



ARCHAEOLOGICAL EXCAVATION
REPORT

Northern Archaeological Associates Ltd.

Marwood House
Harmire Enterprise Park
Barnard Castle
Co. Durham
DL12 8BN

t: 01833 690800

f: 01833 690801

e: sp@naaheritage.com

w: <http://www.naaheritage.com>

ALDI REGIONAL DISTRIBUTION
CENTRE CAR PARK
GOLDTHORPE
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Project No.: 1292
Text: Al Teasdale
Illustrations: Cath Chisman and Dawn Knowles
Edited by: Andrew Crowson

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		Name	Al Teasdale	Andrew Crowson	Richard Fraser

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**ALDI REGIONAL DISTRIBUTION CENTRE CAR PARK, GOLDTHORPE, SOUTH
YORKSHIRE: ARCHAEOLOGICAL EXCAVATION REPORT**

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ALDI REGIONAL DISTRIBUTION CENTRE CAR PARK, GOLDTHORPE, SOUTH YORKSHIRE: ARCHAEOLOGICAL EXCAVATION REPORT

Summary

This report presents the results of archaeological excavations undertaken in advance of development of a new car park at Aldi Stores Regional Distribution Centre at Goldthorpe, South Yorkshire. The excavations were carried out by Northern Archaeological Associates on behalf of Aldi Stores Ltd in April and May 2016. The car park was located in the north of the operational site in a landscaped area separated from the main block of the distribution centre by a branch of Carr Dike.

The earliest archaeological feature revealed by the excavations was a shallow irregular pit dated by worked flints and a radiocarbon determination to the late Mesolithic period. A comparable pit nearby, which also contained charcoal, is considered possible to be of similar date.

A rectangular ditched enclosure measuring 25m by 19.5m was interpreted on the basis of radiocarbon dates as representing Middle Iron Age–Roman occupation. Several pits and/or post-holes were located inside the enclosed area and areas to the south and east.

Ditches radiating from the north-east, south-west and south-east corners of the enclosure represented elements of an associated field system.

The enclosure and other ditches comprise one element of a much larger contiguous field system on a north-east–south-west axis, which extends to the south beneath the distribution centre buildings.

1.0 INTRODUCTION

1.1 This report presents the results of archaeological excavation in advance of the development of a new car park at Aldi Stores Regional Distribution Centre (RDC) on land to the west of Goldthorpe Industrial Estate, Goldthorpe, South Yorkshire (Figure 1). The work was carried out in April and May 2016 by Northern Archaeological Associates in accordance with a Written Scheme of Investigation (Farrington-McCabe and Brogan 2016) agreed with South Yorkshire Archaeological Services.

2.0 LOCATION, TOPOGRAPHY AND GEOLOGY

2.1 The excavation site is located on the west side of Goldthorpe, centred on NGR SE 4490 0380 (Figure 1). The site encompasses c. 0.7ha and is situated at c. 28–29m AOD. It lies in landscaped grounds to the north of the Aldi RDC complex, from which it is separated by a partly canalised stream channel constituting a branch of Carr Dike. An access road to the RDC runs to the west of the excavation site, whilst Commercial Road forms the northern boundary, with industrial development to the east.

2.2 The solid geology in the area of the excavation consists of sedimentary Carboniferous mudstone, siltstone and sandstone rocks of the Pennine Middle Coal Measures Formation. Superficial Quaternary deposits of alluvial clay and silt are recorded in the general area of the excavation, indicating a former environment dominated by rivers (British Geological Survey 2016).

2.3 Previous archaeological monitoring of the site recorded the total depth of topsoil and subsoil as between 0.3m and 0.5m (Ross 2014). However, subsequent spoil disposal and landscaping associated with the construction of the RDC had resulted in a depth of overburden soils of up to 1m. In the trench excavated southwards from the main site, intended to take drainage from the new car park to the stream to the south, the total depth of overburden increased to 1.70m at the top of a slope, and to in excess of 1.90m at the bottom of the slope.

3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 The proposed development area was previously considered by a desk-based archaeological assessment (Davies and Sayer 2001), by a partial geophysical survey (Webb 2001), and by limited archaeological evaluation (WYAS 2003). The preceding work informed the requirement for and extent of the current excavation.

Bronze Age

- 3.2 A large-scale archaeological investigation in 2012–13, prior to construction of the main RDC south of the car park development site, confirmed that the local area has been settled and exploited since at least the Early Bronze Age, with palaeoenvironmental evidence suggestive of a cleared and open landscape. Bronze Age funerary monuments, including the remains of a cairn or barrow containing at least two cremation burials, and an oval gully, which may have represented the remains of a possible second barrow, were excavated. A number of Bronze Age pits were also revealed, one of which contained another cremation burial (Ross 2014).

Iron Age–Roman

Aldi RDC site

- 3.3 The 2012–13 investigations at the Aldi RDC site revealed evidence for an extensive field system, which was consistent with a series of positive linear responses identified by geophysical survey (Biggs 2011) (Figure 2). The land divisions comprised several large fields, delimited by four principal ditches, oriented north-east–south-west and north-west–south-east. The fields were subdivided by a series of smaller ditches and the results of the excavation indicated that the entire field system had either been set out as a single unit, or that if later subdivisions were added, then the ditches were re-cut and cleaned together routinely. The ditches varied from 1.45–2.55m wide by 0.53–0.91m deep, and for the most part were cut into the natural bedrock (Ross 2014).
- 3.4 It was determined that the field system was established in the late Iron Age or very early Roman period, as pre-Roman Iron Age pottery sherds were recovered from primary fills of the ditches. The age of a charred wheat grain from one of the latest ditch re-cuts was determined by radiocarbon dating as cal. AD436–635 (SUERC-48120), intimating that the principal field ditches remained open into the post-Roman period.
- 3.5 A corner enclosure, or corral, was identified at the intersection of two of the principal ditches, inside which a series of undated pits – indicating occupation at this point – were located.

Car park site

- 3.6 A partial geophysical survey of the car park site revealed that the field system to the south of Carr Dike continued into the current development area, and included a small rectangular enclosure in the angle between two of the ditches (Figure 2) (Webb 2001). Archaeological monitoring and limited evaluation of the RDC access road and associated service trenches by the 2012–13 works revealed that the field ditches survived in the area of the car park site, but were truncated by more recent land use (Ross 2014).

The wider landscape

- 3.7 The site is situated within a wider landscape of late Iron Age or Roman settlement enclosures and field systems. These features have been recognised, for the most part, from cropmarks visible on aerial photographs, with the nearest being c. 500m north at Holly Grove Farm and 1.6km to the north at Thurnscoe.
- 3.8 Geophysical survey and trial trench evaluation at Holly Grove Farm revealed evidence for at least two enclosures, a drove-way and field boundary ditches (Merrony 1993). Whilst these remains could not be dated, some of the field boundaries appear to lead south, across the line of the modern A635 road, toward the Goldthorpe Industrial Estate, and they may have formed part of the same field system identified within the Aldi RDC development.
- 3.9 Excavations at Thurnscoe revealed evidence for similar archaeological remains, which comprised a series of Roman enclosures and associated field systems, linked via a track (Neal and Fraser 2004).
- 3.10 Further comparable sites nearby include Jump (Robinson 2007b) and Upper Woodhead Farm (Northamptonshire Archaeology 2003), both near Wombswell, and Armthorpe, located on the outskirts of Doncaster (WYAS 2004).

Early medieval

- 3.11 The excavations at Aldi RDC revealed the below-ground remains of two early medieval corn-drying ovens, each located in the corner of a field. The ovens were figure-of-eight-shaped, comprising adjoining fire and drying chambers, set within shallow, roughly rectangular pits, in which a superstructure was presumably housed. The fills contained a large quantity of charred grain, with burnt clay and willow providing evidence for collapse of the oven. Radiocarbon dates taken from the charred grain ranged from the early 5th–6th centuries AD, providing significant evidence for the continuation of the Roman field system (Ross *et al.* 2016).

Later medieval–post-medieval

- 3.12 Evidence of medieval and/or post-medieval ridge and furrow cultivation was identified by the geophysical survey within the proposed car park area and demonstrated by the excavation at the RDC site.

4.0 AIMS AND OBJECTIVES

- 4.1 The objectives of the archaeological work were, as set out in the Written Scheme of Investigation for the works (Farrington-McCabe and Brogan 2016):
- to provide a detailed record of archaeological remains in advance of their loss through construction works;

- to more fully understand the extent, nature and date of archaeological remains; the period of occupation and the relationships between the various periods of human activity;
- to recover and assess any associated structural, artefactual and environmental evidence to help inform understanding of the layout, date, function, phasing, development and economic basis of each area of activity;
- to undertake a programme of investigation which will contribute to the relevant regional research priorities;
- to prepare an illustrated report on the results of the archaeological investigations to be deposited with the South Yorkshire Sites and Monument Record and the National Monuments Record; and
- to undertake further analysis and publish the results in a local, regional or national journal, as appropriate.

5.0 METHODOLOGY

Machine excavation

- 5.1 The removal of overburden – topsoil and non-archaeological subsoil – was undertaken using a 360° mechanical excavator fitted with a toothless bucket under constant archaeological supervision and direction.
- 5.2 Overburden was stripped in spits down to the level at which archaeological deposits were identified or to natural subsoil deposits, whichever were found at a higher level. Thereafter, all archaeological excavation was undertaken by hand.

Archaeological excavation

- 5.3 All exposed archaeological features were cleaned and planned prior to hand excavation. Sample excavation of all discrete archaeological features was as follows: 50% of all pits and postholes; 20% of the overall length of linear features. Deposits at junctions or interruptions of linear features were sufficiently excavated for the relationship between components to be established.

Recording

- 5.4 A pre-excitation plan of the site and all archaeological features was compiled using sub-centimetre GPS.
- 5.5 Drawn records of all archaeological features were made at appropriate scales: sections and profiles at 1:10, plans at 1:20. Drawings included levels relative to

Ordnance Datum and were located within the site and the National Grid using sub-centimetre GPS.

- 5.6 Written descriptions of archaeological features and deposits were recorded on pro forma context sheets employing standard archaeological recording conventions.
- 5.7 A photographic record of the excavation was made using 35mm black and white film and high resolution digital files.

Finds retrieval

- 5.8 Archaeological artefacts were collected as bulk finds, apart from artefacts deemed to have special significance which were three-dimensionally recorded prior to removal. All finds were appropriately recorded, processed and submitted for post-excavation assessment in accordance with guidelines issued by the Chartered Institute for Archaeologists (CIfA 2014). All finds were appropriately packaged and stored under optimum conditions in accordance with published guidelines (English Heritage 1995; Watkinson and Neal 2001).
- 5.9 A metal detecting survey was undertaken of exposed archaeological features as appropriate, of topsoil and of spoil heaps, by a suitably experienced individual.

Environmental/dating sampling

- 5.10 Where possible, bulk soil samples of 40l were taken from appropriate deposits and assessed for their palaeoenvironmental potential, including charcoal, small bones, cereal grains, mollusca, and macro-environmental material. Sampling and recovery of environmental remains was in accordance with English Heritage (2010; 2014) and Campbell *et al.* (2011) guidelines.
- 5.11 Sub-samples of charcoal and charred grains from residues of processed bulk soil samples were taken for radiocarbon dating.

