ARCHAEOLOGICAL WATCHING BRIEF ON LAND ON THE HOLDINGHAM RISING MAIN PIPELINE (HOLDINGHAM PUMPING STATION TO SLEAFORD STW) (HRM04)

Work Undertaken For
Anglian Water Services Ltd

February 2007

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National Grid Reference: TF 067 471 to TF 083 473
LCNCC Accession Number: 2005.62
OASIS ID - archaeol1-23580

ARCHAEOLOGICAL PROJECT SERVICES

APS Report No. **10/07**

Quality Control

Holdingham Rising Main Pipeline
Sleaford, Lincolnshire
(HRM04)

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1. SUMMARY

An archaeological watching brief was undertaken during the construction of a pipeline route for Holdingham Rising Main, to run from Holdingham Pumping Station to Sleaford Sewage Treatment Works, Sleaford, Lincolnshire. A number of test pits were also excavated and an area of the pipeline was fully excavated after significant archaeological features were uncovered.

Within the area of the main excavation an early Neolithic tree-throw hole was found which originated from a time of early clearance and settlement. In addition, an unusual ring ditch comprising four segments each with rounded terminals was uncovered, and this was considered to be a ceremonial monument of late Neolithic date. This may have been part of a wider ritual landscape in the area.

The excavated area was subsequently crossed by a series of ditches, dated from stratigraphic evidence and pottery to the late Iron Age. The pottery shows similarities to ceramics from Old Sleaford. Five phases of construction of the ditches were seen which indicated successive use of the area for agricultural purposes over a number of decades. The ditches may have been boundaries for fields or plots, and may have held fences or hedges and been subdivided by further small fences. Evidence of metalworking and weaving showed that an Iron Age settlement lay nearby. Some Romano-British finds in the ditches probably originated from a nearby settlement.

Agricultural activity continued through the medieval period with traces of a ditch and some pottery, and this use probably continued into the post-medieval and modern periods. Modern construction work was apparent in the test pits' sections.

2. INTRODUCTION

2.1 Definition of a Watching Brief

An archaeological watching brief is defined as, '*a formal program of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits maybe disturbed or destroyed.'* (IFA 1999)

2.2 Planning Background

Archaeological Project Services (APS) was commissioned by Anglian Water Services Ltd to undertake an archaeological watching brief during groundworks being carried out for the construction of a pipeline route. The pipeline was proposed to run from Holdingham Pumping Station to Sleaford Sewage Treatment Works, Lincolnshire. This is referred to as Holdingham Rising Main.

The watching brief was carried out in accordance with a specification designed by APS and approved by Lincolnshire County Council (Appendix 1). The archaeological work took place between 15 December 2004 and 10 June 2005.

2.3 Topography and Geology

The pipeline was located 1.5km north of Sleaford (Fig. 1), between Holdingham pumping station, Northfield Farm (TF067 471), and Sleaford Sewage Treatment Works (TF 083 473). The total length of the route was about 1.9km (Fig. 2).

The pipeline ran northeast from the pumping station to the north of Northfield Farm, up to the A17 where the pipeline turned east and closely followed the edge of the road the junction with East Road.

The pipeline route then followed the roads around Bonemill junction to cross the Sleaford to Lincoln railway and the A17 to reach the Sewage treatment works. The route of the pipeline lies on flat ground at approximately 10m OD.

Local soils consist of gleyic brown calcareous earths of the Ruskington Association, with some sand and clay of the Curdridge Association near the Slea navigation. Ruskington soils tend to have an undulating clay substratum at depth, overlying a solid geology of Upper Jurassic limestone. Soils of the Curdridge series are deep, permeable, coarse and loamy lying on fine grained Jurassic sand (Hodge *et al* 1984, 154 and 304).

2.4 Archaeological Setting

A desk-based assessment (Archaeological Project Services 2004), an aerial photographic assessment (Air Photo Services 2004) and a geophysical survey (Stratascan 2005) have been undertaken along the length of the proposed pipeline corridor. Known archaeological remains in the areas around the construction route range from the prehistoric to medieval period (APS 2004, fig. 10), and other remains are likely to be present as indicated by the assessments and surveys.

Some indication of Neolithic presence in the area is provided by finds of Neolithic axes and flintworking, and Bronze Age flints have also been found. At Sleaford North Junction, near the roundabout and Bonemill Lane, evidence of Iron Age activity, in the form of ditches and gullies, an enclosure and a trackway, are known about 70m to the south of the pipeline route. An Iron Age double ditch and other ditches, pits and gullies have also been identified in this area 300m south of the pipeline (Cope-Faulkner 2002; Hambly 2000; Rayner and Young 2000. Iron Age occupation is known at Old Place, Sleaford, which may have been a sub-capital for the local tribe.).

Adjacent to the proposed pipeline corridor a field system and associated enclosures of probable Romano-British origin lie close to the Roman road but on the north side of the A17 (Air Photo Services, 2004). The pipeline will cross the route of the Mareham Lane Roman road (Cope-Faulkner 2002) and further west towards the centre of the current pipeline corridor, a substantial quantity of material suggests that a Romano-British site, possibly a farmstead, lies to the south of the route.

Features, identified from aerial photography, and which may intersect the pipeline corridor include ditches, which may form part of an enclosure, adjacent to Northfield Farm. Ditches and other linear features which may be associated with the area of Roman occupation to the south of the corridor were also found.

Medieval ridge and furrow cultivation was also seen on aerial photographs and it is thought that this area formed part of the north field of the medieval three-field system in this area until the 18th century (Pawley 1996, 28).

Geophysical survey, undertaken on the route between the pumping station and the industrial units adjacent to East Road, identified both positive and negative linear anomalies of possible archaeological origin, possibly indicating the location of ditches and banks. A small group of anomalies of possible agricultural origin were seen near the industrial units towards the eastern end of the pipeline corridor. Other responses indicated isolated features, such as pits, and the presence of ferrous objects. In addition modern pipelines and service trenches are known to cross or lie adjacent to the pipeline route.

Some disturbance of the archaeological remains is suspected due to modern road works, drainage and medieval agriculture.

3. AIMS

The aim of the watching brief, as detailed in the specification (Appendix 1), was to record and interpret archaeological features exposed during the ground works for the pipeline construction. The objectives were to determine the form, function, spatial arrangement, date and sequence of any archaeological remains. Time was to be allowed to enable an appropriate record to be made of any archaeological remains.

4. METHODS

The watching brief was undertaken during the groundworks phase of the development, and covered the length of the 1.9km of the pipeline construction corridor which is approximately 10m wide (Fig. 2). In addition a number of test pits were dug along the route to investigate specific areas 1, 2, 3 and 4 (Fig. 2).

Topsoil stripping along the pipeline corridor was carried out under close archaeological supervision. A mechanical excavator fitted with a toothless ditching bucket removed the topsoil and other overburden.

On completion of the removal of the topsoil and overburden the nature of the underlying deposits was assessed by hand excavation. Any features or significant deposits identified were cleaned and recorded in plan to enable the identification and analysis of the archaeological features exposed. Time was given for investigation, and recording of features and deposits during this process.

During the watching brief significant archaeological features were uncovered in the central area of the site and their location is indicated as the area of excavation on Figs 2 and 3. Each deposit or feature revealed was allocated a unique reference number (context number) with an individual written description. A photographic record was compiled depicting the setting of the site, section drawings and recorded features. Sections were drawn at scales of 1:10 and 1:20 and their locations plotted on annotated sketch and scale plans. The location of all the sections is detailed in the results.

Recording of the deposits encountered during the watching brief was undertaken according to standard APS practice.

Records of the deposits and features identified during the watching brief were examined. Phasing was assigned based on the nature of the deposits and recognisable relationships between them, supplemented by artefact analysis (Appendices 3 and 4). A report on the animal remains is also presented (Appendix 5) and upon the charred plant macrofossils and other similar remains (Appendix 6).

A summary of all contexts, with interpretations, appears as Appendix 2. Contexts are described below with the numbers assigned in the field shown in brackets.

5. RESULTS

Following post-excavation analysis, seven phases were identified within the main area of excavation and of the watching brief, and these are shown below. Results of the test pit excavations are also given.

5.1 Phase 1 - Natural deposits
5.2 Phase 2 - Early Neolithic features and deposits

5.3 Phase 3 - Later Neolithic features and deposits
5.4 Phase 4 - Iron Age features and deposits
5.5 Phase 5 - Medieval features and deposits
5.6 Phase 6 - Undated features and deposits
5.7 Phase 7 – Modern features and deposits

The locations of the features uncovered in the excavation are shown on Figs 4 to 6, and the test pits are shown on Figs 7 to 10.

5.1 Natural deposits

The earliest deposits found on this site during the course of the watching brief and excavation and the digging of the test pits were identified as naturally deposited gravel and sands and occasional Cornbrash. These deposits were uncovered throughout the site.

The natural deposits comprised light brown and yellow sands and gravels (032, 043, 051, 052, 056, 057, 058, 089, 199, 200, 201, 202, 208 and 209).

5.2 Phase 2 – Earlier Neolithic features and deposits

Within area B of the excavation (Fig. 4) features were uncovered which lay beneath the segmented ring ditch. There was no dating evidence but the stratigraphic position indicates these are the earliest features on the site.

The main feature of this phase was an oval hollow [075], which measured 1.90m east to west and 2.80m from north to south, and was up to 0.4m deep (Plate 5). This was clearly seen in section to be a tree-throw hole left by the uprooting of a large tree (Fig 11, S20). Material from the old ground surface (090/091) had been dragged into the area of the displaced root and soil was pushed up by the tree-root forming a characteristic humped disturbance of the subsoil (089).

Associated with the tree-throw hole was the u-shaped gully [082] which was approximately 0.62m wide and 0.23m deep (Fig. 11, S21) and continued south as [093] where it was more shallow and only up to 0.08m in depth. This gulley may have been connected to the removal or use of the tree. To the west, also stratigraphically earlier than the ring ditch lay a shallow irregular feature [107] with a single fill (106) measuring 0.75m x 0.50m x 0.09m deep. There was no dating evidence but it was possible that this feature too belonged to an early Neolithic phase of use of the site.

5.3 Phase 3 - Later Neolithic features and deposits

In the centre of the excavated area B lay a ring ditch with an overall external diameter of 9.5m (Plates 1, 2 and 4). The ditch comprised four segments although the northern two were not fully excavated, as these lay outside the pipeline corridor (Fig. 4). Where excavated all the segments were found to retain rounded terminals.

The northwest segment of the ring ditch [154] and [143] was composed of a northeast to southwest curving linear 0.80m wide, at least 4.00m long and 0.28m in depth. The ditch had steep sides and a gently concave base. In this northwest segment the ring ditch [143] was truncated by later adjacent ditch [145], and the terminal [154] by later west to east linear [152] (Fig. 11, S54 & 55).

The southwest segment of the ring ditch [105], [103] (Plate 7) and [101] had an overall length of 5.00m, steep sides and a concave base (fig. 11, S 30 & S31) (Plate 6). The ditch was composed of a curving linear running approximately northwest to southeast which was between 0.60m and

0.75m wide and was 0.30m deep (Fig. 11, S30).

The curved section of the ditch in the southeast [108], [110] (Plate 9) and [193], ran in a northeast to southwest direction for approximately 4.50m and had steep sides and a concave base (Plate 8). The ditch was between 0.62m and 0.66m wide and 0.30m deep (Fig. 12, S36).

The northern terminal of the southeast ditch segment ditch [193], was 0.14m wide and 0.28m deep (Fig. 12, S71), and a box section cut at this point (Fig. 4) indicated that the fill of the ring ditch (111) was cut by the later west to east ditch [112] (Fig. 12, S48).

The northeast segment of the ring ditch [189] and [134] curved slightly and ran from northwest to southeast. A total of 2.50m of the ditch was exposed and it was seen to be about 0.50m wide and 0.18m deep (Fig. 12, S46). The southeast terminal the ring ditch had been cut by the later west to east linear ditch [122] (Fig. 12, S69). This section of the ring ditch lay at a slightly higher level, and appears to have been truncated by later agriculture

In the northwest segment of the ring ditch two sherds of late Iron Age pottery were found in (153) the fill of [154] and four sherds were found in context (142) fill of [143] (see Appendix 3). Also in (153) a burnt stone was uncovered (see Appendix 4). In the southwest section of the ring ditch a single sherd of late Iron Age pottery was found in context (100) the fill of ditch [101]. Four sherds were found in context (104) fill of [105] and five sherds in [105]. During the watching brief on this area four sherds of late Iron Age pottery were found in the southwest quadrant (203=100/102/104), fills of [101], [103] and [105] (Fig. 4).

In the southeast segment of the ring ditch five sherds of late Iron Age pottery were found in (111) fill of [110], and one sherd in (192) fill of [193]. A spread of late Iron Age pottery, 12 sherds, was found as a surface scatter (061) within this southeast segment of the site between cuts [108] and [110]. Within the terminal of this southeast quadrant [108] five sherds of late Iron Age pottery were found (204=109), fill of [108]. In the northeast segment where the ditch had been truncated, a single sherd of late Iron Age pottery was found in (188) the fill of [189] (Fig. 4).

There is no secure dating evidence for this segmented ring ditch. Material from the ditches is not securely sealed and is likely to be contaminated due to the subsequent use of the site, and therefore scientific dating of deposits in the ditches was likely to prove unsatisfactory However, the distinctive form of the ring ditch and its stratification suggest that this is most likely to be a late Neolithic feature. The sherds of pottery found in these contexts is likely to have been scattered and introduced into the upper part of the fills by later agriculture which was quite extensive on this site and surrounding areas.

A total of 21 pieces of animal bone was found in the late Neolithic ring ditch (see Table 1, Appendix 5). However, the faunal remains were poorly preserved and were too limited to provide any detailed information on the site in this period.

Charred plant remains were found in these ditches but the quantities of material recovered were very small and the origin was unclear. In addition, coal fragments were present throughout all the contexts examined, including those considered to be later Neolithic (see Appendix 6, samples 3, 4, 8, 21 and 26). Therefore, intrusive material was present and the ditch assemblages had been disturbed by subsequent agricultural practices including steam ploughing.

Three small circular features, small pits or postholes, lay close to the segmented ring ditch and although undated they may be associated with it. Circular feature [084] measured 0.25m x 0.28m and was 0.70m deep with steep sides. This lay outside the southeast segment of the ring ditch and cut the early Neolithic gully [093] (Fig. 12, S22). A second small hollow or posthole [183] measured 0.21m x 0.26m x 0.07m deep and lay between the terminals of the two southern segments of the ring ditch (Fig. 4). A small circular pit [191] 0.42m in diameter and 0.14m deep lay at the southern end of the northeast segment of the ring ditch. These contained no finds.

5.4 Phase 4 - Late Iron Age features and deposits

In this phase a number of linear features crossed the site mainly from west to east but also from north to south and some pits were uncovered. This phase has been divided into five sub-phases, 4a to 4e. All the features are shown on Figs 5i, 5ii and 5iii, where the phasing is also illustrated.

Phase 4a - The earliest of these features is an elongated wide ditch [112], [194], [070], [171], and [115] (Figs 5i and 5ii) which ran west to east from area B to area C. This wide ditch had rounded terminals at both the west and east ends, vertical sides and a flat or slightly concave base and was approximately 9.00m long. It varied in width between 0.84m [194] and 1.16m [171] and in depth between 0.29 [194] and 0.44m [115]. Ditch section [194] had partially infilled and had been recut (Fig. 12, S60).

The ditch contained a total of 199 sherds of late Iron Age pottery, mainly found in a number of contexts in sections cut through the ditch (Appendix 3a). Thirty one sherds were uncovered as a surface spread (060) over (113) the fill of the terminal of [112], and a further 22 sherds were found in (113). Forty three sherds were found in (140) the upper fill of [194] and nine sherds in the lower fill (148) of [194]. Five sherds of pottery were found in (071) the fill of ditch section [070] (Fig, 13, S17a), and during the watching brief on this area another 34 sherds were found (205=071). In ditch section [171] 12 sherds were found in (170), and in section [115] 41 sherds were found, (114, 40 sherds and 132, 1 sherd). Also, in this ditch section [115] two sherds of late Iron Age pottery were found during the watching brief (207=114). In addition, three sherds of Romano-British pottery were found in (114) (see Appendix 3c).

A number of other finds were made in this ditch (Appendix 4). Fourteen pieces of a late Iron Age triangular fired clay loomweight were found in (140) the upper fill of [194], together with some charcoal roundwood. Part of an abraded Roman tegula was found in (071) fill of [070]. In context (114) fill of ditch section [115] were found three pieces of fired clay, some industrial residue which may have been a hearth bottom and four pieces which may have been iron smithing slag. In context (132) a fill of [115] a fragment of copper alloy was found.

Phase 4b – Cutting the earliest Iron Age ditch was another linear ditch [157], [117], [174] and [178]. This commenced at the east end of area B and ran into area C (Figs 5i and 5ii). This was a narrower ditch which varied in width between 0.60m [178] and 0.85m [117], and in depth between 0.28m [178] and 0.42m [117]. The ditch ran west to east and cut the earlier ditch (Fig 13, S64). At its western end the ditch may have extended further west (to [112]) and may have totally recut the earlier ditch of phase 4a but this could not be determined from the sections. This second phase ditch eventually turned northeast and appeared to continue northwards beyond the extent of the excavation (Fig. 5ii, area C).

A total of 63 sherds of late Iron Age pottery were found in this ditch (Appendix 3). In context (158), fill of ditch cut [157], 46 sherds were uncovered, and two sherds were found during the watching brief (206=158). In (116), fill of [117] 10 sherds were found. Context (175), fill of [174], contained five sherds. Also in (158) four pieces of fired clay and some charcoal roundwood were found.

Phase 4c – A section was cut across several ditches in area C (Fig. 14, S37) and a ditch or large pit [139] was uncovered. This feature was at least one metre long west to east and up to 0.72m wide and 0.22m deep. The sides of the pit or ditch sloped gently and the base was broad and uneven. This may be part of the series of Iron Age ditches seen on the site or could be a large pit of unknown function which cut ditch [117] and was in turn cut by ditch [072]. There were no finds in the fill (133), but stratigraphically this feature is of Iron Age date.

Phase 4d – In area D of the excavations a pit 1.4m north to south and up to 0.83m wide and 0.16m deep was found [167+087]. This pit was cut by later Iron Age ditch [085] (Fig. 13, S19) (Plate 11) and is also most likely to be of Iron Age date, although there were no finds to provide any secure information on its possible function or on its date. In area B a gully [156] was found which was 1.50m long and 0.43m wide and 0.33m deep (Fig. 13, S57). This was cut by later Iron Age ditch [152] (Fig. 13, S56).

Phase 4e – In this phase a number of connected late Iron Age ditches crossed the site, approximately west to east and north to south.

Running west southwest (WSW) to east northeast (ENE) across the site was a wide ditch [217+184], [212], [152], [094],[210], and [122+072] (areas A and B). Two further ditches joined from the south [196] in area A and [215+080] in area B. The main WSW-ENE ditch was between 1.78m [217+184] (Fig. 13, S68) and 2.08m wide [122+072] and up to 0.22m deep. In area B the ditch had silted up before being recut in the medieval period (Fig. 14, S17b). The north-south ditch [196] (area A) was 1.90m wide and 0.38m deep (Fig. 14, S72), and the north to south ditch [215+080] (area B) was 1.04m wide and 0.18m deep (Fig. 14, S18). All the ditches had gently sloping sides and flat but uneven bases. Sections cut at the junctions of the WSW-ENE and N-S ditches, for example at [215], showed them to be contemporaneous (Fig. 14, S43), and indicated that the WSW-ENE ditch was cut by a later ditch [214].

The WSW-ENE ditch continued eastwards into area C as [072] (Fig. 14, S37) and [176] (Fig. 15, S65), and also into area D as [065] (Fig. 15, S12), where the ditch was only 0.85m wide and 0.20m deep. This main ditch continued as [097] where it was 2.00m wide and 0.23m deep, and it appeared to continue beyond the limit of the excavations (area D, Fig. 5ii). A connecting ditch from the south [069] was about 9.00m long, 1.20m wide and 0.23m deep (Fig. 15, S15) (Plate 10). This north to south ditch also connected with two further ditches [099] and [066] which returned southwest. Sections cut at junctions of these ditches, for example [069] and [099] (Fig. 15, S26 and S27), again showed that the ditches were all of the same date.

The ditch running SW from [069], that is, [099], [063], [085], [161] in area C, continued westwards in area B as [149] with a rounded terminal [146]. The width of this main ditch varied between 0.43m [063] (Fig. 15, S11) and 0.90m [085] (Fig. 15, S49), and was 0.25m deep with a concave base and gently sloping sides. The terminal [146] had a flat base, and was 0.70m wide and 0.27m deep (Fig. 15, S52). Adjacent ditch [163] was of similar

dimensions and contemporaneous (Fig. 15, S61).

A second ditch [066] was also seen to run southwest from the north to south ditch [069], and this too was contemporaneous (Fig. 16, S16), and approximately 0.85m wide and 0.12m deep with a flat base. This ditch continued WSW beyond the excavation and ENE as [066] in area E. This section of the ditch was 1.00m wide and 0.11m deep with a flat base and gentle sides (Fig. 16, S13). Running south from [066] in area D was another ditch [187] approximately 0.50m wide and 0.12m deep.

A total of 58 sherds of late Iron Age pottery was found in this phase of the excavation, all in ditch fills. A single sherd was found in context (068), fill of ditch [069], in area D. Sixteen sherds were found the north-south ditch [080+215] in area B; 15 were in context (079), fill of [080], and one sherd was in context (131), fill of [215]. Also in [079] 12 small pieces of fired clay (15g) were found and a large burnt stone (730g) (Appendix 4). In north-south ditch [196] in area A, one piece of post-medieval tile (2g) was found. In context (086) fill of [085] in area B a single sherd of Romano-British pottery was found.

Thirty nine sherds of late Iron Age pottery were found in ditch [149], 38 sherds in (150) and one sherd in (138), and two sherds were found in (164), fill of ditch [163], both ditches being located at the southeast of area B.

The environmental information from the site indicates that barley, wheat and spelt wheat glume bases were seen in Iron Age samples (10, 11 and 18, Appendix 6). Molluscs found in the ditches indicated dry open grassland conditions. However, there were insufficient quantities of material to provide any quantifications and fragments of coal from steam ploughing suggested some contamination was possible. Some bones of cattle and sheep/goat were apparent on the site in the late Iron Age (Appendix 5) but the preservation of the animal bone assemblage was poor and the remains too limited to provide much information. No real differences in the remains within the Iron Age phases could be seen (Appendix 5, table 1).

5.5 Phase 5 - Medieval features and deposits

Crossing the excavation from WSW to ENE in areas A, B and C, was a further ditched feature (Figs 6i and 6ii), [184], [214], [152], [094], [077] and [125].This ditch cut through the wide late Iron Age ditch of phase 4e (Fig. 16, S68). The ditch ran for approximately 30m across the site and varied in width along its length. In area A the ditch was 1.42m wide [184] (Fig. 13, S68), in area B 1.48m wide [094] (Fig. 16, S24), and 0.80m wide [077] (Fig. 14, S17b). In area C this ditch was between 0.95m [077] (Fig. 14, S37) and 0.83m wide [125] (Fig. 16, S39). This feature is a medieval furrow or ditch which cuts the earlier ditches.

In context 151, fill of ditch cut [152], one sherd of medieval pottery, part of a jug handle of Lincoln glazed ware of mid/late 12th/13th century date was found. Six sherds of Romano-British pottery were found in context (130), the fill of ditch section [214] (Appendices 3c and 4).

5.6 Phase 6 – Undated features and deposits

Within the area of the main excavation a few features were uncovered which could not be reasonably assigned to any phase and remain undated.

In the north of area B a short length of ditch with a rounded terminal [123] was found. The ditch extended beyond the

north limit of the excavation and was seen for 3.65m. It was 0.80m wide and 0.33m deep with steep sides and a concave base (Fig. 17, S44). A single burnt stone was found in context (124) the fill of [123] (Appendix 4). Also in (124) 2 unidentified and undated animal bones were found (Appendix 5).

Also in area B, alongside the northwest segment of the ring ditch, lay another ditch or elongated pit [145]. This feature was approximately 4.00m long, 0.70m wide and 0.19m deep and cut the ring ditch segment [143] (Fig. 11, S54). There were no finds.

In area C three pits were found, [172], [160] and [165]. Pit [172] was oval in plan, measuring 0.70m from northeast to southwest and 0.57m northwest to southeast, with gradual sides and a shallow concave base, and was 0.17m deep (Fig. 15, S65). This pit cut through ditch [174], and there were no finds in the pit. Pit [160] was an oval feature 1.50m long north to south, 0.70m wide and 0.23m deep with moderate sides and a flat base. There were no finds in the fill (159) and it had no stratigraphic relationship to any other features. Likewise [165], which was an irregular oval pit 1.30m long from west to east, 0.90m wide and 0.21m deep. There were no finds.

Within Areas 1 to 4 (see Fig. 2) a number of test pits were dug and the stratigraphy of the sections was recorded. These were in Area 1 (Fig. 7), section 1 (fills from upper to primary, 008, 009, 010, 011, 012), section 2 (013, 014, 015) and section 3 (016, 017, 018, 019, 020). In Area 2 (Fig. 8) section 7 was recorded (039, 040, 041, 042, 043), section 8 (045, 046, 047), and section 9 (049, 050, 051, 052). In Area 3 (Fig. 9) in the test pit section 10 (053, 054, 055, 056, 057, 058) was recorded, and in Area 4 (Fig. 10) three sections were recorded in test pits, section 4 (024), section 5 (026, 027) and section 6 (035). Only in Area 4, in sections 4, 5 and 6, were any features uncovered and these were undated.

In Area 4 (Fig. 10) a linear ditch [025] was confirmed in section 4 (Fig. 17, S4).The ditch had a single fill (024) and was aligned from west to east, about 1.00m wide and 0.09m deep. The fill (024) contained one sherd from a small jug of Bourne D ware with a frilled base, of mid 15th to 16th century date and a single hobnail was also found in (024) (Appendix 4). A linear ditch seen in section 6 of Area 4 [036] was also orientated west to east with gently sloping sides and a concave base comparable to [025]. This ditch was 0.90m wide and 0.13m deep and could have been a continuation of [025]. The fill (035) of ditch [036] contained a single sherd of transfer printed ware blue and white chinoiserie pottery of 19th/20th century date. Also found in (035) was a piece of hand-made brick of post-medieval date, an iron nail and a piece of tile possibly of medieval date (Appendix 4).

Within the test pit 025 (context 024, Appendix 5) a number of animal bones were found including the partial skeleton of a infant/juvenile sheep/goat and a bird and fowl bone. This material is undated.

Similarly, another linear ditch [028] was revealed in a section in this area. This ditch had two fills (026 and 027) and was approximately 1.50m wide and 0.20m deep (Fig. 17, S5). The upper fill (026) contained one piece of medieval tile and a piece of slate (Appendix 4).

