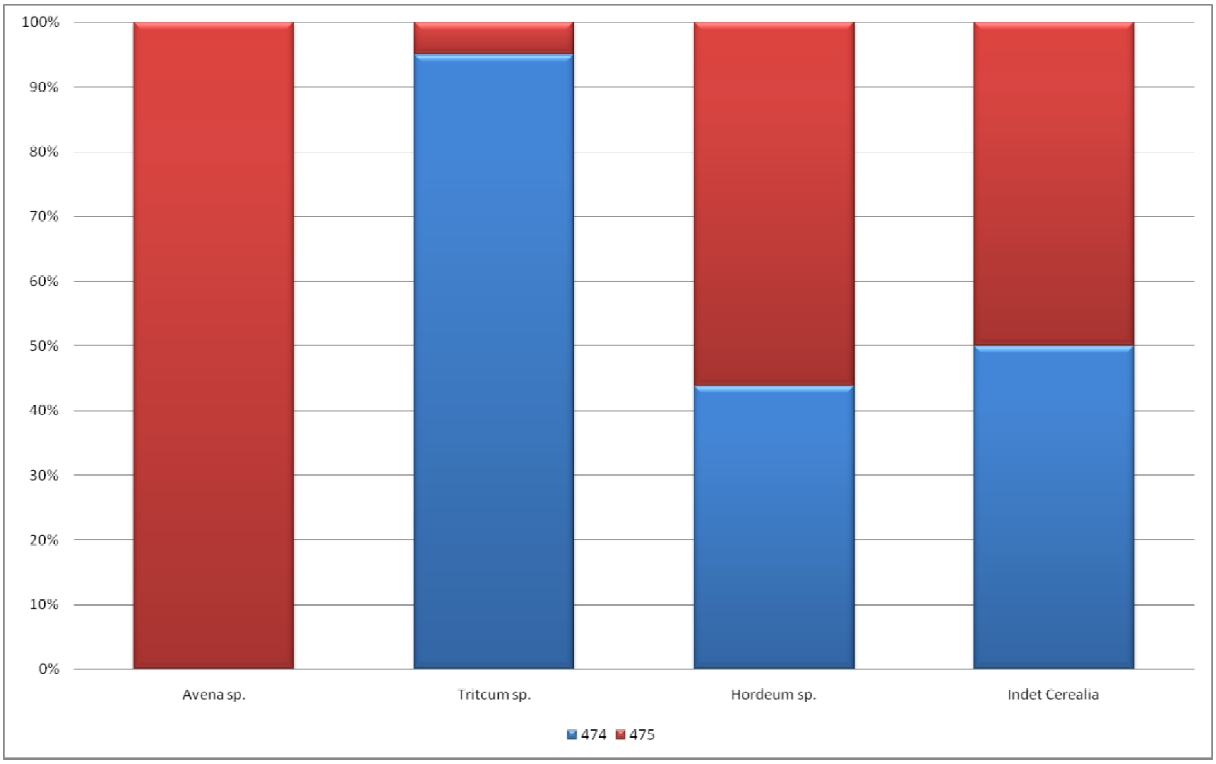


Fig. 6: Corn Dryer 473: Frequency of distribution by weight.



APPENDIX G

CONTEXT CATALOGUE

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
1			Topsoil				Contained two flint flakes and one flint core, one sherd of RB pottery,11 sherds of medieval and PM pottery
2			Subsoil				
3			Natural				
4			Group number for series of plough furrows				Contained three sherds of RB pottery including grey ware, two sherds of medieval pottery including a glazed strap handle and a glazed body sherd
5	19		Cut of pit				
6			Fill of pit 5				
7	19		Cut of pit				
8			Fill of pit 7				
9	19		Cut of pit				
10			Fill of pit 9				
11	19		Cut of pit				
12			Fill of pit 11				
13	19		Cut of pit				
14			Fill of pit 13				
15	19		Cut of pit				
16			Fill of pit 15				
17	19		Cut of pit		Cut by 20		
18			Fill of pit 17				
19			Group number for pits	5, 7, 9, 11, 13, 15, 17, 20, 23			
20	19		Cut of pit		Cuts 17; cut by 23		
21			Primary fill of pit 20				
22			Secondary fill of pit 20				
23	19		Cut of pit		Cuts 20; cut by 4		

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
24			Fill of pit 23				
25	562		Cut of ditch				
26			Fill of ditch 25				
27	562		Cut of ditch				
28			Fill of ditch 27				
29	562		Cut of ditch				
30			Fill of ditch 29				
31			Fill of pit 52			40l bulk sample	
32			Fill of pit 42			20l bulk sample	
33			Cut of ditch				
34			Fill of ditch 33				
35			Cut of ditch				
36			Fill of ditch 35				
37			Cut of pit				
38			Cut of pit				
39			Fill of pits 37 and 38				
40			Cut of pit				
41			Fill of pit 40				
42			Cut of pit		Cuts 44		
43			Fill of pit 44			20l bulk sample	
44			Cut of pit		Cuts 47; cut by 42		
45			Secondary fill of pit 47				
46			Primary fill of pit 47				
47			Cut of pit		Cut by 44		
48			Fill of pit 52				
49			Fill of pit 52				
50			Fill of pit 52				
51			Fill of pit 52				
52			Cut of pit				
53			Fill of pit 54				
54			Cut of pit				
55			Cut of pit				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
56			Fill of pit 55				
57			Fill of ditch 33				
58			Fill of ditch 35				
59			Cut of ditch terminal				
60			Fill of ditch terminal 59				
61			Cut of ditch terminal				
62			Primary fill of ditch terminal 61				
63			Seconadry fill of ditch terminal 61				
64			Tertiary fill of ditch terminal 61				
65	562		Cut of ditch				
66			Fill of ditch 65			40l bulk sample	
67	559		Cut of ditch				
68			Fill of ditch 67			40l bulk sample	
69			Cut of pit				
70			Fill of pit 69				
71			Deposit of compacted sandstone				
72			Cut of ditch terminal				
73			Fill of ditch terminal 72				
74			Fill of ditch terminal 75				
75			Cut of ditch terminal				
76			Cut of gully terminal				
77			Fill of gully terminal 76				
78			Cut of gully				
79			Fill of gully 78				
80			Fill of ditch 81				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
81	559		Cut of ditch				
82			Cut of posthole				
83			Secondary fill of posthole 82			40l bulk sample	
84			Primary fill of posthole 82				
85	559		Cut of ditch				
86			Secondary fill of ditch 85				
87			Primary fill of ditch 85				
88			Cut of pit				
89			Primary fill of pit 88			60l bulk sample	
90	561		Cut of ditch				
91			Fill of ditch 90				
92			VOID				
93			VOID				
94			VOID				
95			VOID				
96			VOID				
97	561		Cut of ditch				
98	568		Cut of ditch		Truncated by plough headland 100		
99			Fill of ditch 98				
100	572		Cut of medieval plough headland		Truncates ditch 98		
101			Fill of plough headland 100				
102	568		Cut of ditch				
103			Primary fill of ditch 102				
104			Secondary fill of ditch 102				
105			Tertiary fill of ditch 102				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
106			Quaternary fill of ditch 102				
107			Quinary fill of ditch 102				
108			Senary fill of ditch 102				
109			Septenary fill of ditch 102				
110			Octonary fill of ditch 102				
111			Fill of ditch 98				
112			Fill of ditch 98				
113			Fill of ditch 98				
114			Fill of ditch 118				
115			Fill of ditch 118				
116			Fill of ditch 118				
117			Fill of ditch 118				
118	568		Cut of ditch				
119	119		Oval ring gully				
120			Cut of pit				
121			Primary fill of pit 120				
122			Secondary fill of pit 120				
123			Tertiary fill of pit 120				
124			Slumping within ditch 98				
125			Slumping within ditch 98				
126	119		Cut of ring gully				
127	119		Fill of ring gully 126			40l bulk sample	
128	119		Cut of ring gully				
129	119		Fill of ring gully 128				
130	119		Cut of ring gully				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
131	119		Fill of ring gully 130			40l bulk sample	
132	119		Cut of ring gully				
133	119		Fill of ring gully 132			20l bulk sample	
134	119		Cut of ring gully				
135	119		Fill of ring gully 134				
136	119		Cut of ring gully				
137	119		Fill of ring gully136			40l bulk sample	
138			Cut of gully				
139			Fill of gully 138			40l bulk sample	
140			Secondary fill of pit 149			10l bulk sample	
141			Primary fill of pit 149				
142			Secondary fill of pit 149				
143			Primary fill of pit 149				
144			Secondary fill of pit 149			20l bulk sample	
145			Primary fill of pit 149				
146			Secondary fill of pit 149				
147			Primary fill of pit 149				
148			Secondary fill of pit 149				
149			Cut of pit (tree bole?)		Truncates pit 152		
150			Fill of pit 151			30l bulk sample	
151			Cut of pit		Truncated by pit 150		

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
152	572		Cut of plough headland				
153	572		Cut of plough headland				
154	572		Cut of plough headland				
155			Fill of plough headland 152				
156			Fill of plough headland 153 and 154				
157			Fill of plough headland 152, 153 and 154				Contained one Fe object; dished, in several pieces, one sherd of medieval? Pottery
158			Cut of pit				
159			Cut of pit				
160			Fill of pit 159			40l bulk sample	
161	568		Cut of ditch				
162			Secondary fill of ditch 161				Contained 15 sherds of IA/RB pottery
163			Primary fill of ditch 161				
164			Tertiary fill of ditch 158				
165			Secondary fill of ditch 158				
166			Primary fill of ditch 158				
167			Fill of ditch 218			40l bulk sample	
168	568		Cut of ditch		Truncates pits 173 and 176		
169			Fill of ditch 168				
170			Fill of ditch 168				
171			Fill of ditch 168				
172			Fill of ditch 168			40l bulk	

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
						sample	
173	576		Cut of pit		Truncated by ditch 169		
174			Fill of pit 173				
175	576		Cut of pit		Truncated by ditch 169		
176			Fill of pit 175				
177	576		Cut of pit				
178			Fill of pit 177				
179			Fill of ditch 180			10l bulk sample	
180	568		Cut of ditch				
181			Fill of pit 182				
182	576		Cut of pit				
183			Fill of ditch 184				Contained one sherd of RB pottery; a grey ware base
184	568		Cut of ditch				
185			Cut of ditch		Truncates pit 206, truncated by 204		
186	576		Cut of pit				
187			Fill of pit 186				
188			Cut of ditch				
189			Primary fill of ditch 188				
190			Secondary fill of ditch 188			40l bulk sample	
191			Ditch re-cut				
192			Primary fill of ditch 191			40l bulk sample	
193			Secondary fill of ditch 191				
194	568		Cut of ditch				
195			Fill of ditch 194				
196			Fill of ditch 180				
197			Fill of ditch 180				
198			Fill of ditch 180				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
199			Fill of ditch 185				Contained two sherds of RB pottery
200	568		Cut of ditch		Truncated by 204		
201			Fill of ditch 200				
202			Cut of pit		Truncates 204		
203			Fill of pit 202				Contained two sherds of PM pottery
204			Cut of pit		Truncates 185 and 200, truncated by 202		
205			Fill of pit 204				
206	576		Cut of pit		Truncated by ditch 185		
207			Fill of pit 206				
208			Cut of pit				
209			Fill of pit 208				
210			Fill of pit 211				
211	576		Cut of pit				
212			Cut of cremation pit				
213			Fill of cremation pit 212			40l bulk sample	
214	561		Cut of ditch				
215			Fill of ditch 214				
216	561		Cut of ditch				
217			Fill of ditch 216				
218	561		Cut of ditch		Truncates pit 236		
219			Fill of ditch 218				
220	561		Cut of ditch				
221			Fill of ditch 220				
222			Fill of ditch 97				
223			Cut of ditch				
224			Fill of ditch 223				
225	561		Cut of ditch				
226			Fill of ditch 225				
227			Cut of cremation pit				
228			Fill of cremation pit 227			60l bulk sample	
229			Fill of ditch 230				
230	568		Cut of ditch				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
231			Fill of furrow 232				
232			Cut of furrow				
233	569		Cut of ditch				
234	561		Cut of ditch				
235			Fill of ditch 234				
236			Cut of pit		Truncated by ditch 218		
237			Fill of pit 236				
238	563		Cut of ditch				
239			Fill of ditch 238				
240	561		Cut of ditch				
241			Fill of ditch 240				
242	561		Cut of ditch				
243			Fill of ditch 242				Contained one sherd of RB pottery
244			VOID				
245			Fill of ditch 244				
246			Fill of ditch 248				
247			Fill of ditch 248				
248	569		Cut of ditch				
249			Fill of ditch 233				
250			Fill of ditch 233				
251			Fill of ditch 233				Contained three sherds of IA/RB pottery
252	560		Cut of ditch		Contemp. with 254		
253			Fill of ditch 252				Contained three sherds of medieval? Pottery
254	561		Cut of ditch		Contemp. with 252		
255			Fill of ditch 254				
256			Cut of ditch				
257			Fill of ditch 256				
258	563		Cut of ditch				
259			Fill of ditch 258				
260	563		Cut of ditch				
261			Fill of ditch 260				
262			Fill of ditch 263			40l bulk sample	
263	561		Cut of ditch				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
264			Fill of ditch 265			40l bulk sample	
265	561		Cut of ditch				
266	561		Cut of ditch				
267			Secondary fill of ditch 266				
268			Primary fill of ditch 266				
269			Fill of ditch 265				
270			Secondary fill of ditch 263				
271			Fill of ditch 272				
272	563		Cut of ditch				
273			Fill of ditch 274				
274	563		Cut of ditch				
275	563		Cut of ditch				
276			Fill of ditch 275			40l bulk sample	
277			Cut of pit		Truncates ditches 287 and 289		
278	561		Cut of ditch				
279			Secondary fill of ditch 278				
280			Primary fill of ditch 278				Contained two sherds of RB pottery; handmade
281			Primary fill of ditch 220				
282			Primary fill of ditch 90				
283			Primary fill of ditch 97				
284			Fill of pit 285				
285			Cut of pit				
286			Fill of pit 277				
287	563		Cut of ditch		Truncated by 277, contemp. with 289?		