6.0 EXCAVATION RESULTS

Figures 4, 5 and 6

- 6.1 The earliest datable feature recorded was pit **70** located in the south of the excavation site. The pit was quite irregular in form, possibly a modified tree bole, measuring 1.34m by 1.0m by 0.22m deep (Figure 6, Section 1; Plate 1). The upper fill **72** contained several worked flints, including examples typical of Mesolithic blade production. Charcoal from **72** was dated by radiocarbon analysis to 4242–4049 cal. BC (at 95.4% probability – SUERC-69396). Pit **73**, a characteristically similar feature located 12m to the north-west, measured 1.24m

- by 0.48m by 0.26m deep, also produced charcoal (and a small fragment of eggshell), and is considered to potentially be of similar date (Figure 6, Section 2).
- 6.2 In the north-west corner of the excavation, the east and south sides of a sub-rectangular ditched enclosure— recognised in full in the geophysical survey interpretations (Figure 3) – were recorded as **Group 103**. The enclosure had internal measurements of 25m by 19.5m. The ditches **103** were typically V-shaped with a flat or slightly concave base, measuring up to 2.1m wide by 1.1m deep, and formed a distinctly rounded south-east corner to the enclosure. Ditch segment **86**, located at the west edge of excavation, contained markedly stonier deposits than elsewhere in the enclosure ditch (Figure 6, Section 3; Plate 2). The amount of stone suggested purposeful in-filling, possibly representing a causeway across the ditch. A little to the east of **86**, a possible whetstone was retrieved from the top of the ditch.
- 6.3 At the north-east corner of the enclosure, the fills of **103** (segment **166**) were indistinguishable from those of east–west ditch **Group 205**, were suggestive of a sequence of back-filling, and were overlain by a cultivation furrow **180**. Segment **166** cut partly exposed east–west gully **167** (0.75m wide by 0.10m deep), which might have represented the original north boundary to the enclosure (Figure 6, Section 4; Plate 3).
- 6.4 The geophysical survey results indicated that the west ditch to the enclosure, only a small part of which was exposed **208**, was a continuation of the principal north–south field ditch alignment, which was investigated to the south of the enclosure as ditch **50**.
- 6.5 Three sub-circular features **139**, **142** (Figure 6, Section 5) and **146** in the south of the enclosure interior were interpreted as probable postholes. The features, measuring 0.56–0.72m in diameter by 0.16–0.23m deep, all contained deposits of stones interpreted as post packing. A charred wheat grain from posthole **139** produced a radiocarbon date range of 36 cal. BC–cal. AD 124 (at 95.4% probability – SUERC-70445). A little to the south, a similarly sized feature **158** lacked significant stone content, but was interpreted as another possible posthole. Adjacent to **158**, a sub-rectangular pit **159**, measuring 0.57m by 0.36m by 0.19m deep was considered to have been cut by enclosure ditch **103**, but the relationship could not be conclusively proven.
- 6.6 Situated towards the east side of the enclosure, posthole **91**, measuring 0.6m in diameter by 0.15m deep and containing packing stones, cut a shallow, irregular natural hollow **98** (Plate 4). Located 0.82m to the north-east of **91**, a very shallow oval cut **96**, measuring 0.4m by 0.3m by 0.06m deep, might have been the truncated remnant of an associated posthole (Figure 6, Section 6).
- 6.7 Circular pit **171** measured 0.83m in diameter by 0.17m deep and was located in the west side of the enclosure. It contained charcoal-rich deposits, organic material and several small fragments of calcined animal bone (Figure 6, Section 7; Plate 5). A charred barley grain from the primary fill produced a radiocarbon date of 44 cal. BC–cal. AD 85 (at 95.4% probability – SUERC-69398). The pit

produced 92% of the total of charred plant remains from the site, the majority being cereal grains.

- 6.8 Feature **119** was cut by the south side of enclosure ditch **103** and probably represented a shallow natural hollow. Posthole **116** was situated immediately to the west, measured 0.44m in diameter by 0.18m deep, contained packing stones and cut the south edge of enclosure ditch **103** (Figure 6, Section 8). Another cut **127**, situated 0.8m south of ditch **103** and measuring 0.8m in diameter by 0.11m deep, might have represented a second posthole, but the frequent stones distributed throughout its single fill perhaps indicate that it was more likely to have been a pit (Figure 6, Section 9).
- 6.9 Sub-oval pit **94** was located 5m outside the south-east corner of the enclosure and measured 1.20m by 0.97m by 0.32m deep (Figure 6, Section 10). Its sandy silt fill **95** was flecked with charcoal and contained three large stones **107** towards the north end. Radiocarbon analysis of charcoal from fill **95** produced a date range of 359–114 cal. BC (at 95.4% probability – SUERC-69397).
- 6.10 Approximately 5.5m to the east of enclosure **103**, a group of four postholes approximately parallel to the north–south ditch was recorded. The northern-most posthole **126** was sub-circular, measured 0.35m in diameter by 0.16m deep and contained stone packing (Figure 6, Section 11). Two sub-oval postholes, **113** and **115**, measuring 0.47m by 0.34m by 0.18m deep and 0.45m by 0.3m by 0.2m deep respectively, were situated 2m to the south and also contained stone packing. Located a further 2m to the south, sub-oval feature **138** measured 0.53m by 0.32m by 0.19m deep and lacked the obvious stone packing of neighbouring features, but its location and general characteristics suggested potential association with the other postholes to its north.
- 6.11 A fifth small sub-circular feature, pit **129** was located 5m south-east of **138**. The pit measured 0.50m in diameter by 0.13m deep and contained frequent charcoal fragments (Figure 6, Section 12; Plate 6).
- 6.12 Feature **187**, located 14m east of the north-east corner of the enclosure and 1m south of ditch **205**, was 0.13m deep and measured 1.05m north–south by at least 1.12m east–west (the east side had been truncated by a modern service trench). The primary fill included some charcoal and heat-reddened clay, and was overlain by a layer consisting mostly of charcoal, which produced a small, non-diagnostic fragment of glass. The upper fill also contained occasional charcoal pieces (Figure 6, Section 13; Plate 7). It is possible that feature **187** represented an oven or kiln, although there was no conclusive evidence of burning *in situ* and it is perhaps more likely that it was used to dispose of the residue of fires/ovens. Pit **202**, which measured 0.6m by 0.4m by 0.1m deep and contained similar burnt material, was located 2m to the east of **187** and may potentially have been used in association with it.
- 6.13 Three major elements of an associated field system, first identified in the results of the geophysical survey (Webb 2001), were recorded radiating from the south-

west, south-east and north-east corners of the enclosure, the latter showing evidence of re-cutting.

- 6.14 North–south ditch **50** was investigated in a trench opened from the south-west corner of the main excavation for a footpath leading from the new car park to the RDC access road. The ditch measured 1.68m wide by 0.76m deep, and had a V-shaped profile with a slightly concave base (Figure 6, Section 14; Plate 8). Its primary fill contained stones up to 0.4m by 0.3m by 0.15m in size, and had therefore not accumulated naturally. Its upper fill contained a fragment of sandstone with grooved cut marks. The results of the geophysical survey suggested that the west side of enclosure **103** was formed by an uninterrupted continuation of ditch **50** to the north (Figure 3).
- 6.15 Ditch **Group 65** ran approximately north-west from the east end of the site towards enclosure **103**, terminating 7.5m short of the south-east corner (Plate 9). Ditch **65** measured up to 1.38m wide by 0.48m deep, and typically had a V-shaped profile with a slightly concave base. The ditch was evidently eroded by later cultivation, but appeared to be least truncated at segment **15** (Figure 6, Section 15). The fill of the western terminal **38** was very stony (Plate 10), which was uncharacteristic of the ditch fills elsewhere, and was notably rich in coal and cinders (Figure 6, Section 16).
- 6.16 Ditch **Group 205**, measuring up to 1.1m wide by 0.5m deep with a V-shaped profile and slightly concave base, ran eastwards from the north-east corner of enclosure **103** for 26.50m up to terminal **181**. As noted above, the deposits within **205** and **103** were undifferentiated at the junction of the two features, demonstrating that they became filled at the same time. Ditch segment **193**, investigated 11m east of the junction, was seen to be a re-cut of earlier ditch **197**, measuring at least 0.95m wide by 0.55m deep (Figure 6, Section 17; Plate 11).
- 6.17 Several smaller linear features were recorded, which appeared to be associated with the main elements of the field system. Ditch **Group 206**, located 8m to the south of the south-east corner of enclosure **103**, measured 10.75m long and broadly continued the alignment of the east side of the enclosure. Ditch **206** was different in character to the main ditches in that it measured a maximum of 0.65m wide by only 0.12m deep. Ditch segment **52**, located towards the south end of the feature, cut a deeper but more irregular curving feature **54** – interpreted as a natural feature – (Figure 6, Section 18), of which several other examples were investigated across the site.
- 6.18 Another short, shallow linear feature **105/108** was located in the space between the south-east corner of enclosure **103** and the terminals of ditches **206** and **65**. It measured 5.5m long by up to 1.10m wide by 0.15m deep, and was aligned north-north-west–south-south-east. Pit **94** was located adjacent to the south terminal **105**, but it is not known whether the two were contemporary or functioned inter-dependently. The north terminal **108** cut a more irregular shallow linear feature **110/135**, which measured up to 1.27m wide by 0.11m deep (Figure 6, Section 19), and which was also truncated by enclosure ditch **103**. Although it

is possible that **110/135** represented an earlier element of the field system, it is considered more likely that it was a natural gully.

- 6.19 Feature **7** was located towards the east end of the site, 5m to the north of, and parallel to, ditch **65**. The feature, perhaps a truncated fragment of a ditch, measured 1.35m wide by 0.45m deep, with a profile very similar to **65**, but was only 4.1m long (Figure 6, Section 20).
- 6.20 A linear feature **170**, located in a trench opened southwards from the main excavation to take drains from the new car park to the stream to the south, was aligned north-west–south-east and measured 0.97m wide by 0.44m deep by at least 3.4m long. Its V-shaped, flat-based profile resembled a ditch, but other factors gave cause for doubting this interpretation. Its primary fill comprised very clean thin fragmented pieces of sandstone derived without modification from the surface strata on the south side of the feature, whilst the secondary fill was less red and less silty than the typical fills of the field system ditches, bearing more comparison with the fills of features interpreted as natural. Furthermore, all of the linear features associated with the field system corresponded with clearly defined anomalies in the results of the geophysical survey, whereas there was no such corresponding anomaly for **170** (Figure 3). On balance, it is therefore considered that **170** was more likely to be a natural feature, rather than archaeological in origin.
- 6.21 A further five features were recorded that had no observable association with the field system. Pit **27**, located in the south-east corner of the excavation, measured 0.65m by 0.44m by 0.24m deep and contained occasional flecks of charcoal. Sub-circular pit **12**, located towards the north-east corner of the site, measured 1.3m in diameter by 0.33m deep. Pit **12** was cut by short gully **10**, which had a U-shaped profile and measured 0.66m wide by 0.18m deep by at least 1.7m long. The gully began 1.3m away from pit **12** and ran north-east to terminate at or in that feature. A slightly curving feature **18/19**, which had been bisected by a modern service trench, was located immediately to the west of pit **12** and measured 3.15m by 0.64m by 0.3m deep. A larger, sub-rectangular pit **40**, located 5m south-west of **18/19** was truncated by the same service trench. It measured 2.46m by 1.85m by 0.38m deep and contained a thin layer of charcoal 10mm thick.
- 6.22 There was evidence of medieval–post-medieval ridge and furrow cultivation on a north–south alignment across the site, the furrows being filled by silty sand **3**. Deposit **3** was sealed by typically 0.3m of original topsoil **2**, compressed over much of the site by vehicular activity, and up to 0.7m of redeposited material **1**, consisting mostly of topsoil but including layers of stone and other material associated with spoil disposal and landscaping during construction of the RDC.
- 6.23 In the trench excavated to the south from the car park site, the total combined depth of original topsoil and overburden increased to 1.7m at the top break of slope, and to in excess of 1.9m at the bottom of the slope.