Also apparent across the site was an undated subsoil which comprised light brown and yellow silty sand with occasional small stones. This was found both within the test pits (031, 034, 042, 046 and 055) and in the main excavation (141). In (031) (Area 4, Fig. 10) two sherds of pot were found, both were Toynton/ Bolingbroke ware, one sherd was

from a jug handle, badly abraded, of mid 15th to 16th century date, and one sherd was from the base of a glazed bowl of 16th date. Also in (031) three pieces of post-medieval hand-made brick were found, one piece of tile possibly of Roman type, a post-medieval iron gate fastener and part of the stem of a 17th century clay pipe (see Appendix 4).

5.7 Phase 7 – Modern features and deposits

In the main excavation in the north of area C an irregular elongated feature [127] of uncertain size 0.41m deep was excavated. This was considered to be a pit or ditch of modern date likely to have been created during the construction of a previous pipeline and it cut medieval ditch [125] (Fig. 16, S39). Two sherds of late Iron Age pottery were found in the lower fill (128).

Identified across the site within the test pits in Areas 1, 2, 3 and 4, was modern topsoil, which varied in different areas of the construction route, from dark brown sandy clay with occasional gravel to dark grey sandy clay with frequent limestone fragments. This was seen within the contexts (008, 016, 029, 033, 037, 039, 045 and 049) of the test pits.

The most recent deposits found on the site comprised hardcore and other modern material dumped during construction and clearance work. These were deposits found within the test pits of Areas 1 to 4 (Figs 7 to 10), and consisted of redeposited natural (002, 009, 010 and 011), and material dumped during construction works (001, 003, 004, 006, 007, 012, 013, 014, 015, 017, 019, 020, 023, 038, 041 and 050). Also in the test pits were found layers of concrete (018 and 044), tarmac (021, 022 and 053) and hardcore (005, 030, 040, and 054). Within (005) a single sherd of late Iron Age pottery was found and in (030) a piece of a 19th century dark green bottle.

6. DISCUSSION

Early Neolithic – The earliest feature on this site is the oval tree-throw hole [075] and its associated gully [082] and [093] found in area B (Fig. 4). A shallow irregular pit [107] may also belong to this phase.

The size and shape of the hollow [075] which resulted from the uprooting of a tree may be closely compared with similar features found elsewhere, for example in large numbers in an area excavation at Reading Business Park (Moore and Jennings 1992, fig. 6). On many sites, both in the north and south of England, these tree-throw holes have been dated to the earlier Neolithic period (Evans *et al* 1999, 244 & 247; Allen 2006), and attributed to a period of early clearance and settlement.

Later Neolithic – In the centre of area B (Fig. 4) a ring ditch was uncovered with an overall diameter of 9.5m which comprised four segments, northwest [154, 143], southwest [105, 103, 101], southeast [108, 110, 193], and northeast [189, 134]. Where fully excavated the four segments were seen to have rounded terminals and to be 4.0m to 4.5m in length.

A total of 34 late Iron Age pottery sherds was found in and around these ditch fills, twelve of which sherds were found as a surface scatter (061) in the southeast segment. It seems likely that this pottery had been spread over the site from the late Iron Age ditches which lie close by during subsequent agricultural activity, as there is ample evidence for later ploughing.

A number of similar segmented ring ditches are known, and have been dated to the later Neolithic period. Two similar segmented ring ditches, approximately 7.5m and 10.0m in diameter, have been found at Harlaxton, near Grantham, Lincs, about 23km to the southwest of Holdingham. These were located by aerial

photography and although not excavated, each appeared to comprise five segments. During subsequent fieldwalking in the area flintwork of later Neolithic date was located in and around these ditches (Heritage Lincolnshire 1982).
At Green Park (the second phase of excavation of Reading Business Park in Berkshire) a segmented ring ditch, probably with two segments, was found and was of similar dimensions (Brossler *et al* 2004, fig. 2.1). A small pit lay between two of the terminals as at this site. There were few finds in the Green Park ditches but animal bone found was dated to 2900 to 2580 cal BC (95.4% confidence, NZA9411) (Brossler *et al* 2004, 7).

At Barrow Hills, Radley a ring ditch with four segments was excavated (Barclay and Halpin 1999, 44), and this again had very similar measurements with an average external diameter of 10.0m, although the ditches were wider and deeper than Holdingham. The ditch fills at Radley were also fairly clean, with a small amount of worked flint and fragments of animal bone being found. The ditch was undated but placed in the late Neolithic on stratigraphic grounds and on its similarity to other ring ditches elsewhere, for example at Dorchester (*ibid,* 281). The exact function of such ditches is unclear, but the lack of domestic finds and of occupation evidence suggests that these ditches to fit into a time of renewed monument construction (*ibid*, 322).

Iron Age – In this period a series of ditches was uncovered which ran approximately west southwest to east northeast, and north to south across the site in all the areas (Figs 5i, 5ii and 5iii). The first ditch (phase 4a) [112, 194, 070, 171, 115] ran west to east and in the second phase another ditch [157, 117, 174, 178] was seen to cut the earlier ditch and turned northeast beyond the extent of the excavation. This second ditch may have extended further to the west ([112]) recutting the first ditch but this could not be clearly determined. In the third phase (4c) a pit or ditch [139], at least a metre long and 0.72m wide and 0.22m deep, cut the previous ditch [117].

The fourth phase of Iron Age ditches (4d) covered the breadth and width of the excavated area with ditches running WSW to ENE [217, 184, 212, 152, 094, 210, 122, 072] in areas A and B and [072, 076, 065] in areas C and D. Several north to south ditches joined this long ditch [196, 215, 080, 069]. From the north to south ditch at towards the eastern end of the excavation [069] another ditch returned southwest [099, 063, 085, 161, 149] ending in a rounded terminal [146]. Ditch [149] also joined another ditch [163] which extended beyond the excavation in area B. In area D the north to south ditch [069] continued south and a further ditch [066] ran from it to the southwest and to the northeast.

Excavation of the junctions of all the ditches in this phase showed them to be contemporaneous in spite of the differing widths and depths across the site, as detailed in the results. In general the wider ditches were between about 1.75m and 2.00m in width and about 0.22m deep. The narrower ditches were around 1.00m in width and 0.20m in depth. All tended to have gently sloping sides and flat but rather undulating bases.

A total of 320 sherds of late Iron Age pottery was found in these ditches, 199 sherds in phase 4a, 63 sherds in phase 4b and 58 sherds in 4e (Appendix 3a). This includes the 38 sherds found in these ditches during the watching brief.

The pottery found in the Iron Age phases belongs to the period of the late Iron Age, probably dating to the decades prior to and following the end of the first millennium BC. The distinctive rim shapes, necked bowl with cordon and pronounced rounded girths indicate the ceramics belong to the

late La Téne regional tradition. The pottery showed similarities with the handmade pottery seen from Old Sleaford, although no wheelmade pottery was seen at Holdingham. Thin section analysis indicated that the pottery was most likely to have been sourced and made locally. There was no distinction apparent between the pottery of the various Iron Age phases, showing that the system of boundaries was deployed and amended within a few decades.

In addition to the Iron Age pottery a number of other finds were made in this phase of the excavations (Appendices 3c and 4). These included sherds of Romano-British pottery and a piece of Roman tile [070] in the first phase. Within the Iron Age ditch system four sherds of Romano-British pottery were found (086 one sherd, 114 three sherds). The only datable sherd was a grey ware fragment (086) probably of the second century AD suggesting that there was occupation of this period in the vicinity most likely in an adjacent area. A Roman site has been identified to the west of the excavation (APS 2004, fig. 10; White 1977, 71), and the material may have been spread around the fields during ploughing. A piece of post-medieval tile found in [196] may also be the result of manuring in later times.

Also within the ditches evidence of smithing and a hearth bottom was found in [115] together with a fragment of copper alloy. Some pieces of fired clay were seen in a number of ditches [115, 157, 080]. Fired clay is seen as an indicator of domestic occupation and may be the remains of ovens or making of weights. Part of a triangular fired clay loomweight was found in [194], suggesting that weaving was taking place in the vicinity. All these finds suggest that there was a some occupation of the late Iron Age in the area with a settlement nearby.

The layout of the late Iron Age ditches appeared to be irregular as was the width and depth of various sections. It seems most likely that these ditches were part of boundaries employed in agricultural activities in the later Iron Age. The wider ditches may have held hedges and the narrower ones fences to create useful boundaries for plots or fields. It is possible that the ditches were supplemented by the addition of wooden or wattle fences, of which no traces remain, and that these made divisions suitable for a variety of agricultural activities for crops or animals.

The environmental information from the site (Appendix 6) indicates that barley, wheat and spelt wheat were apparent in the Iron Age period, but the results suggested that no waste material was present and that the remains recorded were peripheral to a settlement. None of the assemblages contained sufficient material for quantification.

The animal bone assemblage was likewise limited in its potential for providing information on the site (Appendix 5). Much of the bone was heavily leached and poorly preserved, probably biasing the assemblage towards bigger bones, but many of these were not identified with certainty. Horse, sheep and cattle were identified in the Iron Age in very small numbers and no evidence of butchery, pathology or gnawing was seen on any of the remains.

Iron Age ditches, pits and gullies have previously been identified in the area of the pipeline (Rayner and Young 2000; Cope-Faulkner 2002; APS 2004, 5). Aerial photographs of the area around the pipeline revealed a wealth of cropmark features, many of them ditches, both to the north and south of the pipeline corridor (Air Photo Services 2004, Figs 1 and 2), although no features were identified on the area which was excavated. To the south west of the excavated area cropmarks may

indicate the location of fields, an enclosure and a settlement. These cropmarks may be associated with a surface collection of Romano-British material known in the vicinity (APS 2004, 6) or may be and indication of an Iron Age occupation area associated with the boundary system identified in the excavations.

To the north of the pipeline the presence of 'brickwork' field systems and small enclosures suggest a further settlement and field boundaries. These may be of Romano-British or earlier date (Air Photo Services 2004), and could be the source of the Romano-British material resulting from manuring of the fields in this period.

Medieval – A ditch, considered to be the result of medieval agricultural use of the area ran from WSW to ENE across the site [184, 214, 152, 094, 077, 125], cutting the Iron Age ditches (Figs 61 and 6ii). The width of the ditch varied from 1.42m in area A to 0.80m wide in area B and averaged 0.90m in width. The ditch contained a sherd of medieval pottery, and six sherds of Romano-British pottery. It has been suggested that the area around the pipeline probably formed part of the North Field of the medieval three-field system around Sleaford and that this may have been in use into the 18th century (Pawley 1996, 28). Aerial photographs of the area (Air Photo Services 2004, fig. 1) indicate that medieval cultivation was widespread and, although not clearly shown in the excavated area, is very likely to have existed there before disturbance by post-medieval and modern ploughing.

Undated – A few features were uncovered which remain undated in areas B and C. A short ditch 3.65m long with a rounded terminal [123] was seen in the north of the site, extending beyond the excavations. This might be part of the Iron Age ditch system, but this was not clear. A ditch or elongated pit [145] lay alongside the northwest segment of the ring ditch and this was undated. Three pits in area C [172], [160], and [165] were found. Pit [172] was stratigraphically later than the Iron Age ditches but remained undated as did [160] and [165]. There were no finds within the pits to assist with date or function.

Modern – A single elongated feature [127] found in the north of area C. This was an irregular ditch or pit and was thought to be modern, most likely resulting from the building of a previous pipeline. Many recent deposits of redeposited natural, material dumped during construction works, concrete, tarmac and hardcore were also found within the test pits dug across the site.

7. CONCLUSIONS

An archaeological watching brief was undertaken during the groundworks for the construction of a pipeline route for Holdingham Rising Main, between Holdingham Pumping Station and Sleaford Sewage Treatment Works. A number of test pits were dug and an area of archaeological features revealed during the watching brief was fully excavated.

The excavations revealed the use of the location from the Neolithic through to modern times.

In the early Neolithic trees were uprooted initially to clear land for agriculture. The resulting timber would have been used for fuel and building materials. The visual impact of such trees may have been dramatic in the early Neolithic landscape (Evans *et a*l 1999, 249). These trees could have served as landscape markers or as a centre for settlement activities which may have shifted through the seasons. Occasionally these trees appear in groups (Moore and Jennings 1992, 13). However, on this site a rare glimpse of early Neolithic life was seen through the

excavation of the pipeline construction area, revealing a single tree-throw hole and accompanying gully.

In the later Neolithic monument building became more usual and segmented ring ditches like this at Holdingham, alongside henges, presented a focus for ceremonial activities. In some instances such sites comprised part of a larger ritual complex as at Harlaxton (Jones 1998, fig.12) and in southern England (Barclay and Halpin 1999, 307). Access to the ritual sites by water, in this case the river Slea, may have played an important part in their location (Jones 1998, 101). However, at Holding-ham only a part of the site was revealed and the place of this unusual monument in the later Neolithic landscape is unknown.

The extensive series of late Iron Age ditches uncovered at this site shows the long term use of this and other nearby areas in the Iron Age. Widespread boundary ditches were constructed in the late Iron Age and amended over a fairly short period of time according to the pottery finds, indicating more intensive use of the land. These ditches must have been supplemented by the addition of fences or hedges within the ditches and by fences and partitions of a less permanent type which divided the areas into plots and fields suitable for agriculture. Finds of cereal and animal remains suggest both arable and pastoral use of the surrounding area. Late Iron Age pottery of late La Téne regional type was also found adding to information on this pottery in this area.

Late Iron Age pottery was also found in modern deposits in the excavation, test pits and in the later Neolithic ditches. A medieval furrow crosses the site and it seems certain that agricultural activity of medieval, post-medieval and modern date had disturbed and distributed this material from the Iron Age ditches.

8. ACKNOWLEDGEMENTS

Archaeological Project Services would like to acknowledge the assistance of Anglian Water Services Ltd who commissioned the fieldwork and this report. Fieldwork for Archaeological Project Services was supervised by Fiona Walker. APS staff who undertook the watching brief and excavation were Chris Moulis, Neil Parker, Mary Nugent, Barry Martin, Karen Rosser, Mikaela Oluvson, Aleck Russell, Pete Watkin and Vicky Mellor.

Dale Trimble would like to thank David Knight for his assistance with the Iron Age pottery report. The project was coordinated by Mark Williams and Dale Trimble who edited this report. Jo Hambly, the North Kesteven Heritage Officer, kindly allowed access to the parish files and library maintained by Heritage Lincolnshire.

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10. ABBREVIATIONS

APS Archaeological Project Services
IFA Institute of Field Archaeologists

Figure 1: General Location Plan

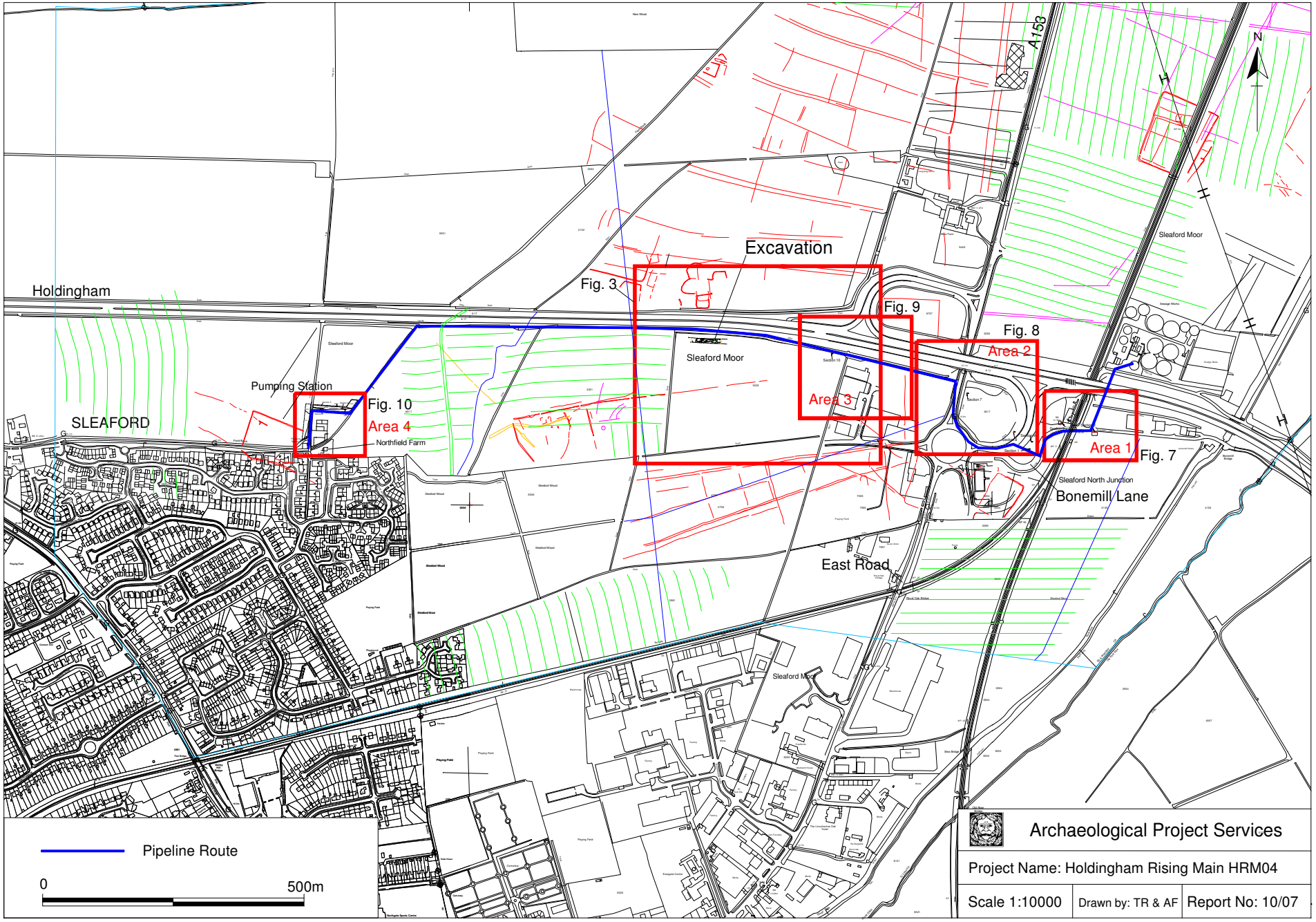
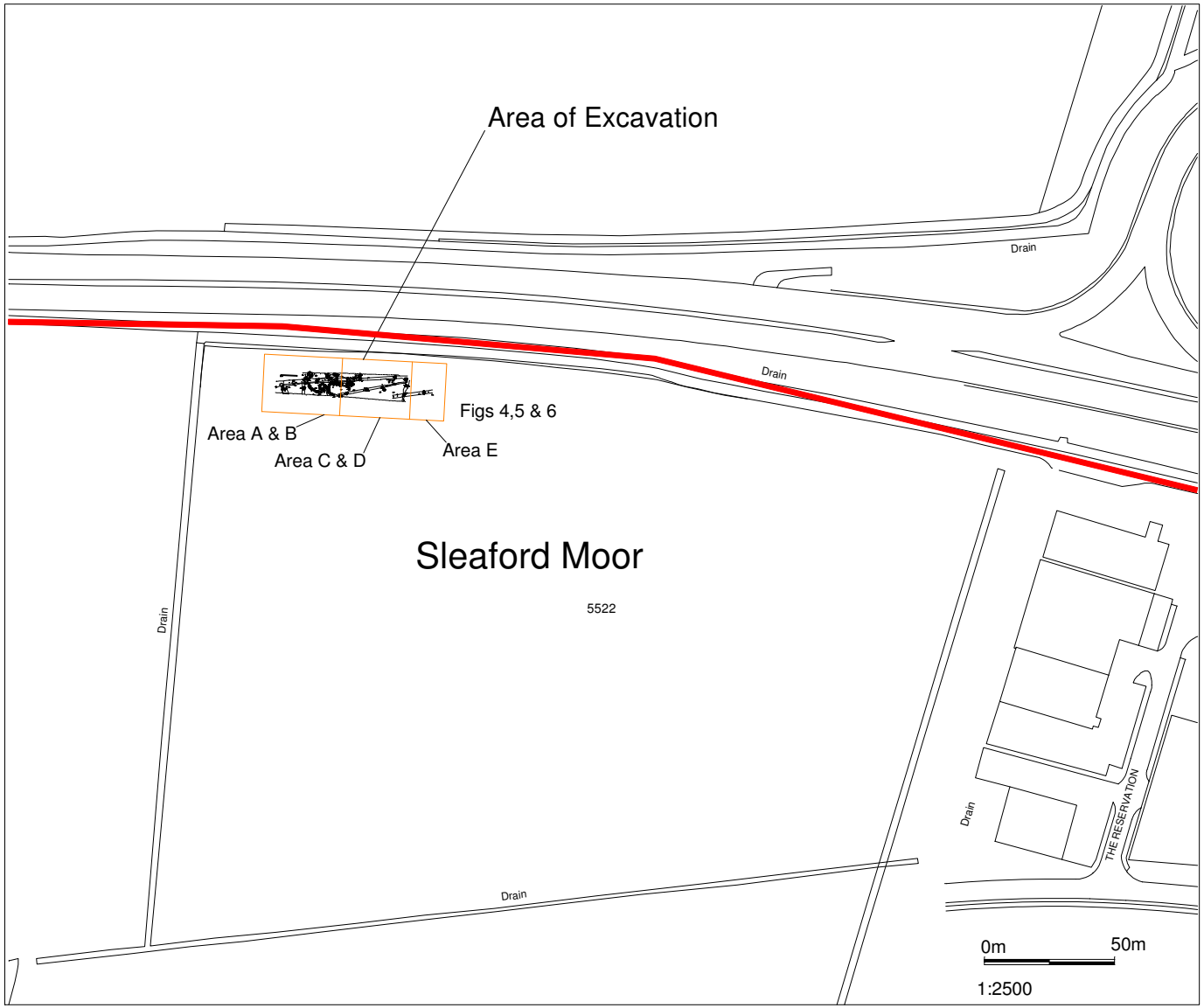


Figure 2: Site Location Plan



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Project Name: Holdingham Rising Main HRM04		
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Figure 3: Location of excavation and areas A to E.

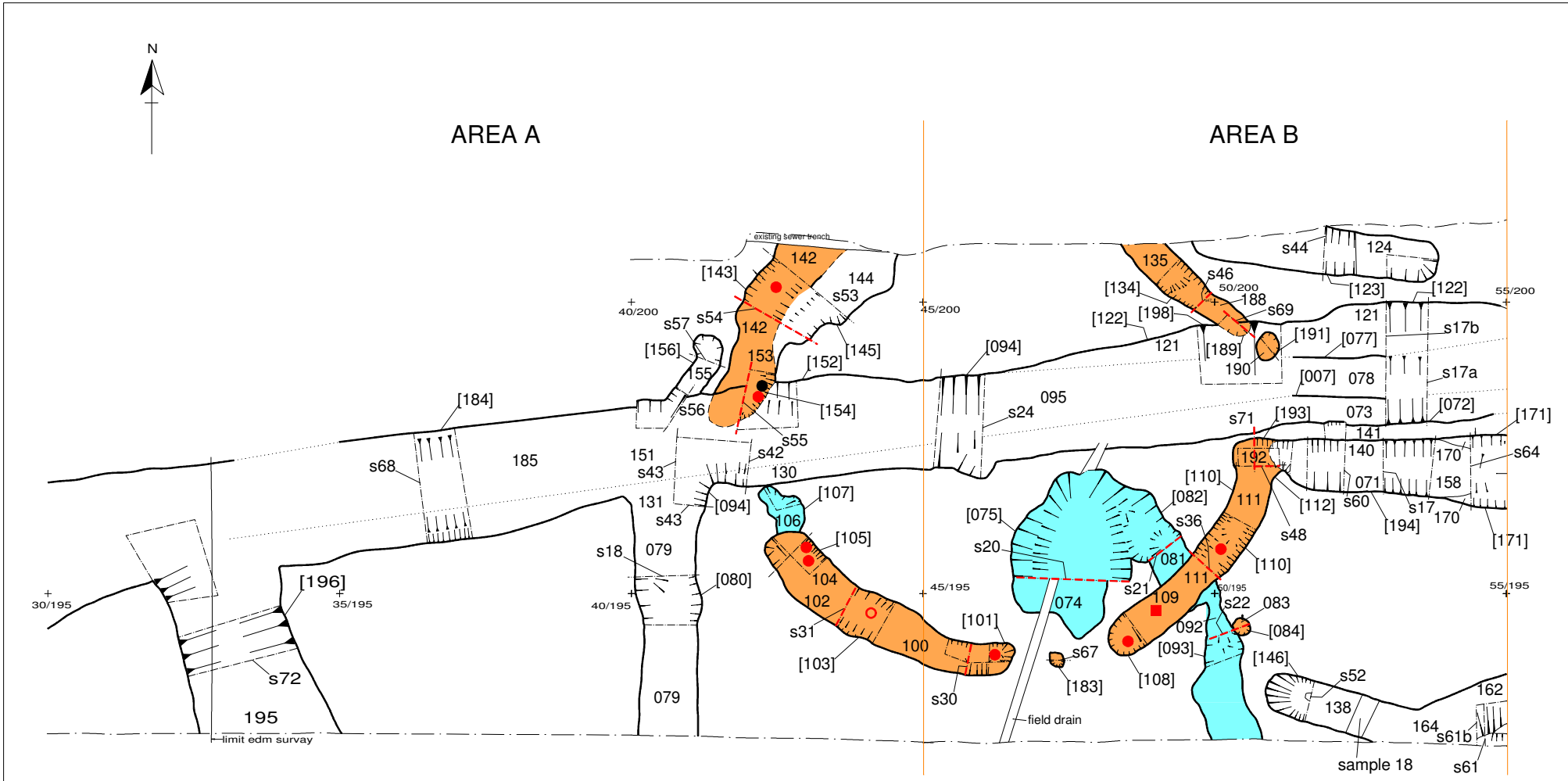


Figure 4: Phases 2 and 3, Neolithic features in western areas A and B of excavation