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
288			Fill of ditch 287				
289	561		Cut of ditch		Truncated by 277, contemp. with 287?		
290			Fill of ditch 289				
291			Cut of ditch				
292			Fill of ditch 291				
293			Fill of ditch 294				
294	566		Cut of ditch				
295			Fill of ditch 296				
296	566		Cut of ditch				
297	566		Cut of ditch				
298			Primary fill of ditch 297				
299			Secondary fill of ditch 297			20l bulk sample	
300	564		Cut of ditch terminal				
301			Fill of ditch terminal 300				
302	566		Cut of ditch terminal				
303			Fill of ditch terminal 302				
304	565		Cut of ditch terminal		Truncated by 306		
305			Fill of ditch 304				
306	565		Cut of ditch terminal		Truncates 304, truncated by 308		
307			Fill of ditch terminal 306			20l bulk sample	
308	565		Cut of ditch terminal		Truncates 306		
309			Fill of ditch terminal 308				
310			Tertiary fill of ditch 297				
311			Cut of ditch			Adjacent to compound	
312			Secondary fill of ditch 311			Adjacent to compound	

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
313			Primary fill of ditch 311			Adjacent to compound	
314			Cut of ditch			Adjacent to compound	
315			Fill of ditch 314			Adjacent to compound	
316			Cut of pit				
317			Fill of pit 316			10l bulk sample	
318			Cut of pit				
319			Fill of pit 320			40l bulk sample	
320			Cut of pit				
321			Fill of pit 318			40l bulk sample	
322			Fill of ditch 324				
323			Fill of ditch 324				
324	561		Cut of ditch		Contemp. wuth 331, truncated by 327		
325			Fill of ditch 327				
326			Fill of ditch 327				
327	561		Cut of ditch		Truncates ditch 324		
328			Cut of cremation pit				
329			Fill of cremation pit 328			20l bulk sample	
330			Fill of ditch 331				
331	564		Cut of ditch		Contemp. with 324		
332			Layer of slumping within ditch 278				
333			Primary fill of ditch 278				
334	565		Cut of ditch				
335			Fill of ditch 334				
336	565		Cut of ditch				
337			Fill of ditch 336				Contained one sherd of RB pottery; grey ware base

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
338			Fill of pit 339			40l bulk sample	
339			Cut of pit				
340			Stone spread				
341			Fill of natural scour				
342			Cut of natural scour				
343			Cut of pit				
344			Secondary fill of pit 343			40l bulk sample	
345			Red primary fill of pit 343			40l bulk sample	
346			Black primary fill of pit 343			20l bulk sample	Contained one fragment of animal tooth
347			Fill of ditch 348				
348	564		Cut of ditch				
349			Fill of cremation urn				
350			Primary fill of cremation pit 328			10l bulk sample	
351	561		Cut of ditch				
352			Fill of ditch 351				
353			Fill of ditch 354				
354	561		Cut of ditch				
355			Cut of pit				
356			Fill of pit 355				
357			Cut of pit				
358			Fill of pit 357				
359			Tertiary fill of pit 362				
360			Secondary fill of pit 362				
361			Primary fill of pit 362			40l bulk sample	
362			Cut of pit		Truncates ditch 364, truncated by linear cut 366		
363			Fill of ditch 364				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
364	561		Cut of ditch		Truncated by pit 362		
365			Fill of cut 366				
366			Modern (?) linear cut		Truncates pit 362		
367			Cut of natural scour				
368			Fill of natural scour 367				
369			Fill of pit 373				
370			Possible capstone				
371			Fill of ditch 372				
372	561		Cut of ditch				
373			Cut of pit				
374			Fill of pit 378				
375	561		Cut of ditch				
376			Fill of ditch 377				
377	561		Cut of ditch				
378			Cut of pit				
379			Fill of pit 378				
380			Upper backfill of kiln 381			40l bulk sample	
381			Cut of kiln				
382	561		Cut of ditch				
383			Fill of ditch 382				
384	561		Cut of ditch				
385			Fill of ditch 384				Contained one flint blade
386			Secondary fill of ditch 387				
387	561		Cut of ditch				
388	569		Cut of ditch				
389			Fill of ditch 388				
390	561		Cut of ditch				
391			Fill of ditch 390				
392			Primary fill of ditch 387				
393			Fill of ditch 394				
394	569		Cut of ditch				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
395			Fill of ditch 396				Contained one fragment of burnt bone
396	569		Cut of ditch				
397	568		Cut of ditch				
398			Fill of ditch 397				
399	568		Cut of ditch				
400			Secondary fill of ditch 399				
401			Primary fill of ditch 399				
402			Octonary fill of kiln 381				
403			Septenary fill of kiln 381				
404			Senary fill of kiln 381				
405			Quinary fill of kiln 381				Contained one sherd of PM pottery
406			Quaternary fill of kiln 381			40l bulk sample	
407			Tertiary fill of kiln 381				
408			Secondary fill of kiln 381			40l bulk sample	
409			Primary fill of kiln 381				
410	569		Cut of ditch				
411			Secondary fill of ditch 410				
412	573		Cut of ditch		Truncates pit 426		
413			Fill of ditch 412				
414	567		Cut of ditch				
415			Primary fill of ditch 414				
416			Secondary fill of ditch 414				Contained one sherd of medieval-PM pottery
417			Cut of posthole				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
			within 343				
418	564		Fill of ditch 419				
419			Cut of ditch				
420	567		Cut of ditch				
421			Fill of ditch 420			40l bulk sample	
422			Fill of posthole 417				
423			Primary fill of ditch 410				
424			Fill of ditch 425				
425	562		Cut of ditch				
426			Cut of pit		Truncated by ditch 412		
427			Secondary fill of pit 426			40l bulk sample	
428			Primary fill of pit 426			30l bulk sample	
429			Fill of ditch 430				
430	562		Cut of ditch				
431			Fill of ditch 432				
432	560		Cut of ditch				
433	560		Cut of ditch				
434			Fill of ditch 433				
435	560		Cut of ditch				
436			Fill of ditch 435			40l bulk sample	
437	574		Cut of ditch				
438			Fill of ditch 437				
439			Cut of pit				
440	567		Cut of ditch		Truncates ditch 443 (but prob. Contemp. and re-cut)		
441			Primary fill of ditch 440				
442			Secondary fill of ditch 440				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
443	570		Cut of ditch		Truncated by ditch 440 (but prob. Contemp. and re-cut)		
444			Fill of ditch 443				
445	567		Cut of ditch		Contemp. with 450		
446	559		Fill of ditch 447				
447	560		Cut of ditch				
448			Fill of ditch 449				
449	560		Cut of ditch				
450	562		Cut of ditch		Contemp. with 445		
451			Primary fill of ditch 445				
452			Secondary fill of ditch 445 and 450				
453			Fill of ditch 454				
454			Cut of ditch				
455			Cut of pit				
456			Fill of pit 455				
457			Fill of pit 458				Contained a flint flake, a flint core and three sherds of early prehistoric pottery
458			Cut of pit				
459			Fill of ditch 460				
460	573		Cut of ditch				
461	560		Cut of ditch		Contemp. with 463?		
462			Fill of ditch 461				
463	562		Cut of ditch		Contemp. with 461		
464			Fill of ditch 463				
465			Fill of ditch 466				
466			Cut of ditch				
467			Secondary fill of pit 88				
468			Cut of rectangular pit				
469			Primary fill of pit 468				
470			Secondary fill of pit				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
			468				
471	569		Cut of ditch				
472			Fill of ditch 471				
473			Cut of pit				
474			Primary fill of pit 473			20l bulk sample	Contained one fragment of flint, 11 fragments of burnt bone, and a piece of slag
475			Secondary fill of pit 473			20l bulk sample	
476			Fill of ditch 477				
477	569		Cut of ditch				
478	570		Cut of ditch				
479			Fill of ditch 478				
480			Cut of pit				
481			Primary fill of pit 480				
482			Secondary fill of pit 480				
483			Overlying deposit				
484			Cut of ditch				
485			Fill of ditch 484			40l bulk sample	
486			Fill of ditch 484				
487			Fill of ditch 484				
488			Fill of ditch 484				
489			Cut of pit		Truncates layer 555		
490			Primary fill of pit 489			20l bulk sample	
491			Secondary fill of pit 489				
492			Tertiary fill of pit 494			40l bulk sample	
493			Secondary fill of pit 494				
494			Cut of pit				
495	570		Cut of ditch				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
496			Fill of ditch 495			40l bulk sample	
497			Cut of pit		Truncates layer 555		
498			Primary fill of pit 497			20l bulk sample	
499			Secondary fill of pit 497				
500			Primary fill of pit 494				
501			Secondary fill of ditch 503				
502			Primary fill of ditch 503				
503	574		Cut of ditch		Contemp. with 505		
504			Fill of ditch 505				
505	574		Cut of ditch		Contemp. with 503		
506			Fill of pit 439			10l bulk sample	
507	571		Cut of ditch				
508			Primary fill of ditch 507				
509			Secondary fill of ditch 507				Contained one pivot stone (RF 1)
510	571		Cut of ditch				
511			Cut of pit		Truncates layer 555		
512			Secondary fill of pit 511			10l bulk sample	
513			Primary fill of pit 511			40l bulk sample	
514			Fill of pit 515			40l bulk sample	
515			Cut of pit		Truncates layer 555		
516	571		Cut of ditch				
517			Tertiary fill of ditch 510				
518			Secondary fill of				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
			ditch 510				
519			Primary fill of ditch 510			10l bulk sample	
520			Deposit sealing ditch intersections				Contained two pieces of slag including a hearth bottom
521			Primary fill of ditch 230				
522			Secondary fill of ditch 230				
523			Tertiary fill of ditch 230				
524			Quaternary fill of ditch 230				
525			Secondary fill of ditch 526				
526	574		Cut of ditch				
527			Primary fill of ditch 526				
528			Cut of pit		Truncates layer 555		
529			Fill of pit 528			40l bulk sample	
530			Cut of pit		Truncates layer 555		
531			Fill of pit 530			40l bulk sample	
532			Primary fill of ditch 516				
533			Secondary fill of ditch 516				
534			Tertiary fill of ditch 516				
535			Cut of pit				
536			Fill of pit 535				Contained one sherd of pottery/fired clay
537	571		Cut of ditch		Truncates ditch 539 (but prob. Contemp. and re-cut)		
538			Fill of ditch 537				

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
539	569		Cut of ditch		Truncated by ditch 537 (but prob. Contemp. and re-cut)		
540			Fill of ditch 539				
541	570		Cut of ditch		Truncates ditch 543 (but prob. Contemp. and re-cut)		
542			Fill of ditch 541				
543	569		Cut of ditch		Truncated by ditch 541 (but prob. Contemp. and re-cut)		
544			Secondary fill of ditch 543				
545			Primary fill of ditch 543				
546			Cut of pit				
547			Fill of pit 546				
548			Fill of pit 546				
549			Fill of pit 546			40l bulk sample	Contained one fragment of RB?glass, one sherd of medieval pottery
550			Primary fill of kiln (381) flue			10l bulk sample	
551			Secondary fill of kiln (381) flue				
552			Cut of pit		Cut by ditch		
553			Primary fill of pit 552				
554			Secondary fill of pit 552				
555			Layer of trample within enclosed area		Truncated by pits 489, 497, 511, 515, 528, 530		
556			Fill of ditch 557				
557	569		Cut of ditch				
558			Fill of ditch 484				
559			Group number for gully / small ditch	67, 81, 85, 466			