7.0 DISCUSSION

- 7.1 The archaeological investigations at the site of the proposed new Aldi RDC car park at Goldthorpe have revealed further possible evidence of prehistoric activity on the RDC site. Additional elements of the known late Iron Age–early post-Roman field system were also recorded, including a possible area of enclosed settlement.
- 7.2 Pit **70** contained worked flints characteristic of Mesolithic blade production and produced a radiocarbon date from charcoal consistent with a date in the late Mesolithic period, thereby providing relatively reliable evidence for hunter–gatherer activity on the site. A characteristically similar pit **73** nearby might have been of the same period, though there was no dating evidence to support this interpretation. Other dating evidence for possible prehistoric activity on the site was limited to flint finds from the topsoil. The earliest features recorded in the excavation at the RDC site were dated to the Bronze Age.
- 7.3 No artefacts were retrieved from the ditches of the field enclosures to establish their date, but given the results of the geophysical survey it seems reasonable to assume that the field system investigated at the car park site was a direct continuation of that recorded to the south in the 2012–13 excavation, which was dated to the late Iron Age–early post-Roman periods. The main north–south ditch **50**, which also defined the west side of the small enclosure **103**, was shown by the geophysical survey results to continue to the south of the car park site on the same line as the ditch interpreted as one of the principal elements of the field system in the RDC site. The other field boundary ditches **65** and **205** were also comparable in dimensions and profile to examples recorded by the 2012–13 investigation.
- 7.4 The results of the geophysical survey suggested that the short ditch **206** to the south of enclosure **103** formed one element of a longer north–south boundary, which continued to the south of the car park area excavation. The boundary ran 18m to the east of, and parallel to, ditch **50**, perhaps defining a drove-way leading to/from the fields to the south.
- 7.5 The north-most field ditch **205** was also shown to be part of a longer boundary with a continuation beyond the limit of the site: a ditch noted towards the north-east corner of the field during the watching brief on a service trench for the 2013 works compound was on the same line and can be considered to be part of the boundary described by **205**. Ditch **205** was the only element of the field system with visible evidence of a re-cut. However, it is possible that the evidence survived in this case because the later ditch veered sufficiently from the original line, and that re-cutting of the ditches was actually more prevalent. An east–west ditch noted to the west of enclosure **103** by the 2013 watching brief on the RDC access road was also recorded as being re-cut.
- 7.6 The short ditch **105/108** located adjacent to the south-east corner of enclosure **103** appeared likely to be associated with ditches **65** and/or **206**, perhaps

- designed to aid control of access into the fields on either side of **65** and the possible drove-way to the west of **206**. A feature **94** outside the enclosure and adjacent to **105/108** produced a radiocarbon date from charcoal placing it broadly in the Middle Iron Age period, perhaps suggesting use of the site earlier in the late prehistoric period than had been thought previously.
- 7.7 The short ditch **7** to the north of and parallel to ditch **65** may have represented a feature inside the field bounded to the south by ditch **65**.
- 7.8 The excavation confirmed that the small enclosure **103** was integral to the wider field system. The east ditch of the enclosure **103** joined with and was open at the same time as the northern field system ditch **205**. Although the north-west and south-west corners of the enclosure were outside the excavation, the geophysical survey indicated that the west ditch **208** was a continuation of the main north-south field system ditch **50**. At the internal north-east corner, **103** cut the partly exposed shallow east-west gully **167**, which might have represented the original northern boundary to the enclosure. The geophysical survey indicated a strong linear response 10m long in the centre of the northern boundary, with gaps or areas of weaker response c. 5m long to either side, suggesting the possibility of two northern entrances to the enclosure.
- 7.9 Postholes found inside enclosure **103** did not have a coherent pattern suggestive of a structure, but the existence of a concentration of such features could be considered as evidence of settlement. An adjacent pit **171** contained charcoal-rich fills and was strongly suggestive of habitation. Radiocarbon determinations obtained from charred grains from two of the features within enclosure **103** date the features to the late Iron Age-early Roman period.
- 7.10 Further pits, outside the enclosure to the south, were indicative of probable settlement activity. However, their chronological relationship with the internal features is unknown, and one probable posthole **116** post-dated the in-filling of the enclosure ditch.
- 7.11 Further features to the east of the enclosure suggested settlement activity in the western part of the field bounded by ditches **65** and **205**. Pits **129**, **187** and **202** all contained charcoal, and it is possible that **187** represented an oven or kiln. The alignment of post-holes **126**, **113**, **115**, and **138** respecting the enclosure perhaps represented a fence line.
- 7.12 The remaining features **10**, **12**, **18/19**, **40**, and **27** in the east part of the site produced no evidence to inform their possible function or date.

8.0 CONCLUSIONS

- 8.1 The proposed development of a new car park at the Aldi RDC provided an opportunity to further investigate an element of a multi-period landscape to the west of Goldthorpe in South Yorkshire.
- 8.2 The archaeological investigations revealed additional evidence of the prehistoric use of the area. At least one pit, dated by worked flints and a radiocarbon determination to the late Mesolithic period, provided evidence of probable hunter-gatherer activity on the site.
- 8.3 The excavation confirmed that a regular series of ditches indicated by geophysical survey data was part of a field system recorded previously to the south, and which had been dated to the late Iron Age-early post-Roman periods. A small enclosure identified by the geophysical survey was potentially the location of settlement- or occupation-related activity. Additional elements indicative of habitation were present in the area to the south and east of the enclosure, including one example post-dating the in-filling of the enclosure ditch.
- 8.4 No artefactual dating evidence was recovered, but radiocarbon dates obtained from charred plant remains and charcoal in features thought to be associated with the enclosure and field system provided a range from the Middle Iron Age-early Roman period, suggesting that activity at the site began at an earlier date than had been recognised previously. Unlike the earlier investigation, no evidence of activity relating to the later Roman and early post-Roman periods was recovered.

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APPENDIX A

LITHICS

Frederick Foulds

1.0 INTRODUCTION

1.1 This report concerns the analysis of lithic material recovered by excavations in advance of car park development at the Aldi Regional Distribution Centre, Goldthorpe, South Yorkshire. The majority of the material was found in the secondary fill 72 of prehistoric pit 70. The overall composition of the assemblage is shown in Table 1.

Table 1: Composition of lithic assemblage

Type of material	Total
Worked	18
Natural	1
Total	19

2.0 METHODOLOGY

2.1 All material was inspected by eye and logged in a Microsoft Excel spreadsheet. Variables are described as follows:

2.2 Site Information

Context No. Context number.

Sample Sample number, if relevant.

Flint No. A unique number assigned for the purposes of the lithic catalogue.

Quantity Number of pieces. Usually '1' and used to calculate total numbers.

2.3 Raw Material

Material Flint, chert, quartz, etc.

Material colour A description of the colour of the raw material.

Cortex The amount of cortex present, expressed as a percentage value.

Cortex colour A description of the colour of the cortex, where present.

Patina The amount of patination, expressed as a percentage value.

Patina colour A description of the colour of the patination, where present.

2.4 Technology

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

Size Individual measurements have not been taken at this time. Sizes are provided in 5mm increments, with the maximum dimension, or in the case of flakes, maximum length, given.

Reduction sequence Stage of knapping sequence, given as 'primary', 'secondary' or 'tertiary'. Term 'thermal' is used to note heat fracture.

Platform The type of platform (for flakes, where present), based on Andrefsky (2005, 96), 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 based on Cotterell and Kamminga (1987), i.e. 'feathered', 'step', 'hinge', or 'overshoot'.

Interpretation An indication of further working, e.g. 'retouch' or 'edge use'.

Working A description of working, e.g. 'abrupt', 'invasive', etc.

2.5 Damage

Burnt Column uses an ordinal scale to indicate the exposure to burning an item has received. 0 = not burnt; 1 = lightly fired (surface sooting, light crazing); 2 = fired (surface and interior patination, surface cracks, but still retaining original form); 3 = heavily fired (complete surface and interior patination, pot lid fractures, shattering, original form cannot be determined).

Damage Description of any other damage present, e.g. 'plough', 'frost', 'edge chipping', etc.

2.6 Interpretation

Period Where the artefact is chronologically distinctive the period is noted.

Notes A further field to note any other observations, i.e. if items refit.

3.0 RAW MATERIAL

3.1 All of the material recovered is flint, with the majority being brown in colour. Only two pieces appear to have been produced from grey-coloured flint. Most pieces have some degree of patination, which is primarily a milky white stain, generally covering the whole surface. Similar-coloured flint, displaying a similar

pattern of patination, is seen elsewhere in Yorkshire, such as at Sleigill (Coggins, Laurie and Young 1989).

- 3.2 One piece is so heavily patinated that the original colour of the flint is impossible to determine. In addition, the pattern of patination on one of the artefacts (GP16_003), on which patination is present on the dorsal surface, while the ventral is devoid of any discolouration to the flint, may suggest that this is a more recent removal, probably resulting from natural factors.
- 3.3 Cortex is present on six pieces (31.6%) and is a cream colour. In some cases, the cortex exhibits an orange stain, possibly indicating the present of iron minerals. None of the pieces display any evidence of burning.
- 3.4 The quality of the flint appears to have been very suitable for knapping, with limited numbers of the recovered finds displaying internal flaws or unformed fractures that have inhibited removal of flakes.

4.0 TECHNOLOGY

- 4.1 The following discussion focuses on the material identified as humanly worked and does not cover that identified as natural. Table 2 differentiates these according to type.

Table 2: Composition of lithics by worked form

Worked Form	Quantity
Flake	4
Blade/bladelet	7
Debitage (angular waste)	6
Scraper	1
Total	18

- 4.2 Seven pieces of worked flint (38.9% of the assemblage) are blades or bladelets, which were all recovered from the secondary fill 72 of pit 70. Five of these were recovered from soil sampling. Most of the artefacts display some form of breakage, resulting in the proximal or distal end being absent, although there is little evidence that this was done in the production of microliths. They are generally small in size, with most being no greater than 25mm long. Evidence of a soft hammer technique (either using antler or bone hammers, or lighter blows from a stone hammer) is provided by the prevalence of diffuse bulbs of percussion. In addition, they are all carefully flaked, with prepared platforms and no cortex, indicating skilful knapping which occurred during the middle or end of a knapping sequence. Only one of the blades displays any evidence of error, in the form of an overshot termination. These blades and bladelets are characteristic of Mesolithic blade production (Butler 2005).

- 4.3 Other worked material from the secondary fill of pit 70 consists of a single cortical flake and four pieces of debitage. Two of the waste pieces appear to be fragments of blades or flakes, while another is a small splinter that may possibly be a long burin spall. The remaining piece represents angular waste or shatter.
- 4.4 The rest of the artefacts were found in the topsoil 2 or redeposited topsoil 1, the fill 26 of a suspected natural linear feature 24, and the fill 149 of enclosure ditch 145. These consist of non-diagnostic flakes and debitage, aside from a single retouched tool (GP16_005) from the topsoil. This is an end scraper, produced on a thick blade using steep retouch to blunt the distal end. This type of tool can be found across a range of later prehistoric periods. Due to its recovery out of context and the absence of associated diagnostic forms, it is hard to provide an accurate date for the piece. However, it is likely to originate from the Mesolithic or early Neolithic periods.

5.0 CONCLUSIONS

- 5.1 The assemblage of lithics recovered during the excavations is limited in size. However, what has been recovered includes diagnostic material that suggests an earlier usage of the local landscape prior to the known Bronze Age occupation. The presence of small blades and bladelets displaying characteristic working associated with the Mesolithic demonstrates the presence of hunter-gatherers within the area. These artefacts may have been preserved within a modified tree bole, which pit 70 has been suggested to be.
- 5.2 The end scraper recovered from the site, while being the only retouched tool, is unfortunately of limited use in dating the material further, being out of context in the topsoil and most likely moved. Nevertheless, this artefact does provide some additional support to the assertion that early prehistoric activities took place within the vicinity of the Goldthorpe area.

6.0 RECOMMENDATIONS

- 6.1 The material identified as natural can be discarded. The worked material should be curated, though further analysis is not recommended. The single end scraper (GP16_005) should be illustrated/photographed.

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APPENDIX B

OTHER FINDS

Dr Elizabeth M. Foulds

1.0 INTRODUCTION

1.1 A collection of 18 artefacts was recovered. The results of quantification and analysis are presented below.

2.0 THE ASSEMBLAGE

2.1 The finds assemblage included a range of artefact materials (Table 1). The majority were likely post-medieval in date (Table 2).

Table 1: Summary of material quantities

Material	Context					TOTAL
	001	002	051	104	189	
Glass	2	5	-	-	1	8
Pottery	3	4	-	-	-	7
Ceramic	-	1	-	-	-	1
Stone	-	-	1	1	-	2
TOTAL	5	10	1	1	1	18

Table 2: Summary of quantities by period

Material	Context					TOTAL
	001	002	051	104	189	
Medieval	-	1	-	-	-	1
Post-medieval	5	8	-	-	-	13
Non-diagnostic	-	1	1	1	1	4
TOTAL	5	10	1	1	1	18

2.2 A possible whetstone or smoothing stone (No. 1) was found in the upper fill of enclosure ditch **86** (Group **103** context **104**). It was not indicative of a close date or period.

2.3 The remaining finds were not from contexts allocated to a Group. Finds from the original topsoil **2** and re-deposited topsoil **1** were primarily post-medieval. This included a complete glass perfume bottle (No. 11), glass drinks bottle marked with 'DONCASTER' 'REED & SON' (No. 10), and fragments of pottery typical of the post-medieval period (e.g. Nos 2, 4, 6, 7). There was one fragment of a green-glazed medieval ceramic jug with a part of a handle (No. 5).

2.4 A tabular sandstone fragment was found in the upper fill **51** of ditch **50** (No. 13). Although it had grooved cut marks, its purpose was unclear and not clearly

indicative of date. In addition, given that the primary fill **57** was noted to contain large stones, it may be that it was related to this soil deposition process.