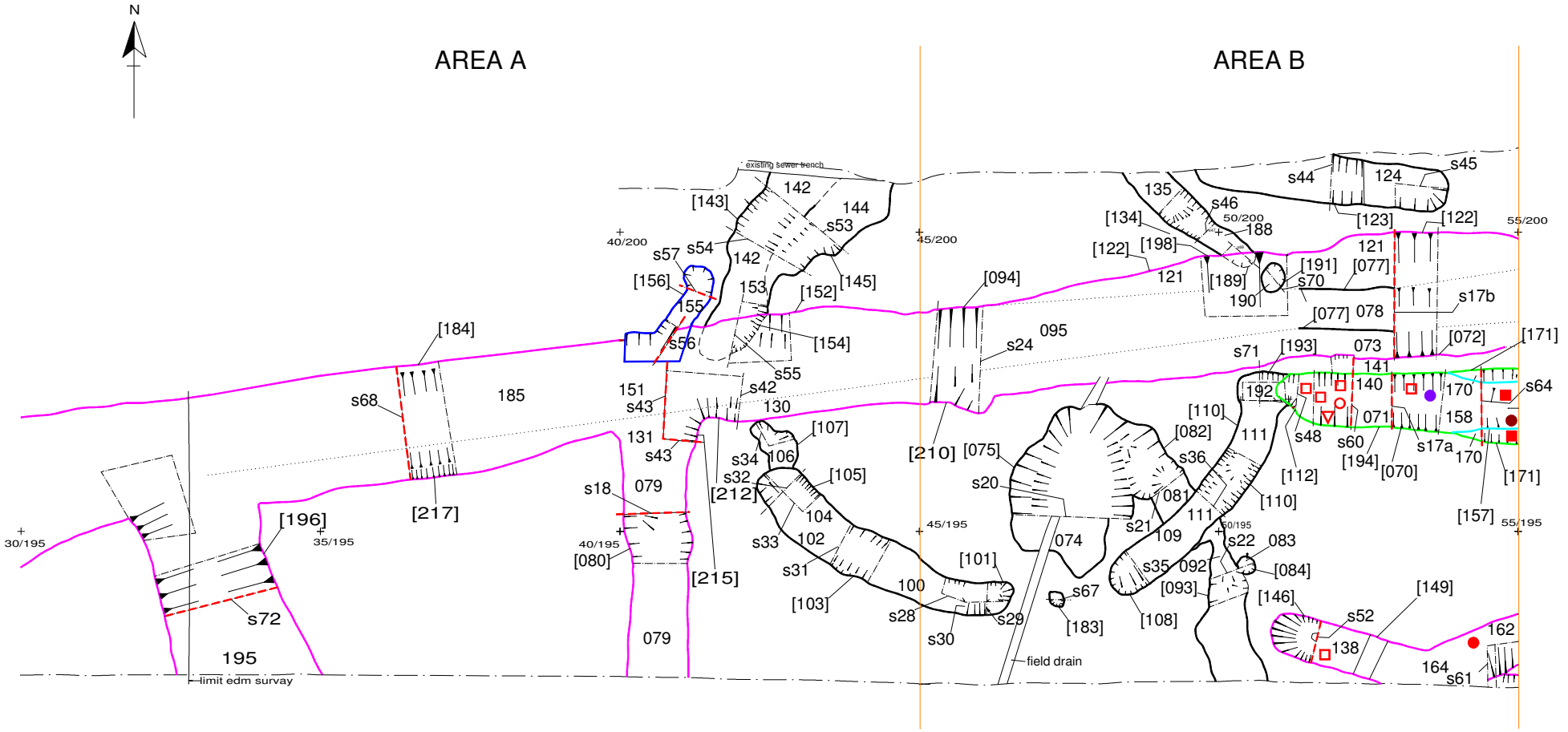


Figure 5i: Phase 4, Iron Age features in areas A and B of excavation

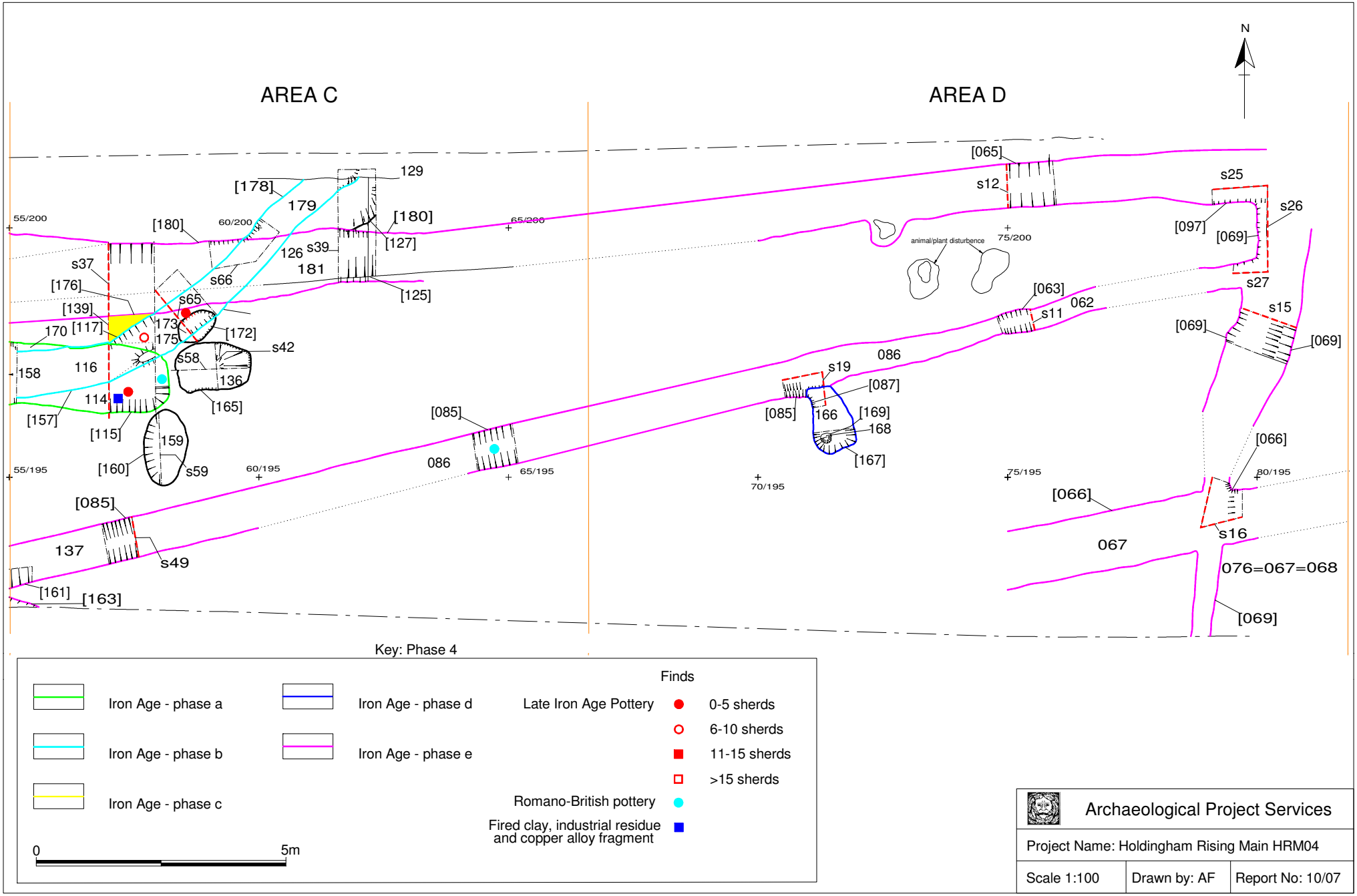


Figure 5ii: Phase 4, Iron Age features in areas C and D of excavation

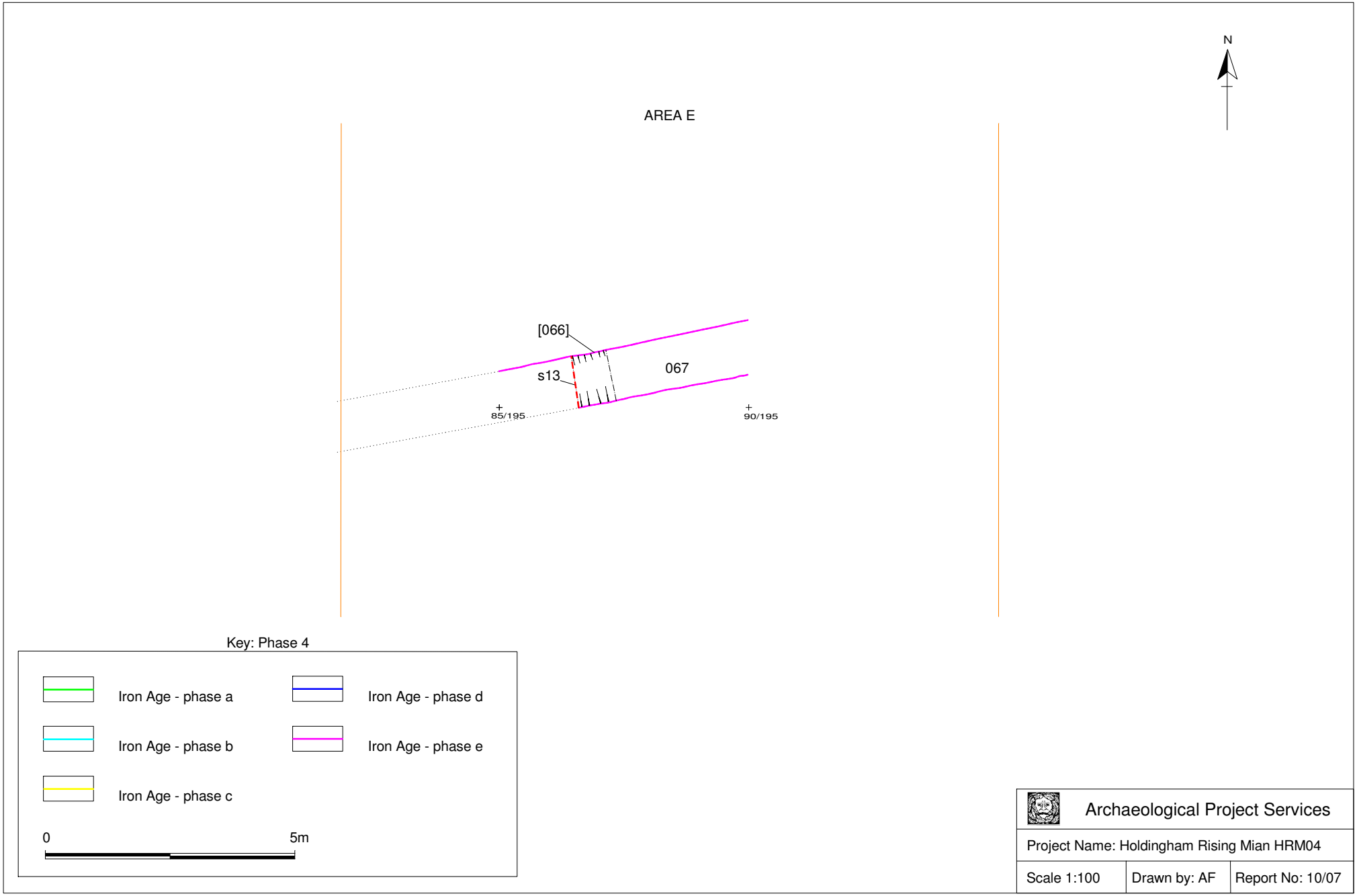


Figure 5iii: Phase 4, Iron Age features in area E of excavation

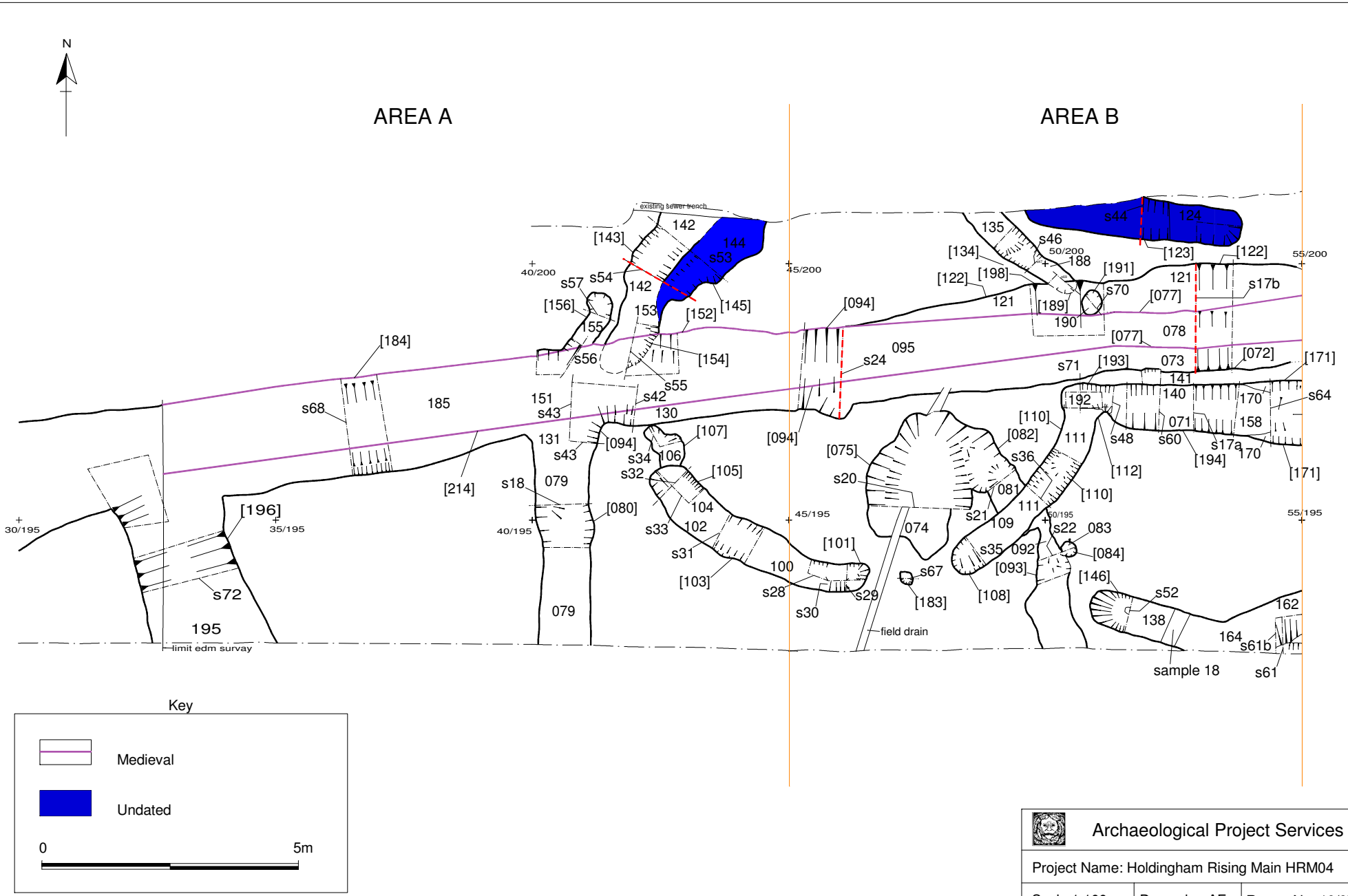


Figure 6i: Medieval and undated features in areas A and B of excavation

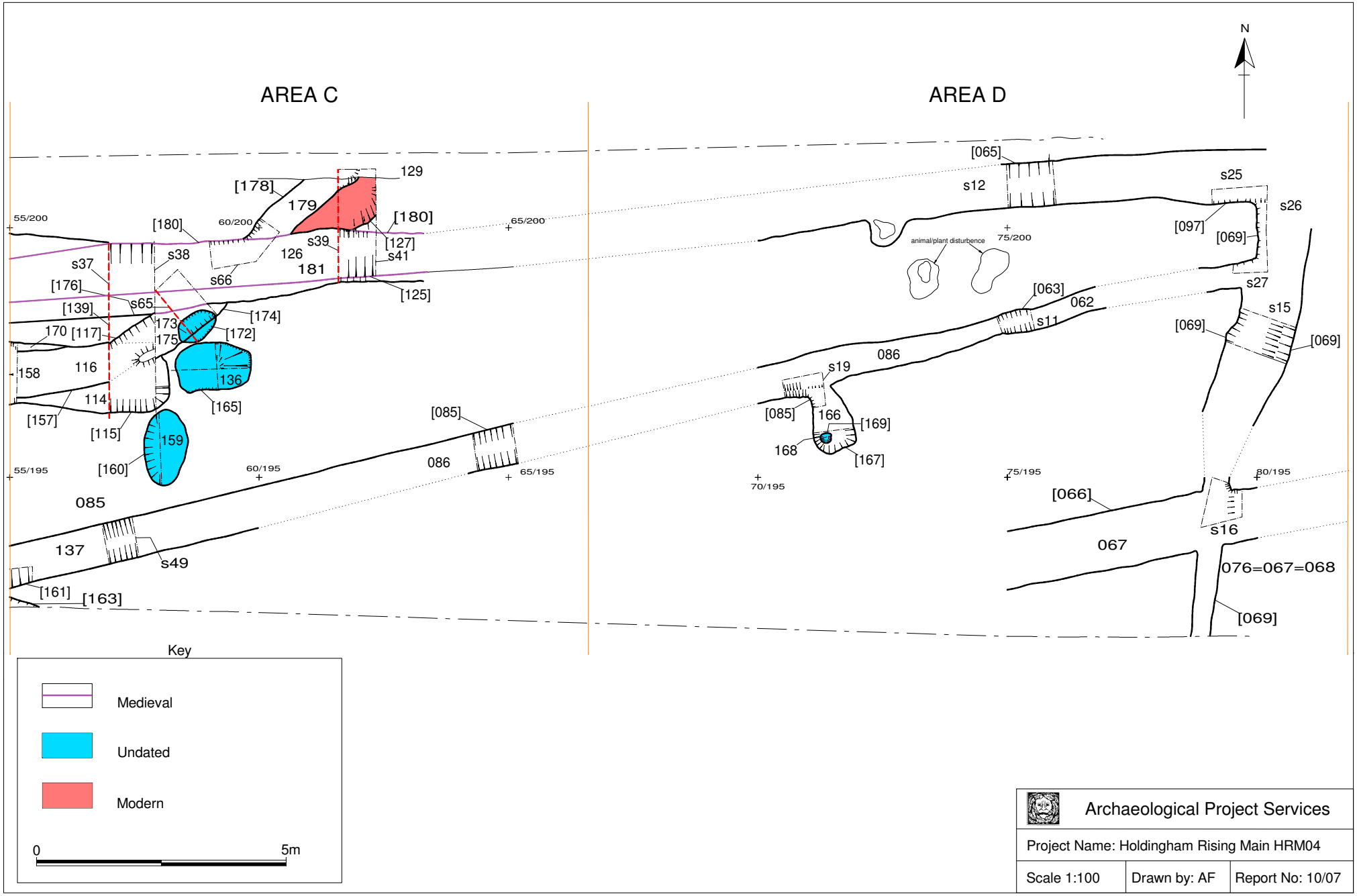


Figure 6ii: Medieval, undated and modern features in areas C and D of excavation

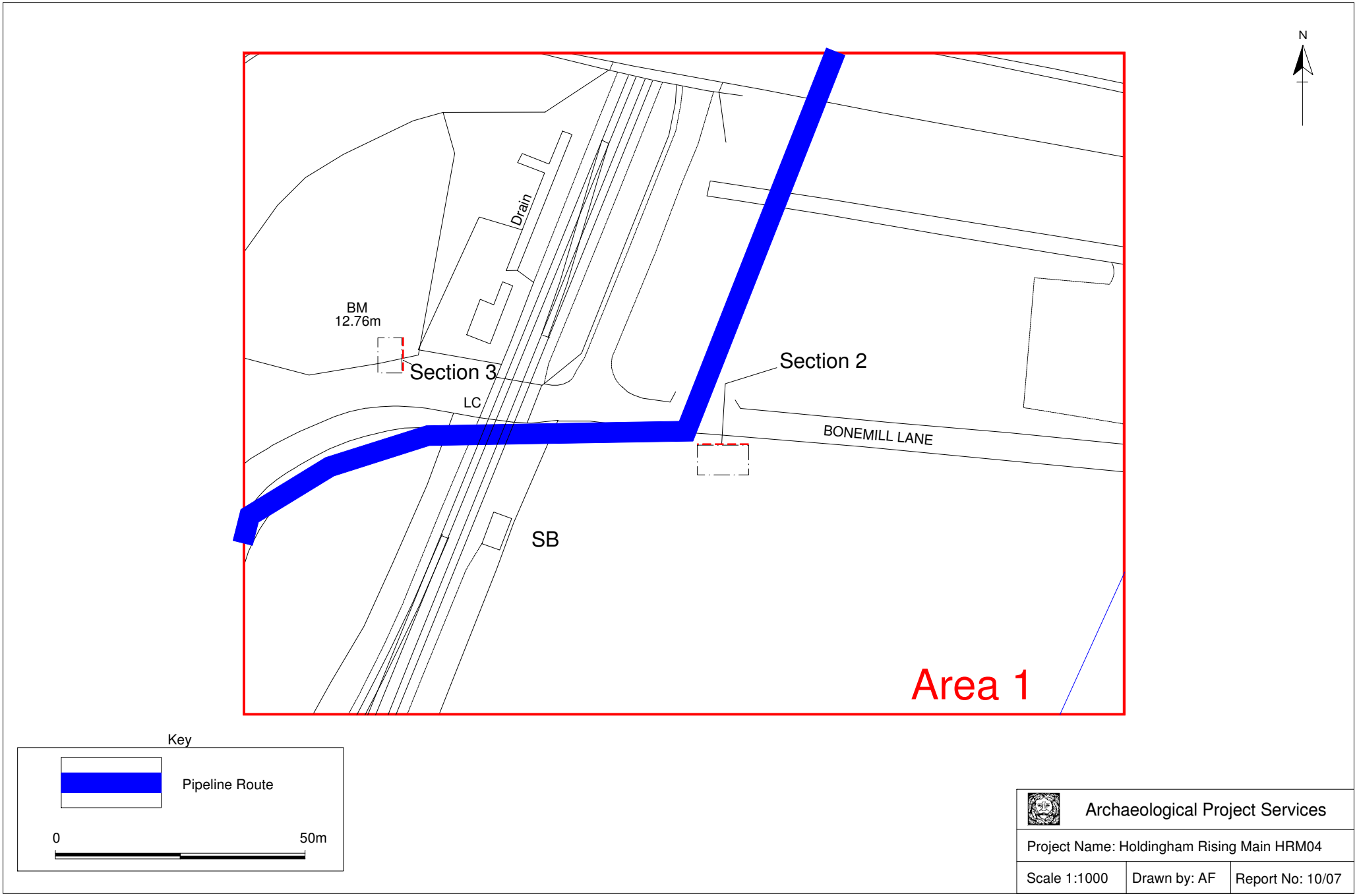


Figure 7: Area 1, location of test pits and sections

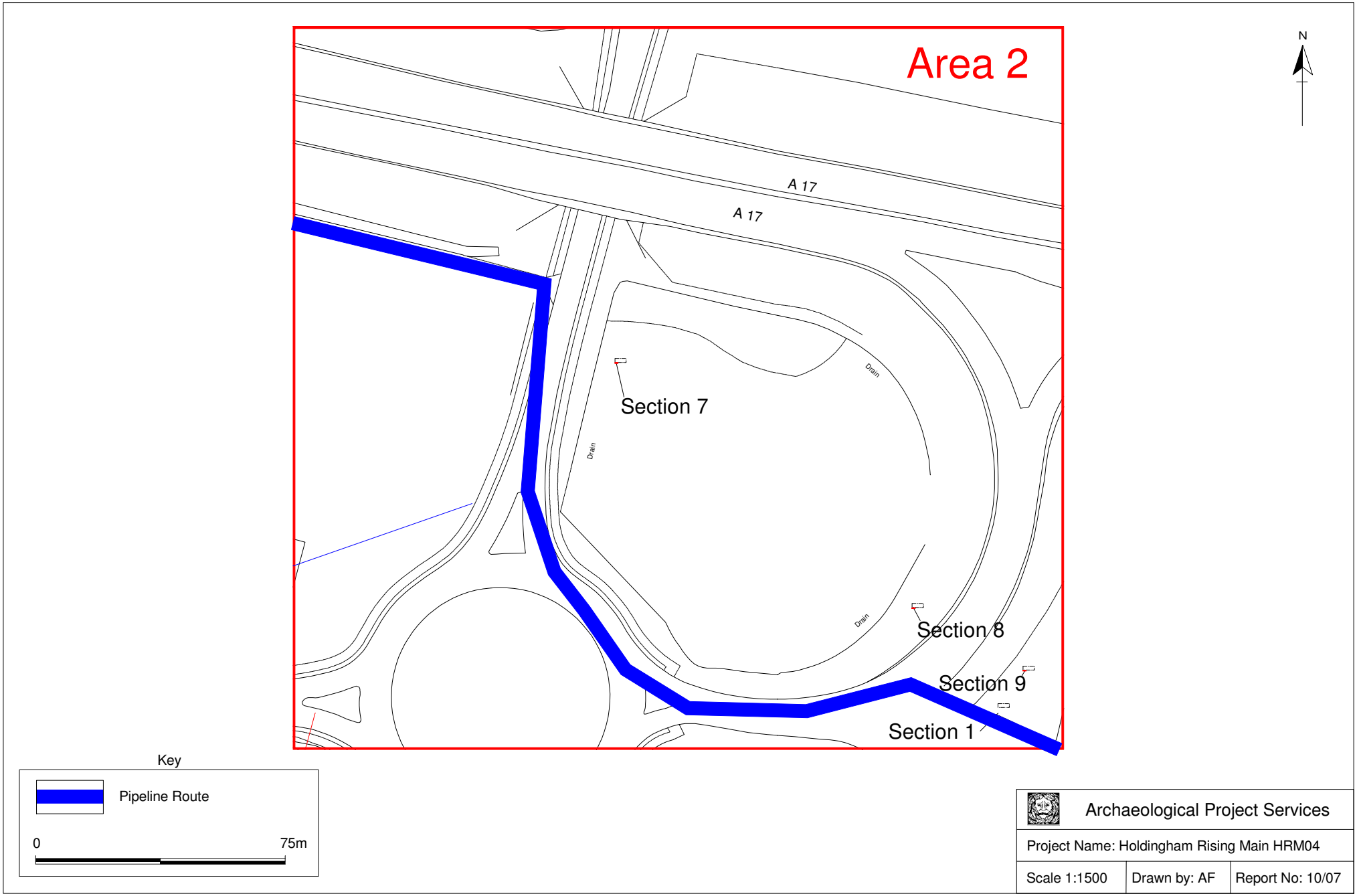


Figure 8: Area 2, location of test pits and sections

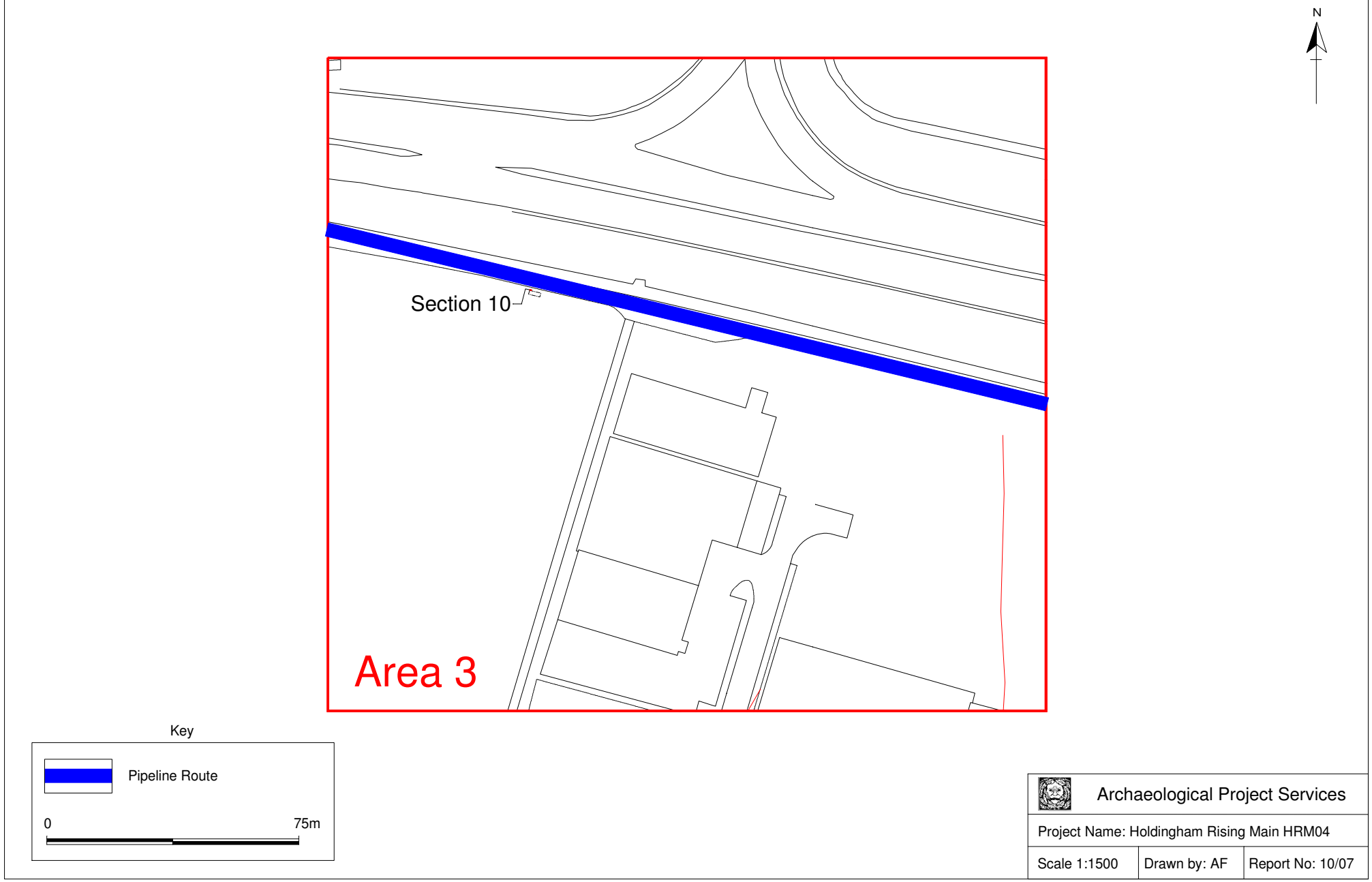


Figure 9: Area 3, location of test pit and section

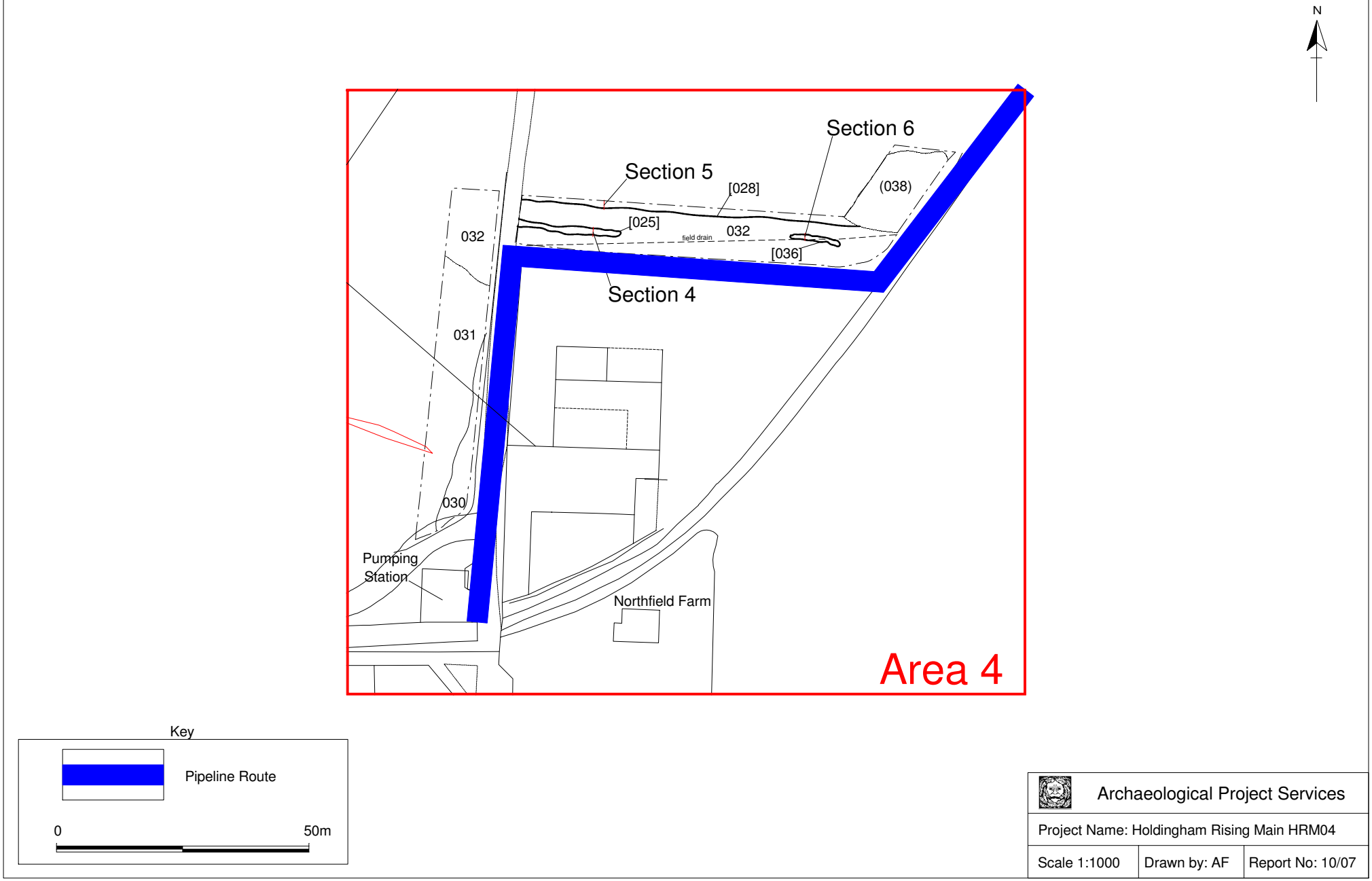


Figure 10: Area 4, location of test pits and sections

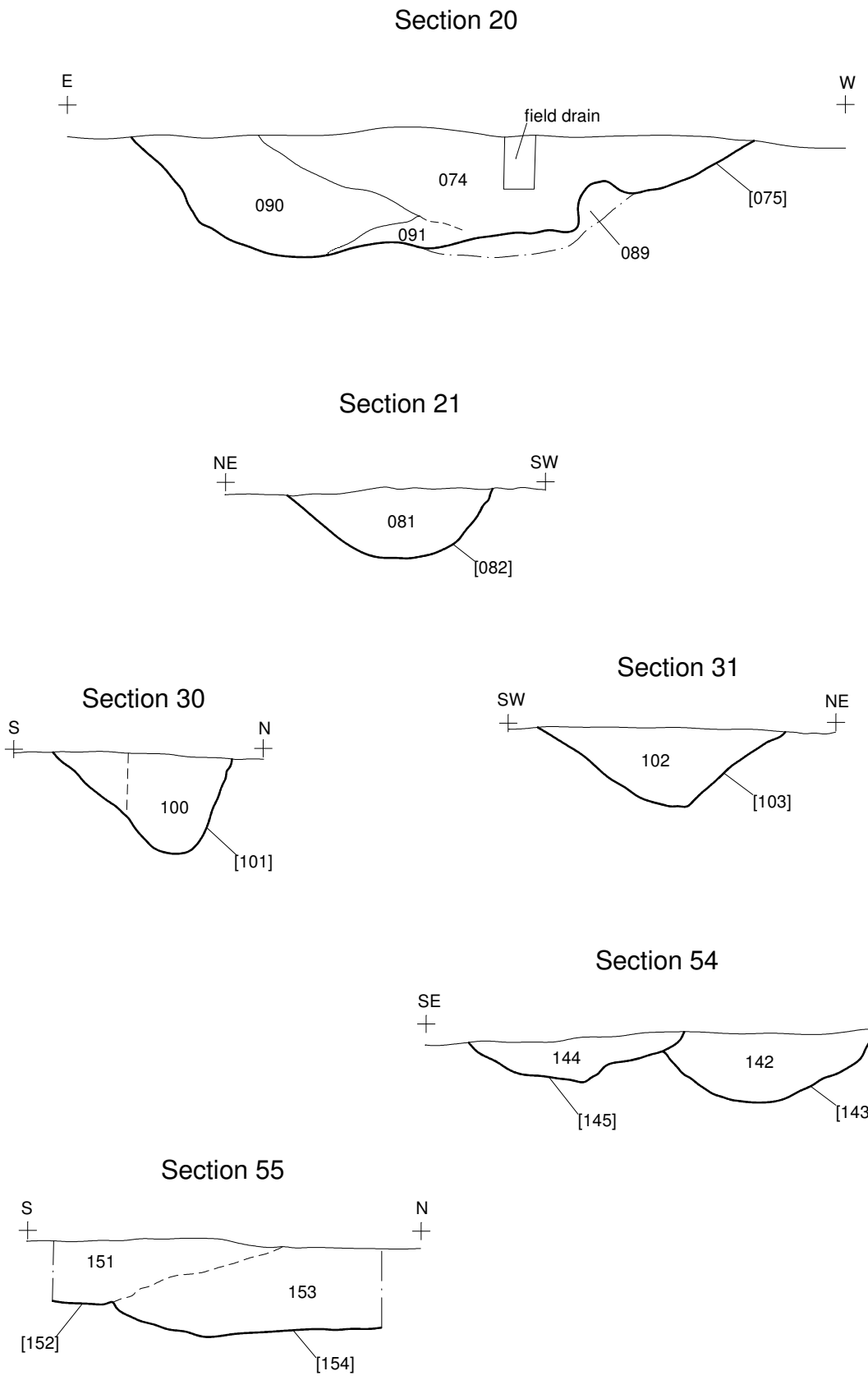


Figure 11: Sections 20, 21, 30, 31, 54 and 55

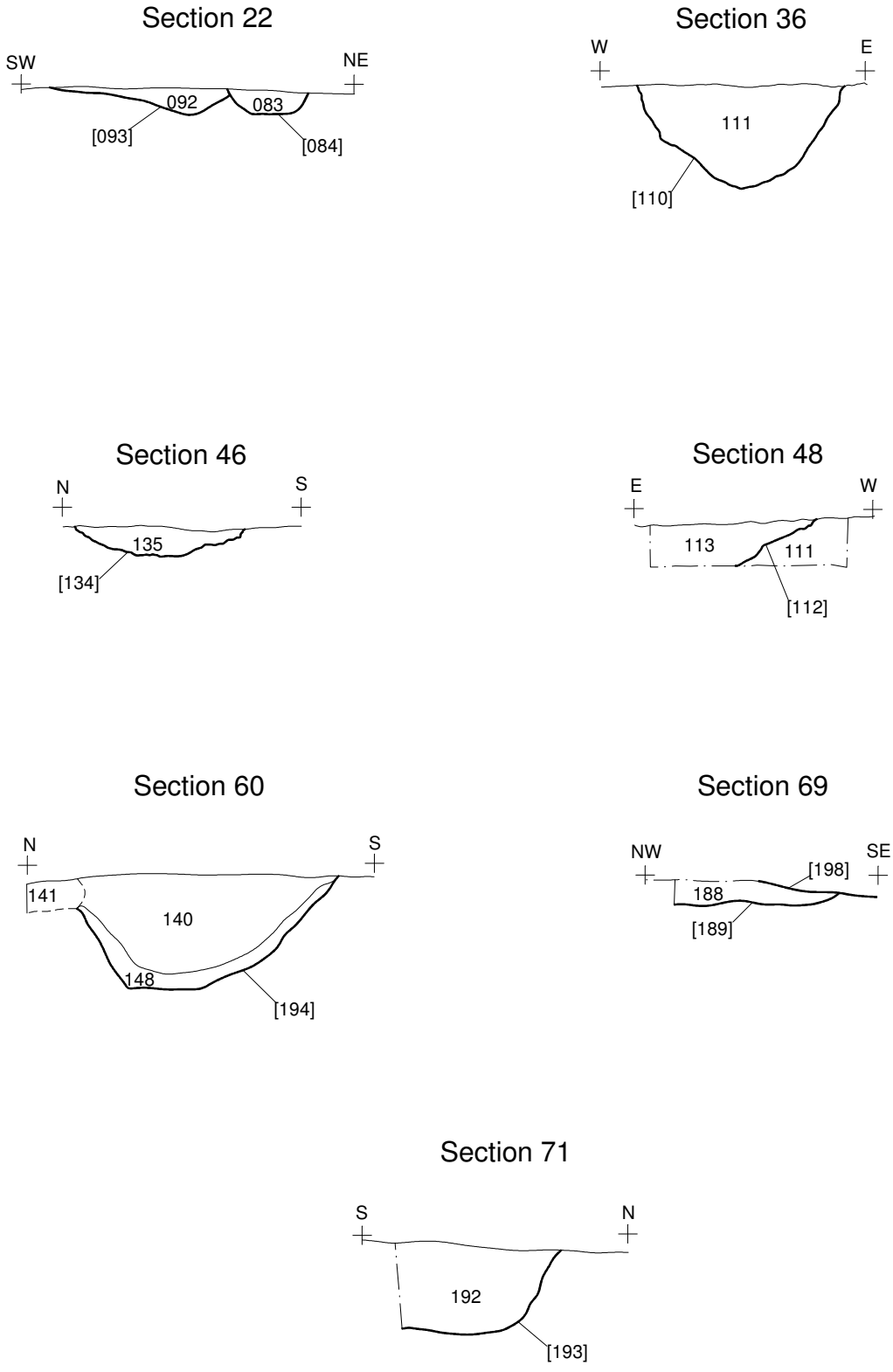


Figure 12: Sections 22, 36, 46, 48, 60, 69 and 71

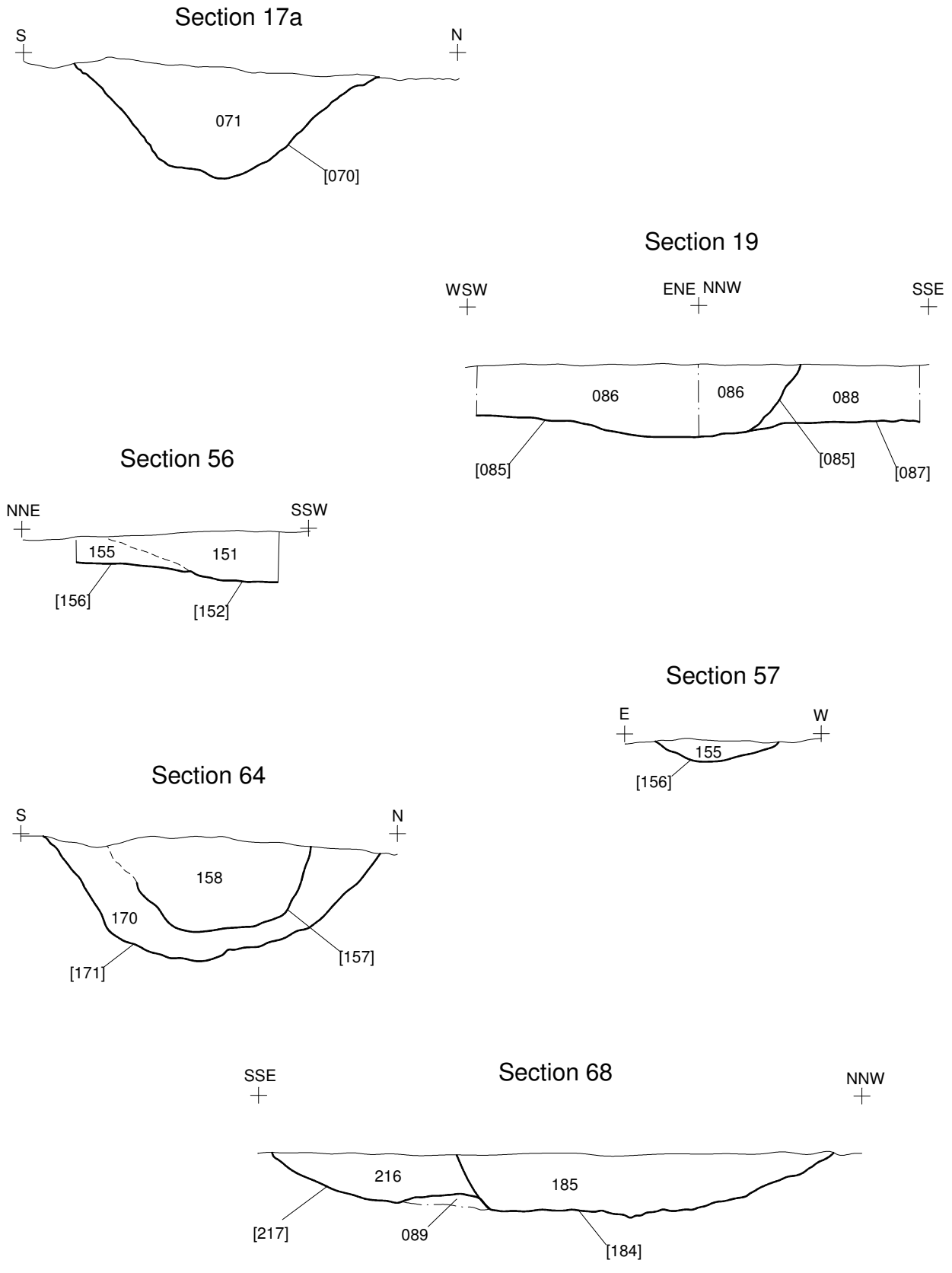


Figure 13: Section 17a, 19, 56, 57, 64 and 68

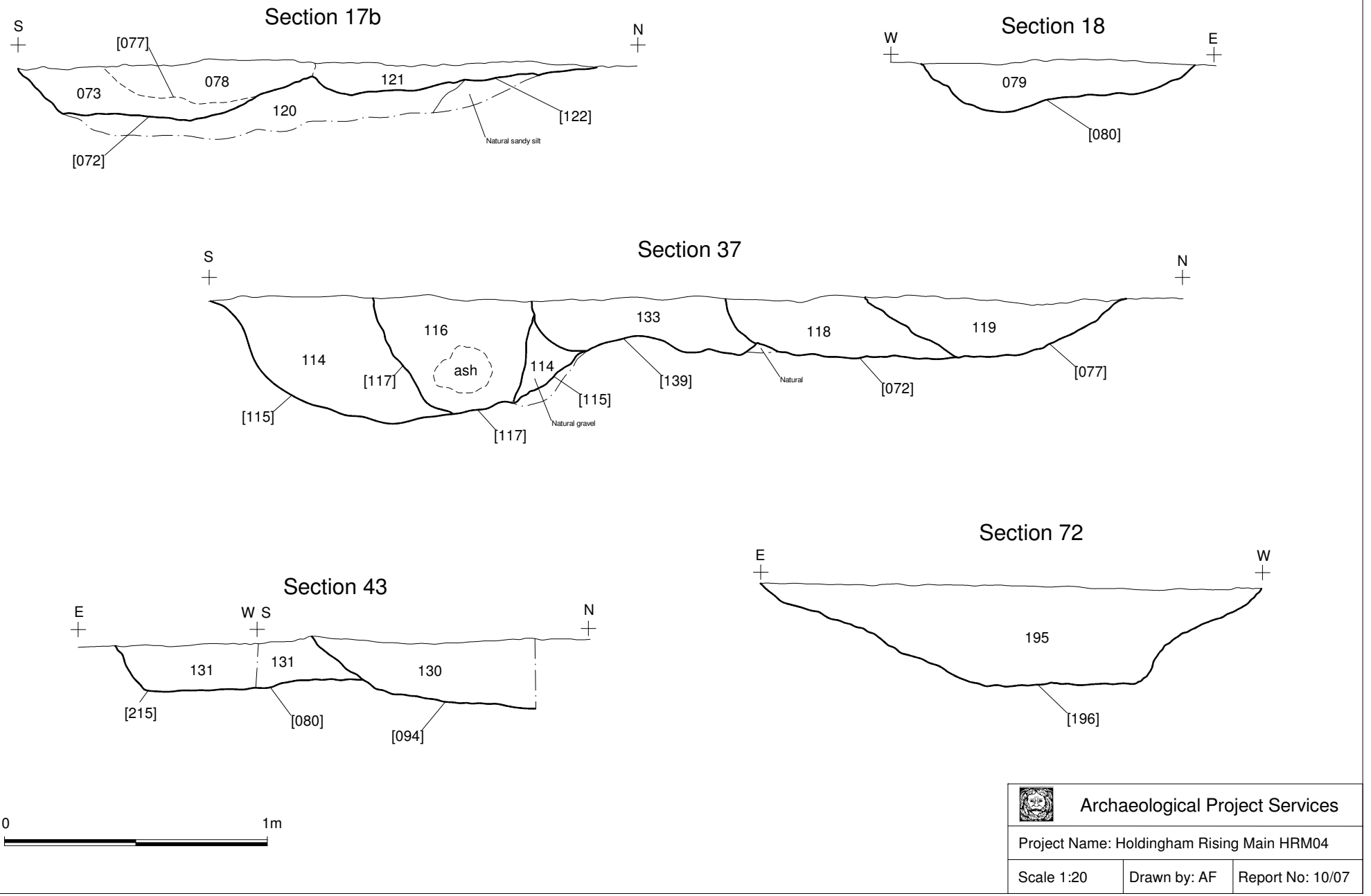


Figure 14: Sections 17b, 18, 37, 43 and 72

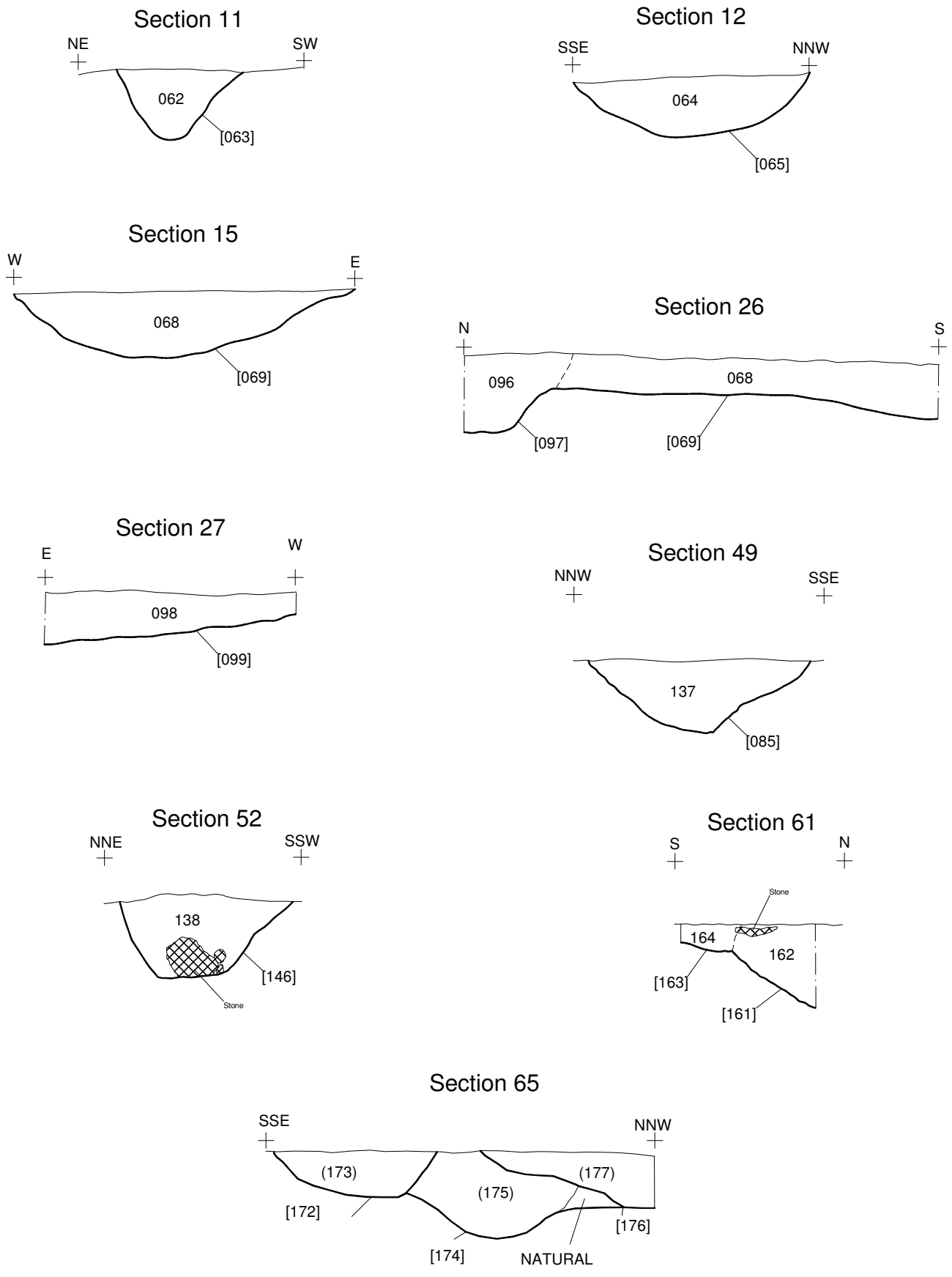


Figure 15: Sections 11, 12, 15, 26, 27, 49, 52, 61 and 65

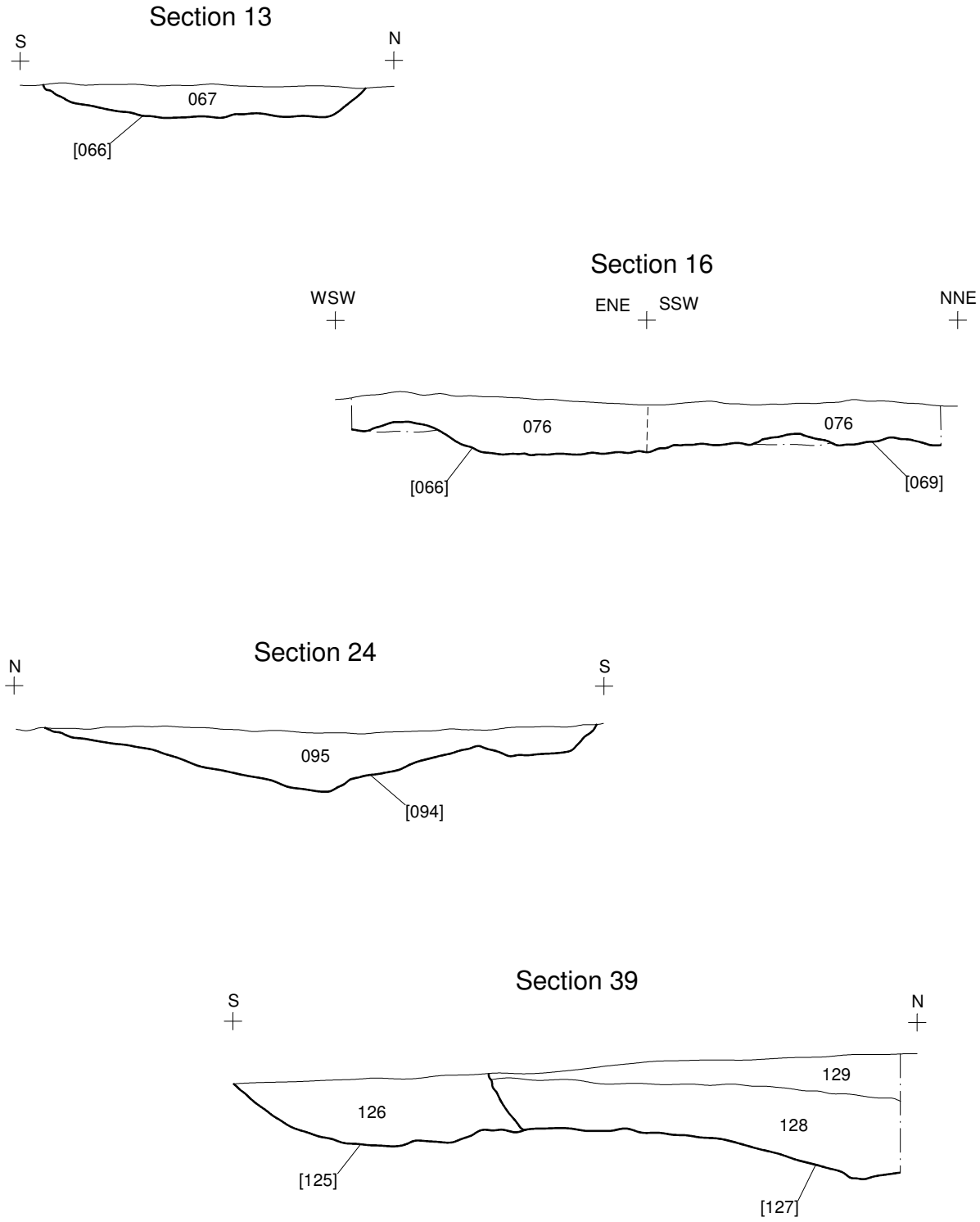


Figure 16: Sections 13, 16, 24 and 39

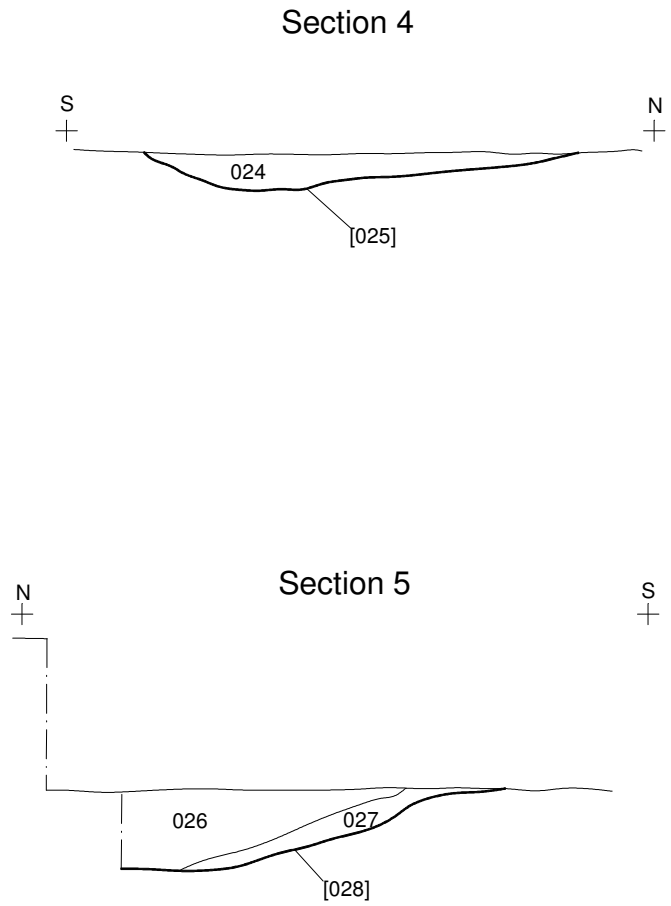
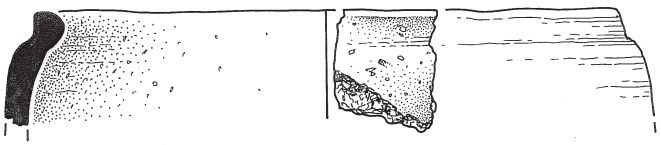


Figure 17: Sections 4, 5 and 44



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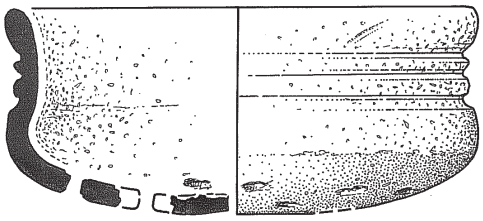

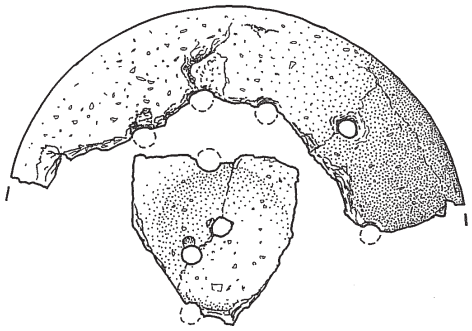

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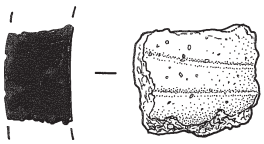

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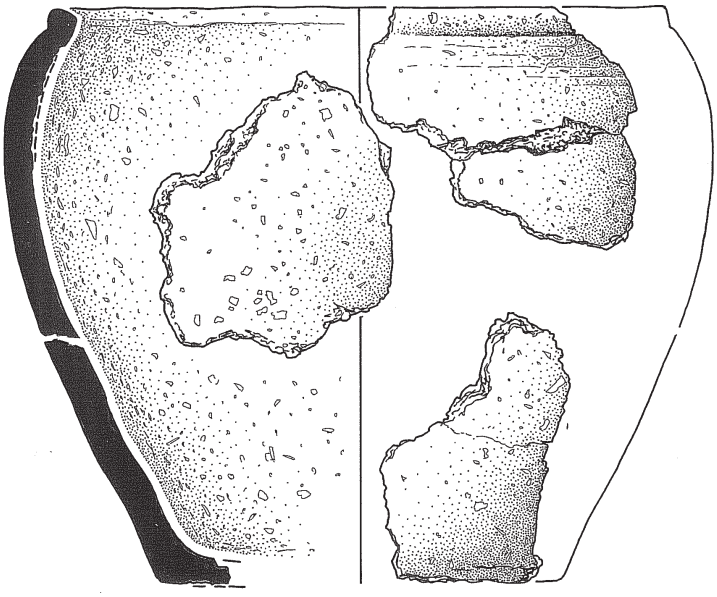

DR 5

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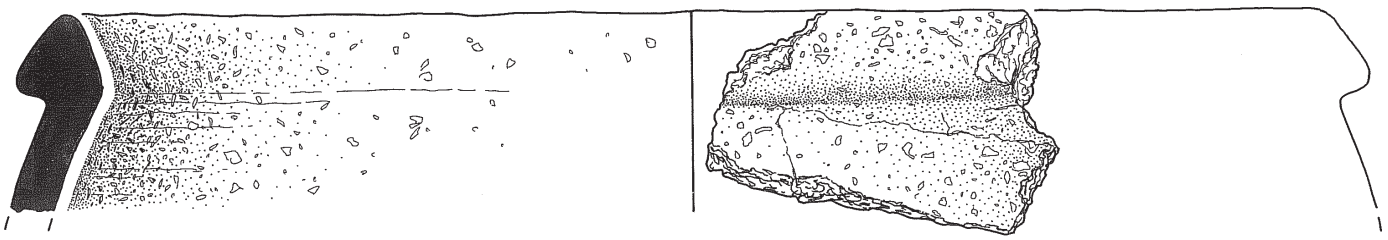
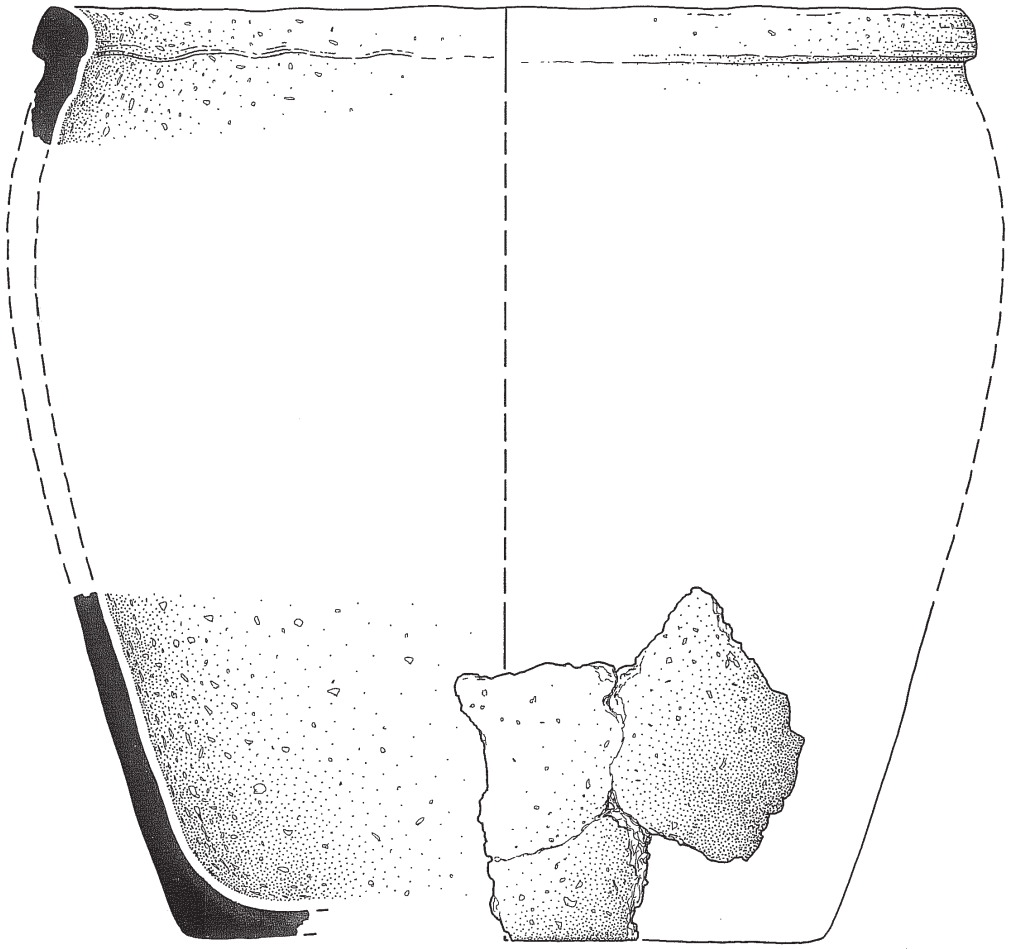
Scale 1:2

Fig 18. HRM04 Iron Age Pottery. Drawings 1 - 5



DR 6



DR 7

0cm 10cm

Scale 1:2

Fig 19. HRM04 Iron Age Pottery. Drawings 6-7

Plate 1. General shot of main excavation area from southwest. Note segmented ring ditch right of centre

Plate 2. Main area during excavation looking from southeast.

Plate 3. Main area during excavation from southeast.

Plate 4. Phase 3 Later Neolithic segmented ring ditch after excavation. From south.

Plate 5. Phase 2 Earlier Neolithic tree-throw hole after excavation. From north

Plate 6. Phase 3 Later Neolithic segmented ring ditch southwest terminal [101]. From east.

Plate 7. Phase 3 Later Neolithic segmented ring ditch part of southwest segment [103]. From east.

Plate 8. Phase 3 Later Neolithic segmented ring ditch part of southeast terminal [108]. From southwest

Plate 9. Phase 3 Later Neolithic segmented ring ditch part of southeast segment [110]. From North

Plate 10. Phase 4e Late Iron Age north south aligned linear [069]. From south.

Plate 11. Phase 4e Late Iron Agesouthwest-northeast aligned linear [085]. From east.

Appendix 1

LAND ON THE HOLDINGHAM RISING MAIN PIPELINE (HOLDINGHAM PUMPING STATION TO SLEAFORD STW) LINCOLNSHIRE - SPECIFICATION FOR ARCHAEOLOGICAL WATCHING BRIEF

SUMMARY

0.1 *A watching brief is required during the goundworks associated with the construction of the Holdingham Rising Main pipeline, between Holdingham pumping station and Sleaford Sewage Treatment Works, Lincolnshire.*

0.2 *The pipeline route has been subject of desk-based assessment, aerial photographic assessment and geophysical survey. Known archaeological sites in the vicinity range from the prehistoric to the post-medieval period. In particular Iron Age and Romano-British sites are known in proximity to the pipeline corridor, together with evidence of ridge and furrow cultivation. In addition geophysical survey has identified a few anomalies indicating the possible presence of a few ditches and pits on the western part of the route.*

0.3 *The watching brief will be undertaken during the groundworks along the pipeline route with provision for archaeological excavation and recording where archaeological remains are discovered. The archaeological features exposed will be recorded in writing, graphically and photographically.*

0.4 *On completion of the fieldwork a report will be prepared detailing the results of the investigation. The report will consist of a narrative supported by illustrations and photographs.*

1 INTRODUCTION

1.1 This document comprises a specification for an archaeological watching brief during the groundworks associated with the Holdingham Rising Main pipeline, between Holdingham pumping station and Sleaford Sewage Treatment Works (STW), Lincolnshire.

1.2 This document contains the following parts:

1.2.1 Overview.

1.2.2 Stages of work and methodologies.

1.2.3 List of specialists.

1.2.4 Programme of works and staffing structure of the project

2 SITE LOCATION

2.1 The pipeline route is located 1.5km north of Sleaford, between Holdingham pumping station, Northfield Farm at TF 067 471 and Sleaford STW at TF 083 473 in the administrative district of North Kesteven. The total length of the route is approximately 1.9km (Fig 1).

3.2 From the pumping station the pipeline follows a northeast alignment, skirting Northfield Farm, up to the A17 where the route turns to the east, closely following the edge of the road to the junction with East Road. The route then follows the roads around Bonemill junction to cross the line of the A17 and the Sleaford - Lincoln railway to the treatment works.

3 PLANNING BACKGROUND

3.1 The Senior Built Environment Officer, Lincolnshire County Council, has requested an archaeological watching brief be undertaken during construction the pipeline route between Holdingham pumping station and Sleaford STW (Holdingham Rising Main).

4.2 The pipeline route has been subject of an archaeological desk-based assessment (Archaeological Project Services 2004), an aerial photographic assessment (Air Photo Services 2004) and a geophysical survey along the western part of the route (Stratascan 2005).

4.3 The watching brief will carried out during pipeline construction in order to identify and record any archaeological remains disturbed by the groundworks. Time is to be allowed within the construction programme to enable an appropriate record to be made of any archaeological remains.

4 SOILS AND TOPOGRAPHY