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
560			Group number for L-shaped ditch	252, 432, 433, 435, 447, 449, 461			
561			Group number for ditch	90, 97, 185, 214, 216, 218, 220, 225, 234, 240, 242, 254, 263, 265, 266, 278, 289, 324, 327, 351, 354, 364, 372, 375, 377, 382, 384, 387, 390			
562			Group number for gully / small ditch	25, 27, 29, 65, 425, 230, 450, 463			
563			Group number for gully / small ditch	236, 238, 258, 260, 272, 274, 275, 287			
564			Group number for gully / small ditch	300, 331, 348, 418			
565			Group number for gully / small ditch	304, 306, 308, 334, 336			
566			Group number for gully / small ditch	294, 296, 297, 302			
567			Group number for ditch	414, 420, 440, 445			
568			Group number for ditch	98, 102, 118, 161, 168, 180, 184, 194, 200 230, 397, 399			
569			Group number for ditch	233, 248, 388, 394, 396, 410, 471, 477, 539, 543, 557			
570			Group number for curvilinear ditch	443, 478, 495, 541			
571			Group number for curvilinear ditch	507, 510, 516, 537			
572			Group number for plough headland	100, 152, 153, 154			
573			Group number for gully / small ditch	412, 460			
574			Group number for rectilinear enclosure ditch	503, 526			
575			Group of pits	88, 468, 480			
576			Group of pits	173, 175, 177, 182, 186, 206, 211			
577			Group number for rectilinear enclosure	437, 505			

Context	Group number	Phase	Interpretative description	Component parts	Relationships	Sample information	Finds information
			ditch				
578	580		Cut of ditch				
579	580		Cut of ditch				
580			Group number for ditch	578, 579			

APPENDIX H

THE RADIOCARBON DATES

Scottish Universities Environmental Research Centre

Summary Table

Context	Feature	Reason for dating	Sample material	Result (95.4% unless stated)
(213)	[212]	Fill of cremation pit	Cremated human bone	2022 – 1780 cal BC
(350)	[328]	Fill of cremation pit	Cremated human bone	1955 – 1760 cal BC
(345)	[343]	Fill of corn dryer	Grain - barley	331 – 533 cal AD (at 93.7%)
(346)	[343]	Fill of corn dryer	Grain - barley	422 – 561 cal AD
(474)	[473]	Fill of corn dryer	Grain - barley	432 – 598 cal AD
(131)	[119] (Group number for feature)	Fill of oval gully	Charcoal - oak	1608 – 1436 cal BC
(321)	[318]	Fill of pit adjacent to cairn area	Charcoal - oak	1609 – 1447 cal BC
(492)	[494]	Fill of distinct pit within stock corral – different in form and earlier than others	Grain - wheat	161 cal BC – 50 cal AD
(529)	[528]	Fills of pits cutting deposit (555) within stock corral – later than pit [494] which is of different form and cut into natural	Grain - barley	440 – 637 cal AD
(89)	[88] (Group 575)	One of a group of 3 pits at the south-east edge of site	Charcoal - hazel	2195 – 1965 cal BC
(31)	[52]	Fill of pit within enclosure	Charcoal - oak	1413 – 1262 cal BC
(299)	(297)	Fill of ditch adjacent to corn dryer [343] (Fill 2 of 3)	Grain - barley	540 – 644 cal AD
(485)	[484]	Fill of ditch at main intersection – latest ditch (fill 2 of 5)	Grain - wheat	436 – 635 cal AD
(519)	[510]	Fill of curvilinear ditch (fill 1 of 3)	Grain - wheat	46 cal BC – 76 cal AD

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48107 (GU31346)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of pit within enclosure
Sample Reference	31 AA
Material	Charcoal : Quercus sp.
$\delta^{13}C$ relative to VPDB	-25.9 ‰
Radiocarbon Age BP	3063 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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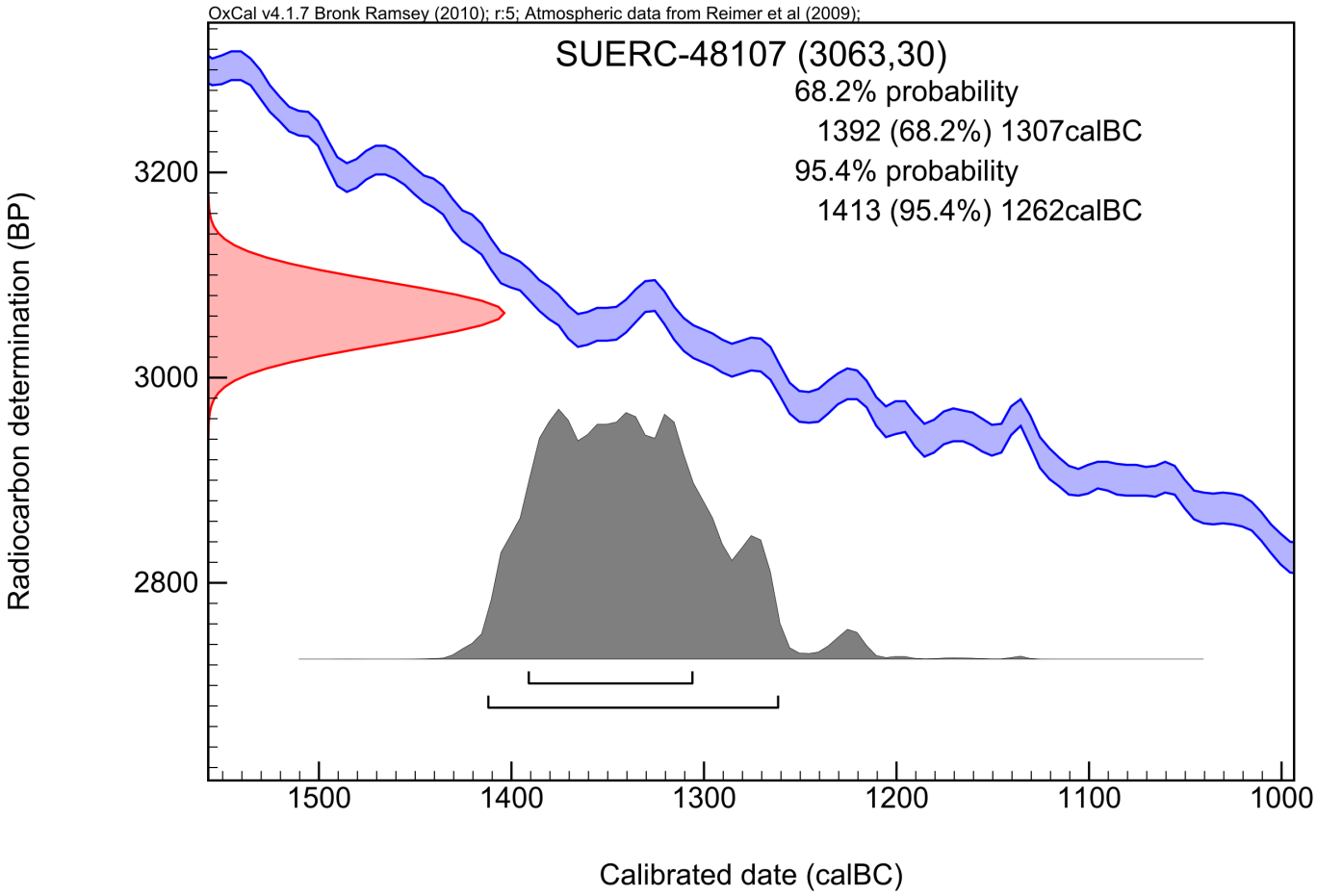
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48108 (GU31347)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	One of a group of three pits at SE edge of enclosure
Sample Reference	89 AA
Material	Charcoal : Corylus avellena
$\delta^{13}C$ relative to VPDB	-27.4 ‰
Radiocarbon Age BP	3685 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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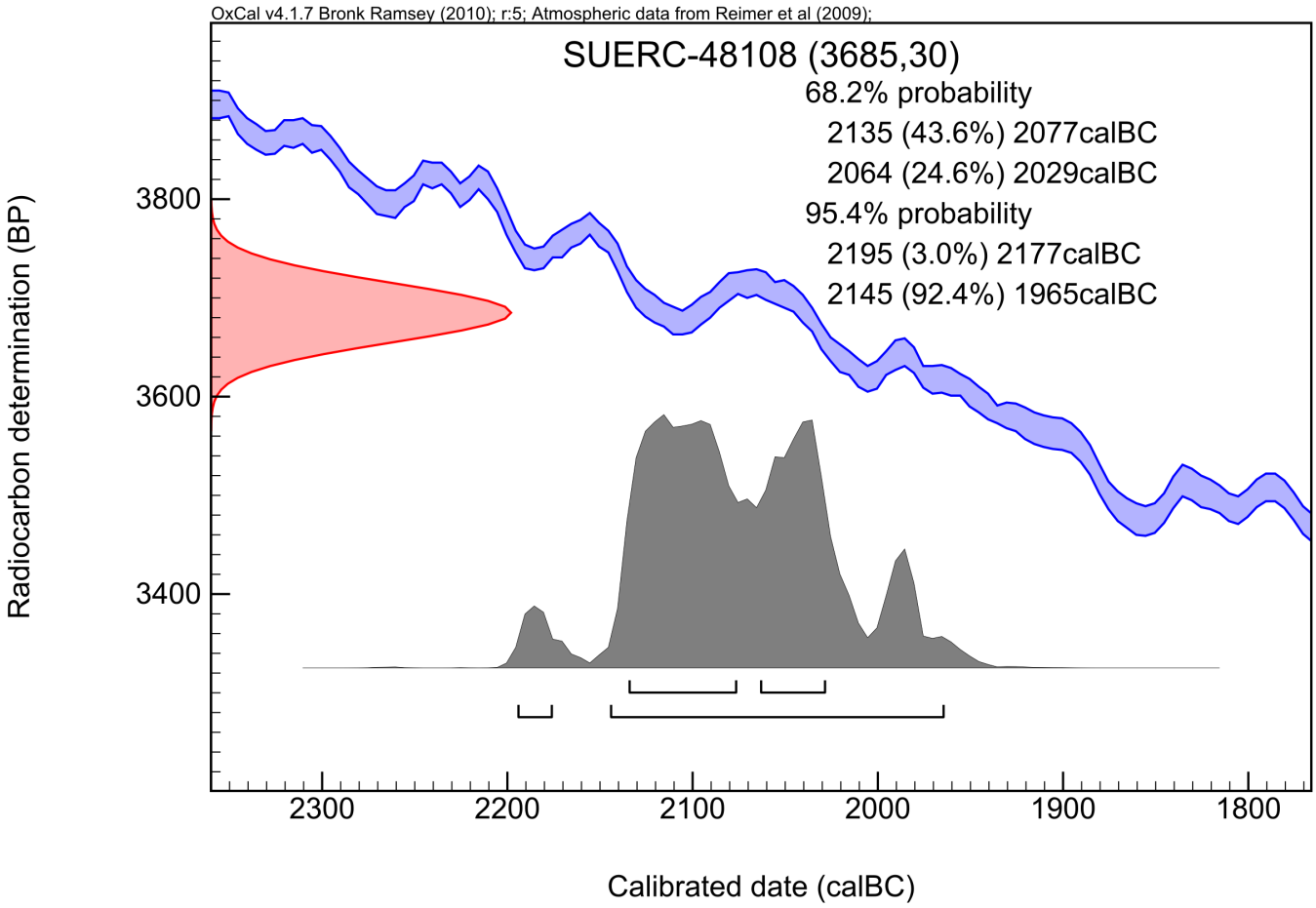
Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48109 (GU31348)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of oval gully
Sample Reference	131 AA
Material	Charcoal : Quercus sp.
$\delta^{13}C$ relative to VPDB	-26.4 ‰
Radiocarbon Age BP	3238 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