- 2.5 In the secondary layer of possible oven or kiln **187**, a small fragment of glass was recovered by palaeoenvironmental soil sampling (No. 14). The find suggested that the deposits of burnt material in the pit was not prehistoric in date, but it was not possible to assign a more refined date or period.

3.0 DISCUSSION AND RECOMMENDATIONS

- 3.1 The artefacts recovered by the excavation are primarily post-medieval in date, but are not informative about activity at the site.

- 3.2 It is recommended that the artefacts should be retained and deposited with the site archive.

4.0 CATALOGUE BY GROUP AND CONTEXT

Group 103

top fill 104 of enclosure ditch 86

1. Triangular sandstone object broken into two pieces. It had a very smooth surface. Possible whetstone or smoothing stone. RF 2, non-diagnostic, 78g

Non-grouped contexts

re-deposited topsoil 1

2. Two fragments of Willow pattern pottery in different designs. One a rim-sherd and the other a body sherd. Post-medieval, 4g
3. One base and rim sherd of a low, possibly rectangular, dish with sky-blue glaze. Post-medieval, combined weight 22g
4. Two fragments of colourless glass with black enamel or transfer print on the surface. One fragment has 'oz' on it. Measuring jug or flask. Post-medieval, 17g

original topsoil 2

5. Fragment of green-glazed ceramic jug handle. Medieval, 35g
6. Rim-sherd of white glazed teacup. Post-medieval, 3g
7. Body sherd of white glazed porcelain with an embossed tree design with cherries and leaves picked out in brown, green, and red paint. Possibly from a cup, small bowl, or other small vessel. Post-medieval, 11g
8. Body sherd of a yellow slip-ware dish. Post-medieval, 12g
9. Unglazed two-tone clay marble. Post-medieval, 5g
10. A complete bottle made from translucent glass with a slight green tinge. Approximately 200mm tall. Around the shoulder it reads 'REED & SON' and along the bottom 'DONCASTER'. On the base, 'B327' and two additional 'B's spaced evenly around the

circumference of the base. There are mould marks that run along the sides and round the neck. Post-medieval, 418g

11. A complete bottle made from colourless glass c. 125mm tall with embossed Art-Deco design on sides and shoulders. Perfume bottle. Post-medieval, 102g
12. Three fragments of glass vessels. One a colourless bottle base sherd with embossed curved designs on the surface. The stippling on the base suggests that it is post-medieval. The second fragment is a milky white glass body sherd with decorative moulded ridges, also likely to be post-medieval. The third fragment is a thick colourless body sherd and is non-diagnostic. Combined weight 33g

top fill 51 of field system ditch 50

13. Tabular fragment of sandstone with grooved cut marks on opposing flat faces. RF 1, non-diagnostic, 526g

charcoal secondary fill 189 of oven/kiln 187

14. Small colourless glass fragment. From sample. Non-diagnostic, <1g

APPENDIX C

CERAMIC BUILDING MATERIAL

Chrystal M.L. Antink

1.0 INTRODUCTION

- 1.1 Five fragments of ceramic building material (CBM) were recovered by excavations at Goldthorpe Aldi car park, ranging in weight from 3–153g. All fragments are modern and either roof, floor, or wall tiles, with one non-diagnostic fragment.

2.0 METHODS

- 2.1 Fragments were recorded by weight and form in a Microsoft Access database. Any unusual firing characteristics, stamps, and external effects were noted. No fabrics were recorded.

3.0 CATALOGUE

3.1 Context 1

Non-diagnostic fragment, 51g.

3.2 Context 2

One fragment of wall tile, white glazed with white lattice decoration, with moulded keying on reverse, 3g.

One fragment of roof tile, 46g.

One fragment of floor tile with moulded keying on reverse, 153g.

One fragment of floor tile, glazed dark maroon, with moulded keying on reverse, 72g.

4.0 DISCUSSION AND RECOMENDATIONS

- 4.1 The CBM recovered was only of modern date and thus does not inform us of the nature of any historic activity at the site.
- 4.2 It is recommended that the CBM fragments should be discarded before the site record is archived.

APPENDIX D

PALAEOENVIRONMENTAL REMAINS

Lynne F. Gardiner

Summary

Thirty-three palaeoenvironmental samples were taken by the excavation. A total 1,141kg (830l) of sediment was processed at Northern Archaeological Associates' premises. The resulting flots were sorted and the charred plant material and charcoal was assessed, along with a small assemblage of calcined animal bone (1.97g) from 173 (fill of pit 171), and a very small fragment of eggshell from 74 AA (fill of ?prehistoric pit 73). The fine fraction residues from 16 samples were re-floated in order to obtain samples for radiocarbon dating; material from four samples was submitted to SUERC for dating.

*The majority of the 317 charred plant remains observed were from five fills (samples 172 AA, 173 AA, 174 AA, 199 AA, and 200 AA) of pit 171. These contained varying quantities of charred grain – wheat (*Triticum sp.*), barley (*Hordeum sp.*), oat (*Avena sp.*) – with smaller quantities of weed seeds, particularly rye brome (*Bromus secalinus*). The further floating of the fine fractions recovered substantially more quantities of plant material, with the majority being glume bases that were not observed in the first flot sort.*

*The charcoal recovered from >2mm meshes cumulatively weighed 190.60g. The majority of the charcoal fragments were identified as oak (*Quercus sp.*). Some of the assemblage was vitrified and mineralised. The charcoal from the samples from pit 171 yielded oak, alder/hazel (*Alnus/Corylus*) and willow/poplar (*Salix/Populus*) charcoal fragments. Other species were noted from other contexts, however the larger charcoal-yielding samples from fill of pit 129 (130 AA), top fill of ?oven/kiln 187 (188 AA), charcoal secondary fill of ?oven/kiln 187 (189 AA), and fill of pit 202 (203 AA) largely contained oak.*

All palaeoenvironmental material and magnetic matter may be discarded. The material from pit 171 samples 172 AA, 173 AA, 174 AA, 199 AA, and 200 AA should be retained.

1.0 INTRODUCTION

- 1.1 Thirty-three bulk palaeoenvironmental samples were taken by the excavation at the Aldi RDC car park site on land to the west of Goldthorpe Industrial Estate, Goldthorpe, South Yorkshire, centred on SE 4490 0380.
- 1.2 This report presents the results of the analysis of the palaeobotanical and charcoal remains, in accordance with Campbell *et al.* (2011) and English Heritage (2008).

2.0 METHODOLOGY

- 2.1 Bulk palaeoenvironmental samples were taken from a variety of features (Table 1) and processed at Northern Archaeological Associates' (NAA) premises. The colour, lithology, weight, and volume of each sample was recorded using standard NAA pro forma recording sheets, cf. Table 2. 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 any artefacts and ecofacts removed from the larger fraction and forwarded to the relevant specialists (see Table 3 for a list of material recovered). The smaller fraction was not examined and has been retained, for the most part. In order to facilitate recommendations for accelerator mass spectrometry (AMS) dating a selection of the fine fractions was re-floated by bucket flotation.
- 2.2 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. Results are given in Table 4.
- 2.3 The plant remains and charcoal were identified to species as far as possible, using Cappers *et al.* (2006), Cappers and Bekker (2013), Cappers and Neef (2012), Hather (2000), Jacomet (2006), Schoch *et al.* (2004), and the NAA reference collection. Nomenclature for plant taxa followed Stace (2010) and cereals followed Cappers and Neef (2012).

3.0 RESULTS

3.1 A total weight of 1,141kg (830l) of sample sediment was processed.

3.2 Magnetic matter

3.2.1 Magnetic matter was examined under the microscope for micro-slugs. None were observed.

3.3 Eggshell

3.3.1 A small fragment of eggshell (<0.1g) was recovered from sample **74** AA (fill of ?prehistoric pit **73**). Fragmented shell can only be identified to species via SEM microscopy (Sidell 1993, 9), although new techniques for identification have been trialled at York University using ZooMS (Zooarchaeology by Mass Spectrometry) (Stewart *et al.* 2013, 1797–804). For the requirements of this work, it was considered not suitable to make further identification.

3.4 Animal bone

3.4.1 Twenty-nine very small fragments (total weight 1.97g) of calcined bone were hand collected from fill **173** of pit **171**.

3.5 Plant remains

- 3.5.1 The preservation of plant remains was, for the most part, good-to-poor. Eight of the samples yielded 317 charred plant remains (CPR). No uncharred plant remains were present. Pit 171 produced the most CPR (primary fill 172 AA n=142; fill 173 AA n=63; top fill 174 AA n=35; fill 199 AA n= 34; and fill 200 AA n= 17). The pit contained 92% of the site's charred plant remains, including wheat (*Triticum* sp.), cf. spelt (*Triticum aestivum* cf. ssp *spelta*), barley (*Hordeum* sp.), oat (*Avena* sp.), cf. rye (cf. *Secale cereale*), rye brome (*Bromus secalinus*), cf. flax (cf. *Linum usitassimum*), and knotgrass (*Polygonum* sp.). Only one other sample contained grain of any note: 141 AA from fill of pit/posthole 139 contained 24 plant remains, including cf. spelt, oat and rye brome. The full list is given in Table 5.
- 3.5.2 The re-floating of some of the samples provided a much larger yield, especially relating to the samples from pit 171. With the exception of 200 AA, the CPR count in all of the others increased significantly. Those from 172 AA, 173 AA and 174 AA contained significant numbers of glume bases, which were absent from the initial processing.
- 3.5.3 Oat grains are only identifiable to species if their floret bases are present. In the case of this assemblage, all were absent, therefore identification to species was not possible. The oat grains in 172 AA were mostly stunted.

3.6 Charcoal

- 3.6.1 Charcoal was more prevalent in the samples than CPR. Identification is usually undertaken at assessment stage on a small selection of fragments. This is done in order to facilitate recommendations for AMS dating and to gain an understanding of charcoal potential. The charcoal from ?oven/kiln 187 (sample 189 AA) was vitrified and similar to 203 AA (fill of pit 202). In some cases, mineralisation had affected the assemblage, which was evident in 77 AA (quaternary fill of enclosure ditch 75).
- 3.6.2 Oak (*Quercus* sp.) was the dominant species of the charcoal fragments identified, and was almost ubiquitous. Other species present were ash (*Fraxinus excelsior*), alder/hazel (*Alnus/Corylus*), hazel (*Corylus avellana*), Maloideae (apple/pear/whitebeam), birch (*Betula* sp.), guelder rose (*Viburnum opulus*), willow/poplar (*Salix/Populus*), cherry-type (*Prunus* sp.), and conifer-type. Table 5 contains a list of observed species by context.
- 3.6.3 The charcoal from pit 171 contained 63.36g of charcoal >2mm (sample 172 AA 21.06g; sample 173 AA 26.75g; sample 174 AA 4.67g; sample 199 AA 9.95g; and sample 200 AA 0.93g). The highest numbering wood species observed in the samples were oak, alder/hazel and willow/poplar, with very rare occurrences of cherry-type and conifer-type.

4.0 DISCUSSION

4.1 Eggshell

4.1.1 No discussion is possible.

4.2 Animal bone

4.2.1 The animal bone assemblage is not suitable for further discussion. The lack of animal bone is surprising as PH levels taken from the soil samples were mostly neutral, which would sustain the preservation of animal bone.

4.3 Plant remains

4.3.1 The majority of CPR recovered was concentrated in pit 171. The majority were economic plants, i.e. cereal grains. However, non-economic plants (weeds) were also observed, although these were generally limited to rye brome. The initial assessment suggested a relatively cleaned crop, although re-floating and the subsequent identification of many glume bases suggested a crop in the early processing stages.

4.4 Charcoal

4.4.1 The charcoal from pit 171 (oak, alder/hazel and willow/poplar) suggests possible material from a kiln structure. The species present are comparable with material from corn drying ovens in previous excavations at Goldthorpe (Ross *et al.* 2016, 11). The larger charcoal-yielding samples (fill of pit 129, sample 130 AA; top fill of ?oven/kiln 187, sample 188 AA; charcoal secondary fill of ?oven/kiln 187, sample 189 AA; and fill of pit 202, sample 203 AA) largely contained oak, which may possibly indicate structural waste (oak traditionally used in building) while sample 198 AA from fill of ditch 197 contained alder/hazel, birch, willow/poplar and cherry-type, but no oak. This sample's assemblage may reflect burning/clearance of local scrub, as most species were from relatively small-sized trees in comparison to oak, for example.

5.0 RECOMMENDATIONS

5.1 No further work on the assemblage, apart from that outlined above for pit 171, is warranted. All palaeoenvironmental material and magnetic matter may be discarded unless required for AMS dating. The material from pit 171 samples 172 AA, 173 AA, 174 AA, 199 AA, and 200 AA should be retained.