4.1 The site lies on relatively flat ground at approximately 10m OD. The soils in the assessment area consist of gleyic brown calcareous earths of the Ruskington Association, with some sand and clay of the Curdridge Association near the Slea navigation. Ruskington soils tend to have an undulating clay substratum at depth, overlying a solid geology of Upper Jurassic limestone. Soils of the Curdridge series are deep, permeable coarse loamy soils on fine grained Jurassic sand (Hodge *et al.* 1984, 154 and 304).

5 ARCHAEOLOGICAL OVERVIEW

5.1 A desk-based assessment (Archaeological Project Services 2004), an aerial photographic assessment (Air Photo Services 2004) and a geophysical survey (Stratascan 2005) have been undertaken on the proposed route. Known archaeological remains in the vicinity range from the prehistoric to post-medieval period.

6.2 Evidence of Iron Age and Romano-British activity is known in the vicinity of the pipeline, particularly concentrated toward the eastern end of the route where it crosses the line of Mareham Lane Roman Road. Archaeological features lying adjacent to the pipeline corridor include a field system perpendicular to the Roman road with possible associated settlement enclosures visible (on aerial photographs) on the north side of the A17. Remains of a Romano-British site lie to the south of the route and evidence of prehistoric and Iron Age activity has been recorded at the eastern end of the survey corridor. In particular the eastern end of the pipeline route may reveal evidence of Iron Age features (near the roundabout and Bonemill Lane) and the Roman road (near the roundabout).

6.3 Features identified from aerial photographs which may intersect the pipeline corridor include ditches (part of a possible enclosure?) adjacent to Northfield Farm, ditches and other linear features which may be associated with the area of Roman occupation to the south of the corridor and medieval ridge and furrow cultivation.

6.4 Geophysical survey (undertaken on the route between the pumping station and the industrial units adjacent to East Road) has identified a few positive and negative linear anomalies of possible archaeological origin (eg ditches and banks) and a small group of anomalies of possible agricultural origin near the industrial units. Other responses indicate possible isolated features, such as pits, and the presence of ferrous objects. In addition modern pipelines and service trenches are known to cross or lie adjacent to the pipeline route.

6 AIMS AND OBJECTIVES

6.1 The aims of the archaeological monitoring will be:

6.1.1 To record and interpret the deposits and any archaeological features exposed during the groundworks.

6.2 The objectives of the investigation will be to:

6.2.1 Determine the form and function of the archaeological features encountered;

6.2.2 Determine the spatial arrangement of the archaeological features encountered;

6.2.3 As far as practicable, recover dating evidence from the archaeological features, and

6.2.4 Establish the sequence of the archaeological remains present on the site.

7 SITE OPERATIONS

7.1 General considerations

7.1.1 All work will be undertaken following statutory Health and Safety requirements in operation at the time of the investigation.

7.1.2 The work will be undertaken according to the relevant codes of practise issued by the Institute of Field Archaeologists (IFA), under the management of a Member of the institute (MIFA). Archaeological Project Services is IFA registered organisation no. 21.

7.1.3 Any and all artefacts found during the investigation and thought to be 'treasure', as defined by the Treasure Act 1996, will be removed from site to a secure store and promptly reported to the appropriate coroner's office.

7.2 Methodology

7.2.1 The watching brief will be undertaken during the ground works phase of development, and includes the archaeological monitoring of all phases of soil movement. Archaeological supervision of the groundworks will enable the identification of archaeological features and deposits exposed by the works and, where necessary, enable their replacement by record.

8.2.2 Topsoil stripping along the pipeline corridor will be under close archaeological supervision. A mechanical excavator fitted with a toothless ditching bucket will undertake removal of the topsoil and any other overburden.

8.2.3 On completion of the removal of the topsoil / overburden, the nature of the underlying deposits will be assessed by hand excavation where necessary before any further mechanical excavation. Any features or significant deposits identified will be cleaned and recorded in plan to enable the identification and analysis of the archaeological features exposed.

8.2.4 Where further mechanical excavation is required, to achieve the required construction levels or within the pipe trench / directional drilling pits, this will be under archaeological supervision. Time will need to be allowed for investigation / recording of features / deposits during this process.

8.2.5 Section drawings will be recorded at a scale of 1:10. Features will be recorded in plan at a scale of 1:20. Written descriptions detailing the nature of the deposits, features and fills encountered will be compiled on Archaeological Project Services pro-forma record sheets.

8.2.6 Any finds recovered will be bagged and labelled for later analysis.

8.2.7 Throughout the investigations a photographic record will be compiled.
The photographic record will consist of:

7.2.7.1 the site during work to show specific stages, and the layout of the archaeology.

7.2.7.2 groups of features where their relationship is important.

7.2.8 Should human remains be located they will be left *in situ* and only excavated if absolutely necessary. Should removal be required the appropriate Home Office licence will be obtained before the exhumation of the remains. In addition, the Local Environmental Health Department, coroner and the police will be informed, where appropriate.

8 POST-EXCAVATION

8.1 Stage 1

8.1.1 On completion of site operations, the records and schedules produced during the investigations will be checked and ordered to ensure that they form a uniform sequence forming a level II archive. A stratigraphic matrix of the archaeological deposits and features present on the site will be prepared. All photographic material will be catalogued and labelled, the labelling referring to schedules identifying the subject/s photographed.

8.1.2 All finds recovered during the fieldwork will be washed, marked and packaged according to the deposit from which they were recovered. Any finds requiring specialist treatment and conservation will be sent to the Conservation Laboratory at the City and County Museum, Lincoln.

8.2 Stage 2

8.2.1 Detailed examination of the stratigraphic matrix to enable the determination of the various phases of activity on the site.