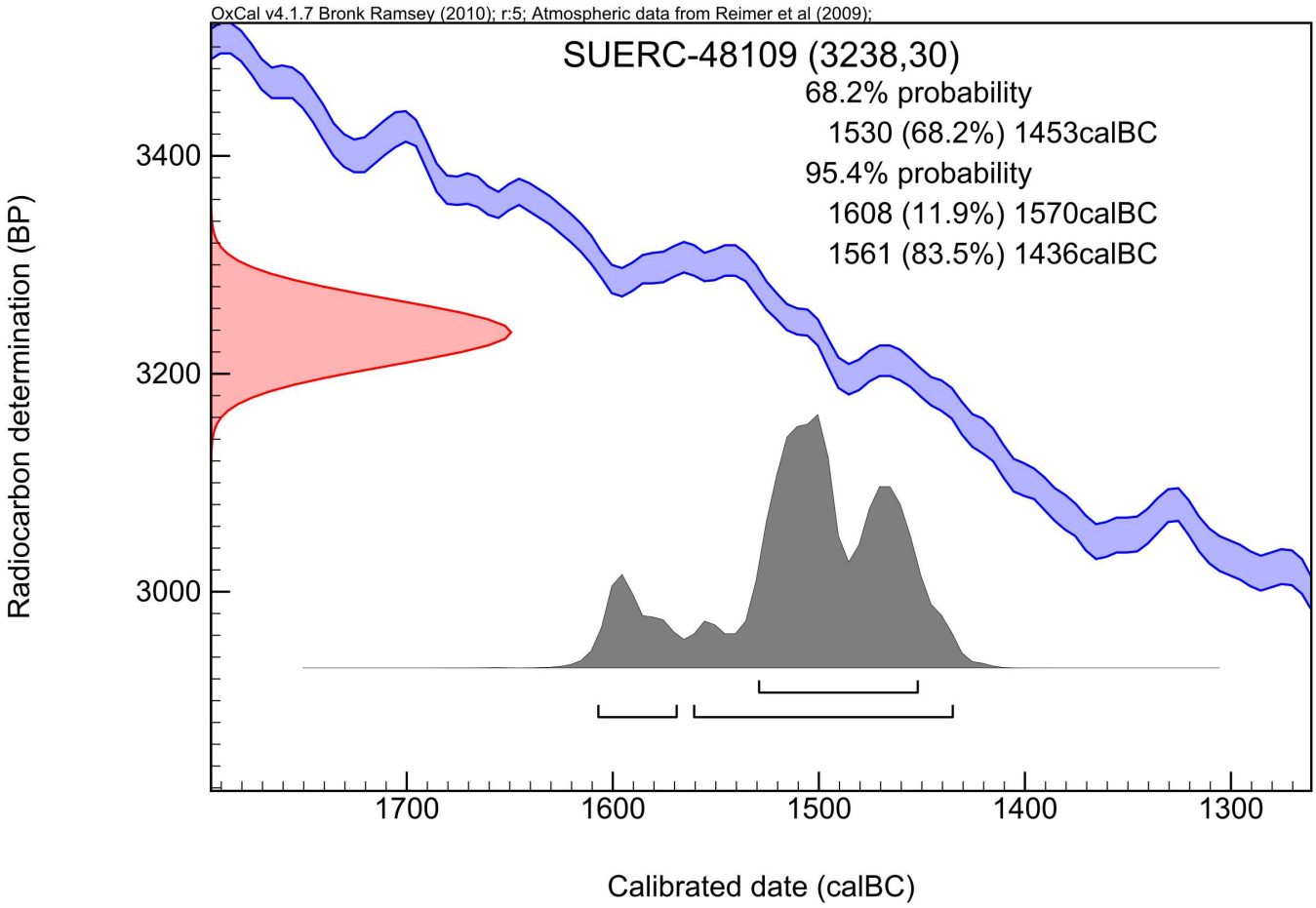
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48110 (GU31349)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Cremation
Sample Reference	213
Material	Cremated Bone : Human
$\delta^{13}C$ relative to VPDB	-26.9 ‰
Radiocarbon Age BP	3569 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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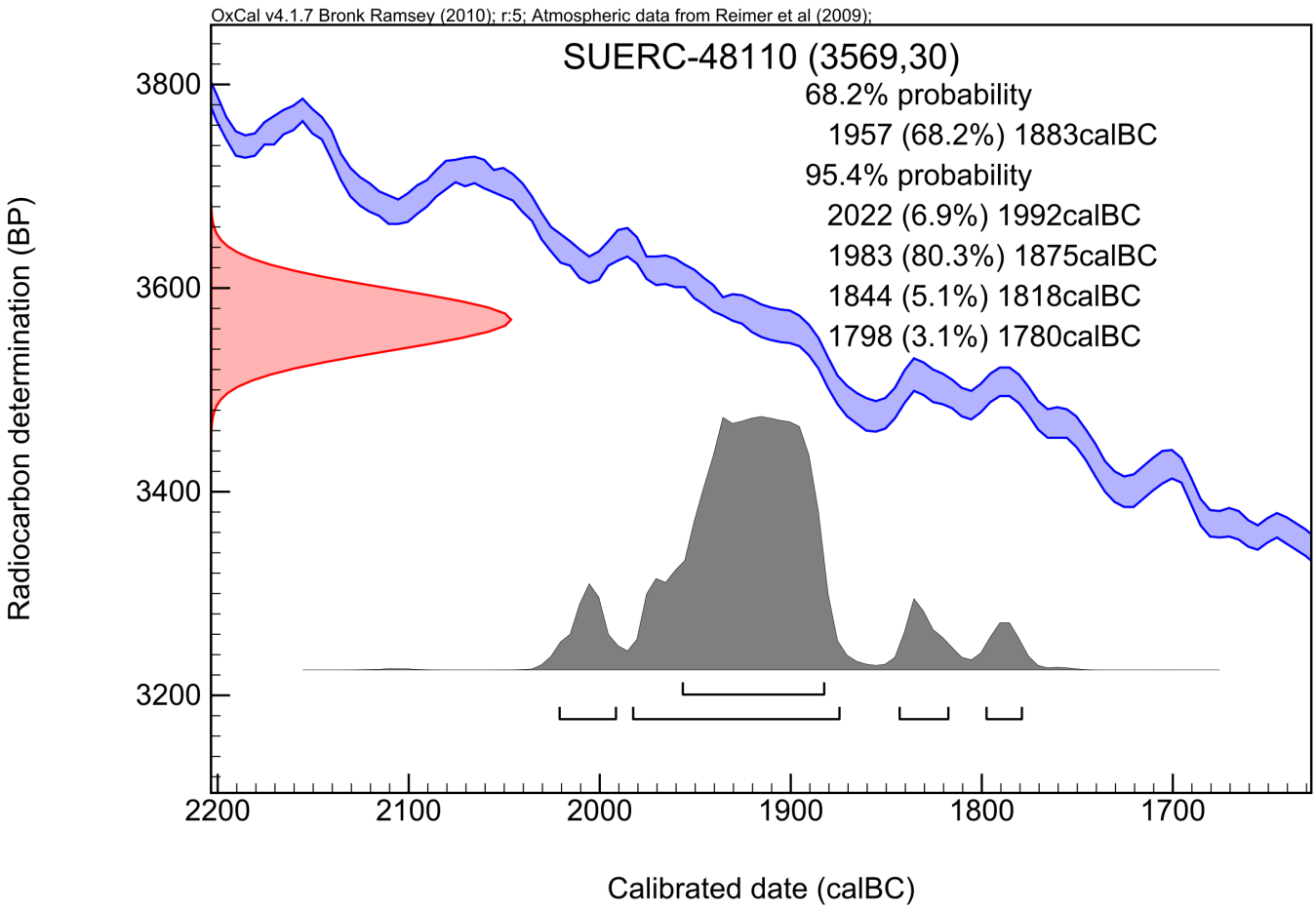
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48114 (GU31350)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of ditch adjacent to corn dryer
Sample Reference	299
Material	Grain : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-23.7 ‰
Radiocarbon Age BP	1480 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

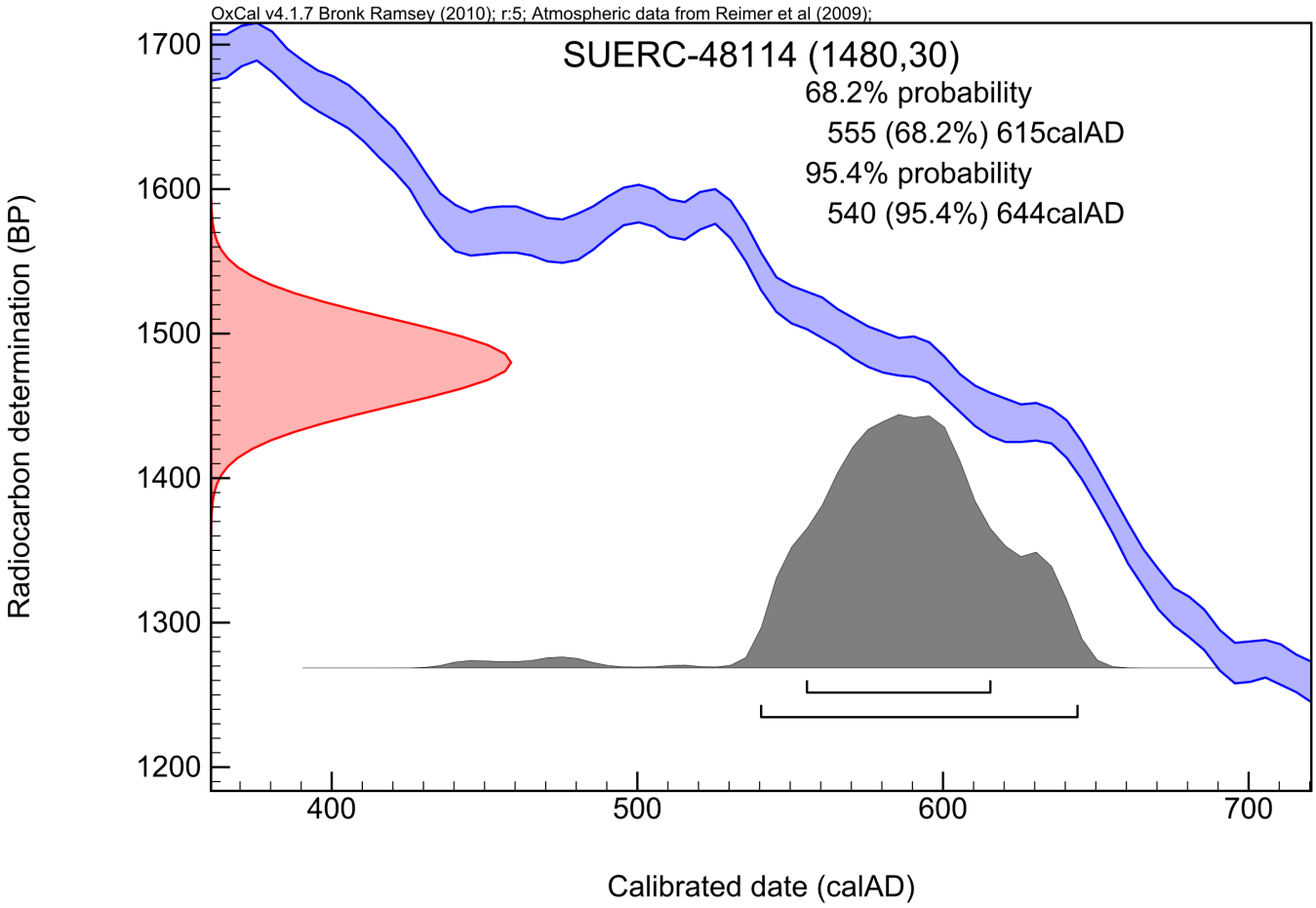
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48115 (GU31351)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of pit adjacent to cairn area
Sample Reference	321 AA
Material	Charcoal : Quercus sp.
$\delta^{13}C$ relative to VPDB	-27.4 ‰
Radiocarbon Age BP	3246 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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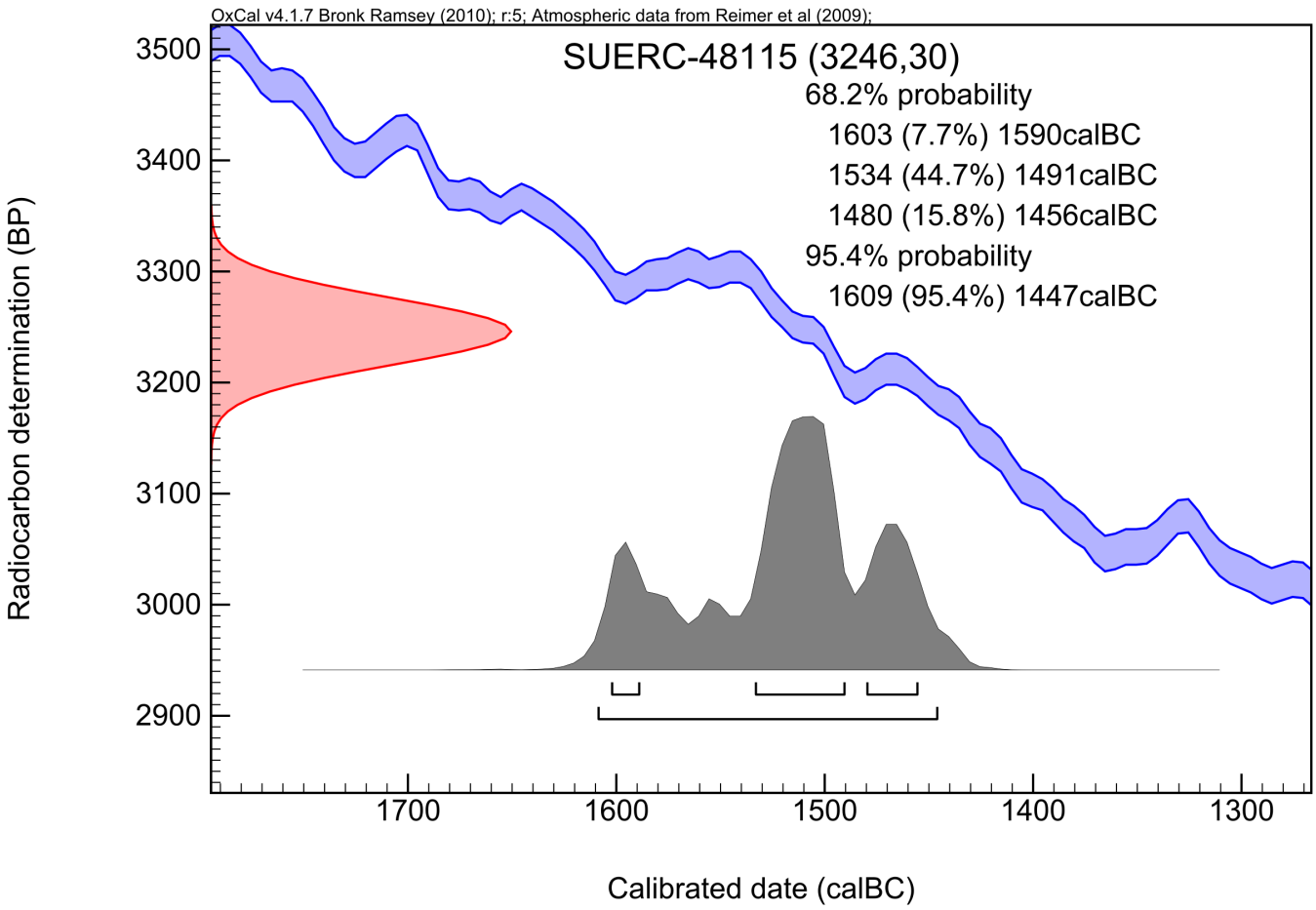
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48116 (GU31352)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of corn dryer
Sample Reference	345 AA
Material	Grain : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-24.7 ‰
Radiocarbon Age BP	1646 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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Conventional age and calibration age ranges calculated by :- Date :-