5.2 If further archaeological works take place in the vicinity of the Aldi RDC car park site then a soil sampling strategy should be implemented as palaeoenvironmental remains, if present, would be robust enough to survive.

ACKNOWLEDGMENTS

The samples were processed, sorted and re-floated by Megan Lowrie.

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Table 1: descriptions of sampled contexts

C	SCs	Context descriptions
26	AA	lower fill of linear 24
28	AA	fill of small pit 27
43	AA	charcoal tertiary fill of pit 40
46	AA	fill of field system ditch terminal 45
48	AA	fill of field system ditch terminal 47
57	AA	primary fill of field system ditch 50
58	AA	upper fill of field system ditch terminal 38
71	AA	primary fill of prehistoric? pit 70
72	AA, AB	secondary fill of prehistoric? pit 70
74	AA, AB	fill of prehistoric? pit 73
77	AA	quaternary fill of enclosure ditch 75
89	AA	secondary fill of enclosure ditch 86
95	AA	fill of oval pit 94
124	AA	primary fill of enclosure ditch 121
130	AA	fill of pit 129
141	AA	fill of small pit/posthole 139
144	AA	fill of small pit/posthole 142
148	AA	fill of small pit/posthole 146
160	AA	fill of small pit/posthole 158
168	AA	top fill of ditch 170
172	AA	primary fill of pit 171
173	AA	fill of pit 171
174	AA	top fill of pit 171
177	AA	fill of enclosure ditch 166
188	AA	top fill of ?kiln/oven 187
189	AA	charcoal secondary fill of ?kiln/oven 187
190	AA	primary fill of ?kiln/oven 187
194	AA	top fill of field system ditch 193
198	AA	fill of field system earlier ditch 197
199	AA	fill of pit 171
200	AA	fill of pit 171
203	AA	fill of pit 202

Table 2: sample data

C	SC	PH	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	A	SA	SR	R	SW	SV	>SW	>SV	<4?
26	AA	6.66	Dark reddish brown	Sticky	Sandy silt	48	34	Mid reddish brown	Loose	Stone>1cm 30%: stone<1cm 20%: sand 50%	-	√	-	-	8608	6000	4521	3000	x
28	AA	7.19	Mid yellowish brown	Loose	Sandy silt	28	24	Pale yellowish brown	Loose	Stone>1cm 20%: stone<1cm 30%: sand 50%	-	√	-	-	5854	3100	2478	700	x
43	AA	7.12	Mid yellowish brown	Loose	Sandy silt	19	13	Pale yellowish grey	Loose	Stone>1cm 20%: stone<1cm 20%: sand 60%	-	√	-	-	3547	2200	2572	1500	x
46	AA	7.04	Mid yellowish brown	Loose	Sandy silt	34	22	Mid yellowish grey	Loose	Stone>1cm 30%: stone<1cm 40%: sand 30%	-	√	-	-	10035	6600	6527	3900	x
48	AA	6.95	Mid yellowish brown	Loose	Sandy silt	14	10	Mid yellowish brown	Loose	Stone>1cm 30%: stone<1cm 40%: sand 30%	-	√	-	-	6441	4200	4751	3000	x
57	AA	7.09	Mid yellowish brown	Sticky	Silty sand	45	35	Pale yellowish grey	Loose	Stone>1cm 40%: stone<1cm 20%: sand 40%	-	√	-	-	13157	8400	8417	5050	x
58	AA	7.13	Dark yellowish brown	Loose	Sandy silt	80	52	Pale yellowish brown	Loose	Stone>1cm 30%: stone<1cm 40%: sand 30%	-	√	-	-	18069	12800	9634	6200	x
71	AA	6.99	Mid yellowish brown	Loose	Sandy silt	37	20	Mid yellowish grey	Loose	Stone>1cm 40%: stone<1cm 20%: sand 40%	-	√	-	-	9897	6200	5148	2825	x
72	AA	7.74	Mid yellowish brown	Loose	Sandy silt	111	76	Mid yellowish brown	Loose	Stone>1cm 40%: stone<1cm 10%: sand 50%	-	√	-	-	27729	17400	12019	6000	x
72	AB	6.95	Mid reddish brown	Loose	Sandy silt	40	27	Mid yellowish brown	Loose	Stone>1cm 20%: stone<1cm 30%: sand 50%	-	√	-	-	9185	5700	3558	1800	x
74	AA	7.05	Dark reddish brown	Loose	Sandy silt	94	66	Pale reddish grey	Loose	Stone>1cm 20%: stone<1cm 40%: sand 40%	-	√	-	-	21304	13900	9084	4600	x
77	AA	6.87	Dark reddish brown	Loose	Silty sand	3	3	Pale reddish brown	Loose	Stone>1cm 5%: stone<1cm 25%: sand 70%	-	√	-	-	270	300	88	150	x

C	SC	PH	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	A	SA	SR	R	SW	SV	>SW	>SV	<4?
89	AA	7.01	Dark reddish brown	Sticky	Silty sand	47	32	Mid yellowish brown	Loose	Stone>1cm 50%: stone<1cm 20%: sand 30%	-	√	-	-	28375	22200	22414	17800	x
95	AA	7.25	Dark reddish brown	Crumbly	Silty sand	81	64	Pale yellowish brown	Loose	Stone>1cm 20%: stone<1cm 20%: sand 60%	-	√	-	-	19901	13400	10111	8100	x
124	AA	7.05	Mid yellowish grey	Sticky	Silty sand	42	32	Pale yellowish brown	Loose	Stone>1cm 40%: stone<1cm 30%: sand 30%	-	√	-	-	15090	10400	10705	7000	x
130	AA	6.97	Dark reddish brown	Loose	Sandy silt	20	13	Mid reddish brown	Loose	Stone>1cm 20%: stone<1cm 30%: sand 50%	-	√	-	-	2959	2000	1254	700	x
141	AA	7.08	Dark reddish brown	Loose	Sandy silt	9	7	Mid yellowish brown	Loose	Stone>1cm 30%: stone<1cm 30%: sand 40%	-	√	-	-	2270	1600	990	600	x
144	AA	6.94	Dark reddish brown	Loose	Sandy silt	14	10	Pale yellowish grey	Loose	Stone>1cm 40%: stone<1cm 20%: sand 40%	-	√	-	-	6352	4800	4743	3500	x
148	AA	7.06	Pale yellowish brown	Loose	Sandy silt	12	10	Mid yellowish grey	Loose	Stone>1cm 40%: stone<1cm 30%: sand 30%	-	√	-	-	4094	2800	3122	1900	x
160	AA	6.95	Pale yellowish brown	Loose	Sandy silt	7	6	Mid yellowish brown	Loose	Stone>1cm 20%: stone<1cm 30%: sand 50%	-	√	-	-	1661	1400	766	800	x
168	AA	7.10	Mid yellowish brown	Crumbly	Sandy silt	48	33	Mid yellowish grey	Loose	Stone>1cm 40%: stone<1cm 30%: sand 30%	-	√	-	-	12490	8400	5988	3700	x
172	AA	7.05	Dark yellowish brown	Crumbly	Sandy silt	44	30	Pale yellowish brown	Loose	Stone>1cm 30%: stone<1cm 40%: sand 30%	-	√	-	-	11799	8400	7972	5400	x
173	AA	7.19	Dark yellowish brown	Crumbly	Sandy silt	29	20	Mid yellowish grey	Loose	Stone>1cm 40%: stone<1cm 20%: sand 40%	-	√	-	-	6241	4500	4093	2700	x
174	AA	7.03	Dark yellowish brown	Crumbly	Silty sand	17	16	Pale yellowish grey	Loose	Stone>1cm 30%: stone<1cm 30%: sand 40%	-	√	-	-	7668	4300	5861	2700	x
177	AA	7.23	Pale yellowish grey	Crumbly	Silty clay	45	41	Pale yellowish grey	Loose	Stone>1cm 30%: stone<1cm 40%: sand 30%	-	√	-	-	2280	1800	1811	1500	x

C	SC	PH	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	A	SA	SR	R	SW	SV	>SW	>SV	<4?
188	AA	7.02	Dark yellowish brown	Crumbly	Sandy silt	41	34	Pale yellowish grey	Loose	Stone>1cm 15%: stone<1cm 35%: sand 50%	-	√	-	-	7340	4800	3149	1700	x
189	AA	7.13	Dark yellowish brown	Crumbly	Silty sand	3	3	Mid reddish black	Loose	Stone>1cm 10%: stone<1cm 20%: sand 20%: charcoal 50%	-	√	-	-	591	700	159	300	x
190	AA	7.19	Mid yellowish brown	Loose	Sandy silt	47	37	Mid yellowish brown	Loose	Stone>1cm 30%: stone<1cm 30%: sand 40%	-	√	-	-	7352	5000	3634	2200	x
194	AA	7.09	Dark reddish brown	Sticky	Silty sand	5	6	Pale yellowish brown	Loose	Stone>1cm 20%: stone<1cm 20%: sand 60%	-	√	-	-	760	400	465	150	x
198	AA	7.35	Dark reddish brown	Sticky	Silty sand	52	34	Mid reddish brown	Loose	Stone>1cm 40%: stone<1cm 20%: sand 40%	-	√	-	-	4007	2800	2006	1300	x
199	AA	7.08	Dark reddish brown	Sticky	Silty sand	11	9	Mid reddish brown	Loose	Stone>1cm 30%: stone<1cm 30%: sand 40%	-	√	-	-	4243	3200	3072	2100	x
200	AA	7.06	Dark reddish black	Loose	Silty sand	1	1	Mid reddish brown	Loose	Stone>1cm 10%: stone<1cm 30%: sand 60%	-	√	-	-	140	100	64	50	x
203	AA	7.07	Mid yellowish brown	Crumbly	Silty sand	13	10	Mid reddish brown	Loose	Stone>1cm 20%: stone<1cm 30%: sand 40%: charcoal 10%	-	√	-	-	1900	1600	901	800	x

Key: **C**= context, **SC**= sample code, **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 dried residues, **TS**= texture of dried residues, shape of stone majority in sediment (**A**=angular, **SA**= sub-angular, **SR**= sub-rounded, **R**= rounded), **SW**= weight (g) of dried residues, **SV**= volume (ml) of dried residues, **>SW**= weight (g) of >4mm residues, **>SV**= volume (ml) of >4mm residues

Table 3: finds from samples

C	SC	Charcoal	MM	Bone	Flint	Glass	Fuel: coal	Industrial waste	F. clay
26	AA	1g	12g		1 (2g)				
28	AA	2g	<1g						
43	AA		4g						
46	AA		6g						
48	AA		3g						
57	AA	<1g	1g						
58	AA		47g				127g	3g	
71	AA		<1g						
72	AA	2g	11g		10 (2g)				
72	AB	2g	3g						
74	AA	1g	3g						
77	AA	3g	6g						
89	AA		6g						
95	AA	<1g	71g						
124	AA	<1g	8g						
130	AA	5g	27g						
141	AA	1g	1g						
144	AA		1g						
148	AA	<1g	3g						
160	AA	1g	<1g						
168	AA		4g						
172	AA	20g	41g						12g
173	AA	27g	12g						2g
174	AA	4g	5g						
177	AA	<1g	13g						
188	AA	136g	3g						
189	AA	10g	1g			1 (<1g)			
190	AA	2g	4g						
198	AA	9g	40g						
199	AA	10g	7g						
200	AA	<1g	<1g						
203	AA	27g	18g						

Key: **C**= context, **SC**= sample code, **MM**= magnetic matter, **F. clay**= fired clay