8.2.2 Finds will be sent to specialists for identification and dating.

8.3 Stage 3

8.3.1 On completion of stage 2, a report detailing the findings of the investigations will be prepared.

8.3.2 This will consist of:

8.3.2.1 A non-technical summary of the results of the investigation.

8.3.2.2 A description of the archaeological setting of the investigation.

8.3.2.3 Description of the topography of the site.

8.3.2.4 Description of the methodologies used during the investigation.

8.3.2.5 A text describing the findings of the investigations.

8.3.2.6 A consideration of the local, regional and national context of the findings.

8.3.2.7 Plans of the archaeological features exposed. If a sequence of archaeological deposits is encountered, separate plans for each phase will be produced.

8.3.2.8 Sections of the trenches and archaeological features.

8.3.2.9 Interpretation of the archaeological features exposed, and their chronology and setting within the surrounding landscape.

8.3.2.10 Specialist reports on the finds from the site.

8.3.2.11 Appropriate photographs of the site and specific archaeological features.

9 REPORT DEPOSITION

9.1 Copies of the report will be sent to the Client; the Senior Built Environment Officer, Lincolnshire County Council; the Heritage Officer, North Kesteven District Council; and the County Council Archaeological Sites and Monuments Record.

10 ARCHIVE

10.1 The documentation and records generated during the watching brief will be sorted and ordered

into the format acceptable to the City and County Museum, Lincoln. This will be undertaken following the requirements of the document titled *Conditions for the Acceptance of Project Archives* for long-term storage and curation.

11 PUBLICATION

11.1 A report of the findings of the watching brief will be presented to the editor of the journal *Lincolnshire History and Archaeology*. If appropriate, notes on the findings will be submitted to the appropriate national journals: *Britannia* for discoveries of Roman date, and *Medieval Archaeology* and the *Journal of the Medieval Settlement Research Group* for findings of medieval or later date.

12 CURATORIAL RESPONSIBILITY

12.1 Curatorial responsibility for the archaeological work undertaken on the site lies with the Senior Built Environment Officer, Lincolnshire County Council. They will be given written notice of the commencement of the project.

13.2 During all stages of the fieldwork the archaeological curator will be kept informed of progress and promptly informed of any significant discoveries.

13 VARIATIONS AND CONTINGENCIES

13.1 Variations to the proposed scheme of works will only be made following written confirmation of acceptance from the archaeological curator.

13.2 In the event of the discovery of any unexpected remains of archaeological importance, or of any changed circumstances, it is the responsibility of the archaeological contractor to inform the archaeological curator (*Lincolnshire Archaeological Handbook* 1998, Sections 5.7 and 18).

13.3 Where important archaeological remains are discovered and deemed to merit further investigation additional resources may be required to provide an appropriate level of investigation, recording and analysis.

13.4 Any contingency requirement for additional fieldwork or post-excavation analysis outside the scope of the proposed scheme of works will only be activated following full consultation with the archaeological curator and the client.

14 PROGRAMME OF WORKS AND STAFFING LEVELS

14.1 The watching brief will be integrated with the programme of construction and is dependent on the developers' work programme. It is therefore not possible to specify the person-hours for the archaeological site work. A supervisor experienced in this type of work will undertake archaeological monitoring.

15.2 Dependent on the quantity / complexity of the archaeological remains revealed a two person team may be required to enable the cleaning, planning and recording of archaeological features and deposits. It is anticipated that, where necessary, sufficient time will be allowed to enable the appropriate level of recording within the construction programme. Should significant or large numbers of archaeological features be exposed provision has been made to increase the on-site team to facilitate the appropriate level of recording without undue delay to the construction programme. The archaeological curator and client will be kept informed of progress and due consultation will be undertaken where additional resources are required.

14.2 Post-excavation analysis and report production will be undertaken by the archaeological supervisor, or a post-excavation analyst as appropriate, with assistance from a finds supervisor, illustrator and external specialists. In general it is expected that each fieldwork day (equal to one person-day) will require a post- excavation day (equal to one-and-a-half person-days) for completion of the analysis and report. However, post-excavation analysis will be dependent on the quantity and nature of the archaeological remains exposed during the investigations. Allowance has been made for specialist time within the project budget, however, given the nature

of the project contingencies have been specified.

15 SPECIALISTS TO BE USED DURING THE PROJECT

15.1 The following organisations/persons will, in principle and if necessary, be used as subcontractors to provide the relevant specialist work and reports in respect of any objects or material recovered during the investigation that require their expert knowledge and input. Engagement of any particular specialist subcontractor is also dependent on their availability and ability to meet programming requirements.

Task	Body to be undertaking the work
Conservation	Conservation Laboratory, City and County Museum, Lincoln
Pottery Analysis	Prehistoric - Trent & Peak Archaeological Trust Roman - B Precious, Independent Specialist Anglo-Saxon - J Young, Independent Specialist Medieval and later - G Taylor in consultation with H Healey, Independent Archaeologist
Non-pottery Artefacts	J Cowgill, Independent Specialist, or G Taylor, APS
Animal Bones	Environmental Archaeology Consultancy
Environmental Analysis	V Fryer, Independent Specialist
Human Remains Analysis	Dr R Gowland, Independent Specialist

16 INSURANCES

16.1 Archaeological Project Services, as part of the Heritage Trust of Lincolnshire, maintains Employers Liability Insurance of £10,000,000, together with Public and Products Liability insurances, each with indemnity of £5,000,000. Copies of insurance documentation can be supplied on request.