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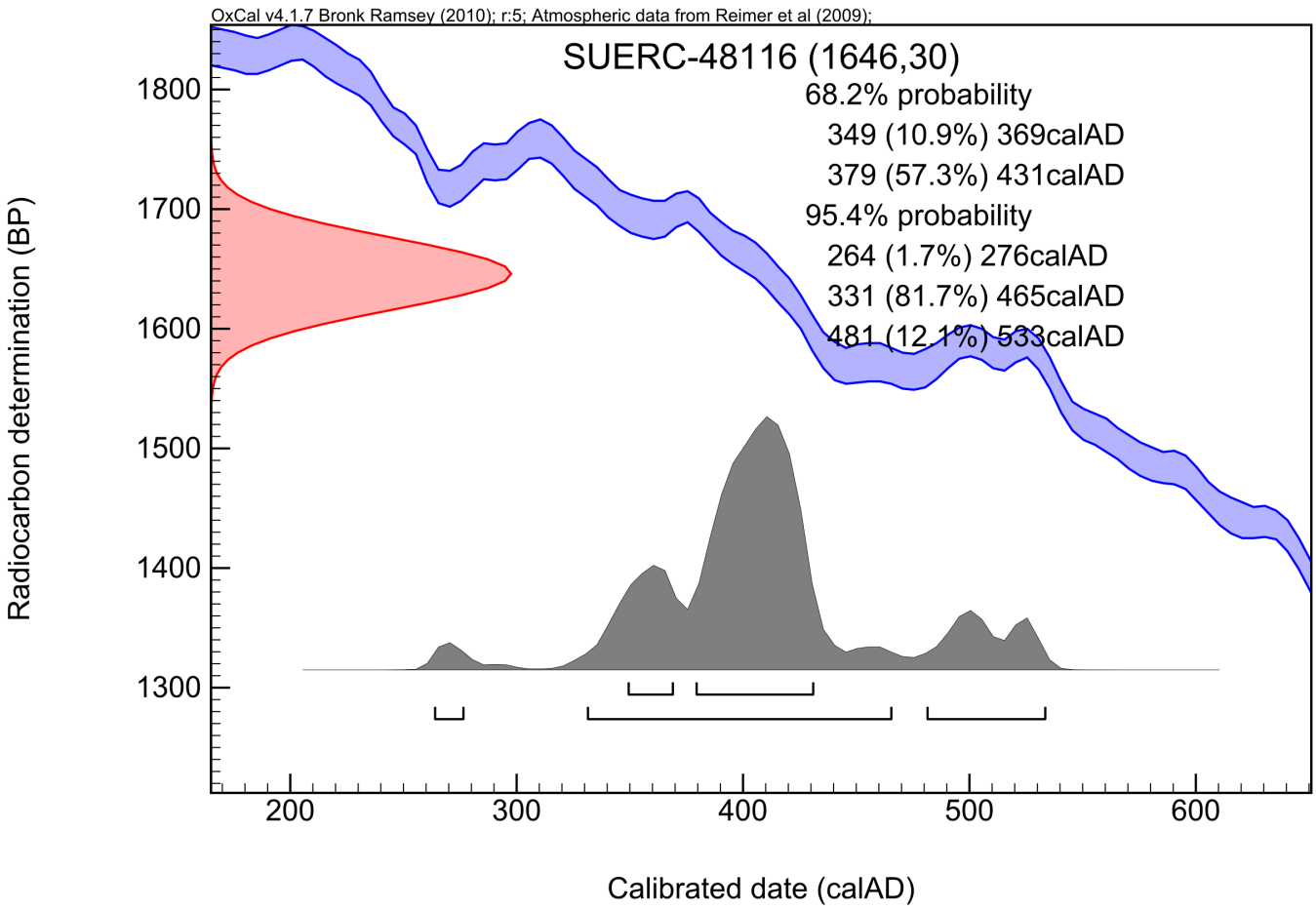
Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48117 (GU31353)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of corn dryer
Sample Reference	346 AA
Material	Grain : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-25.0 ‰ assumed
Radiocarbon Age BP	1565 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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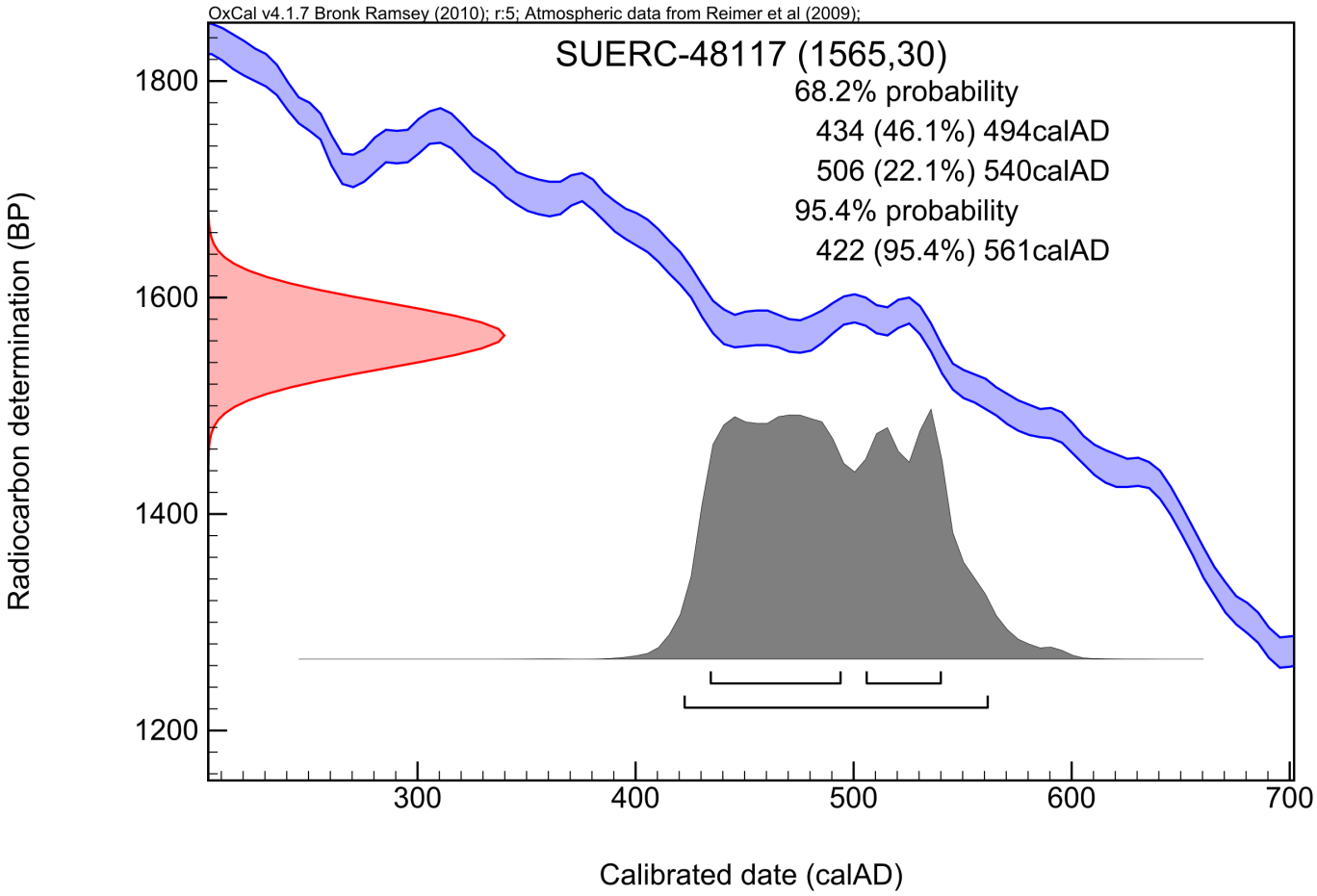
Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48118 (GU31354)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Cremation
Sample Reference	350
Material	Cremated Bone : Human
$\delta^{13}C$ relative to VPDB	-26.3 ‰
Radiocarbon Age BP	3540 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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Conventional age and calibration age ranges calculated by :- Date :-