Table 4: flot data

C	SC	WF	Mscope	Mm	CPR	AMS?	CI	Cres	Components	EWC	Comments	FD?
26	AA	7.64	x45	-	-	yes	0.07	2	Very fine rootlets 25%: charcoal 25%: sand 50%	-	-	yes
28	AA	1.99	x45	-	-	no	-	2	Very fine rootlets 50%: sand 40%: small coal flakes 10%	-	-	yes
43	AA	1.21	x45	-	-	yes	0.47		very fine rootlets 50%: charcoal 50%	-	-	yes
46	AA	0.85	x45	-	-	no	-		Very fine rootlets 100%	-	-	yes
48	AA	1.91	x45	-	-	no	0.1		Sand 50%: very fine rootlets 45%: charcoal 5%	-	-	yes
57	AA	0.6	x45	-	-	no	0.19	<1	Very fine rootlets 95%: charcoal 5%	-	-	yes
58	AA	69.93	x45	2mm	-	no	<0.01		Very fine rootlets 20%: cinder 80%	-	cinder 48.5g	yes
71	AA	1.6	x45	-	-	no	0.26		Very fine rootlets 50%: sand 40%: charcoal 10%	-	-	yes
72	AA	11.3	x45	2mm	-	no	3.45	2	Very fine rootlets 20%: sand 10%: charcoal 70%	-	-	yes
72	AA.R	15.45	x45	2mm	-	-	2.89		Sand 5%: comminuted charcoal 95%	-	-	yes
72	AB	2.4	x45	-	-	no	1.06	2	Very fine rootlets 20%: sand 30%: charcoal 50%	-	-	yes
72	AB.R	7.06	x45	2mm	-	-	1.87		Sand 5%: comminuted charcoal 95%	-	-	yes
74	AA	18.81	x45	2mm	-	no	4.19	1	Very fine rootlets 50%: sand 10%: charcoal 40%	-	eggshell	yes
74	AA.R	23.4	x45	2mm	8	-	3.33		Sand 10%: very fine rootlets 10%: comminuted charcoal 80%	2	-	yes
77	AA	5.1	x45	-	-	no	1.16	3	Very fine rootlets 10%: sand 70%: cinder 10%: charcoal 10%	-	cinder 1.52g	yes
89	AA	0.14	x45	-	-	no	-		Very fine rootlets 100%	-	-	yes
95	AA	13.26	x45	2mm	1	yes	1.69	<1	Very fine rootlets 80%: charcoal 20%	2	-	yes
124	AA	1.72	x45	-	-	no	-	<1	Very fine rootlets 100%	-	-	yes
130	AA	8.58	x45	2mm	-	no	5.87	5	Charcoal 100%	-	-	yes
130	AA.R	18.43	x45	2mm	1	-	4.76		Sand 5%: comminuted charcoal 95%	2	-	yes
141	AA	5.92	x45	2mm	24	yes	4.04	1	Charcoal 100%	-	-	yes
141	AA.R	131.84	x45	2mm	3	-	0.11		Sand 95%: charcoal 5%	-	-	yes
144	AA	0.36	x45	-	-	no	<0.01		Very fine rootlets 100%	-	-	yes
148	AA	7.84	x45	2mm	-	no	4.5	<1	Charcoal 70%: sand 20%: very fine rootlets 10%	-	-	yes
148	AA.R	5.31	x45	2mm	-	-	0.47		Very fine rootlets 10%: sand 20%: comminuted charcoal 70%	4	-	yes
160	AA	5.95	x45	2mm	1	no	3.3	1	Very fine rootlets 50%: charcoal 50%	-	-	yes
160	AA.R	9.03	x45	2mm	-	-	2.35		Sand 10%: charcoal 90%	-	-	yes
168	AA	1.81	x45	-	-	no	-		Sand 50%: very fine rootlets 50%	1	-	yes
172	AA	6.27	x45	2mm	142	yes	1.43	20	Very fine rootlets 20%: charcoal 80%	1	-	yes
172	AA.R	103.89	x45	2mm	+++	-	34.65		Sand 5%: charred material 95%	1	-	yes
173	AA	3.65	x45	2mm	63	yes	0.13	27	Very fine rootlets 10%: charred material 10%: sand 80%	-	-	yes
173	AA.R	35.87	x45	2mm	+++	-	12.14		Sand 10%: charred material 90%	2	-	yes
174	AA	6.29	x45	2mm	35	yes	0.99	4	Very fine rootlets 90%: charred material 10%	-	-	yes
174	AA.R	12.19	x45	2mm	++	yes	4.17		Sand 5%: charred material 95%	-	-	yes
177	AA	1.2	x45	-	-	yes	0.24	<1	Very fine rootlets 95%: charcoal 5%	-	-	yes

C	SC	WF	Mscope	Mm	CPR	AMS?	CI	Cres	Components	EWC	Comments	FD?
188	AA	5.55	x45	2mm	-	no	3.08	13	Very fine rootlets 50%: charcoal 50%	3	-	yes
188	AA.R	39.66	x45	2mm	-	-	14.52		Sand 5%: comminuted charcoal 95%	2	-	yes
189	AA	7.79	x45	2mm	-	no	7.19	10	Very fine rootlets 5%: charcoal 95%	-	-	yes
189	AA.R	46.9	x45	2mm	-	-	15.8		Comminuted charcoal 100%	-	-	yes
190	AA	6.23	x45	2mm	-	no	3.62	2	Very fine rootlets 25%: charcoal 75%	-	-	yes
190	AA.R	38.05	x45	2mm	1	-	8.7		Sand 5%: comminuted charcoal 95%	-	-	yes
194	AA	0.12	x45	2mm	-	no	<0.01		Very fine rootlets 100%	-	-	yes
198	AA	12.39	x45	2mm	-	yes	6.21	9	Very fine rootlets 15%: charcoal 85%	-	-	yes
198	AA.R	26.53	x45	2mm	3	-	13.4		Very fine rootlets 5%: sand 15%: comminuted charcoal 80%	5	-	yes
199	AA	1.38	x45	-	34	yes	0.22	10	Very fine rootlets 45%: sand 45%: charred material 10%	-	-	yes
199	AA.R	34.47	x45	2mm	50	-	12.85		Comminuted charcoal 100%	-	-	yes
200	AA	2.02	x45	-	17	yes	0.01	<1	Sand 50%: very fine rootlets 45%: charred material 5%	-	-	yes
200	AA.R	6.45	x45	2mm	2	-	0.31		Sand 80%: charcoal 20%	-	-	yes
203	AA	1.86	x45	-	-	no	0.94	27	Very fine rootlets 50%: charcoal 50%	-	-	yes
203	AA.R	13.03	x45	2mm	-	-	5.93		Sand 5%: comminuted charcoal 95%	-	-	yes

Key: **C**= context, **SC**= sample code, **WF**= weight (g) of flot, **Mscope**= magnification used, **Mm**= size of mesh used in flot sorting, **CPR**= charred plant material (actual quantities), **AMS?**= any suitable material for radiocarbon AMS dating?, **CI**= material suitable for charcoal identification (in g), **Cres**= charcoal from residues (in g), **EWC**= earthworm capsules (actual quantity), **FD**= flot discarded after sorting. Note: the highlight AA.R denotes the re-flot from the sample's fine fraction.

Table 5: charcoal and plant data

CHARCOAL										CHARRED PLANT MATERIAL															
Oak (<i>Quercus</i> sp.)	Ash (<i>Fraxinus excelsior</i>)	Alder/hazel (<i>Alnus/Corylus</i>)	Hazel (<i>Corylus avellana</i>)	Apple/pear/whitebeam (Maloidae)	Birch (<i>Betula</i> sp.)	Geulder rose (<i>Viburnum opulus</i>)	Willow/poplar (<i>Salix/Populus</i>)	Cherry-type (<i>Prunus</i> sp.)	Conifer-type	Indet.	% identified	Context	Sample Code	Actual quantity	Naked wheat (<i>Triticum</i> sp.)	Wheat (<i>Triticum</i> sp.)	Cf. spelt (<i>Triticum aestivum</i> cf. ssp spelta)	Barley (<i>Hordeum</i> sp.)	Oat (<i>Avena</i> sp.)	Indet. cereal	Cf. rye (cf. <i>Secale cereale</i>)	Rye brome (<i>Bromus secalinus</i>)	Cf. flax (<i>Linum usitatissimum</i>)	Knotgrass (<i>Polygonum</i> ssp.)	
yes		yes	yes				yes	yes			100	26	AA												
				yes		yes	yes				50	43	AA												
yes				yes							100	48	AA												
yes											100	57	AA												
									yes		100	58	AA												
yes											100	71	AA												
yes	yes										75	72	AA												
yes	yes										100	72	AB												
yes	yes										50	74	AA												
			yes			yes	yes				25	77	AA												
yes			yes	yes		yes					50	95	AA	1	yes										
yes											100	124	AA												
yes						yes					25	130	AA												
yes		yes									25	141	AA	24			yes		yes	yes		yes			
									yes		100	144	AA												
yes		yes									25	148	AA												
yes											25	160	AA	1		yes									
yes		yes					yes	yes			25	172	AA	142			yes	yes	yes	yes	yes	yes	yes	yes	yes
yes		yes					yes	yes			50	173	AA	63			yes	yes		yes		yes			
yes		yes					yes				50	174	AA	35		yes		yes				yes			
						yes					100	177	AA												
yes											25	188	AA												
yes	yes										25	189	AA												
yes											25	190	AA												

CHARCOAL										CHARRED PLANT MATERIAL															
Oak (<i>Quercus</i> sp.)	Ash (<i>Fraxinus excelsior</i>)	Alder/hazel (<i>Alnus/Corylus</i>)	Hazel (<i>Corylus avellana</i>)	Apple/pear/whitebeam (Malloideae)	Birch (<i>Betula</i> sp.)	Gaulther rose (<i>Viburnum opulus</i>)	Willow/poplar (<i>Salix/Populus</i>)	Cherry-type (<i>Prunus</i> sp.)	Conifer-type	Indet.	% identified	Context	Sample Code	Actual quantity	Naked wheat (<i>Triticum</i> sp.)	Wheat (<i>Triticum</i> sp.)	Cf. spelt (<i>Triticum aestivum</i> cf. ssp. <i>spelta</i>)	Barley (<i>Hordeum</i> sp.)	Oat (<i>Avena</i> sp.)	Indet. cereal	Cf. rye (cf. <i>Secale cereale</i>)	Rye brome (<i>Bromus secalinus</i>)	Cf. flax (<i>Linum usitatissimum</i>)	Knotgrass (<i>Polygonum</i> ssp.)	
yes								yes			100	194	AA												
		yes			yes		yes				25	198	AA												
yes							yes				50	199	AA	34		yes		yes							yes
		yes					yes				100	200	AA	17		yes		yes		yes					yes
yes											25	203	AA												

APPENDIX E

POTENTIAL RESIDUES FROM PYROTECHNIC PROCESSES

Dr Roderick Mackenzie

1.0 INTRODUCTION

- 1.1 The following report is an assessment of possible metallurgical and/or high-temperature production residues recovered by the excavation at the Aldi car park site at Goldthorpe, South Yorkshire.

2.0 METHODOLOGY

- 2.1 The aim of this assessment has been to provisionally identify the residues and determine whether further analysis could provide additional information about the site. In some cases, scientific analysis can help to determine the process origin of slag-like residues, although this is normally only justified where there is good supporting archaeological evidence.
- 2.2 All of the fragments in the assemblage have been visually examined and, where relevant, tested for magnetic response. A summary of the findings of the assessment is given in Table 1.

3.0 Results

Table 1: Results

Context	Count	Weight (g)	Description
58	c. 100	48.5	Coal derived fuel ash/partially burnt coal (cinders)
58	c. 70	127	Coal
58	1	3	Coal derived fuel ash slag
77	4	<3	Coal derived fuel ash/partially burnt coal (cinders)
172	7	12	Fragments of orange-red coloured fired clay
173	3	2	Fragments of orange-red coloured fired clay
198	5	1	Fragments of orange-red coloured fired clay
199	8	11	Fragments of orange-red coloured fired clay

4.0 DISCUSSION AND INTERPRETATION OF RESULTS

- 4.1 The assemblage largely consists of small fragments (<1cm³) of coal, partially burnt coal (cinders), and fired clay. All of the coal, and almost all of the cinders were found in context **58**, the upper fill of a field system ditch initially thought to date from the late Iron Age–early post-Roman period. One small fragment of slag was recovered from **58**, which appears to be coal-derived fuel ash slag.
- 4.2 The presence of coal and related combustion residues in deposit **58** is not that surprising, as archaeological evidence for the use of coal as fuel in and around the Roman period is extensive, and has been reported and reviewed by several authors, including Dearne and Brannigan (1995) and Travis (2008). As Goldthorpe is situated in an area where coal deposits are found at, or close to the surface, it seems likely that the coal found in context **58** originated locally.
- 4.3 All of the small fragments of fired clay in the assemblage appear to be composed of the same low-fired orange-red clay; none of the fragments have obvious signs of vitrification or slagging that is a characteristic of clay from the linings of high-temperature hearths, furnaces and kilns. This suggests that the fragments are possibly from a domestic heating or food preparation hearth or oven. It is worth noting that previous archaeological fieldwork in the immediate area found the truncated remains of two corn-drying ovens (Ross 2014), so it is possible that the fragments of clay were originally part of these structures.
- 4.4 At the time of writing, there is not enough evidence to indicate that the production or working of metals was an activity that took place at the site, and the general opinion is that the materials in the assemblage are more likely to relate to domestic heating and food preparation.