17 COPYRIGHT

17.1 Archaeological Project Services shall retain full copyright of any commissioned reports under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it hereby provides an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in the Project Specification.

17.2 Licence will also be given to the archaeological curators to use the documentary archive for educational, public and research purposes.

17.3 In the case of non-satisfactory settlement of account then copyright will remain fully and exclusively with Archaeological Project Services. In these circumstances it will be an infringement under the Copyright, Designs and Patents Act 1988 for the client to pass any report, partial report, or copy of same, to any third party. Reports submitted in good faith by Archaeological Project Services to any Planning Authority or archaeological curator will be removed from said planning Authority and/or archaeological curator. The Planning Authority and/or archaeological curator will be notified by Archaeological Project Services that the use of any such information previously supplied constitutes an infringement under the Copyright, Designs and Patents Act 1988 and may result in legal action.

17.4 The author of any report or specialist contribution to a report shall retain intellectual copyright of their work and may make use of their work for educational or research purposes or for further publication.

18 BIBLIOGRAPHY

Air Photo Services, 2004 *Holdingham Rising Main, Sleaford, area centred TF 075 473, Lincolnshire: aerial photographic assessment,* unpubl. report **2005/35**

Archaeological Project Services, 2004 *Desk-based assessment on land at Holdingham terminal pumping station to Sleaford STW (Holdingham Rising Main), Sleaford, Lincolnshire (HRM04),* APS unpubl. report **181/04**

Hodge, CAH, Burton, RGO, Corbett, WM, Evans, R, and Seale, RS, 1984 Soils and their use in Eastern England, Soil Survey of England and Wales 13

Stratascan, 2005 *Geophysical survey report: Holdingham Rising Main, Sleaford, Lincolnshire,* unpubl. report

Specification: Version 1, 04/03/2005

Appendix 2
Context Summary

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
001	Test Pit 1	Layer	Flint gravel	0.06	Gravel layer
002	Test Pit 1	Layer	Clayey-silt, occ stones	0.66	Re-deposited clayey-silt
003	Test Pit 1	Layer	Sand and gravel	0.23	Backfill over pipe
004	Test Pit 2	Layer	Slate Gravel	0.08	Gravel layer
005	Test Pit 2	Layer	Hardcore	0.40	Hardcore layer
006	Test Pit 2	Layer	Clayey-silt, occ stones	0.14	Re-deposited clayey-silt
007	Test Pit 2	Layer	Sand and gravel	0.34	Backfill over pipe
008	1	Layer	Mid-dark brown sandy-clay loam, occ gravel	0.33	Topsoil
009	1	Layer	Light whitish/green/bluish-grey, silty clay	0.35	Re-deposited Clay-silt
010	1	Layer	Mid-dark grey, sandy clay	0.15	Re-deposited natural
011	1	Layer	Mid yellow-brown, med-coarse sand, occ gravel	0.25	Re-deposited natural
012	1	Layer	Mid-dark brown-grey, sandy-clay	0.60	Backfill of natural and mixed construction waste
013	1	Deposit	Mid brown, clayey-sand frequent pebble and limestone frag inclusions	0.20	Modern dump
014	1	Layer	Light pinkish/whitish-brown, crushed limestone frags	0.10	Modern dump
015	1	Layer	Light brown med sand, occ sub rounded pebbles and limestone frags, Lenses of dark-brownish grey silty sand	1.0	Backfill of Modern sewer trench
016	1	Layer	Mid-brown silty sand, occ small stones.	0.20	Topsoil
017	1	Layer	Light brown-grey clay, freq stones and pebbles	0.30	Modern dump
018	1	Layer	Concrete		Modern concrete
019	1	Layer	Firm dark-grey clay, freq stones and pebbles	0.35	Modern dump, land raising
020	1	Layer	Compact light yellowish-brown clayey-sand, occ sub-rounded limestone fragments	0.35	Modern dump deposit
021	1	Layer	Tarmac		Modern road surface
022	1	Layer	Tarmac		Buried previous road
023	1	Layer	Firm, mid-dark olive-brown silty sand	0.30	Build up deposit under road ramp
024	4	Fill	Firm dark slightly olive grey, clayey sand, freq limestone frags.	0.09	Fill of [025]
025	4	Cut	Linear, E-W orientation, shallow sides with concave base. C.1.0m wide	0.09	Linear ditch
026	4	Fill	Firm, mixed dark grey-reddish brown clayey-sand, freq sub-angular limestone frags.	0.20	Fill of [028]
027	4	Fill	Firm, dark grey sandy-clay, occ gravel frags, freq sub-angular limestone frags.	0.05	Fill of [028]
028	4	Cut	Linear, Gently sloping sides with shallow concave base. C.1.50m wide.	0.20	Ditch cut
029	4	Layer	Firm, dark grey clayey-sand, freq sub-angular limestone frags.	0.35	Topsoil
030	4	Layer	Compact, dark brownish/grey, clayey-sand, freq limestone chips, occ CBM fragments.	0.15	Hardcore yard surface

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
031	4	Layer	Firm, light red-brown with olive mottling, clayey-sand. Freq sub-angular limestone frags, occ charcoal.	0.02	Subsoil
032	4	Layer	Compact light yellow-white limestone brash.		Natural geology
033	4	Layer	Firm dark brown-grey clayey-sand, freq sub-angular limestone frags	0.35	Topsoil
034	4	Layer	Firm, light yellow-brown clayey sand, with occ limestone frags		Subsoil/ natural interface
035	4	Fill	Firm, Dark olive grey, clayey-sand. Freq sub-angular limestone frags. Occ coal and charcoal flecks. 0.90m wide.	0.13	Fill in ditch [036]
036	4	Cut	Linear, E-W orientation, Gently sloping sides, concave base. 0.90m wide.	0.13	Linear ditch, possibly same as [025]
037	4	Layer	Firm, dark brown, clayey-sand, freq sub-angular limestone frags	0.35	Subsoil
038	4	Layer	Firm, dark olive-brown with light yellow-brown and dark grey patches, clayey-sand. Occ limestone frags, occ modern ironwork		Dump layer/spread
039	2 E of East Rd, A153	Layer	Friable, mid-brown, sandy-silt, occ sub-rounded pebbles	0.35	Topsoil
040	2 E of East Rd, A153	Layer	Firm, light grey crushed stone	0.12	Hard standing
041	2 E of East Rd, A153	Layer	Moderate, mixed yellow brown sandy-silt, moderate gravel	0.28	Build up material for bank of grass verge
042	2 E of East Rd, A153	Layer	Moderately compact, mid brown- with yellow brown patches, silty sand	0.48	Subsoil
043	2 E of East Rd, A153	Layer	Moderate, light-mid brown-yellow coarse sand	0.48	Natural sand
044	2 W end Strip	Layer	Firm, dark grey clay with brick and mortar, Occ med limestone frags	0.3	Possible residual base of building footing
045	A17 off Area 2	Layer	Moderately compact, mid brown sandy-silt	0.26	Topsoil
046	A17 off Area 2	Layer	Moderately compact, mid brown sandy-silt and stone.	0.24	Subsoil
047	A17 off Area 2	Layer	Moderate-firm, light yellow, crushed stone		Made ground for landscaping roundabout
048	A17 off Area 2	Layer	Moderate, dark brown, clayey-silt	0.67	Buried subsoil?
049	Bone Mill Lane off Area 2	Layer	Moderate mid brown, sandy-silt, occ brick and small pebbles	0.23	Topsoil
050	Bone Mill Lane off Area 2	Layer	Moderate, mid yellow-brown, crushed stone and gravel	0.37	Made ground/ landscaping deposit
051	Bone Mill Lane off Area 2	Layer	Firm, Mixed mid grey and light-mid yellow brown clay	0.80	Natural clay
052	Bone Mill Lane off Area 2	Layer	Moderate, dark grey silty clay	0.50	Natural
053	3 Mole Hole	Layer	Tarmac	0.23	Tarmac surface

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
054	3 Mole Hole	Layer	Firm, crushed stone white/yellow	0.23	Consolidation/ levelling deposit
055	3 Mole Hole	Layer	Moderate, mid grey clayey-silt	0.14	Residual subsoil
056	3 Mole Hole	Layer	Moderate, mid brown coarse sand, occ pebbles	0.50	Natural
057	3 Mole Hole	Layer	Mid brown, sandstone/ brash	0.26	Natural
058	3 Mole Hole	layer	Moderate mid yellow red-brown running sand	1.14	Natural
060	50E 195N	Spread	Pottery Spread occurring within (113)/(071)		Localised finds deposition
061	50E 195N	Spread	Pottery Spread occurring within (109) =(111)		Localised finds deposition
062	70E 195N	Fill	Med olive brown silty sand, occasional pebbles and limestone	0.25	Fill of [063]
063	70E 195N	Cut	Linear ENE-WSW orientated, steep sides concave base 0.43m wide	0.25	Gully
064	70E 200N	Fill	Light grey/brown silty sand, moderate gravel	0.20	Fill of [065]
065	70E 200N	Cut	Linear E-W orientation, moderate sides with flat base 0.85m wide	0.20	Gully
066	85E 195N	Cut	Linear E-W orientation, Shallow due to truncation with concave base,1m wide	0.12	Gully
067	85E 195N	Fill	Light greyish-yellow silty-sand.	0.12	Fill of [066]
068	85E 195N	Fill	Light greenish/brown silty sand, moderate gravel	0.23	Fill of [069]
069	85E 195N	Cut	Linear N-S orientation, gradual sloping sides with flat base. 1.2m wide	0.23	Linear ditch
070	50E 195N	Cut	Curvilinear, moderately steep sides with concave base. 1.05m wide	0.38	Curvilinear boundary ditch [117,112,178]
071	50E 195N	Fill	Mid-dark grey sandy-silt, occ clay patches, occ burnt stone, mod charcoal flecks	0.38	Fill of [070] (116,113,179)
072	50E 195N	Cut	Linear, WSW-ENE orientation, gradual sloping side with broad undulating base. 0.9m wide	0.21	Linear ditch [094, 077]
073	50E 195N	Fill	Mid grey/brown silty-sand with yellow mottling.	0.18	Fill of [072]
074	45E 195N	Fill	Med yellowish brown, silty sand, occasional pebbles and limestone fragments	0.30	Fill of [075] (3)
075	45E 195N	Cut	Irregular shape, with gradual sloping sides and flat base. 1.9m wide	0.40	Possible natural Feature
076	75E 190N	Fill	Light greyish yellow silty-sand	0.16	Fill of intersecting ditches [066] & [069]
077	50E 195N	Cut	Linear, E-W orientation, gradual straight sides, broad flat base. 1m width	0.23	Linear ditch re-cut of [072]?
078	50E 195N	Fill	Mid yellow-brown silty- sand, occ sub rounded pebbles	0.15	Fill of [077]
079	40E 195N	Fill	Mid yellow-brown silty- sand, occ sub rounded pebbles, occ charcoal, occ heat cracked stones	0.19	Fill of [080]
080	40E 195N	Cut	Linear, N-S orientation. Moderate uneven slope, with irregular flattish broad base. 1.04m wide	0.18	Linear ditch =[215]
081	45E 195N	Fill	Med yellowish brown silty/sand, moderate pebbles, occ limestone	0.23	Fill of [082]

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
			fragments		
082	45E 195N	Cut	Linear, SE-NW orientation, Steep sides, uneven concave base. 0.12m wide	0.23	Gully/linear
083	50E 190N	Fill	Mid-Dark greyish brown, silty-sand. Occ charcoal frags, occ limestone fragments	0.28	Fill of [084]
084	50E 190N	Cut	Sub-circular in plan, steep sides and gentle concave base. 0.25m wide x 0.28m long	0.07	Possible Posthole
085	70E 195N	Cut	Linear ENE-WSW orientation, concave sides with relatively flat base. Max width 0.90m	0.25	Linear ditch
086	70E 195N	Fill	Mid-yellowish brown with grey mottling, silty-sand.	0.25	Fill of [085]
087	70E 195N	Cut	Short linear, NNE-SSW orientation, concave sides with lightly rounded base. Approximately 05m wide	0.20	Linear of unknown function,
088	70E 195N	Fill	Light blue/grey sandy-silt, occ small stones	0.25	Fill of [087]
089	Entire Site	Layer	Mid-light brownish yellow sand and gravel	-	Natural
090	45E 195N	Fill	Mid-light brownish yellow sand (60%) and sub-rounded limestone gravel (40%). occ shell fragments	0.38	Fill of [075] (2)
091	45E 195N	Fill	Med slightly greyish, yellow-brown silty-sand, occ sub-rounded limestone pebbles	0.09	Fill of [075] (1)
092	50E 190N	Fill	Med yellow-brown silty-sand, occ sub-rounded limestone pebbles	0.08	Fill of [093]
093	50E 190N	Cut	Linear, SE-NW in orientation. Shallow sides with irregular base. 0.15m wide	0.08	Irregular linear =[082]
094	45E 195N	Cut	Linear, E-W in orientation. Concave sides with V-shape base. 1.78m wide	0.19	Linear ditch
095	45E 195N	Fill	Light greyish/brown silty-sand, occ small sub-rounded stones	0.19	Fill of [094]
096	80E 195N	Fill	Same as (064)		Same as (064) fill [097]
097	80E 195N	Cut	Same as [065]		Same as [065] gully
098	80E 195N	Fill	Same as (062)		Same as (062) fill [099]
099	80E 195N	Cut	Same as [063]		Same as [063]
100	45E 190N	Fill	Mid brown with mid-dark brown-grey mottling, silty sand. Occ small sub-rounded limestone fragments	0.30	Fill of Penannular gully [101]
101	45E 190N	Cut	Penannular/ curvilinear, steep sides with gentle concave base. 0.6m wide	0.30	Segment of a penannular gully =[103,105]
102	40E 190N	Fill	Mid brown with dark grey-brown mottling, silty sand, mod sub-rounded limestone fragments	0.30	Fill of [103] =(100,104)
103	40E 190N	Cut	Penannular/ curvilinear, steep sides with gentle concave base. 0.7m wide	0.30	Segment of Penannular gully (101,105)
104	40E 195N	Fill	Mid brown with dark grey-brown mottling, silty sand, mod sub-rounded limestone fragments	0.29	Fill of [105] = (100,102)
105	40E	Cut	Linear terminus, very steep sides with	0.30	NW terminus of

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
	195N		concave base., 0.75m wide		Penannular gully =[101,103]
106	40E 195N	Fill	Mid brown with dark grey-brown mottling, silty sand, mod sub-rounded limestone fragments	0.09	Fill of [107]
107	40E 195N	Cut	Irregular shaped, with shallow sloping sides and irregular base, 0.75m wide.	0.50	Irregular feature/
108	45E 190N	Cut	Rounded terminus, sharp sloping sides with irregular concave base. 0.66m wide	0.25	S terminal end of penannular gully =[110]
109	45E 190N	Fill	Dark brown sandy silt, occ small sub-rounded stones	0.25	Fill of gully terminus [108]
110	45E 190N	Cut	Penannular/ curvilinear, steep sides with gentle concave base. 0.62m wide	0.30	Segment of Penannular gully =[108]
111	45E 190N	Fill	Dark brown sandy silt, occ small sub-rounded stones	0.30	Fill of penannular gully [110]
112	45E 190N	Cut	Linear, E-W orientation, gully profile not fully excavated		Linear gully
113	45E 190N	Fill	Dark brown sandy silt, occ small sub-rounded stones		Fill of linear gully [112] not bottomed
114	55E 195N	Fill	Mid brownish-grey silty-sand. Occ sub-rounded pebbles, occ burnt clay, occ charcoal	0.44	Fill of [115]
115	55E 195N	Cut	Elongated ovoid, steep straight sides, with slightly concave base, 4m long x 1.12m wide	0.44	Terminal end E-W ditch
116	55E 195N	Fill	Mid-dark grey silty sand. Occ small stones, occ charcoal. Heat effected soil	0.41	Fill of [117] [193]
117	55E 195N	Cut	Curvilinear, SW-NE orientation. 0.85m wide	0.42	Boundary ditch?
118	55E 195N	Fill	Mid yellow-brown with grey mottling silty sand, occ sub-rounded pebbles	0.22	Fill of [072]
119	55E 195N	Fill	Mid reddish brown, occ decaying sandstone, occ shell	0.23	Fill of [077]
120		Layer	Mid brown yellow sandy-gravel	0.20	gravel and silt
121	50E 195N	Fill	Mid brown sandy silt, moderate sub-rounded pebbles.	0.12	Fill of [122]
122	50E 195N	Cut	Linear, E-W orientation, gradual sloping sides with broad flat base, 1.18m wide	0.12	Possible Re-cut of [077]/[072]
123	50E 200N	Cut	Linear, E-W orientation, moderate sloping sides, concave base. 0.8m wide	0.33	Linear ditch terminating to the east
124	50E 200N	Fill	Mid yellow-brown sandy-silt, occ sub-rounded pebbles	0.33	Fill of [123]
125	60E 195N	Cut	Linear, E-W orientation, concave side with V-shaped base. 1.3m wide	0.23	Linear ditch
126	60E 195N	Fill	Mid yellowish-brown silty sand, v occ med sub-rounded pebbles	0.23	Fill of [125]
127	60E 195N	Cut	Sub-circular? Concave sides with convex base? Not fully excavated	0.41	Possible Pit/Linear
128	60E 195N	Fill	Light brownish grey, sandy silt	0.25	Primary fill of [127]
129	60E 195N	Fill	Mid yellowish-brown silty sand, v occ med sub-rounded pebbles	0.15	Overburden/ secondary fill of [127]
130	40E 195N	Fill	Mid yellowish-brown silty sand, slight greyish hue. occ med sub-rounded pebbles	0.24	Fill of [214]

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
131	40E 195N	Fill	Mid yellowish-brown silty sand, v occ med sub-rounded pebbles, occ charcoal	0.18	Fill of [215]
132	55E 195N	Fill	Same as (114) taken for Cu finds		Fill of [115]
133	55E 195	Fill	Mottled mid grey/ yellow-brown silty sand, occ charcoal flecks, occ sub-rounded pebbles	0.2	Fill of [139]
134	50E 195N	Cut	Curvilinear, N-S orientation, shallow sides with an irregular base, 0.5m wide	0.18	Penannular/ curvilinear gully segment [189]
135	50E 195N	Fill	Dark olive brown sandy silt, occ sub-rounded stones	0.18	Fill of [134]
136	55E 195N	Fill	Light greyish-brown silty-sand, occ gravel, rare charcoal	0.17	Fill of [165]
137	65E 190N	Fill	Same as (086)		Fill of [085]
138	50E 190N	Fill	Mid grey-brown silty sand. Occ small stones	0.27	Fill of [146]
139	55E 195N	Cut	E-W orientated feature, not fully uncovered in plan, moderate sides with broad undulating base. 0.72m wide	0.22	Possible pit/ditch
140	50E 195N	Fill	Dark grey with brown/yellow flecks, sandy-silt. Moderate large sub-angular stone. Occ small stones	0.29	Upper fill of [194]
141		Fill	Light brown/yellow silty sand, occ small stone inclusions	0.16	Subsoil
142	40E 200N	Fill	Mid brown some darker grey patches, silty sand, frequent small sub-angular limestone fragments, occ natural flints, occ charcoal	0.27	Fill of [143]
143	40E 200N	Cut	Curvilinear, terminating to the south. Steep sloping sides with shallow concave base. 0.80m wide	0.27	Northwest penannular gully segment
144	40E 195N	Fill	Mid brown some darker grey patches, silty sand, frequent small sub-angular limestone fragments	0.19	Fill of [145]
145	40E 195N	Cut	Linear, NE-SW orientation, steep sloping sides with shallow concave base. 0.70m width, 2.50m long	0.19	Penannular gully segment
146	50E 190N	Cut	Linear, WNW-ESE orientation, Concave sides with flat base. 0.7m wide	0.27	Linear ditch
147			Void		
148	50E 195N	Fill	Light grey/brown, silty-sand, frequent small gravel	0.04	Lower fill of [194]
149	50E 190N	Cut	Linear WNW-ESE orientation, Concave sloping sides with a flat base. Width unknown	0.30	Linear ditch, Same as [146]
150	50E 190N	Fill	Mid-dark brown-grey, silty-sand, occ small stones. Same as (138)	0.30	Fill of [149]
151	40E 195N	Fill	Mid brown silty sand, frequent small sub-rounded limestone fragments	0.21	Fill of [152]
152	40E 195N	Cut	Linear, WSW-ESE orientation, Shallow sloping sides, gentle concave base. 1.50m wide.	0.21	Field Boundary/ Furrow
153	40E 195N	Fill	Friable, mid brown with dark grey mottling, silty-sand, frequent sub-angular limestone fragments. Occasional charcoal flecks	0.28	Fill of [154] Same as (142)
154	40E	Cut	Linear, terminates to the south,	0.28	North-west segment

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
	195N		Roughly NNE-SSW orientated, Steep sloping sides with gentle concave base, 0.80m wide and 4.0m long		of penannular gully
155	40E 195N	Fill	Mid brown sandy-silt with yellow/brown mottling. Freq small sub-rounded limestone pebbles	0.12	Fill of [156]
156	40E 195N	Cut	Linear, NNE-SSW orientation, Gentle sloping sides with concave base. 0.43m wide x 1.50m length	0.12	Shallow gully
157	55E 195N	Cut	Curvilinear, E-W orientation, Slightly concave sides, with shallow concave base. 0.7m wide.	0.33	Curvilinear ditch = [070,117]
158	55E 195N	Fill	Dark grey sandy silt, some black/grey patches, occ large limestone fragments, some burnt, occ small stones, occ charcoal	0.33	Fill of [157]
159	50E 195N	Fill	Light grey/brown sandy-silt, moderate gravel	0.23	Fill of [160]
160	55E 190N	Cut	Sub-ovoid, moderate sloping sides with a flat base. 0.7m wide x 1.5m long	0.22	Pit
161	50E 195N	Cut	Linear, ENE-WSW orientated, not fully excavated		Linear ditch/gully intersection
162	50E 190N	Fill	Mid grey-brown, silty sand, occ small stones. Not fully excavated		Fill of [161]
163	50E 190N	Cut	Linear, WNW-ESE orientation, Not fully excavated		Linear ditch
164	50E 190N	Fill	Mid grey-brown silty sand, occ stones		Fill of [163]
165	55E 190N	Cut	Sub-ovoid, moderate sloping sides and flat base, 0.9m wide and 1.3m long	0.21	Pit
166	70E 195N	Fill	Light yellow-brown, with light grey mottling, sandy-silt, occ sub-rounded pebbles	0.16	Fill of ditch terminal [167]
167	70E 195N	Cut	Linear, N-S orientation, steep sloping sides, with concave base. 0.83m wide	0.16	Linear ditch terminal
168	70E 195N	Fill	Light grey/brown, sandy-silt	0.09	Fill of [169]
169	70E 195N	Cut	Circular, steep sides with a concave base, 0.21m diameter	0.09	Possible posthole
170	50E 195N	Fill	Mid yellow-brown, with grey-brown mottling, occ charcoal, moderate gravel	0.36	Fill of [171]
171	50E 195N	Cut	Sub-rectangular, E-W orientation, gradual sloping concave sides with broad concave base. 1.16m wide	0.43	Elongated pit =[115]
172	55E 195N	Cut	Oval, E-W orientation, gradual sloping sides with shallow concave base. 0.7m long x 0.57m wide	0.17	Pit
173	55E 195N	Fill	Olive mid brown, sandy silt, occ small sub-angular stones	0.17	Fill of [172]
174	55E 195N	Cut	Curvilinear, ENE-SSW orientation, steep sloping sides with stepped, slightly concave base. 0.63m wide	0.30	Linear ditch = [178,117]
175	55E 195N	Fill	Dark olive brown sandy silt. Occ. Small pebbles	0.30	Fill of [174]
176	55E 195N	Cut	Linear, E-W orientation, profile unknown	0.65	Ditch [180]
177	55E 195N	Fill	Mid olive-orange brown, sandy-silt, occ sub-rounded pebble inclusions	0.20	Fill of [176]
178	60E 200N	Cut	Curvilinear, NNE-SSW orientation, steep sloping sides, gradual concave	0.28	Ditch cut [117,174]

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
			base		
179	60E 200N	Fill	Dark orange/olive brown, sandy-silt occ sub-rounded pebble inclusions	0.28	Fill of [178]
180	60E 195N	Cut	Linear, E-W orientation, Steep sloping sides, shallow concave/flat base	0.4	Gully/Furrow
181	60E 195N	Fill	Dark orange/olive brown, sandy-silt occ sub-rounded pebble inclusions	0.4	Fill of [180] = [177]
182	45E 190N	Fill	Medium grey-brown silty sand, Freq sub-rounded pebbles, freq charcoal flecks/frags	0.07	Fill of [183]
183	45E 190N	Cut	Sub-oval, steep sides with concave base. 0.26m long x 0.21m wide	0.70	Possible post-hole between SW & SE pen ditches
184	35E 195N	Cut	Linear, WSW- ENE orientation, Concave sides with a flat base. 1.95m wide	0.22	Linear ditch/gully
185	35E 195N	Fill	Mid reddish brown, silty sand	0.22	Fill of [184]
186	75E 200N	Fill	Same as (068)		Fill of [187]
187	75E 200N	Cut	Same as [187]		Linear ditch = [069]
188	50E 195N	Fill	Mid brown, some dark grey/brown mottling. Silty sand, occ charcoal flecks	0.08	Fill of [189]
189	50E 195N	Cut	Curvilinear steep sides, gentle concave base. 0.40m wide.	0.08	Terminal of NE quadrant [134] penannular ditch segment
190	50E 190N	Fill	Mid yellowish-brown silty sand, v occ small sub-angular limestone fragments	0.14	Fill of [191]
191	50E 190N	Cut	Sub-circular, steep sides and shallow concave base. 0.42m long x 0.42m wide	0.14	Possible post-hole/possible natural
192	50E 190N	Fill	Friable, mid-dark grey/brown sandy silt. occ small sub-angular limestone pebbles. Occ limestone fragments, occ charcoal, occ clay patches	0.28	Fill of gully [193] = [111]
193	50E 190N	Cut	Curvilinear, very steep sides with concave base. 0.14m wide	0.28	South east quadrant of penannular gully
194	50E 195N	Cut	Linear E-W orientated, Steep/vertical sides, flat base. 0.84m wide.	0.29	Linear ditch.
195	30E 190N	Fill	Light grey/brown silty sand, moderate gravel	0.38	Fill of [196]
196	30E 190N	Cut	Linear, N-S orientated. Moderate sloping sides, base uncertain, 1.9m wide	0.38	Possible linear/elongated pit
197	50E 195N	Fill	Friable, mid brown silty sand, freq small sub-angular limestone frags.	0.10	Fill of [198] = (121)
198	50E 195N	Cut	Linear, WSW-ENE orientation, gradually sloping sides, base 1.80m wide, not fully excavated		Field boundary/ furrow = [122]
199		Layer	Soft, light brown, some light grey banding, sand/gravely sand	1.15	Natural Sand
200		Layer	Hard, light brown limestone brash.	0.25	Natural limestone bedrock
201		Layer	Soft, light brown, some red and yellow banding, sand/gravely sand	1.20	Natural deposit
202		Layer	Light brownish grey, fine sand	0.40	Natural sand
203		Finds	Finds from SW quadrant of curvilinear		Deposit same as

Context	*Area*	*Type*	*Description*	*Thickness (m)*	*Interpretation*
		Allocation	gully		100,102, 104
204		Finds Allocation	Finds from SE quadrant of curvilinear gully		Deposit same as 109
205		Finds Allocation	Finds from E-W gully		Deposit same as 071
206		Finds Allocation	Finds from E-W gully		Deposit same as 158
207		Finds Allocation	Finds from E-W gully		Deposit same as 114
208		Layer	Light brown with bands of yellow-brown and pink-brown sand/sandy gravel	1.40	Natural sand
209		Layer	Friable, mid-light bluish grey sand	0.20	Natural sand
210	45E 195N	Cut	Linear E-W orientation, moderate straight sloped sides with shallow concave base, Allocated in Post-Ex	0.09	Linear gully, Same as [072]
211	45E 195N	Fill	Moderate, light grey-brown silty sand. Allocated during Post-Ex	0.09	Fill of Linear [210] Same as (073)
212	40E 195N	Cut	Linear E-W orientation, moderate sloping straight sides, concave base, Allocated during Post-Ex	0.20	Linear gully, same as [072]
213	40E 195N	Fill	Moderately compact, mid-yellow brown silty sand, occ sub-rounded pebble, occ sand flecks. Allocated during Post-Ex	0.09	Fill of linear [212], same as (073)
214	45E 195N	Cut	Linear, moderately sloping straight sides, shallow concave to flat base. Allocated during Post-Ex	0.26	Linear ditch, same as [094]
215	40E 190N	Cut	Linear N-S orientation, moderate uneven sides with flat base. Allocated during Post-Ex	0.17	Linear ditch, same as [080]
216	35E 195N	Fill	Grey brown silty sand occasional sub-angular stones. . Allocated during Post-Ex	0.19	Fill Ditch [217] =[095]
217	35E 195N	Cut	Linear 1.78m wide concave sides v-shaped base E-W. . Allocated during Post-Ex	0.19	Cut of long ditch =[094]

Appendices 3a, 3b and 3c – Pottery and Thin Sections

Appendix 3a
LATE IRON AGE POTTERY
by Dale Trimble
with assistance and comments by David Knight

Background
During May 2005 excavation of a late Neolithic and Iron Age site was undertaken by Archaeological Project Services in advance of the replacement of a rising main to the north of Sleaford, Lincolnshire by Anglian Water. A segmented ring ditch and a number of linear features were recorded. The bulk of the prehistoric pottery was retrieved from the linear features although smaller quantities were also recovered from the segmented ring ditch.