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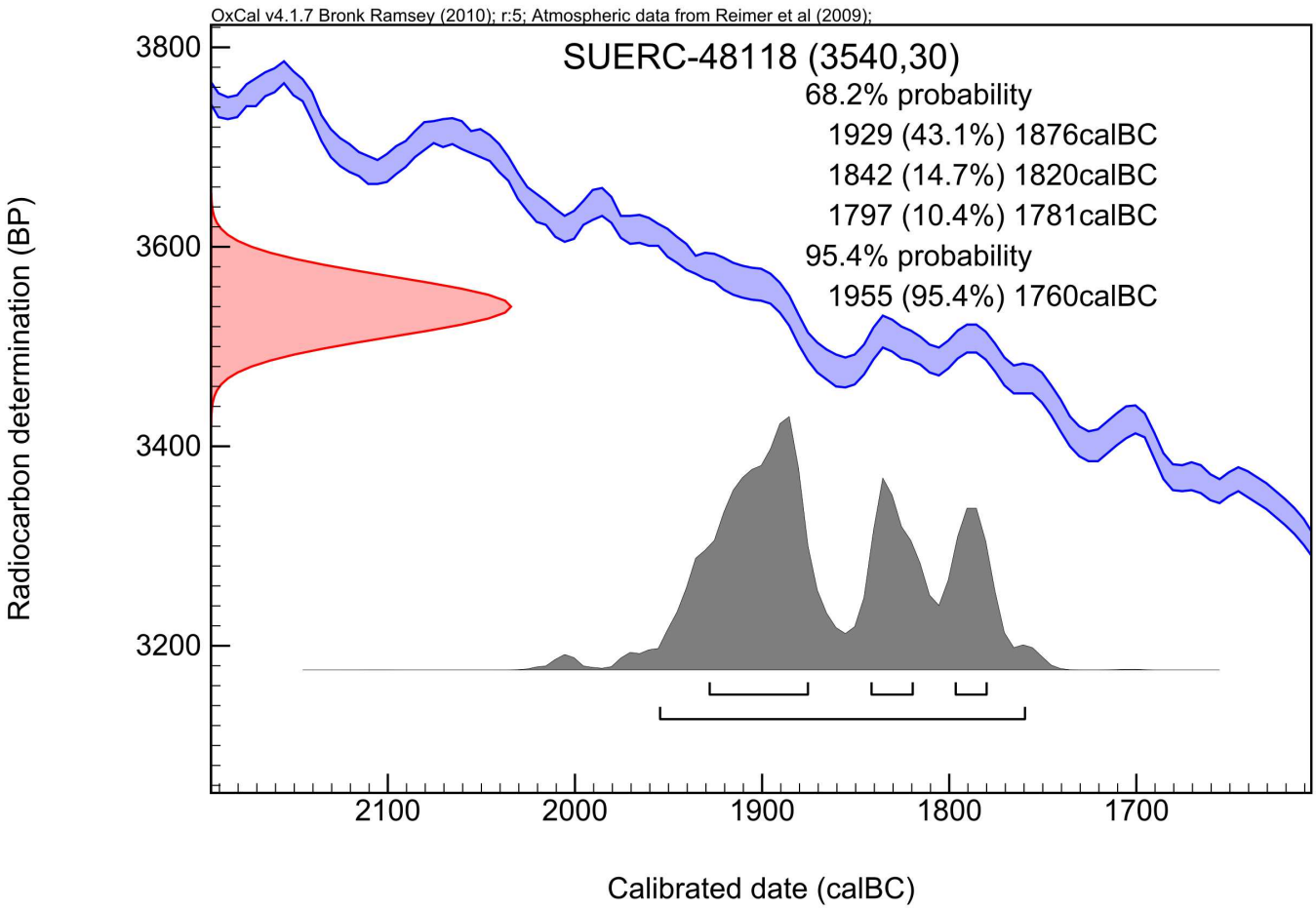
Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48119 (GU31355)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of corn dryer
Sample Reference	474 AA
Material	Grain : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-22.9 ‰
Radiocarbon Age BP	1532 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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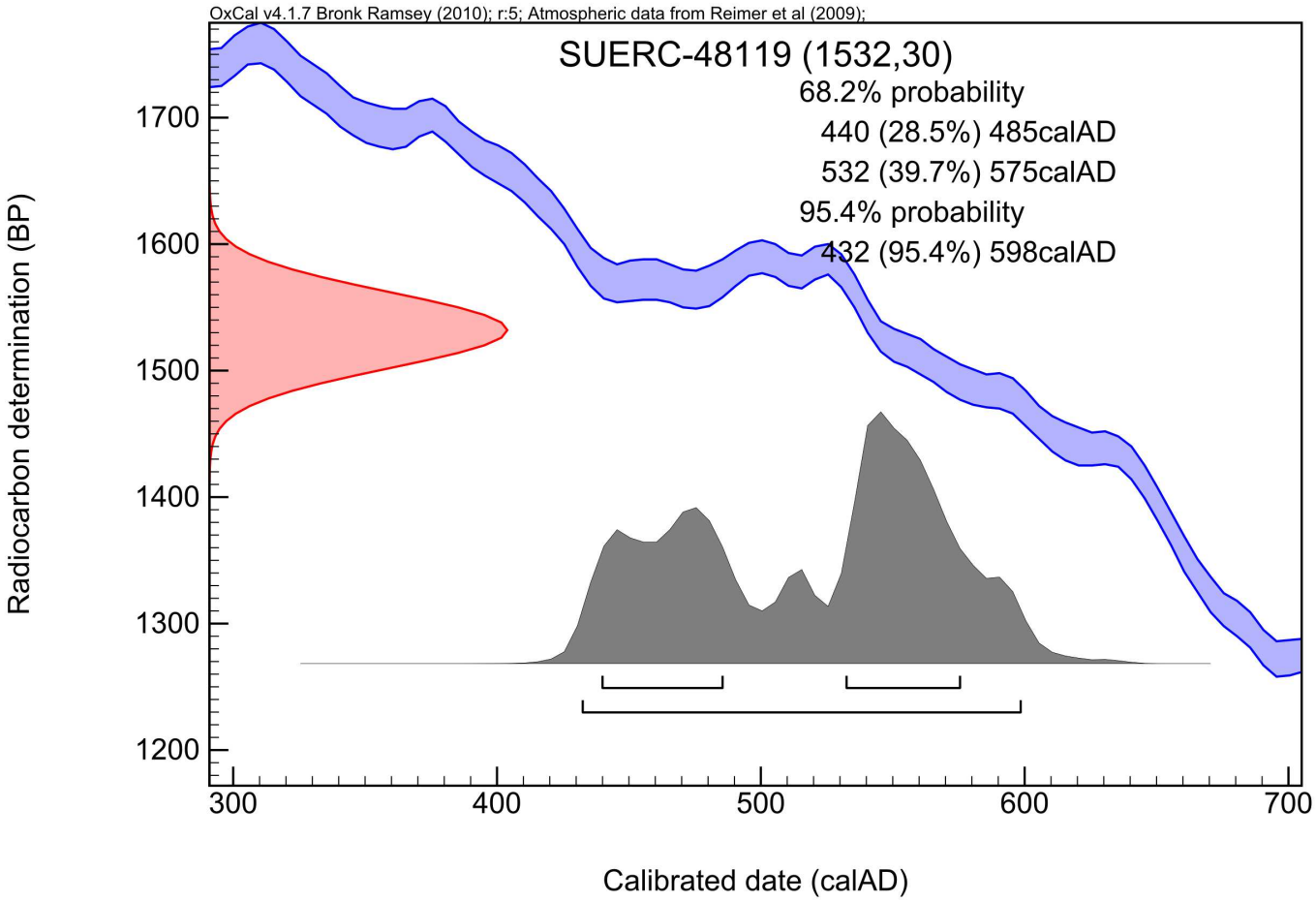
Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48120 (GU31356)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of ditch at main intersection
Sample Reference	485 AA
Material	Grain : Triticum sp.
$\delta^{13}C$ relative to VPDB	-21.9 ‰
Radiocarbon Age BP	1507 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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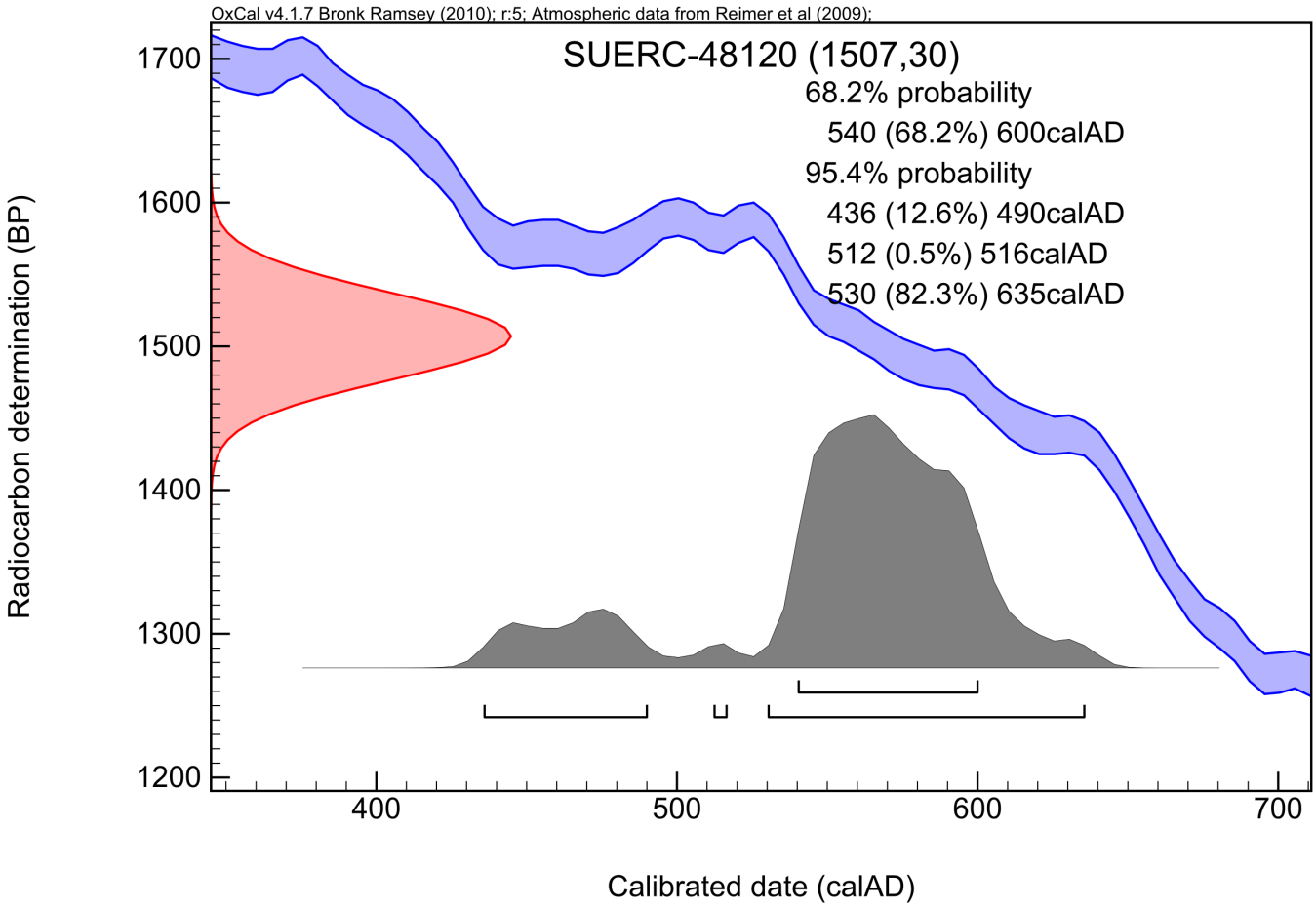
Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48124 (GU31357)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of pit within stock corral
Sample Reference	492 AA
Material	Grain : Triticum sp.
$\delta^{13}C$ relative to VPDB	-23.6 ‰
Radiocarbon Age BP	2035 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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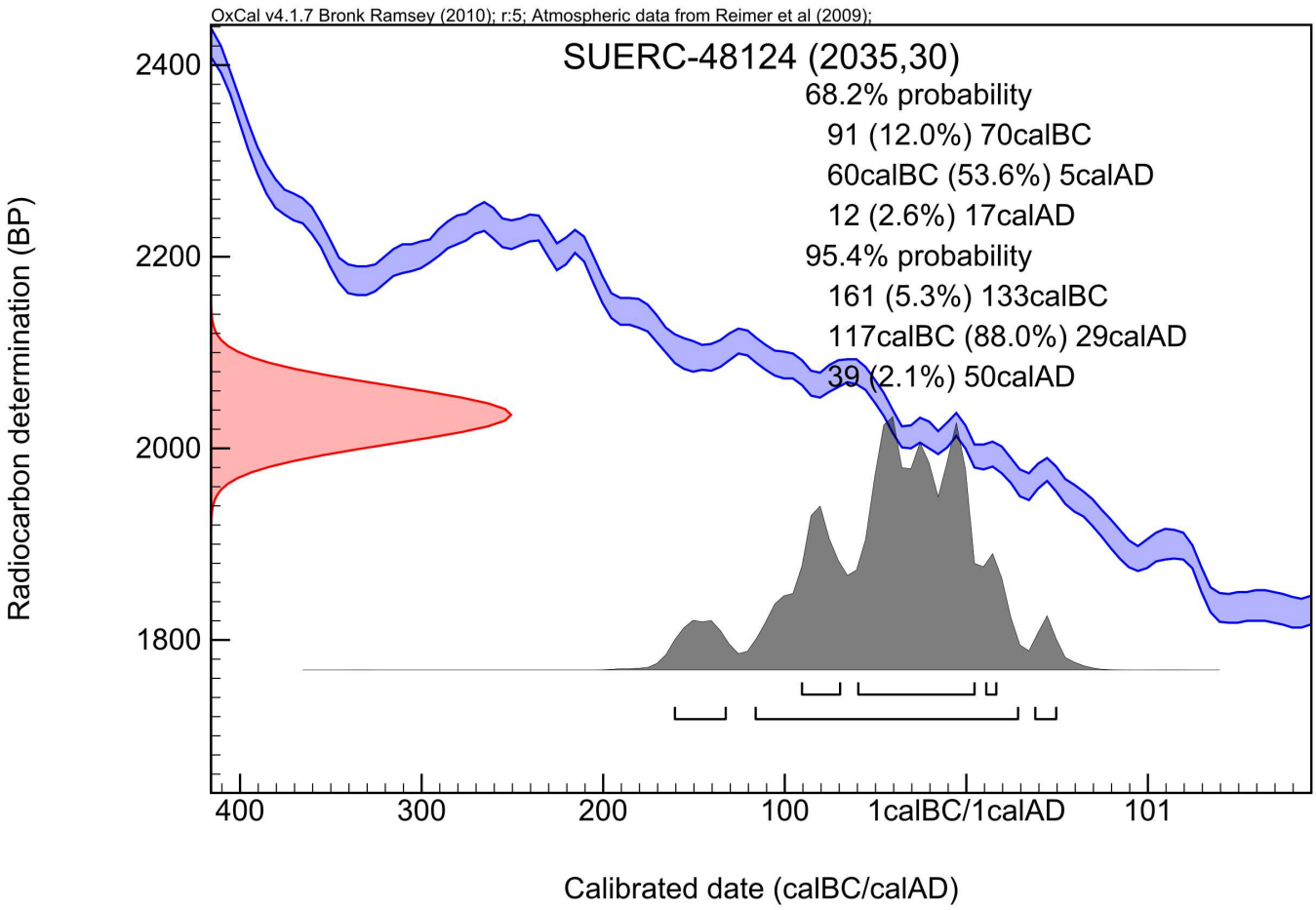
Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48125 (GU31358)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of curvilinear ditch
Sample Reference	519 AA
Material	Grain : Triticum sp.
$\delta^{13}C$ relative to VPDB	-23.5 ‰
Radiocarbon Age BP	1984 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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Conventional age and calibration age ranges calculated by :- Date :-