5.0 RECOMMENDATIONS

- 5.1 No further analysis of the assemblage is required and it can be disposed of in the normal manner.

REFERENCES

Dearne, M.J. and Brannigan, K. (1995) 'The Use of Coal in Roman Britain',
The Antiquaries Journal 75, 71–105

Ross, C. (2014) *Excavation of a Changing Landscape at Goldthorpe, South Yorkshire*. Northern Archaeological Associates report 13/131 (unpublished)

Travis, J.R. (2008) *Coal in Roman Britain*. Oxford: British Archaeological Reports

APPENDIX F

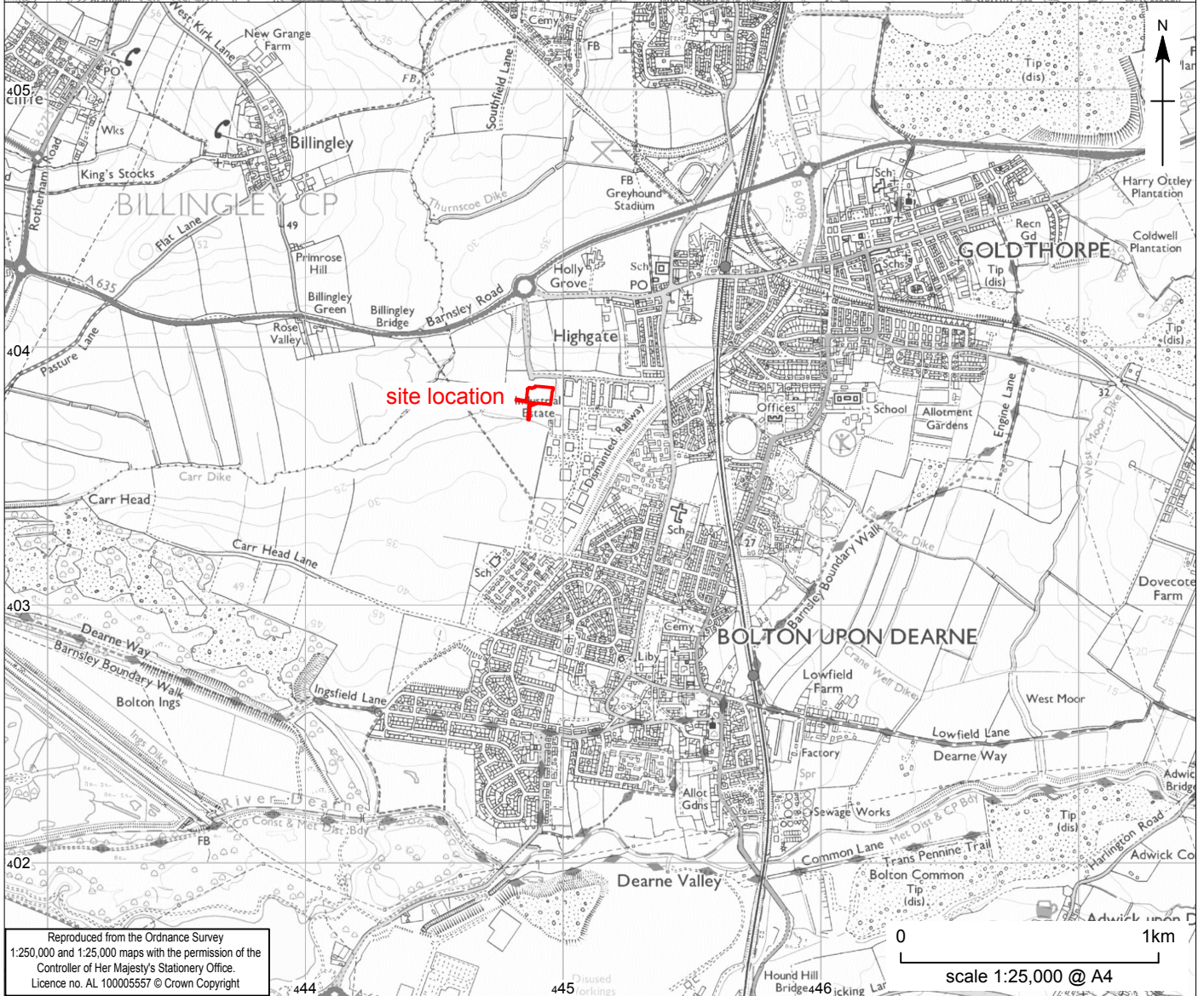
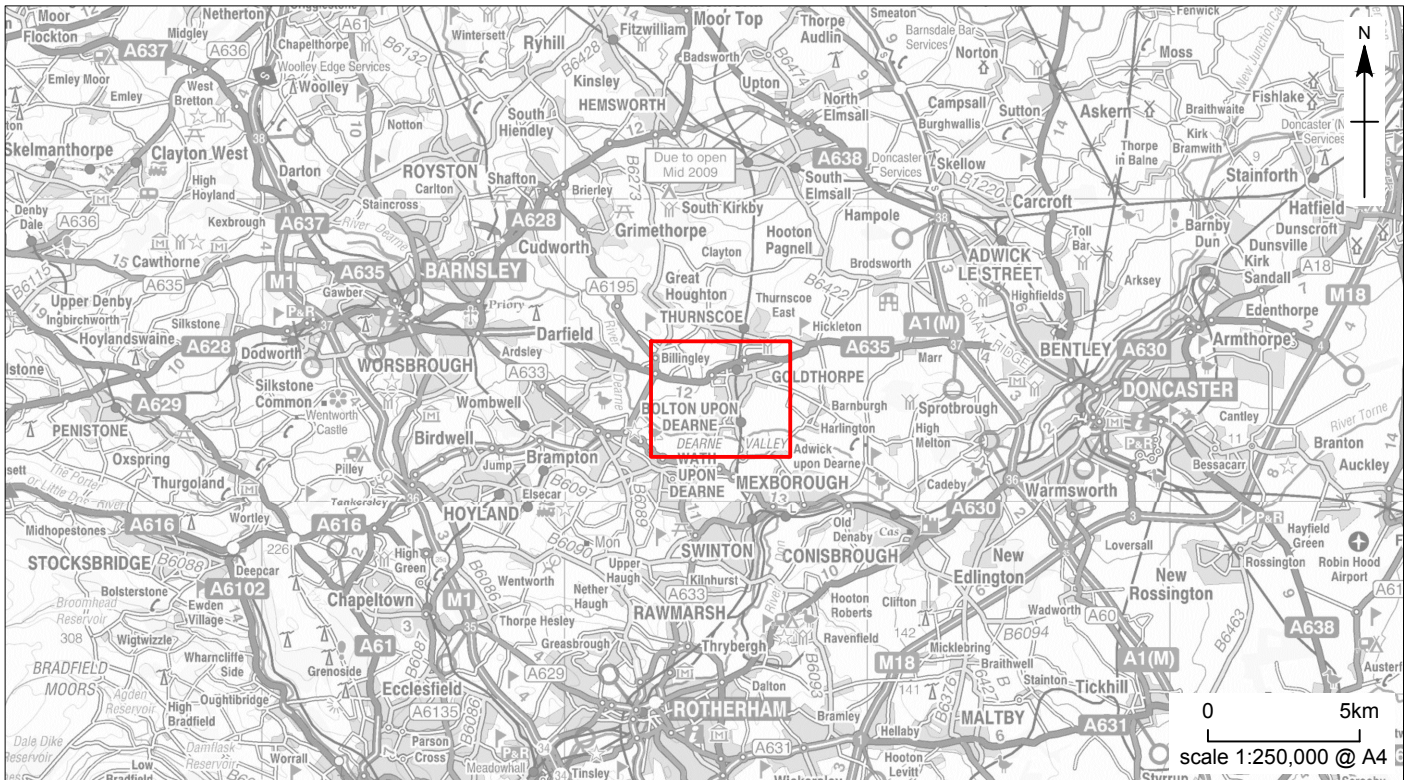
RADIOCARBON DATES

1.0 SUMMARY

- 1.1 Four items of charcoal or charred grain obtained from fine residues of soil samples were submitted to the Scottish Universities Environmental Research Centre Accelerator Mass Spectrometry Facility in East Kilbride for radiocarbon dating. One sample (141 AA) did not contain sufficient carbon and a second item from the same sample was submitted in replacement.
- 1.2 The results of the dating programme are given in Table 1. Copies of the radiocarbon dating certificates are held in the project archive.
- 1.3 ¹⁴C ages are quoted in conventional years BP (before AD 1950). 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.
- 1.4 The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program OxCal4.

Table 1: Radiocarbon dates

Laboratory Code	Sample Ref	Identification	Radiocarbon Age (BP)	$\delta^{13}\text{C}$ (‰)	Calibrated date range (68.2% probability)	Calibrated date range (95.4% probability)
SUERC-69396 (GU41964)	72AA	Charcoal: fraxinus excelsior (ash)	5324 ± 28	-26.0	4233 (5.1%) 4224 cal BC 4207 (26.8%) 4161 cal BC 4131 (36.3%) 4071 cal BC	4242 (95.4%) 4049 cal BC
SUERC-69397 (GU41965)	95AA	Charcoal: Salix/ Populus (willow/ poplar)	2165 ± 28	-25.5	351 (37.7%) 300 cal BC 227 (1.5%) 224 cal BC 210 (29.0%) 172 cal BC	359 (45.9%) 276 cal BC 260 (46.0%) 152 cal BC 136 (3.5%) 114 cal BC
(GU41966)	141AA	Charred grain: Triticum aestivum ssp. spelta (spelt)	Failed: insufficient carbon			
SUERC-69398 (GU41967)	172AA	Charred grain: Hordeum sp. (barley)	1968 ± 29	-24.2	4 (68.2%) cal AD 66	44 cal BC (95.4%) cal AD 85
SUERC-70445 (GU42259)	141AA	Charred grain: wheat	1952 ± 29	-23.2	16 (68.2%) cal AD 80	36 (1.0%) 31 cal BC 22 (2.8%) 11 cal BC 2 cal BC (83.9%) cal AD 90 99 (7.7%) cal AD 124



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Goldthorpe RDC Car Park: site location

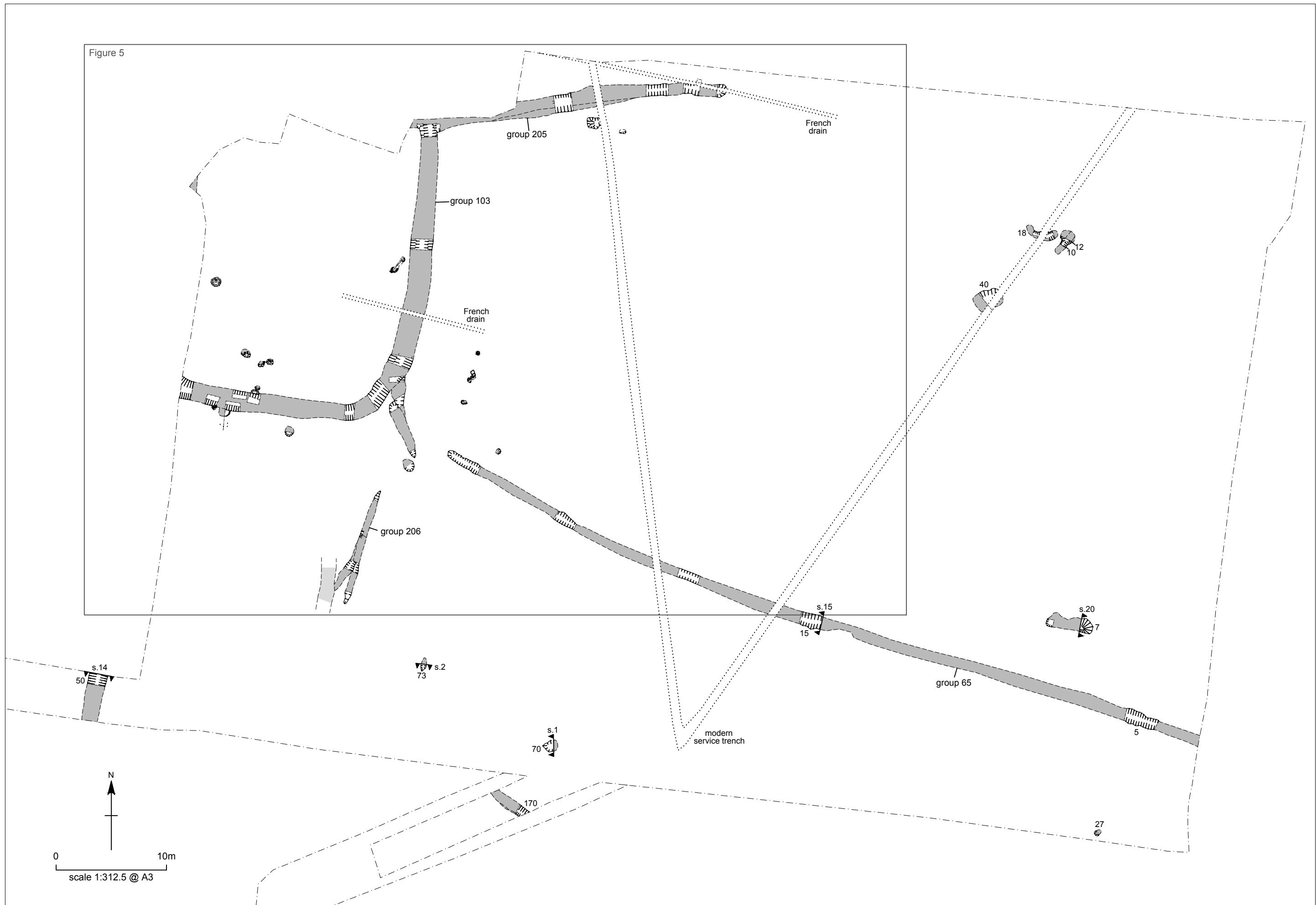
Figure 1





Goldthorpe RDC Car Park: 2016 excavation area overlain on geophysical survey results