A number of significant prehistoric sites are known in the area and include the possible late Iron Age mint site at Old Place, Sleaford, thought to have functioned as a sub-capital for the local Corieltauvi tribe during the late Iron Age. During 1997 an archaeological evaluation of a waterlogged ditched enclosure located approximately 650m southwest of the Holdingham site recovered middle Iron Age scored ware pottery and evidence of domestic occupation. Plotting of cropmarks from aerial photographs has shown a complex of linear features in the area probably representing Iron Age or Romano British field systems.

Methodology
All of the material was recorded using the system for recording prehistoric pottery developed by David Knight (Knight, 1998). For each sherd or group of joining sherds details of context number, count, weight (g), fabric, vessel part, form (body profile), rim form, base form, diameter and surviving percentage of rim and base, surface finish of interior and exterior, decoration (type and extent), sherd condition, surface deposits, method of manufacture and cross-context joins (with comments on other features of interest) were recorded. Data on sherd attributes were entered onto an Access 2003 database and quantitative analyses were carried out to establish the frequencies of fabrics and other vessel attributes and potential correlations between these variables. Summaries of the range of fabrics, forms and styles of surface treatment by context are provided

Quantity, Provenance and Stratigraphic Distribution
A total of 367 pieces of late prehistoric pottery weighing 2888 grammes was retrieved during excavation of the site (Table 1). Of this, 335 pieces were hand collected and 32 retrieved from environmental sample residues. Most of the pottery derives from stratified contexts.

The earliest archaeological phase (Phase 2) dates to the earlier Neolithic, followed by Phase 3 of the later Neolithic, Phase 4 to the Iron Age and successively by Phase 5 (medieval), Phase 6 (Undated) and a modern Phase 7. Prehistoric pottery almost exclusively derives from Phases 3 and 4 from which a total of 281 and 35 pieces were recovered respectively. Phase 4 has been further sub-divided into five sub-phases, referenced alpha numerically 4a – 4e. Phase 4a is represented by a short 9m long linear feature located immediately east of the segmented ring gully. Table 2 shows the quantities of late prehistoric pottery by phase. This feature contained by far the most pottery, by both weight and count with 199 sherds weighing 1238g recovered. Excavation of a section at the west terminal (113 = fill of [112]) recovered 22 sherds and an additional 31 pieces were recovered from a spread of pottery over this area. Among these was approximately half of a Late Iron Age necked bowl with cordons from context 113 comprising 3 joining pieces forming a virtually complete profile (Figure 1). A non joining sherd from (113) showing similar cordons may be from the neck of this vessel. In addition, 52 sherds were found in the section adjacent to the section at west terminal (140) and (148) fill of [194)]), indicating perhaps preferential disposal of material at this end of the feature. At the east terminal of the Phase 4a feature, 41 pieces of pottery were retrieved, all of which were body sherds.

Pottery from late Iron Age Phase 4b comprised 63 sherds forty six of which were recovered from context (158). No ceramics were recovered from either Phases 4c and 4d. The final Iron Age phase comprises an interconnected series of linear ditches aligned predominantly west to east and north to south across the site, probably forming small fields of paddocks. Although 58 sherds of pottery were recovered from these ditches, this is a relatively low total in relation to the number of sections

excavated. Also, 38 of these sherds were recovered from the fill (150) of ditch section [149], located just south of pottery-rich features of Phases 4a and 4b.

Fabric Groups
Initially four fabric groups were defined on the basis of variations in the frequency and modal size range of inclusions visible within the clay matrix employing a x10 hand lens. This followed the recommendations in the revised guidelines of the Prehistoric Ceramics Research Group (PCRG 1997). Each fabric is defined by a four-letter code comprising the following three elements:

Inclusion type. GR: grog (crushed pottery); QU: quartz; SH: fossiliferous shell/shelly limestone
Frequency. R: rare (<3%); S: sparse (3-10%); M: moderate (11-25%); C: common (26-40%); A: abundant (>40%).
Size. F: fine (<0.25mm); M: medium (0.25-1mm); C: coarse (1-3mm); V: very coarse (>3mm).

Representative examples of each fabric group were selected and thin-sectioned by Dr. A. Vince; detailed changes to the proposed fabric type series were made following petrological analysis. Records were compiled for each fabric group of surface colour, firing, hardness, feel/texture, fracture, technology and inclusions (type, frequency, sorting, roundness, sphericity and size). Based on the results of the thin sectioning and the visual inspections, five fabric groups were defined (Table 4).

Fabric SHCV (very coarse shelly ware): common poorly sorted angular/sub-angular very coarse fossiliferous shell and shelly limestone, clearly visible in hand-specimens and thin- sections, possibly added as temper; punctuate brachiopods visible in some sherds; very occasional small rounded quartz grains; generally evenly fired mid greyish brown but more commonly mid grey; some sherds with patches of pale to mid orange on interior or exterior surfaces; hard; granular texture; irregular fracture.

Fabric SHCC (coarse shelly ware): common moderately well-sorted subangular or subrounded coarse fossiliferous shell and shelly limestone; punctuate brachiopod visible in some sherds; very occasional small rounded quartz grains; generally evenly fired mid greyish brown but more commonly mid grey, some sherds with patches of pale to mid orange on interior or exterior surfaces; hard; granular texture; irregular fracture.

Fabric SHSM (medium shelly ware): sparse to moderate well-sorted subangular or subrounded medium fossiliferous shell and shelly limestone; moderate well-sorted angular to subrounded medium quartz grains; firing conditions and surface colours closely comparable to coarser shelly fabrics, as described for Fabrics SHCV and SHCC; hard; granular texture; irregular fracture.

Fabric SHCF (fine shelly ware): initially identified visually as quartz fabric but in thin section shell shown to be more abundant; common well sorted subangular or subrounded fossiliferous shell and shelly limestone; surface colours generally even mid to dark grey; some sherds pale orange with grey core; hard; sandy texture, irregular fracture.

Fabric QUCF (*fine quartz fabric*): applies to a single sherd identified by thin sectioning (see Appendix 3b) after initial classification as shelly ware. Re-examination under a x20 microscope confirmed thin sectioning result. It appears that voids some 1.5mm across containing altered limestone were interpreted as leached shell. Common well sorted subangular and angular fine quartz and also moderate rounded medium quartz of high sphericity. Sparse sub-angular pieces of moderate grog present; mid grey throughout; hard, sandy texture

Sherds in shelly fabrics form the overwhelming majority of the pottery, with only the single sherd described above in *QUCF* fabric containing significant quantities of quartz sand (Table 4). Initial visual classification of the sherds identified a small number in a quartz based fabric but these were later reclassified as shelly following examination of a sample in thin section (fabric SHCF above; Vince, this report). There is a small component of the material in fine or moderate shelly fabrics (Table 3), amounting to 22 sherds or 6% of the pottery, the remainder containing coarse or very coarse inclusions.

Vessel forms
A limited number of vessel forms was identified (Table 5). The most complete vessel was recovered from context (113) located at the western terminal of the feature in Phase 4a. This comprised a

cordoned necked bowl with a near vertical rounded rim and a shallow omphalos base with a number if irregularly spaced perforations (Fig 1). Part of a necked bowl was also recovered from context (192) a fill in the Phase 3 segmented gully. Table 2 shows that round shouldered or ovoid vessels (Fig 2) are the most common identified vessel form, although identification of these is tentative in many instances. Of the pottery 204 pieces are body sherds, the remainder comprising more diagnostic pieces.

Rims
Rim forms are variable but include a triangular example from context (116) (Fig 3), a square-sectioned version from (060) (Fig 2) and three flattened rims, expanded externally, from (205), including the example depicted in DR 5 which was marked as from context (005), which seems unlikely as this is a deposit of hardcore recorded during the watching brief. The remainder of the rims were generally of rounded direct form or were rounded externally or internally.

Bases
Of the five base forms identified three are flat while 2 are flat and pinched out around the circumference. The bowl from context 113 has a shallow omphalos base with an irregular arrangement of perforations.

Decoration and Surface Treatment
None of the sherds were decorated, unless the cordons on the neck of the half complete bowl in context (113) are counted. It is not clear whether the single incised line on a single sherd from context (114) is part of a greater decorative pattern, possibly in the manner of Middle Iron Age Scored Ware pottery. Some sherds show slight smoothing or burnishing although this is largely absent.

Ceramic Production and Distribution

Thin sectioning of a sample of the sherds indicates that a likely source for the clays used for the Holdingham pottery would be weathered Cornbrash, which outcrops at Holdingham and is a poorly cemented shelly limestone with interleaving bands of clay (Kent 1980). The quartz sand is a cover sand, derived ultimately from Triassic sandstones but present in wind-blown and fluvial sands throughout central Lincolnshire (Appendix 3b).

Chronology
There are good indications that this collection of pottery dates to the Late Iron Age, probably to the immediate pre-Conquest period. Although an unusual form, the necked bowl with cordons below the neck from context 113 (Fig 1) shows affinities with ceramic types from Old Sleaford (Elsdon 1996, C8b, 205). Several other pieces show Late Iron Age features, including the square-sectioned rims from context (140) and (060) and the triangular rim from context (116). Sherds with pronounced rounded girths occur in several contexts, including good examples from context (079). In general terms the pottery fits within the Late La Téne regional tradition as defined by Knight (2002, 128), probably dating to the decades immediately prior and subsequent to the end of the first millennium BC.

Particularly close parallels may be drawn with Oetgen's Period 2 pottery from Old Sleaford, dated by Elsdon to the early lst Century AD (Elsdon 1997, 106-7, figs 48, 74-77), although in contrast to Period 2 pottery wheelmade vessels could not be identified. The apparent absence of wheelmade pottery could signify an earlier date for the pottery from Holdingham or might imply a reluctance by local potters to embrace this new technology, although the difficulty of identifying wheelmade vessels from small sherds should urge caution in the interpretation of such comparatively small collections of pottery.

Scored Ware pottery is also absent from the site, although a single linear groove on a body sherd may demonstrate a small component of this pottery. Substantial quantities of Scored Ware pottery were recovered during evaluation of a waterlogged ditched enclosure located just 650m to the southeast, indicating that the absence of this pottery at the Holdingham site is very likely due to chronological variation. Similarly, very little Scored Ware was recovered during the excavations at Old Place, Sleaford suggesting that this pottery was no longer in use during the later phases of the Iron Age in this area.

Discussion
Much of the pottery is stratigraphically associated with a range of artefacts including fired clay, daub, burnt stone and animal bone and would seem to derive from a short-lived phase of domestic occupation

on, or close to, the excavated site. Pottery from the preceding Neolithic phases is thought to represent intrusive material from later agricultural processes.

In the context of the important Late Iron Age at Sleaford, the pottery from the Holdingham site is of some significance to the emerging archaeological picture of the surrounding landscape during this period.

Catalogue of Illustrated Pottery
Figure 18
DR 1. Fabric SHCV; small rim fragment probably from round shouldered vessel with narrow concave neck, lip is flattened with rim slightly expanded externally; dark grey colour but slightly reddish on interior surface; unabraded; Context (205), Cut [071], Phase 4a.

DR2. Fabric SHCV; small rim fragment, lip is flattened with rim slightly expanded externally; dark grey colour; unabraded; Context (205), Cut [071], Phase 4a.

DR3. Fabric SHCV; body sherd ; two shallow parallel score marks; pale orange colour; Context (114), Cut [115], Phase 4a

DR4. Fabric SHCC, half complete cordon necked bowl with shallow omphalos base with irregularly spaced perforations, made up of three joining sherds; mid greyish in colour; slightly abraded, Context (113), Cut [112], Phase 4a

DR5. Fabric SHCV, Includes rim+ of neckless ovoid vessel, lip flattened but rim expanded externally and internally, other sherds show ovoid profile; dark grey colour, unabraded, Context (005 but probably 205), fill of [071], Phase 4a

Figure 19
DR6. Fabric SHCV, Triangular rim of vessel of unknown form; surface colour mid orange on exterior surface, mid grey otherwise; unabraded, Context (116), Cut [117], Phase 4b

DR7. Fabric SHCC, Square section rim, probably from vessel of ovoid form; colour mid grey; unabraded, Context (140), Cut [194], Phase 4a.

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Context	No.	Weight	Interpretation	Description
005	1	32	Modern	Hardcore
060	31	227	Pottery speread within [113=071]	on the surface and contained within 113=071
061	12	82	Pottery speread within (109)=(111)	located at rounded terminal 108=109
068	1	36	fill of linear ditch(069)	light grey brown silty sand with gravel
071	5	13	fill of linear ditch (070)	mid-dark grey sandy silt with occasional clay, burnt stones, ash &
079	15	186	fill of linear (080)	yellow brown silt sand occasional large burnt pebbles and stones
100	1	8	fill of gully (101)	brown and dark grey/brown mottled silty sand sub-angular limestone
104	4	4	fill [105] =100=102	brown and dark grey mottled silty sand limestone fragments occasional
105	5	52	NW end of SW segment of penannular enclosure ditch	curved ditch segment 0.75 m wide steep side and concave base NW
111	5	20	fill [110] =(109)=(061)	dark brown fine sandy silt occasional stones
113	22	301	fill of terminal of E-W linear ditch [112]	dark brown sandy silt occasional pebbles
114	40	192	fill [115]	brown grey silty sand occasional pebbles and burnt clay and slag
116	10	194	fill [117]	dark grey/black silty sand and ash
128	2	6	fill pit [127] {1}	brown grey sandy silt
131	1	4	fill [215]	yellow brown silty sand occasional large stones and small pebbles
132	1	6	fill [115] =(114)	brown grey silty sand occasional pebbles and burnt clay and slag
138	1	1	Fill of 146	grey brown silty sand occasional small stones
140	43	370	upper fill [194]	dark grey with brown and yellow flecks silty sand moderate stones
142	4	19	fill [143]	brown and grey silty sand occasional limestone fragments and charcoal
148	9	84	lower fill [194]	grey brown silty sand frequent gravel
150	38	88	fill [149] = (138)	dark brown/grey silty sand occasional small stones
153	2	4	fill [154] =(142)	brown with dark grey patches silty sand frequent limestone fragments
158	46	241	fill [157]	dark grey sandy silt occasional flat pieces of limestone occasional
164	2	5	fill [163]	grey brown silty sand occasional stones
170	12	45	fill [171]	yellow brown and grey/brown silty sand moderate gravel occasional
175	5	13	fill [174] =(116)=179)	dark brown sandy silt occasion small stones
188	1	2	Fill of 189	medium brown and grey brown silty sand occasional charcoal flecks
192	1	6	fill gully [193] =[111]	dark grey brown silty sand with small limestone fragments occasional
203	4	9	Finds from watching brief	Finds from SW quadrant of curvilinear gully.
204	5	16	Finds from watching brief	Finds from SE quadrant of curvilinear gully.
205	34	352	Finds from watching brief	Finds from E-W gully
206	2	54	Finds from watching brief	Finds from E-W gully
207	2	216	Finds from watching brief	Finds from E-W gully
Total	**367**	**2888**		

Table 1: Pottery by context

Phase	No.	Weight
3	44	222
4a	199	1806
4b	63	502
4e	58	320
6	1	32
7	2	6

Table 2: Pottery by phase

Context	Fabric	No	Weight
005	SHCV	1	32
060	SHCC	31	227
061	SHCC	12	82
068	SHCV	1	36
071	SHCC	5	13
079	SHCC	2	172
079	SHCF	1	4
079	SHSM	12	10
100	SHCC	1	8
104	SHCC	4	4
105	SHCC	5	52
111	SHCC	3	15
111	SHCF	2	5
113	SHCC	22	301
114	SHCC	5	75
114	SHCV	35	117
116	SHCC	8	54
116	SHCV	2	140
128	SHCC	2	6
131	SHCC	1	4
132	SHCC	1	6
138	SHCC	1	1
140	SHCC	32	343
140	SHCV	11	27
142	SHCV	4	19
148	SHCC	9	84
150	SHCC	38	88
153	SHSM	2	4
158	SHCC	3	88
158	SHCV	43	153
164	QUCF	1	2
164	SHSM	1	3
170	SHCC	12	45
175	SHCC	5	13
188	SHCC	1	2
192	SHCC	1	6
203	SHCF	4	9
204	SHCC	5	16
205	SHCV	34	352
206	SHCV	2	54
207	SHCV	2	216
Total		**367**	**2888**

Table 3: Pottery fabrics by context

Fabric	No.	Weight
QUCF	1	2
SHCC	209	1705
SHCF	7	18
SHCV	135	1146
SHSM	15	17

Table 4: Total sherds by fabric

Context	Vessel Forms	Number	WT
140	?	1	Weight
061	?	1	8
114	?	1	6
113	NB	4	104
205	RS	1	2
079	RS?	2	4
205	RS	1	10
192	NB	1	6
205	RS?	1	4
205	OV	1	68
060	RS?	1	11
170	RS?	1	4
204	RS?	1	6
204	OV?	1	4
113	NB	3	80
203	?	1	3
150	?	1	15
150	?	1	24
005	OV	1	32
116	EL?/OV	1	94
175	?	1	5

Table 5: Vessels forms by context

Key to Vessel Form

NB Necked Bowl
RS Round Shouldered
OV Ovoid EL Ellipsoid

Appendix 3b

PETROLOGICAL ANALYSIS OF IRON AGE POTTERY

By Alan Vince

Summary

Eight samples of Iron Age pottery from Holdingham were submitted for thin section analysis. The samples are of two classes, shell-tempered and sandy-tempered. The shelly wares were grouped visually, following examination with a x10 hand lens, into three fabrics SHCC, SHCV and SHSM, whilst the sandy wares were both visually assigned to the same fabric, QUCM. Examination of the QUCM sherds (V3454 & V3459) under a x20 microscope appeared to confirm their initial identification as sandy wares, but thin section analysis demonstrated that both of the samples should be reclassified as shelly wares. Rounded quartz sand is a feature of these two sherds, but in both sections this was in fact secondary in quantity to shell and other calcareous inclusions (in this respect linking these sherds with other examples of shelly wares, namely V3452, V3453, V3456, V3457 and V3458).

Thin section analysis also indicated that one of the SHSM sherds (V3460) was better classified as a sandy ware, characterised by moderate rounded quartz plus abundant subangular and angular quartz. Moderate voids, thought during initial investigation to represent dissolved shell, were shown by thin sectioning to possess in some instances an altered limestone filling but appear not to have contained shell.

TSNO	Context	Fabric type	Revised fabric type	PetroFabric
V3452	O79	SHCC	SHCC	Fabric B
V3453	207	SHCV	SCCV	Fabric B
V3454	203	QUCM	SHCF	Fabric A
V3456	205	SHCV	SHCV	Fabric B
V3457	060	SHCC	SHCC	Fabric B
V3458	079	SHSM	SHSM	Fabric A
V3459	111	QUCM	SHCF	Fabric A
V3460	164	SHSM	QUCF	Fabric C

Table 1: Results of thin section analysis

Methodology

Thin sections were produced by Steve Caldwell, University of Manchester, and stained using Dickson's method (Dickson 1965). This staining distinguishes ferroan calcite (stained blue) from non-ferroan calcite (stained pink) and dolomite (unstained).

Shell-Tempered wares (Fabrics A and B, V3452-v3459)

Description

The thin sections of the shell-tempered wares indicate that each sample has a slightly different composition, but that the range of inclusion types present is quite limited and these differences are due mainly to variations in the frequency of the different types which are listed below:

- Bivalve shell. These range from being sparse to moderate are between 0.3mm and 1.0mm long and are mostly composed of non-ferroan calcite with a nacreous structure (i.e. similar to mother-of-pearl). Several fragments have traces of a ferroan calcite coating and in some cases it seems that the fragments were rounded before being coated. A few have bore holes, filled with ferroan calcite.
- Punctate brachiopod shell. These range from being completely absent to moderately common and come from shells which are c.0.1mm to 0.2mm thick with a lattice of holes piercing the shell. The fragments range from c.0.3mm to 1.0mm long and are often partially coated with ferroan calcite.
- Echinoid shell. These range from being complete absent to moderately common and are usually rounded fragments up to 0.3mm across composed of ferroan calcite.
- Sparry ferroan calcite. These range from being sparse to abundant and from less than 0.1mm to 0.5mm across. The grain size of the calcite crystals is usually c.0.1mm.
- Limestone fragments. These are either sparse or absent but when present are composed of bivalve, punctate brachiopod and echinoid shell fragments, cemented with ferroan calcite and with pores filled with marl. The fragments range from c.1.0mm to 2.0mm across.

- Rounded quartz. These range in frequency from complete absence to moderate and consist of rounded grains, often with a high sphericity, and a maximum grain size of c.0.4mm.
- Rounded chert. These range in frequency from complete absence to sparse and share the high sphericity and size range of the rounded quartz grains.

The groundmass of all the samples is similar, consisting of optically anisotropic baked clay minerals with sparse to abundant ferroan calcite and sparse rounded dark brown grains up to 0.1mm across.

Table 2 indicates the incidence and abundance of these inclusion types and allows the samples to be divided into two petrological groups: Fabric A contains no punctate brachiopod or echinoid shell and Fabric B contains moderate to sparse punctate brachiopod and/or echinoid shell. There is, however, no correlation between the incidence of these types and the presence of limestone, rounded quartz, bivalve shell, chert or ferroan calcite.

TS No	Bivalve	Ferroan calcite	Punctate Brachiopod	Echinoid shell	Rounded quartz	Limestone	chert	Petro Fabric
V3452	Moderate	Moderate	Moderate	Moderate	Absent	Absent	add	Fabric B
V3453	Moderate	Moderate	Moderate	Moderate	Sparse	Absent	add	Fabric B
V3454	Sparse	Abundant	Absent	Absent	Moderate	Absent	add	Fabric A
V3456	Moderate	Sparse	Absent	Sparse	Moderate	Sparse	add	Fabric B
V3457	Moderate	Moderate	Sparse	Moderate	Sparse	Sparse	add	Fabric B
V3458	Sparse	Sparse	Absent	Absent	Moderate	Absent	add	Fabric A
V3459	Sparse	Moderate	Absent	Absent	Sparse	Sparse	add	Fabric A

Table 2: Inclusion types seen in thin sections

Interpretation

The limestone fragments and the groundmass suggest that the clay used to make these vessels was derived from weathered Jurassic marl in which partially cemented fossil shell is present. Numerous rocks in the central Lincolnshire area might match this criteria although the presence of punctate brachiopod and echinoid shell probably discounts the Great Oolite formation, which seems to be the source of shell found in Mid Saxon, Anglo-Scandinavian and medieval shelly wares in the Lincoln area. Three of the samples, V3454, V3458 and V3459, do not contain either punctate brachiopod or echinoid shell, and could therefore conceivably be made from an outcrop of Great Oolite formation limestone. However, the groundmass of these three samples is similar to the remaining shelly wares and it is uncertain how significant the absence of these inclusion types is. The groundmass of the mid Saxon and later shell-tempered wares is not calcareous but is otherwise similar (?Young and Vince 2006, wares MAX, LSS, LSH and POTT).

A likely source would be weathered Cornbrash, which outcrops at Holdingham and is a poorly cemented shelly limestone with interleaving bands of clay (Kent 1980). The quartz sand is a cover sand, derived ultimately from Triassic sandstones but present in wind-blown and fluvial sands throughout central Lincolnshire.

Despite the petrological evidence which indicates that a very local source is possible, it is nevertheless possible that the vessels were produced on a larger scale and very similar fabrics were noted at Washingborough, in the Bronze Age (Vince 2006). Furthermore, shell-tempered wares containing punctate brachiopod and echinoid shell were made in the Roman period at Harrold, Bedfordshire{Woods 1994 #46673}, in the Late Saxon period at St Neots, Cambridgeshire ({Jenner & Vince 1983 #36973}, NEOT.) and in the medieval period at Olney Hyde (unpublished material in Buckinghamshire County Museum.) and Harrold (unpublished material in Bedford Museum) in Bedfordshire. In all these cases the parent clay appears to be of Upper Jurassic origin.

Sand-Tempered ware (Fabric C, V3460)

Description

The following inclusion types were noted in the thin section:

- Subangular and angular quartz. Abundant well-sorted grains ranging from c.0.1mm to 0.2mm across.