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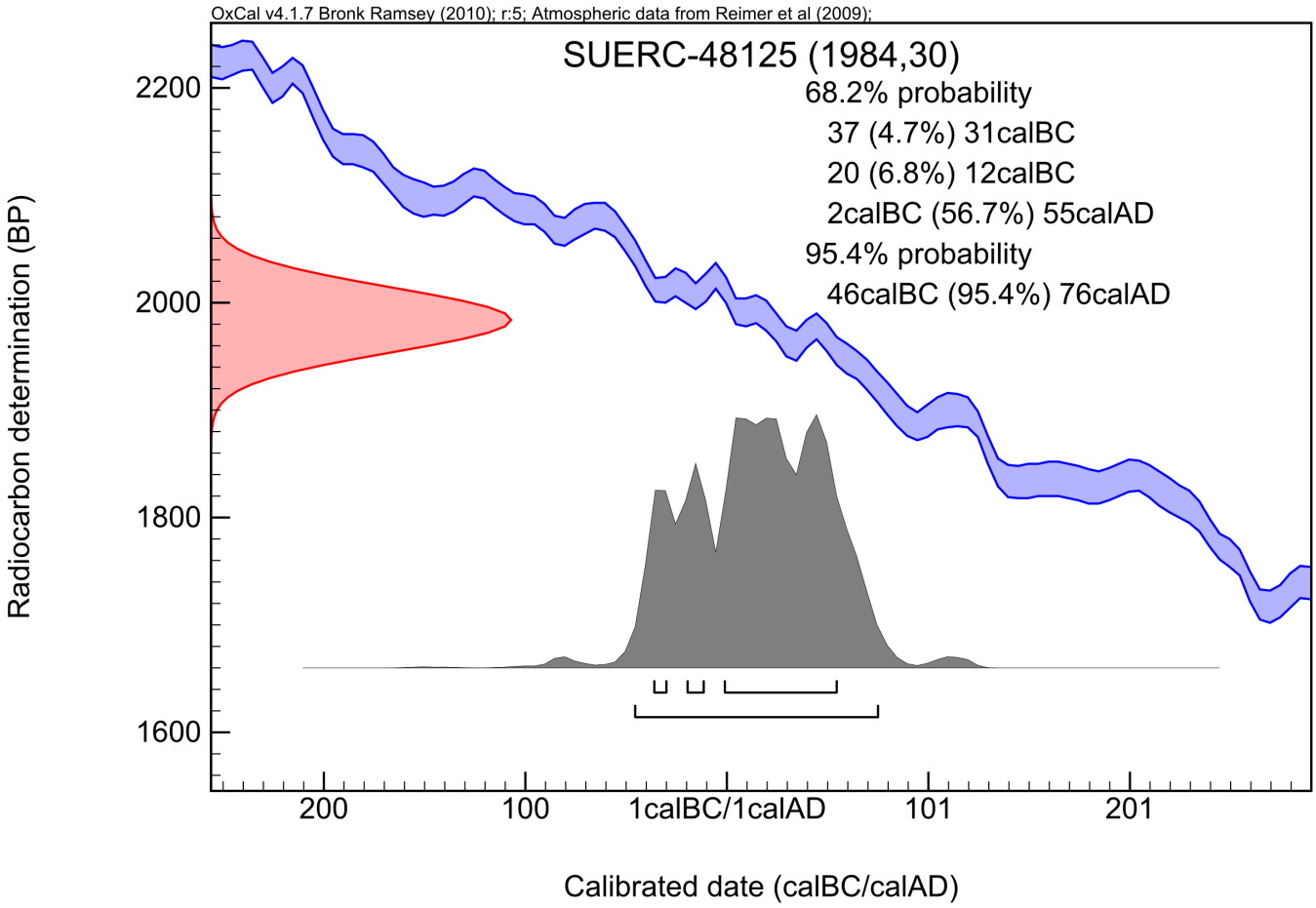
Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48126 (GU31359)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Aldi, Goldthorpe
Context Reference	Fill of pit within stock corral
Sample Reference	529 AA
Material	Grain : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-22.6 ‰
Radiocarbon Age BP	1502 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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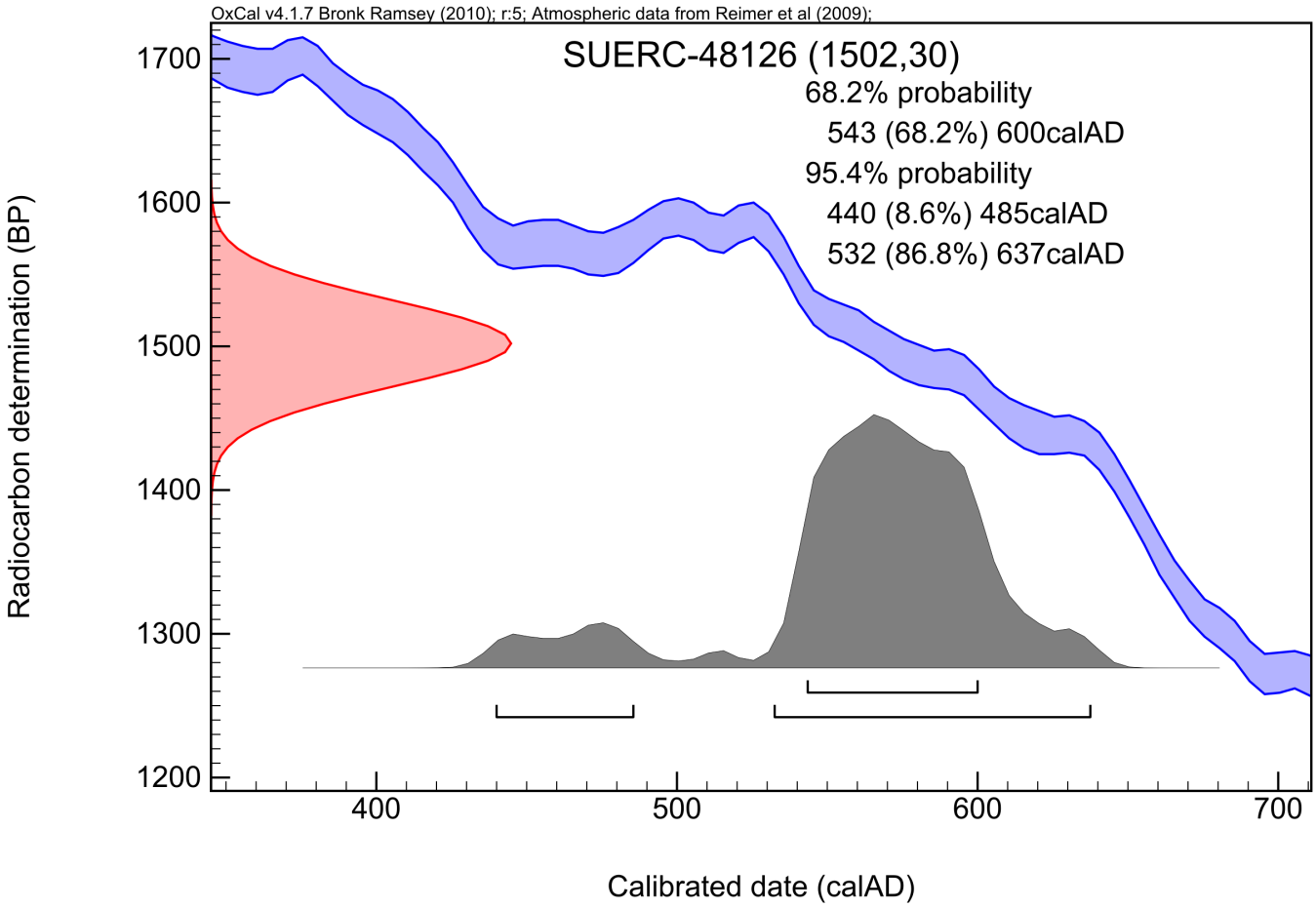
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



Scottish Universities Environmental Research Centre

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	GU31360
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Barrow ring ditch.
Sample Reference	31 (fragment A)
Material	Bone : Animal
Result	Failed: insufficient carbon.

N.B. Any questions directed to the Radiocarbon Laboratory should quote the GU coding given above.

The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

Checked and signed off by :- Date :-

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	GU31361
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Barrow ring ditch.
Sample Reference	31 (fragment B)
Material	Bone : Animal
Result	Failed: insufficient carbon.

N.B. Any questions directed to the Radiocarbon Laboratory should quote the GU coding given above.

The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

Checked and signed off by :- Date :-

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48127 (GU31362)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Boundary feature
Sample Reference	1119
Material	Bone : Sheep/goat and indeterminate
δ^{13}C relative to VPDB	-21.5 ‰
δ^{15}N relative to air	5.7 ‰
C/N ratio (Molar)	3.4
Radiocarbon Age BP	1989 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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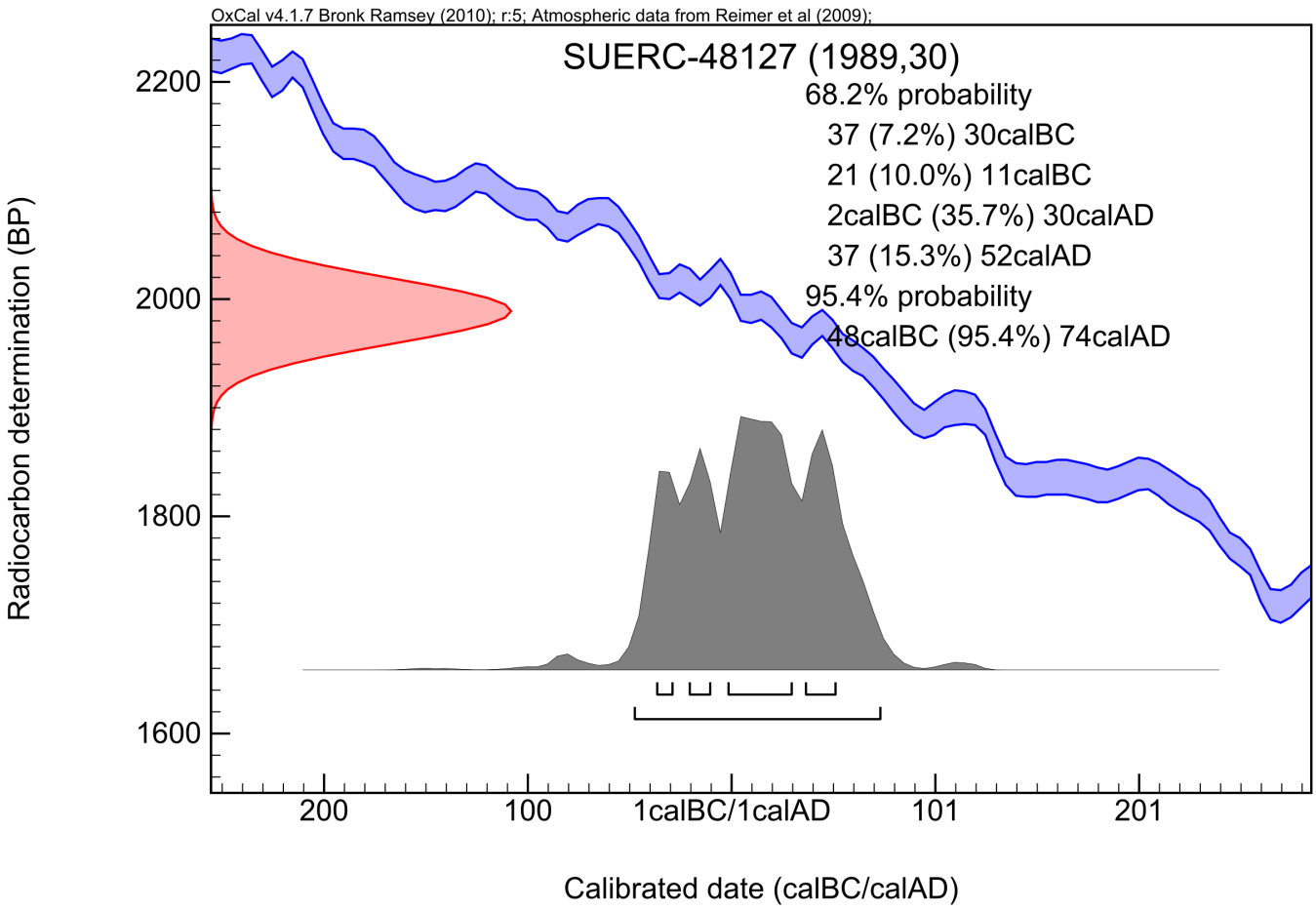
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	GU31363
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Boundary feature.
Sample Reference	1161
Material	Bone : Cattle
Result	Failed: insufficient carbon.

N.B. Any questions directed to the Radiocarbon Laboratory should quote the GU coding given above.

The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	GU31364
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Enclosure ditch.
Sample Reference	1330 (fragment A)
Material	Bone : Cattle radius
Result	Failed: insufficient carbon.

N.B. Any questions directed to the Radiocarbon Laboratory should quote the GU coding given above.

The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	GU31365
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Enclosure ditch.
Sample Reference	1330 (fragment B)
Material	Bone : Cattle radius
Result	Failed: insufficient carbon.

N.B. Any questions directed to the Radiocarbon Laboratory should quote the GU coding given above.

The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	GU31366
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Ditch fill.
Sample Reference	1440 (fragment A)
Material	Bone : Cattle jaw
Result	Failed: insufficient carbon.