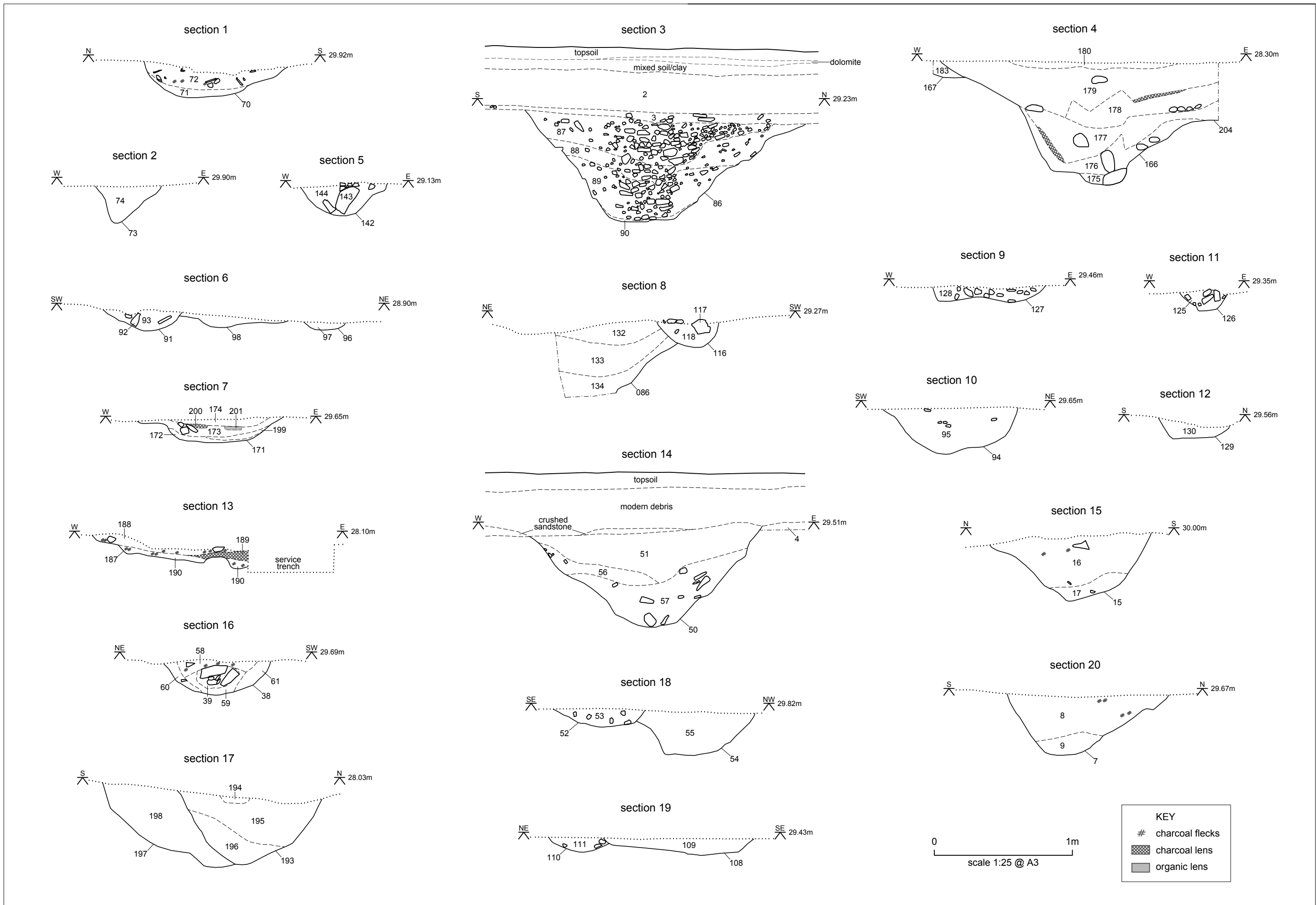
Figure 3



Goldthorpe RDC Car Park: overall site plan with section locations



Goldthorpe RDC Car Park: plan of enclosure area with section locations



Goldthorpe RDC Car Park: sections

Figure 6



Plate 1: Prehistoric pit 70

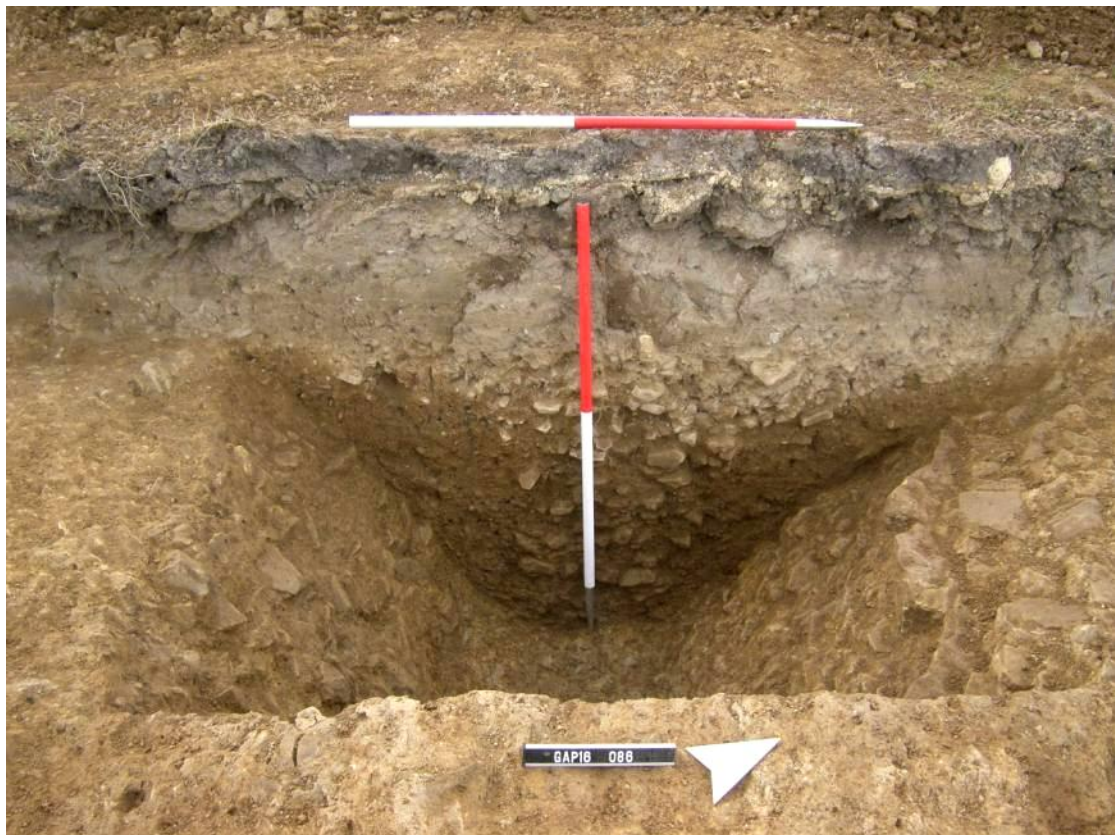


Plate 2: Enclosure ditch 103, segment 86, showing stony fills



Plate 3: Enclosure ditch 103, segment 166, cutting gully 167 (left) and joining field system ditch 204 (right)



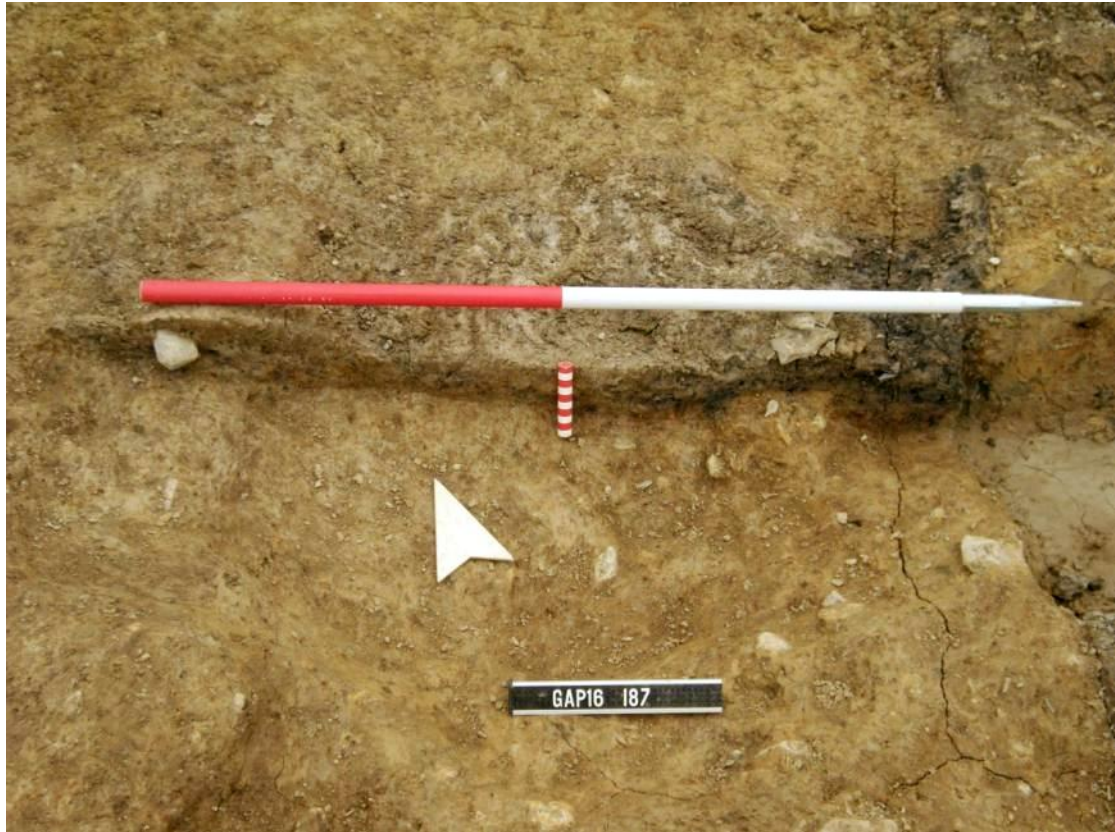
Plate 4: Stone packing 92 in posthole 91



Plate 5: Pit 171 showing charcoal-rich primary fill 172



Plate 6: Pit 129



*Plate 7: Possible kiln **187** cut by modern service trench*



*Plate 8: Principal field system ditch **50***



Plate 9: View of ditch 65 during stripping (looking west)



Plate 10: Stone deposit 39 in ditch terminal 38, Group 65



Plate 11: Ditch 197 re-cut by 193, Group 205