- Rounded quartz. Moderate grains, mostly with a high sphericity, ranging from c.0l2mm to 0.5mm across.
- Chert. Sparse fragments of similar size and shape to the rounded quartz.
- Fine-grained sandstone. Sparse fragments of similar size and shape to the rounded quartz. The sandstone contains subangular quartz grains c.0.1-0.2mm across in a silica cement.
- Wood charcoal. Moderate fragments, some subangular, up to 1.5mm long. It is not clear whether these are recent charcoal or fossil and partially replaced by clay/iron.
- Voids. Moderate round voids up to 1.5mm across, some with an altered limestone filling. The voids do not appear to have been shell fragments.
- Grog. Sparse subangular fragments of light grey grog up to 1.0mm across, some having a different texture from the groundmass.

The groundmass is optically isotropic with no visible quartz, mica or calcareous inclusions.

Interpretation

It is difficult to interpret this section, partly because of the reduced firing and heat alteration of the calcareous content, and partly because it is an unusual combination of inclusions. Fossil wood is sometimes found in Jurassic clays, but usually in a much lower frequency than in this instance, whilst charcoal is sometimes found as a tempering material in Roman coarsewares although it is rarely discussed (e.g. Gloucester Type Fabric 17, {Heighway 1983 #18383}). Grog too is a common Roman coarseware temper but rarer in pre-conquest contexts. The rounded quartz/chert/sandstone sand is a typical cover sand whose widespread occurrence has been mentioned above. All of the inclusions presence could occur in the Holdingham area but the source could have been anywhere in the Trent Valley or central Lincolnshire.

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Appendix 3c

ROMANO-BRITISH POTTERY

by Margaret J. Darling

The pottery consists of five sherds from three contexts, weighing 0.032kg. All of the sherds are abraded. The pottery has been archived using count and weight as measures according to the guidelines laid down for the minimum archive by *The Study Group for Roman Pottery*. Codes are compatible with the archive structure and coding used in the City of Lincoln database and for Lincolnshire sites.

The only sherd offering any dating information is the GREY base fragment from 086, a ditch, which on fabric and type suggests a second century date.

Neither the oxidized flakes from a single vessel from 114, a ditch terminal, nor the sandy grey body sherd from 130, a ditch, can be closely dated, although the latter would be acceptable as a second century sherd.

Context	Fabric	Form	Manuf+	Ve	Altn	D#	Details	Lnk	Sherds	Wt
086	GREY	JBK?	-	-	-	-	BASE FRAG;PLAIN;DIAM70MM	-	1	22
086	ZDATE	-	-	-	-	-	2C?	-	-	-
114	OX	-	-	1	VABR	-	BSS/FLAKES;F.SANDY RB	-	3	5
114	ZDATE	-	-	-	-	-	ROM	-	-	-
130	GRSA	-	-	-	-	-	BS DKGRY;ABUND QTZ;WM	-	1	5
130	ZDATE	-	-	-	-	-	ROM	-	-	-
									5	32

Table 1: Catalogue of Romano-British pottery

Appendix 4

THE OTHER FINDS

by Anne Boyle and Gary Taylor

Recording of the pottery was undertaken with reference to guidelines prepared by the Medieval Pottery Research Group (Slowikowski *et al.* 2001) and the pottery was quantified using the chronology and coding system of the Lincolnshire ceramic type series. Five fragments of pottery weighing 92g were recovered from47 separate contexts. In addition to the pottery, a quantity of other artefacts, mostly brick/tile and stone, comprising 61 items weighing a total of 1809g, was retrieved.

Provenance

The material was recovered from ditch/gully fills (024, 026, 035, 062, 071, 079, 114, 124, 132, 140, 151, 153, 158, 195), rubble spread (030), subsoil (031).

Most of the pottery was made in moderate proximity to Holdingham, at Bourne 25km to the south, in the Toynton All Saints/Old Bolingbroke area, 35km to the northeast, and Lincoln 27km north. However, the latest piece is probably a Staffordshire product.

Range

The range of material is detailed in the tables.

Table 1: Medieval and Post Medieval Pottery

context	cname	sub fabric	form type	sherds	vessels	weight	decoration	part	description	date
024	BOU	smooth	small jug	1	1	6	frilled base ?	base	abraded	mid 15th to 16th
	TB		bowl	1	1	37		base	? ID or sandy GRE; external trimming; internal glaze; late	16th
031	TB		jug	1	1	20		handle	badly abraded	mid 15th to 16th
035	TPW		cup	1	1	1	blue and white chinoiserie design	rim	flake	19th to 20th
151	LSW1/2		jug	1	1	28		handle	strap with deep central hollow; ?ID	mid/late 12th to 13th

Pottery Fabric Codes:

BOU Bourne D ware TB Toynton/Bolingbroke ware TPW Transfer printed ware

LSW1/2 Lincoln glazed ware, 12th-13th century

Table 2: Other Artefacts

Context	Material	Description	No.	Wt (g)	Context Date
024	Iron	Hobnail	1	1	
026	CBM	Tile, reduced core	1	35	Medieval
	Slate	Slate	1	15	
030	Glass	Dark green bottle	1	57	19th century
031	CBM	Handmade brick, post-medieval	3	120	Post-medieval
	CBM	Tile, 1 face quite smooth, Roman?	1	16	
	Iron	Bolt shoot/gate fastener, post-medieval	1	93	
	Clay pipe	Stem, bore 7/64", 17th century	1	4	

Context	Material	Description	No.	Wt (g)	Context Date
035	CBM	Handmade brick, post-medieval	1	10	Post-medieval
	Iron	Nail	1	2	
	CBM	Tile, reduced core, medieval?	1	5	
062	Stone	Natural	1	224	
071	CBM	Tegula, abraded	1	76	Roman
079	CBM	Fired clay	12	15	
	Stone	Burnt stone	1	730	
114	CBM	Fired clay	3	3	
	Industrial residue	Hearth bottom?	1	50	
	Industrial residue	Iron smithing slag?	4	30	
124	Stone	Burnt stone	1	198	
132	Copper alloy	Unidentifiable fragment	1	1	
140	CBM	Fired clay, probable loomweight (triangular), late Iron Age-early Roman	14	37	Late Iron Age-early Roman
	Charcoal	Charcoal, roundwood	2	1	
153	Stone	Burnt stone	1	82	
158	CBM	Fired clay	4	1	
	Charcoal	Charcoal, roundwood	1	1	
195	CBM	Tile	1	2	Post-medieval

One certain Roman artefact, a fragment of flanged tegula roof tile, was recovered. However, other pieces of tile may also be Roman. Several fragments of fired clay from (140) include pieces that have adjoining faces at right angles. Although the fragments are small these appear to be from a loomweight of probable triangular form. Such weights, used in weaving, occur widely on Iron Age sites across southeastern Britain but not north of the Humber. In general they are found to date from after 500BC but at Dragonby in North Lincolnshire loomweights of this type tended to occur in late Iron Age or early Roman contexts (Elsdon and Barford 1996, 330). A comparable chronology can be expected for this Sleaford example.

Condition
All the material is in good condition and presents no long-term storage problems. Archive storage of the collection is by material class.

Documentation
There have been previous archaeological investigations at Holdingham that are the subjects of reports. Details of archaeological sites and discoveries in the area are maintained in the Lincolnshire County Council Sites and Monuments Record and the files of the North Kesteven Heritage Officer.

Potential
As a collection of mixed date the assemblage is of limited local potential and significance and probably mostly comprises manuring scatter, thereby indicating a long period of agricultural use of the land. However, the earlier pieces are of note and imply the presence of Roman buildings and also the undertaking of cloth weaving in the late Iron Age-early Roman period in the vicinity.

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Appendix 5

THE ANIMAL REMAINS
By Jennifer Kitch

Introduction

A total of 115 (676g) fragments of animal bone were recovered by hand, during archaeological evaluation works undertaken on land at Lincoln Road, Holdingham, Sleaford, Lincolnshire. A further 17 (9g) fragments were recovered from the sieved environmental samples.

Methodology

Identification of the bone was undertaken with access to a reference collection and published guides. All the animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also fusion data, butchery marks (Binford 1981), gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified. Undiagnostic bones were recorded as micro (mouse size), small (rabbit size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was done using the criteria of Boessneck (1969) and Prummel and Frisch (1986). Where distinctions could not be made, the bone was recorded as sheep/goat (s/g).

The condition of the bone was graded using the criteria stipulated by Lyman (1996). Grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

The quantification of species was carried out using the total fragment count, in which the total number of fragments of bone and teeth was calculated for each taxon. Where fresh breaks were noted, fragments were refitted and counted as one.

Tooth eruption and wear stages were measured using a combination of Halstead (1985), Grant (1982) and Levine (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976), with asterisked (*) measurements indicating bones that were reconstructed or had slight abrasion of the surface.

Results

Condition

The condition of the bone is relatively poor, averaging within grade 4 of the Lyman criteria (1996). The geological conditions were free draining sands and gravels that are often naturally acidic, this is usually is detrimental to bone preservation. Within the medieval assemblage the condition of the bone is much better, averaging at grade 2. This is probably due the comparatively short time the bone has been in the ground rather than a change in the preservation conditions.

No evidence of butchery, pathology or gnawing was noted on any of the remains. The poor condition of the bone possibly masks or obliterates any of these characteristics from being recorded.

A total of 8 fragments of bone, recovered from both the hand and sieve collected assemblages, displays evidence of burning.

Species Representation

Table 1, Hand Collected and Sieve Collected Assemblage Identified to Taxa, by Phase

	Phase					
Taxon	**Late Neolithic**	**Late Iron Age 4a**	**Late Iron Age 4b**	**Late Iron Age 4e**	**Undated**	**Total**
Equid	2	2				4
Cattle	1		1	1		3
Sheep/Goat		1	1		25*	27
Fowl					1	1
Bird					1	1
Roe Deer	1					1
Large Mammal	14	31	3	2		50
Medium Mammal	3	9	7	2		21
Unidentified		2	2	3	17	24
Grand Total	21	45	14	8	44	132

* Includes partial skeleton of infant/juvenile sheep/goat

The number of fragments identifiable to species is very low within the assemblage. The majority of the remains were unidentifiable beyond size category. The identifiable remains are biased towards the bigger and more robust species, such as cattle and equid within the Iron Age assemblages. Whereas the better preserved medieval assemblage is biased towards sheep/goat due to the presence of a partial juvenile skeleton from ditch [025].

The assemblage is too small to provide any meaningful data on the animal husbandry and utilisation on the site, save the presence of the actual species identified. A single roe deer metatarsal fragment was recovered from the late Iron Age phase. The presence of this species within the assemblage suggests a suitable dwelling habitat of grassland scrub is present within the locality of the site.

Discussion

The preservation of the assemblage severely limits the information that can be gained from this assemblage. Despite the presence of a ring ditch and of boundary ditches which suggest possible settlement, the faunal remains are too limited to provide positive evidence. The remains from the assemblages appeared heavily leached, and therefore small and fragile bones have potentially not survived, biasing the assemblage towards the bigger and more robust bones.

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Ctxt No	Sample No.	Taxon	Element	Side	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Prox	Dist	Path	Butch	Burnt	Gnaw	Fresh Break	Assoc'd	Measured	Tooth Wear	Surface	Condition	No.	(g)	Notes
158	0	Unidentified	Unidentified	X	N	N	N	N	N	N	N	N	X	X	N	N	N	N	Y	N	N	N	X	4	1	0	
207	0	Large Mammal	Innominate	L	N	Y	N	Y	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	4	1	33	
135	0	Cattle	Calcaneus	L	N	Y	N	N	Y	Y	N	N	X	X	N	N	N	N	N	N	N	N	X	5	1	14	
135	0	Equid	Tooth	L	N	N	N	N	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	4	1	36	Lower M2 = 72mm
135	0	Equid	Tooth	L	N	N	N	N	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	4	1	25	Lower M3
135	0	Large Mammal	Mandible	X	N	N	N	N	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	4	14	21	fragments, probably same bone
135	0	Medium Mammal	Long Bone	X	N	N	N	N	N	N	N	N	X	X	N	N	N	N	Y	N	N	N	X	5	1	7	
204	0	Roe Deer	Metatarsal	R	N	N	Y	Y	N	N	N	N	X	X	N	N	N	N	Y	N	N	N	X	4	1	7	
204	0	Medium Mammal	Metatarsal	X	N	N	N	Y	Y	N	N	N	X	X	N	N	N	N	Y	N	N	N	X	5	1	17	
204	0	Medium Mammal	Long Bone	X	N	N	N	N	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	5	1	1	
137	0	Cattle	Radius	L	Y	N	Y	N	N	N	N	N	F	X	N	N	N	N	Y	N	N	N	X	5	1	27	
137	0	Large Mammal	Long Bone	X	N	N	N	N	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	5	1	2	
24	0	Sheep/Goat	Metacarpal	R	Y	Y	Y	Y	Y	Y	N	N	F	X	N	N	N	N	N	N	N	N	X	2	1	4	Infant
24	0	Sheep/Goat	Metacarpal	L	Y	N	Y	Y	Y	Y	N	N	F	X	N	N	N	N	N	N	N	N	X	2	1	4	Infant
24	0	Sheep/Goat	Metatarsal	R	Y	Y	Y	Y	Y	Y	N	N	F	X	N	N	N	N	N	N	N	N	X	2	1	3	Infant
24	0	Sheep/Goat	Metatarsal	L	Y	Y	Y	Y	Y	Y	N	N	F	X	N	N	N	N	N	N	N	N	X	2	1	4	Infant
24	0	Sheep/Goat	Tibia	L	N	N	N	N	Y	Y	Y	Y	X	U	N	N	N	N	N	N	N	N	X	2	1	4	Infant
24	0	Sheep/Goat	Calcaneus	L	N	Y	N	N	Y	Y	Y	N	U	X	N	N	N	N	N	N	N	N	X	2	1	1	Infant
24	0	Sheep/Goat	Calcaneus	R	Y	Y	Y	Y	Y	Y	Y	N	U	X	N	N	N	N	N	N	N	N	X	2	1	1	Infant
24	0	Sheep/Goat	Femur	R	N	N	N	N	N	N	Y	Y	X	U	N	N	N	N	N	N	N	N	X	2	1	1	Infant
24	0	Sheep/Goat	Femur	L	N	N	N	N	N	N	Y	Y	X	U	N	N	N	N	N	N	N	N	X	2	1	2	Infant
24	0	Sheep/Goat	Metapodial	X	N	N	N	N	N	N	Y	Y	X	U	N	N	N	N	N	N	N	N	X	2	4	8	infant, single condyles
24	0	Sheep/Goat	Astragalus	R	Y	Y	Y	Y	Y	Y	Y	Y	X	X	N	N	N	N	N	N	N	N	X	2	1	2	infant
24	0	Sheep/Goat	Phalanx (I)	L	Y	Y	Y	Y	Y	Y	Y	Y	U	U	N	N	N	N	N	N	N	N	X	2	2	2	infant
24	0	Sheep/Goat	Phalanx (I)	L	N	N	Y	Y	Y	Y	Y	Y	U	U	N	N	N	N	N	N	N	N	X	2	1	0	infant
24	0	Sheep/Goat	Phalanx (I)	R	Y	Y	Y	Y	Y	Y	Y	Y	U	U	N	N	N	N	N	N	N	N	X	2	1	1	infant
24	0	Sheep/Goat	Phalanx (I)	R	N	N	Y	Y	Y	Y	Y	Y	U	U	N	N	N	N	N	N	N	N	X	2	2	1	infant
24	0	Sheep/Goat	Phalanx (II)	R	Y	Y	Y	Y	Y	Y	N	N	U	X	N	N	N	N	N	N	N	N	X	1	1	0	infant
24	0	Sheep/Goat	Mandible	L	N	N	N	N	N	N	N	Y	X	X	N	N	N	N	Y	N	N	N	X	2	1	5	
24	0	Fowl	Humerus	R	Y	Y	N	N	N	N	N	N	F	X	N	N	N	N	N	N	N	N	X	2	1	1	
24	0	Sheep/Goat	Carpal/Tarsal	X	N	N	N	N	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	2	3	1	infant
24	0	Unidentified	Unidentified	X	N	N	N	N	N	N	N	N	X	X	N	N	N	N	N	N	N	N	X	2	15	2	
24	0	Bird	Radius	X	Y	Y	N	N	N	N	N	N	F	X	N	N	N	N	N	N	N	N	X	2	1	0	possible d.fowl

Appendix 6

AN ASSESSMENT OF THE CHARRED PLANT MACROFOSSILS AND OTHER REMAINS
By Val Fryer

Introduction and method statement
Excavations along the route of the Holdingham Rising Main, undertaken by Archaeological Project Services, recorded ditches, pits, gullies, post-holes and other discrete features of probable ?? date. Samples for the extraction of the plant macrofossil and mollusc shell assemblages were taken from a number of features, and twenty three were submitted for assessment.

The samples were processed by manual water flotation/washover, and the flots were collected in a 500 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains recorded are listed on Tables 1 and 2. Nomenclature within the tables follows Stace (1997) for the plant remains and Kerney and Cameron (1979) and Macan (1977) for the mollusc shells. All plant remains were charred. Modern contaminants including fibrous roots and seeds were present throughout.

The non-floating residues were collected in a 1mm mesh sieve and sorted when dry. All artefacts/ecofacts were retained for further specialist analysis.

Results
Plant macrofossils
Although plant remains were scarce, cereal grains/chaff, seeds of common weeds and wetland plants and tree/shrub macrofossils were recorded at a low density from all but three samples (22, 24 and 29). Preservation was poor to moderate, with most of the grains being puffed and distorted, probably as a result of combustion at high temperatures.

Both barley (*Hordeum* sp.) and wheat (*Triticum* sp.) grains were recorded, with wheat occurring marginally more frequently. Chaff was rare, but spelt wheat (*T. spelta*) glume bases were recorded as single specimens within samples 10, 11 and 18.

Weed seeds were exceedingly scarce, occurring within only eight assemblages. All were of common segetal or grassland species including onion-couch (*Arrhenatherum* sp.), brome (*Bromus* sp.), large grasses (Poaceae), buttercup (*Ranunculus* sp.) and vetch/vetchling (*Vicia/Lathyrus* sp.). Single sedge (*Carex* sp.) fruits were recorded within six assemblages and a possible hazel (*Corylus avellana*) nutshell fragment and dogwood (*Cornus* sp.) fruit were noted within samples 4 and 10 respectively. Charcoal fragments and pieces of charred root/stem were present or abundant within most of the assemblages studied, but other plant remains were exceedingly rare.

Mollusc shells
Although specific sieving for molluscan remains was not undertaken, shells were present within all twenty three assemblages. The condition of the shells varied considerably from weathered and fragmented to well preserved, and although it was difficult to ascertain which, if any, of the specimens were intrusive, those recorded are assumed to be contemporary with the contexts from which the samples were taken. All four of Evans (1972) ecological groups of terrestrial molluscs were recorded, along with a limited range of freshwater obligate taxa.

Other materials
The fragments of black porous and tarry material noted within most of the assemblages are probable residues of the combustion of organic remains at very high temperatures. Small bone fragments (including some burnt pieces) occurred within a number of the ditch assemblages. Coal fragments were present throughout, but most were possibly intrusive from later agricultural practises including steam ploughing.

Conclusions and recommendations
In summary, all twenty three assemblages are very uniform in character. Primary deposits of refuse or other waste materials are not present, and all the features recorded would appear to have been peripheral to any main centres of settlement or other activities. The few remains recovered would appear to be derived from either scattered or wind-blown detritus, and although small amounts of

cereal processing or domestic waste may be present, the origin of much of the material is unknown. The mollusc assemblages, particularly those from the ditch fills, appear to indicate that dry, open grassland conditions were locally predominant, although many of the ditches and deeper pits may have been damp or seasonally wet.

As none of the assemblages contain sufficient plant macrofossils (i.e. 100+ specimens) for quantification, no further analysis of this material is recommended. Although mollusc shells are more abundant, the issue of contemporaneity is problematic and, again, no further analysis is recommended at this stage.

References

Evans, J., 1972 *Land Snails in Archaeology*, London

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

Macan, T.T., 1977 British Fresh- and Brackish-Water Gastropods. *Freshwater Biological Association,* Publication 13

Stace, C., 1997 *New Flora of the British Isles*, Second edition, Cambridge University Press

Key to Tables

x = 1 – 10 specimens xx = 10 – 50 specimens xxx = 50+ specimens
b = burnt ss = sub-sample ph = post-hole Feat. = feature fg = fragment

Sample No.	**3**	**4**	**5**	**8**	**10**	**11**	**14**	**16**	**17**	**18**	**19**	**21**	**22**	**23**	**24**	**26**
Date	Neo	Neo	Undated	Neo	Iron Age	Iron Age	Iron Age	Iron Age	Iron Age	Iron Age	Iron Age	Neo	Undated	Iron Age	Iron Age	Neo
Context No.	**109**	**111**	**124**	**135**	**137**	**138**	**116**	**132**	**148**	**150**	**158**	**142**	**144**	**175**	**185**	**188**
Feature No.	**108**	**110**	**123**	**134**	**85**	**146**	**117**	**115**	**194**	**149**	**157**	**143**	**145**	**174**	**184**	**189**
Cereals																
Hordeum sp. (grain)							x		x		xcf					
Triticum sp. (grains)	x				x				xcf		x	x				
(spikelet base)					x											
T. spelta L. (glume base)					x	x				x						
Cereal indet. (grains)		x	x	x	x	x	x	x	x	x	xx	x		x		x
Herbs																
Arrhenatherum sp. (tuber)									x							
Bromus sp.							x		x	x	x			x		
Large Poaceae indet.		x				x	x									
Polygonum aviculare L.							xcf									
Ranunculus sp.											xcf					
Rumex/Carex sp.		x														
Vicia/Lathyrus sp.						x										
Wetland plants																
Carex sp.				xcf		x	xcf		x		x			x		
Tree/shrub macrofossils																
Cornus sp. (fruit)					xcf											
Corylus avellana L.		xcf														
Other plant macrofossils																
Charcoal <2mm	xx	xx	x	xx	xx	xxx	xx	x	xxx	xxx	xx	x	x	x	x	xx
Charcoal >2mm		x		x	xx	xxx			xx	xxx	xx	x		x	x	x
Charred root/stem	x	x	xx		x	xx	xxx	x	xx	xx	xx	x		x		x
Indet.seed							x		x		x					
Indet.tuber							x									
Molluscs																
Woodland/shade loving species																
Aegopinella sp.															x	
Punctum pygmaeum					x			x					x			
Open country species																
Pupilla muscorum	x	x			xx	x		x	x	xx	x	x	x			
Vallonia sp.	x	x	xx	x	xxx	xx	x		x	xx	x	xx	xx	xx	xx	x
V. costata	x		x			x	x		x	xx					x	x
V. excentrica	x							x								
V. pulchella			x	x	xx	x		x		xx	x	x			x	
Catholic species																
Cepaea sp.		x														
Cochlicopa sp.	x	x	x	x	xx	x	x	x		xxx		x	x	x	x	x
Trichia hispida group	xx	x	xx	x	xxx	xx	x	x		xxx	x	x	xx	x	x	
Marsh/freshwater slum species																
Carychium sp.		x			x		x			x						
Lymnaea truncatula	x		x		xx	x		x		x		x		x	x	
Vertigo sp.	x	x	x	x	xx	x	x			x	x					
V. angustior						x										
V. pygmaeum					x				x	x		x	x	x	x	
Freshwater obligate species																
Anisus leucostoma	x	x	x		x	x		x	x	xx	x	x	xx	xx		
Bithynia sp.								x			x			xcf		
Lymnaea sp.	x	x		x					x	x	x	x	x	xx		x
L. peregra			x		x	x	x			x		x				
Succinea sp.													x	x		x
Other materials																
Black porous 'cokey' material		x	xx	x	x	x	x		x	x	x		x			x
Black tarry material	x											x	x		x	
Bone	xb	xb	x	x		xb	x xb	xb	xb	x xb		x				
Burnt/fired clay		x								x						
Small coal frags.	x	x	x	xx	x	x		x		x	x	x	x	x	x	x
Sample volume (litres)	**16ss**	**16ss**	**16ss**	**16ss**	**16ss**	**16ss**	**8ss**	**16ss**	**16ss**	**16ss**	**16ss**	**16ss**	**16ss**	**8ss**	**16ss**	**16ss**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Appendix 7

Glossary

Context	An archaeological context represents a distinct archaeological event or process. For example, the action of digging a pit creates a context (the cut) as does the process of its subsequent backfill (the fill). Each context encountered during an archaeological investigation is allocated a unique number by the archaeologist and a record sheet detailing the description and interpretation of the context (the context sheet) is created and placed in the site archive. Context numbers are identified within the report text by brackets, *e.g.* [004].
Cut	A cut refers to the physical action of digging a posthole, pit, ditch, foundation trench, *etc.* Once the fills of these features are removed during an archaeological investigation the original 'cut' is therefore exposed and subsequently recorded.
Fill	Once a feature has been dug it begins to silt up (either slowly or rapidly) or it can be back-filled manually. The soil(s) that become contained by the 'cut' are referred to as its fill(s).
Iron Age	A period characterised by the introduction if iron into the country for tools, between 800 BC and AD50.
Layer	This describes an accumulation of soil or other material which is not contained within a cut.
Medieval	The Middle Ages, dating from approximately AD 1066-1500.
Natural	Undisturbed deposit(s) of soil or rock which have accumulated without the influence of human activity.
Neolithic	The 'New Stone Age' period, part of the prehistoric era, dating from approximately 4500-2250 BC.
Post-medieval	The period following the Middle Ages, dating from approximately AD 1500-1800.
Prehistoric	The period of human history which existed prior to the introduction of writing. In Britain the prehistoric period lasts from the first evidence of human occupation about 500,000 BC, until the Roman invasion in the middle of the 1st century AD.
Romano-British	This is the period dating from AD 43-410 during which the Romans occupied Britain.

Appendix 8

THE ARCHIVE

The archive consists of:

217	Context records
4	Photographic record sheets
29	Plan sheets
30	Section sheets
1	Box of finds

All primary records and finds are currently kept at:

Archaeological Project Services
The Old School
Cameron Street
Heckington
Sleaford
Lincolnshire
NG34 9RW

Responsibility for the ultimate destination of the project archive is held by:

The ultimate destination of the project archive is:

The Collection
Art and Archaeology in Lincolnshire
Danes Terrace
Lincoln
LN2 1LP

The archive will be deposited in accordance with the document titled *Conditions for the Acceptance of Project Archives,* produced by the Lincolnshire City and County Museum.

Lincolnshire City and County Museum Accession Number: 2005.62

Archaeological Project Services Site Code HRM04

The discussion and comments provided in this report are based on the archaeology revealed during the site investigations. Other archaeological finds and features may exist on the development site but away from the areas exposed during the course of this fieldwork. *Archaeological Project Services* cannot confirm that those areas unexposed are free from archaeology nor that any archaeology present there is of a similar character to that revealed during the current investigation.