N.B. Any questions directed to the Radiocarbon Laboratory should quote the GU coding given above.

The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

Checked and signed off by :- Date :-

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	GU31367
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Ditch fill.
Sample Reference	1440 (fragment B)
Material	Bone : Cattle jaw
Result	Failed: insufficient carbon.

N.B. Any questions directed to the Radiocarbon Laboratory should quote the GU coding given above.

The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48128 (GU31368)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Ring gully
Sample Reference	5108 AA
Material	Charcoal : Quercus sp.
$\delta^{13}C$ relative to VPDB	-25.0 ‰
Radiocarbon Age BP	3196 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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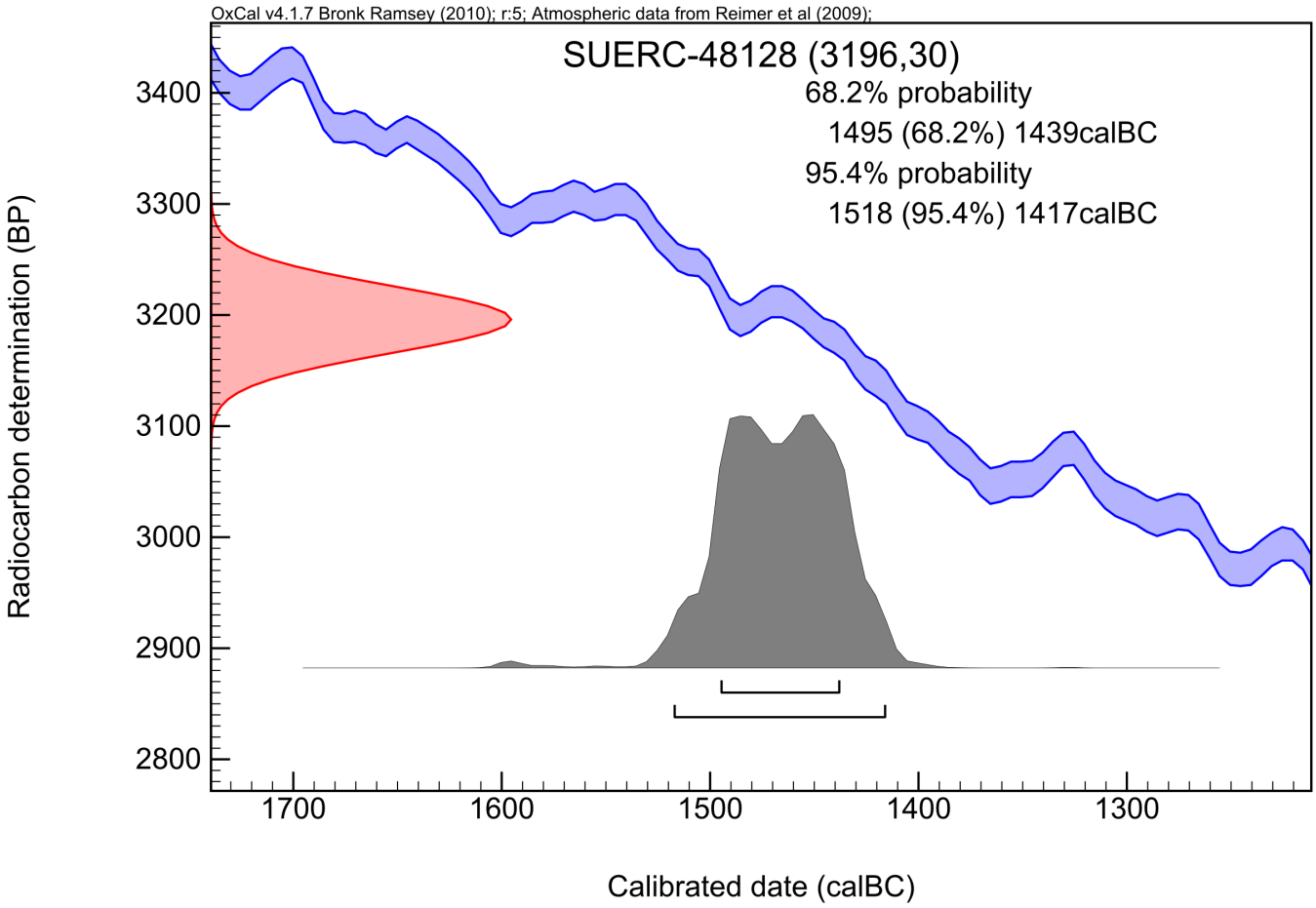
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48129 (GU31369)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Pit fill, early prehist
Sample Reference	5188 AA
Material	Charcoal : Quercus sp.
$\delta^{13}C$ relative to VPDB	-25.6 ‰
Radiocarbon Age BP	3392 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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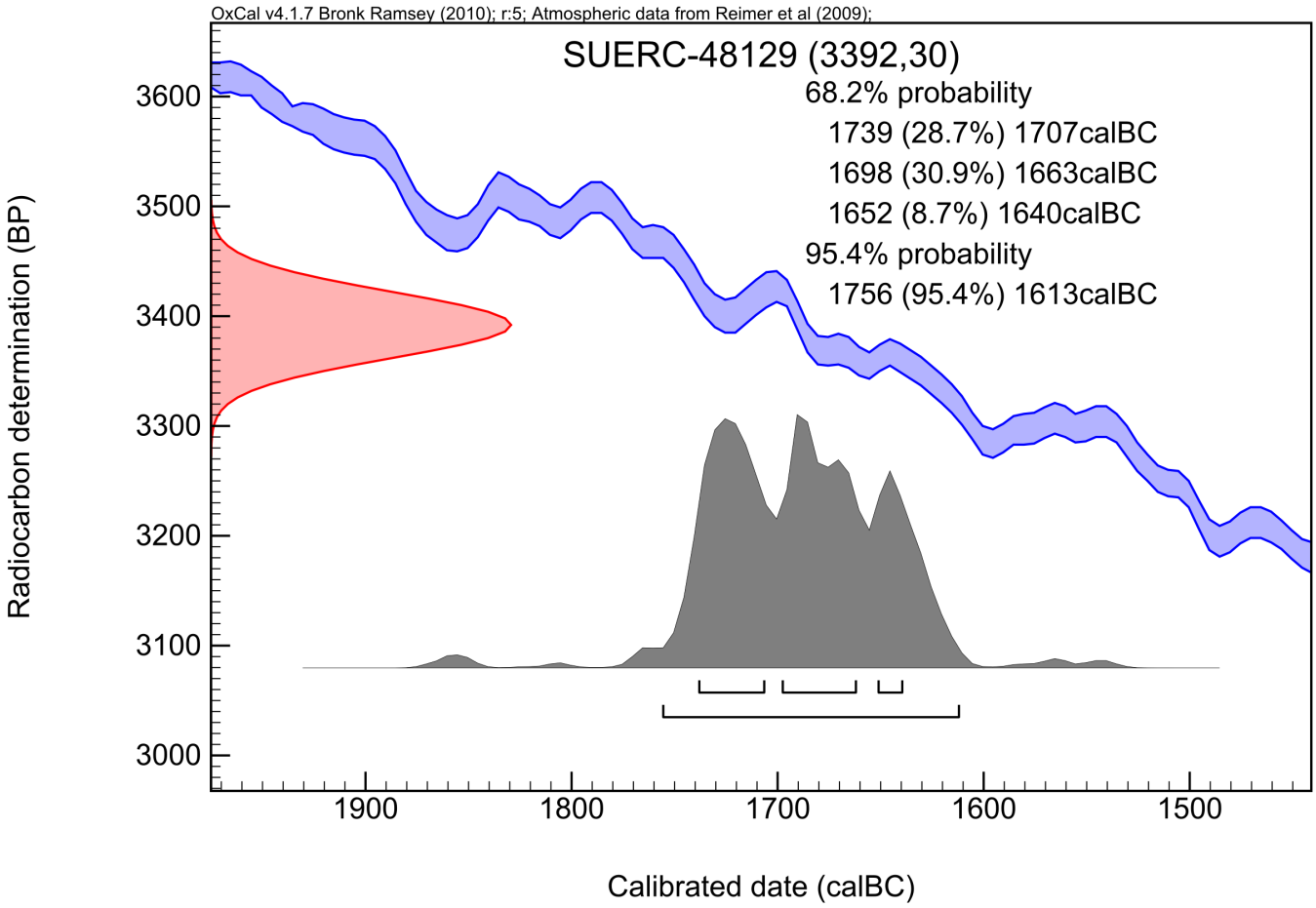
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48130 (GU31370)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Base of column sample
Sample Reference	5249 AB
Material	Tooth Enamel : Cattle
$\delta^{13}C$ relative to VPDB	-13.2 ‰
Radiocarbon Age BP	2791 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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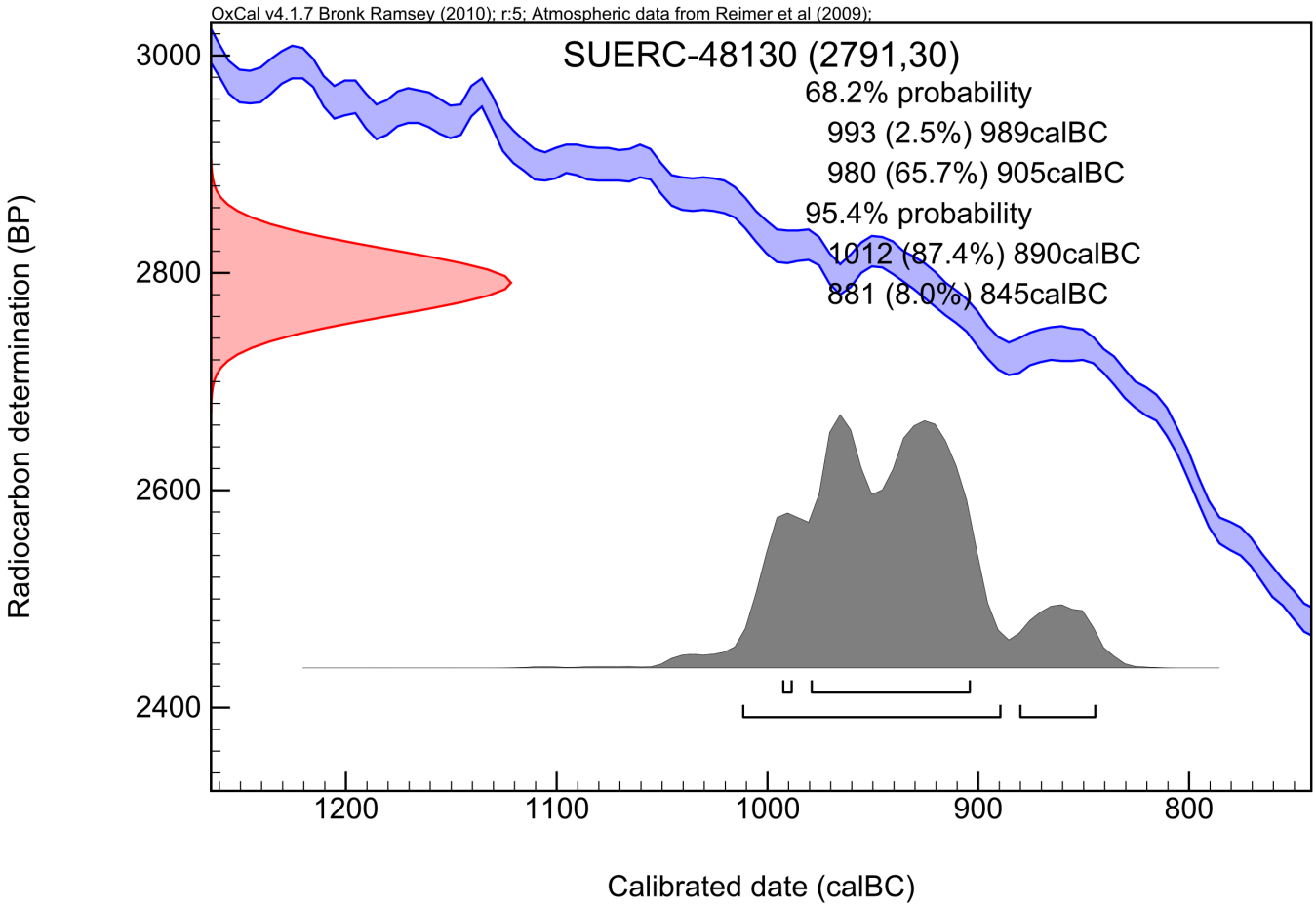
Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

23 September 2013

Laboratory Code	SUERC-48134 (GU31371)
Submitter	Gail Drinkall Northern Archaeological Associates Marwood House Harmire Enterprise Park Barnard Castle DL12 8BN
Site Reference	Greatham North, Renewal
Context Reference	Base of column sample
Sample Reference	5250
Material	Tooth Enamel : Indeterminate
$\delta^{13}C$ relative to VPDB	-12.7 ‰
Radiocarbon Age BP	2877 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot