

**HAXEY VILLAGE DRAINAGE IMPROVEMENT SCHEME,
HAXEY, NORTH LINCOLNSHIRE**

**SCHEME OF ARCHAEOLOGICAL OBSERVATION, ASSESSMENT
AND RECORDING**

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Report prepared for
Lindsey Marsh Drainage Board

by

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Summary

Archaeological monitoring and recording was carried out during the excavation of a sequence of open drains and pipe-trenches, intended to improve drainage on land to the south-east of Haxey, North Lincolnshire.

The village of Haxey is situated on the Isle of Axholme, where linen and hemp textile production was a significant local industry from the medieval period into the 19th century: the right of the inhabitants of the Isle to ret hemp in the waters of the local wetlands is enshrined in a legal document dating to 1360.

Sections of the scheme lay within an area of archaeological potential, where cropmarks on aerial photographs indicated the presence of ditches, enclosures, and rectangular pits where flax and hemp may have been soaked (retted) to prepare them for processing into textiles.

Several pits and ditches were recorded during the project. Two ditches could be identified as part of a complex of recorded cropmarks, and one of these produced archaeobotanical evidence for flax and hemp processing. Another feature encountered seemed most likely to be a former extension of the Lound Rates Drain, which had gone out of use in the early 20th century.

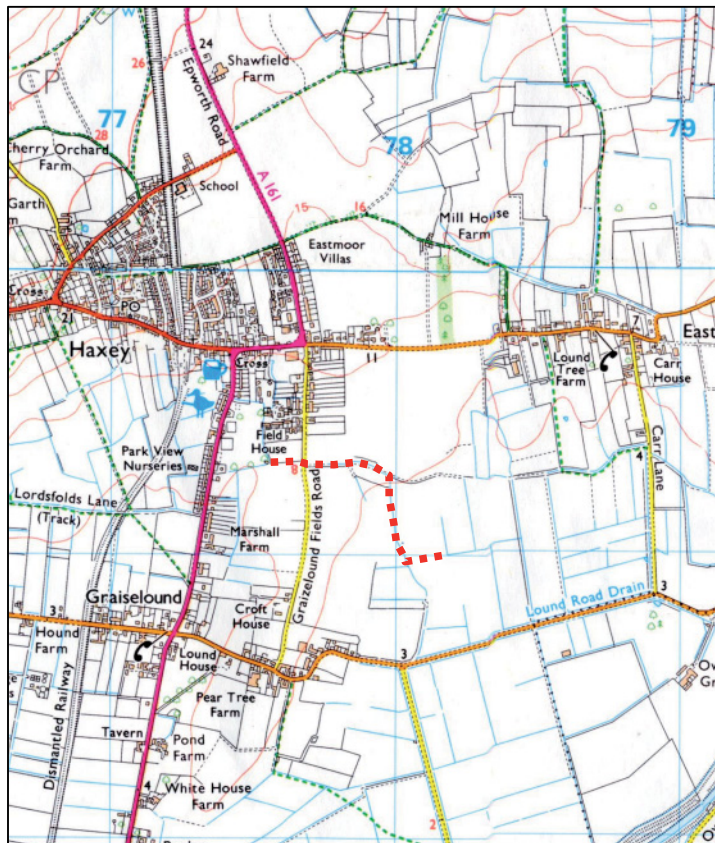


Figure 1: Location plan of the site at scale 1:25,000. The part of the drainage scheme subject to archaeological observation is marked with a broken red line. (© Crown copyright. All rights reserved. PCA licence no. 100049278)

1.0 Introduction

Pre-Construct Archaeological Services Ltd (PCAS) were requested by the Lindsey Marsh Drainage Board to carry out a programme of archaeological observation, assessment and recording during groundworks for a land drainage improvement scheme to the south and south-east of Haxey.

Sections of the drainage scheme passed through an area containing potential archaeological remains, where cropmarks identified from aerial photographs indicate the presence of ditches, enclosures, and backfilled pits where flax and hemp may have been soaked (retted) to prepare them for processing into textile fibres. The area has a high potential for wet-preserved archaeological and palaeoenvironmental deposits. Three monument sites have been recorded by the North Lincolnshire Historic Environment Record (HER) near the intended route.

2.0 Site location and description (figs. 1 & 2)

The village of Haxey lies at the southern side of the Isle of Axholme in the county of North Lincolnshire, about 3.5km to the south of Epworth and 10km to the north-east of Gainsborough. Like all the settlements in the Isle of Axholme, Haxey stands on an area of raised ground surrounded by low-lying former wetland, dependent on artificial drainage to maintain its current use as agricultural land.

The drainage scheme that was the subject of this report ran along roads, tracks and field boundaries to the south and south-east of Haxey. Two adjoining parts of this scheme were identified as falling within an archaeologically sensitive area. These were Zone 1 (trenching for a 210m length of 750mm diameter pipe to either side of and below Graizelound Fields Road), and Zone 2 (excavation of an open watercourse from the eastern end of Zone 1 to the western end of the Lound Rates Drain).

3.0 Geology and topography

The solid geology of this area is mudstone. Along much of the specified area of works, the mudstone is covered with a drift geology of blown sand deposits, but these are absent immediately adjacent to Graizelound Fields Road. Peat deposits overlie the mudstone close to Lound Rates Drain.

The drainage route is at c. 8m OD to the west of Graizelound Fields Road, falling to c. 4m OD at the eastern end of the specified area (Tann, 2010).

4.0 Planning background

Lindsey Marsh Drainage Board consulted with the North Lincolnshire SMR Officer concerning the potential archaeological impact of the scheme in 2009-10. It was agreed that an appropriate archaeological response to the proposals would be a programme of continuous archaeological monitoring and recording of any exposed archaeological or palaeoenvironmental remains during the works in the areas specified as Zones 1 and 2 (above), between Graizelound Fields Road (SK 7768 9931) to Lound Rates Drain Branch (SK 7844 9905). The recording was to include the environmental sampling and subsequent specialist analysis of any exposed peat and retting pit deposits.

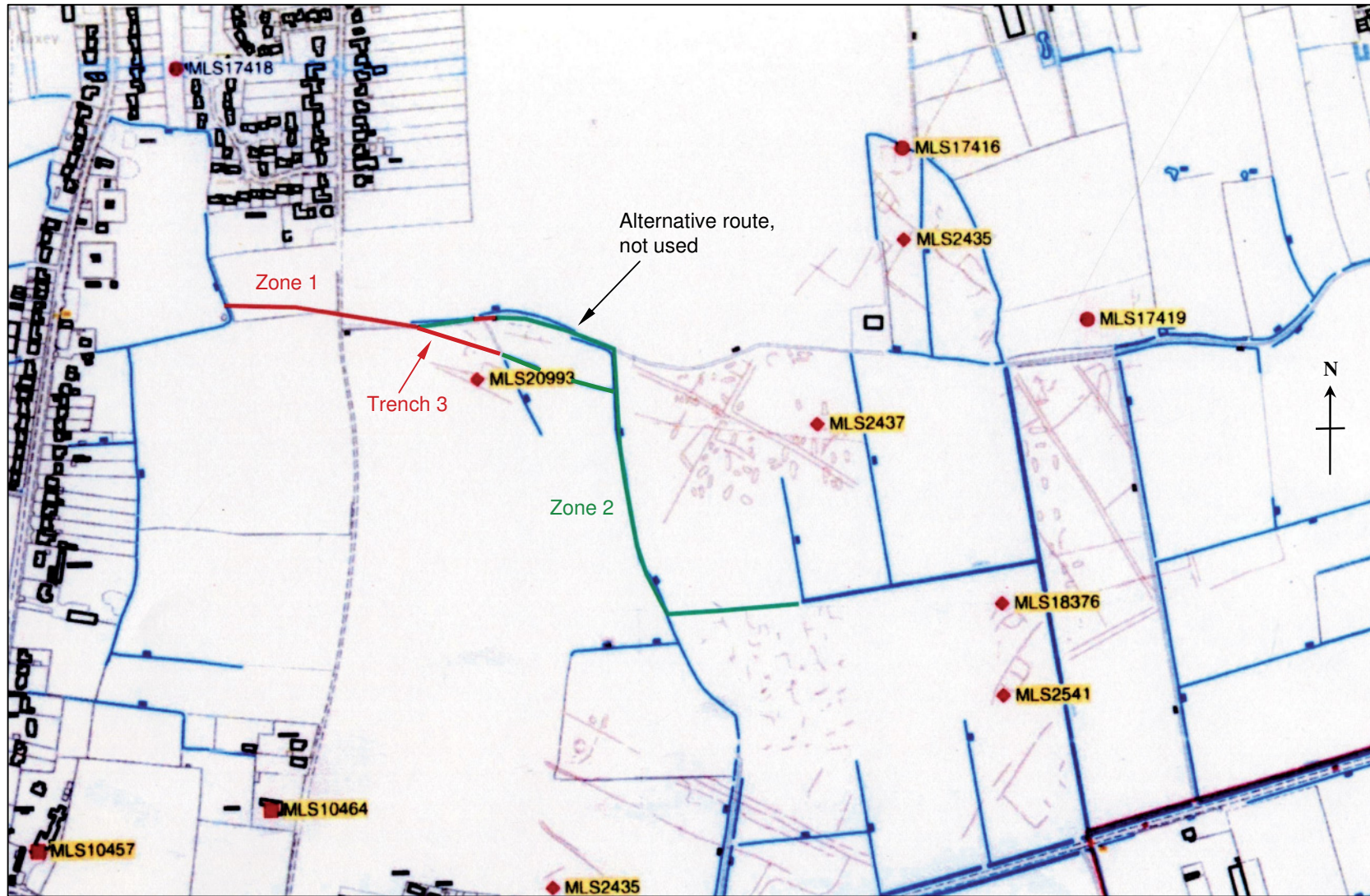


Figure 2: Extract from North Lincolnshire Sites and Monuments Record mapping (not to scale), showing the layout of the relevant zones of the drainage scheme in conjunction with the known areas of cropmarks.

5.0 Archaeological and historical background

There is evidence for Stone and Bronze Age activity in the neighbourhood of Haxey, in the form of a number of individual finds of flint and worked stone artefacts. The majority of these were found in the 19th century, and the North Lincolnshire HER has no accurate information about their findspots. No archaeological features pre-dating the Iron Age have been recorded, suggesting that activity during this period was transient or seasonal (Francis, 2011).

The Isle of Axholme was certainly inhabited during the Iron Age and Roman periods. It has been suggested that some of the drains bordering the Isle (the Turnbridge Dike to the west, and the Bykers Dike to the south) were first cut during the Roman occupation, to improve communications and transport of materials for the legions (Van de Noort and Ellis, 1997, p.21). However, no material evidence of Iron Age activity in the Haxey area has been recorded, and no Romano-British material other than a single coin of the mid-second century, found in 1922 (Francis, 2011).

The place-name 'Haxey', first recorded in the Domesday Book, is probably derived from the Old Norse personal name *Haki* with the Old Norse *ey*, 'island', indicating that Haki's farmstead or settlement was built on an area of dry land among marshes (Cameron, 1998, p.61). 'The Isle of Axholme' as a place-name is tautologous, as the '-holme' element derives from the Old Norse *holmr*, 'island, area of high ground in a marsh', giving 'the isle of the island belonging to Haxey': it appears first in the Lindsey Survey of 1113 (*ibid.*, p.8).

At the time of the Domesday Survey of AD 1086, the manors and land holdings on the Isle of Axholme were concentrated in the hands of Geoffrey de la Guerche. His manor of Haxey was relatively small, comprising three carucates of arable land, three acres of meadow, and an area of woodland partly used for pasturage, with a taxable population of 24 households; the settlement had neither a church nor a mill. The lord drew additional income from the profits of nine fisheries (Williams and Martin, 1992, p.954). By the time of the Lindsey Survey of 1113-15, all the individual land holdings in the Isle of Axholme had become subsumed into the Manor of Epworth, whose boundaries corresponded exactly to the geographical boundaries of the Isle and the political boundaries of the Axholme wapentake (Foster and Longley, 1924, p. 243).

The history and nature of the Isle of Axholme has been significantly affected by the Mowbray Deed, a charter granted by Sir John Mowbray, the lord of the Manor of Epworth, in 1360 and setting out specific common rights for the Isle's inhabitants. Tenant farmers had full use of the common land, excepting a certain part allotted to the use of the lord, and the lord might take no more of the common land in the future: consequently, not even the king (or later, Parliament) could order the drainage, reclamation or enclosure of the lands here without the prior agreement of the tenants (Ella, 1994, p. 24). Among the other rights granted to the inhabitants of the Isle of Axholme by the Mowbray Charter were turbary (the right to dig turf or peat), felling trees for the banking of the Trent and '*putting their hemp to be retted in the waters of the wastes, except in the Skyers, which was to be reserved for the use of the lord*' (Gardner, 2006). Hemp appears to have been a major crop for much of the Isle's history: during the reign of Charles I, the rotation crops were hemp, barley and rye, while flax was grown on the demesne land. Retting took place at an early stage in the processing of flax and hemp for textile production: the harvested plants were steeped in water-filled pits until the soft material had rotted away, leaving the stronger fibres ready to be spun. Retting normally took place at some distance from the villages, as the process was foul-smelling: possible post-medieval retting pits have been

identified as cropmarks near Skyers Farm, to the west of Epworth, which may be the 'Skyers' referred to in the Mowbray Deed (NLSMR).

The North Lincolnshire Sites and Monuments Record contains entries for several crop- and soilmark complexes to the south-east of Haxey and south-west of Lound, which have been identified from aerial photographs. Four of these clusters of features were crossed by or lay in close proximity to Zones 1 and 2 (fig. 2).

The most extensive area of features, approximately 8ha, is NLSMR ref. MLS 2437, to the north of the west end of the Lound Rates Drain in Zone 2. These have been interpreted from their shape as retting pits and ditches of probable medieval date, with associated possible ditched trackways. Local place-names including the element 'rates' indicate the presence of retting pits, and as well as the Lound Rates Drain itself, the fields containing this group of crop- and soilmarks are still locally known as 'The Rates'. There is documentary evidence for a flax and hemp processing industry at Haxey from the 14th century to the 19th (NLSMR); in the 18th century, Epworth had four textile factories, and the dressing of flax and hemp was its main industry into the mid-19th century (Ella, 1994, pp. 63-66).

Further cropmarks of retting pits with associated ditches are recorded to the east of Lound Rates Drain (MLS 18376); this site is adjacent to a fragmentary group of small enclosures (MLS 2541), but these appear to be of an entirely different character and are probably not associated with them. A complex of undated ditches in Zone 1, to the east of Graizelound Fields Road (MLS 20993), may also represent a retting site, although the interpretation here is more speculative, as no pits have been identified.

The Isle of Axholme was supposedly included in Cornelius Vermuyden's project to drain, reclaim and enclose wet- and waste land in the Humberhead Levels during the reign of Charles I, and a number of Parliamentary Enclosure Acts relating to the Isle of Axholme parishes were passed between the 1770s and 1860s, but, due to the provisions of the Mowbray Deed, which remains in force to the present day, full enclosure has never taken place as the required consensus has never been reached. Areas of land near the village remain unenclosed; in some areas open-field strip-cultivation is still practised (Francis, 2011).

6.0 Methodology (fig. 3)

All machine excavation was undertaken with 360° tracked excavators using flat-bladed ditching buckets (plates 2, 5 and 9). Topsoil was stripped under archaeological supervision before trenching or excavation of new drains commenced. Where open drains were excavated, these were relatively small, approximately 3m wide and 2m deep. Existing drains were adopted where practical, but generally required some enlargement. Separate contracting companies worked on each zone.

Excavation started on 8th November 2010 at the Graizelound Fields Road crossing in Zone 1, and worked westwards across a field planted with sugar beet, to join a recently cleared drain on the west side of the field. Groundworks began in the pasture field to the east of the road on 18th November, working eastwards from the road crossing (plate 1). The Zone 1 groundworks consisted exclusively of trenching for a buried pipe; visibility was restricted by the use of shuttering, which was required by the depth of the trench (up to 5m) and the instability of the deposits being cut through. Work in Zone 2 began on November 16th, by clearing and widening the west end of the Lound Rates Drain, and continued back towards Zone 1: the works here were all open cut, and included both the cutting of new drains and the adapting of existing drains.

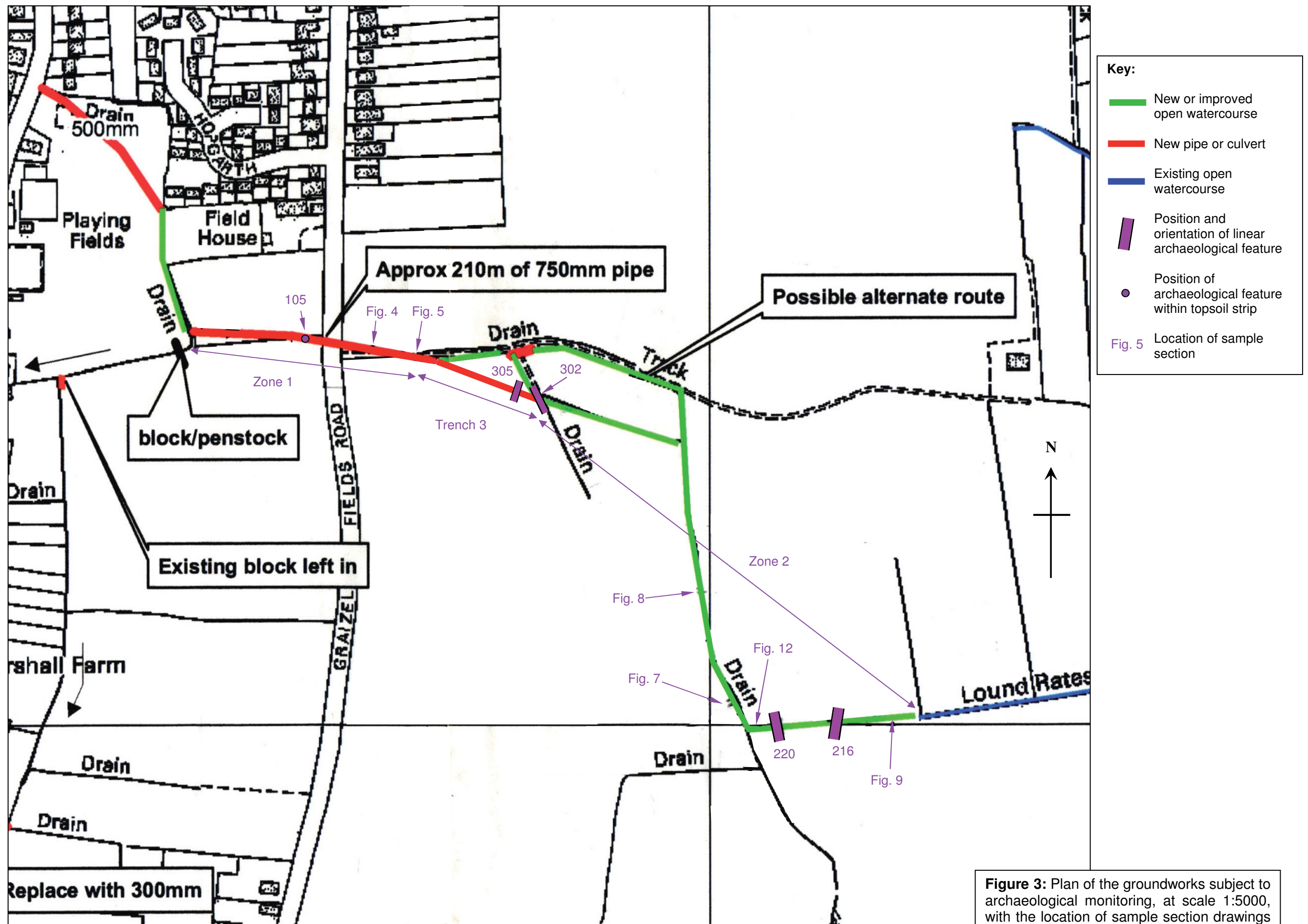


Figure 3: Plan of the groundworks subject to archaeological monitoring, at scale 1:5000, with the location of sample section drawings and significant archaeological features.

The Zone 1 groundworks crossed an east-west running farm track on 25th November 2010. The pipeline excavation from here followed an alternative route, running east-south-east across a cultivated field to connect with the Zone 2 drainage system, rather than running along the track and then turning south-east, as had originally been proposed. This area of the works, which passed through the cropmark site MLS 2437, was separately recorded as Trench 3.

Any potential features encountered during the groundworks were photographed on colour and monochrome film and digitally, and their position and orientation were plotted on a base plan. Where conditions allowed, features were cleaned by hand and drawn in section at a scale of 1:20; features exposed during the topsoil strip were sample excavated and planned at a scale of 1:50. Sample sections were also drawn at intervals. All features and deposits seen were recorded on standard PCAS trench and context recording sheets. As good survival of environmental remains was expected, 40 litre bulk samples were taken from all deposits that appeared to have a potential organic content.

The groundworks were completed on 2nd December 2010; the last day of works took place without archaeological supervision, as the Project Officer was prevented from reaching the site by heavy snow. The watching brief was undertaken by Mike Rowe, Julian Sleaf and Dan Stone.

7.0 Results

7.1 Zone 1 (plates 1-3)

Topsoil 101 in Zone 1 was up to 0.40m deep, and overlay a sandy silt subsoil, 102. Datable finds retrieved from the subsoil ranged from the 18th to the 20th centuries (appendix 3). Subsoil 102 overlay a variety of natural sand and clay deposits (figs. 4 and 5).

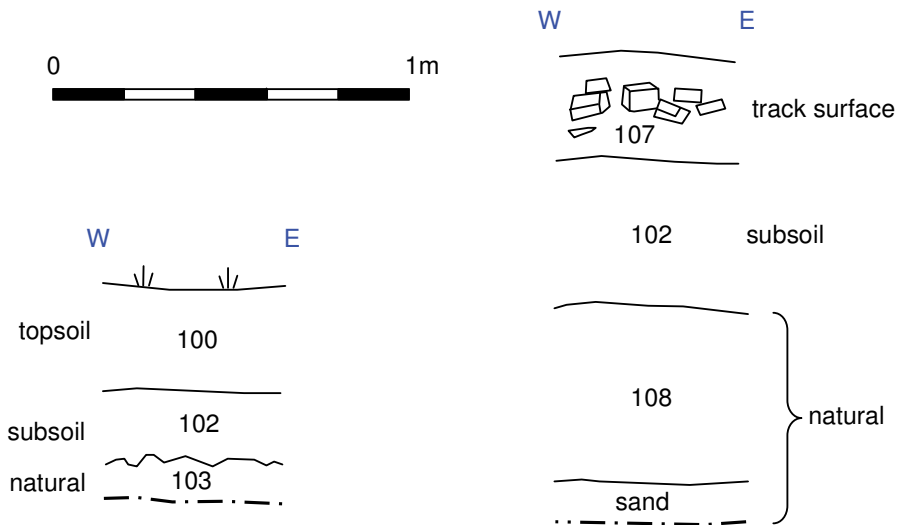


Figure 4: Sample section of the Zone 1 pipe trench in the paddock area, at scale 1:20; section located on figure 3.

Figure 5: Sample section of the Zone 1 pipe trench at the boundary between the paddock and the arable field, at scale 1:20; located on figure 3.

Two modern features were cut through during the Zone 1 groundworks: the Graizelound Fields Road (tarmac over sand bedding, 104) and the east-west running track separating the paddock from the arable field on the eastern side of the road (brick rubble in a silt matrix, 107).

A single archaeological feature was exposed during the initial topsoil strip, 22.6m to the east of the road crossing. Feature 105 was probably an elongated pit, but was not fully exposed in plan: it was roughly rectangular, 2m wide but only 0.30m deep (fig. 6). This feature may have been the base of a retting pit, but its silty sand fill 106 had a notably clean appearance and contained no traces of organic material. No finds were retrieved from it.

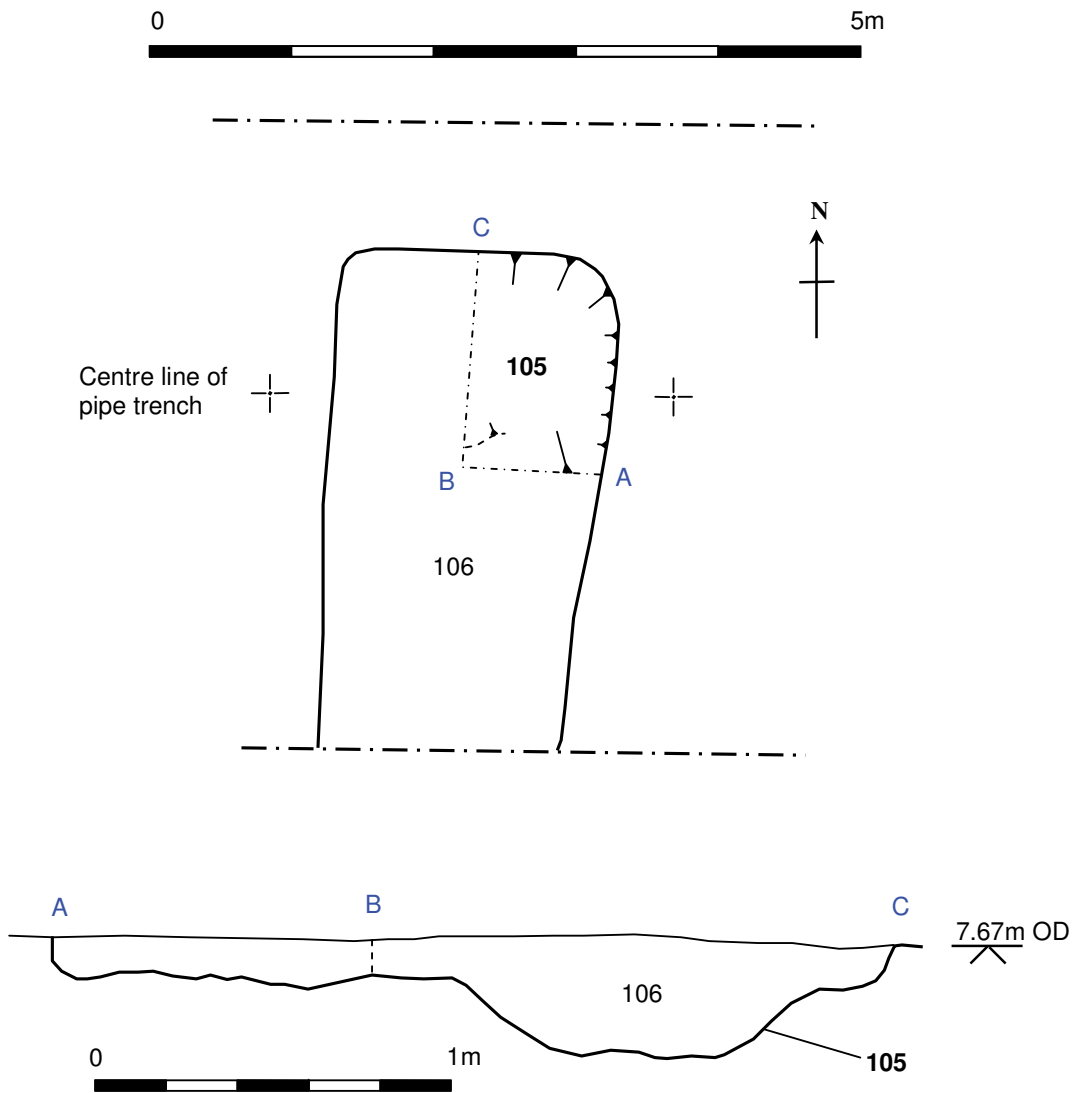


Figure 6: Plan and section of feature 105 in the topsoil strip of Zone 1: plan at scale 1:50, section at scale 1:20.

7.2 Zone 2 (plates 4-7)

The topsoil in Zone 2, layer 200, was up to 0.44m deep and produced no finds. Across the greater part of Zone 2, this topsoil overlay a subsoil 201, whose depth varied from 0.38m to 0.60m, but this deposit did not extend to the south-east corner of the zone, where the new trench met the Lound Rates Drain. No dating evidence was retrieved from the subsoil.

A wide variety of natural deposits were recorded along the ditch sections in Zone 2. A sample section drawn near the south end of the north-to-south aligned drain recorded two silty sand layers, 203 and 204, overlying natural mudstone 205 (fig. 7), while a sample section recorded across the cut of the existing drain, 208, featured layer 204 directly under the subsoil, above windblown sand 206 and sandy silt 207 (fig. 8). A further sample section drawn in the east-west running section of the works, near the end of the Lound Rates Drain, recorded topsoil 200 directly overlying a buried soil, 209, which was present only in this area (fig. 9). The buried soil overlay sand and silt deposit 210, which was probably of natural origin. Below this was a peat deposit, 211: an environmental sample taken from this context showed it to be a naturally occurring deposit with no remains of cultivated plants (appendix 5). Two further natural deposits, clay 212 and windblown sand 213, were recorded below the upper peat layer. At the base of the trench was a second peat layer, 214, which was also sampled with a negative result (appendix 5).

Three linear features were encountered during the Zone 2 groundworks, all within the east-to-west aligned section of new drain cut connecting to the Lound Rates Drain. This cut passed through an area of small, irregular cropmarks with no distinguishable pattern, lying between the three large groupings of regular cropmarks MLS 2437, MLS 18736 and MLS 2435 (fig. 2). Feature 215 ran along the cut, continuing the alignment of the Lound Rates Drain. It was of irregular width and depth, and had no fill of its own, being filled by buried soil 209: it was interpreted as a natural water-cut channel, possibly a precursor of the drain, which would have been dug with the natural route taken by run-off water in mind.

The other two linear features, 216 and 220, both ran approximately perpendicular to the cut, and can tentatively be associated with two of the small, irregular cropmarks, whose northern ends lie close to or cross the line of the trench (fig. 2). Both features were 3m wide and relatively shallow, 216 being 0.66m and 220 0.60m deep. Ditch 216 contained three fills: the lowest, 219, consisted of silty peat, while the upper fills, 217 and 218, were silty clays and sands (fig. 10a). An environmental sample was taken from each of the fills: samples 3 and 4, from the upper fills, were uninformative, but sample 5, from peat fill 219, contained abundant remains of hemp and flax. The highly decomposed nature of the remains, and the indications that young rather than mature flax plants were represented, suggest that these remains represent waste from the processing of the plants for textile fibres (appendix 5). Ditch 220 contained a more complex sequence of five fills, 221-225, and their appearance in section suggests that the ditch may have been periodically cleaned or recut (fig. 10b). The three lowest fills, silty sands 223, 224 and 225, were all sampled, but no archaeobotanical remains of any significance were retrieved (appendix 5).

A group of intercutting features was exposed at the west end of the east-west running section of the new drain cut (fig. 10c). The earliest of these features, 237, which cut a sequence of natural deposits 236, 234 and 245, measured at least 6m east to west: its western end was not identified. It was initially interpreted as a very large pit, but was probably part of a linear feature following roughly the same alignment as the new drain cut: the 1st edition 25" Ordnance Survey map of 1886 shows the Lound Rates Drain as extending much further westwards than it did at the

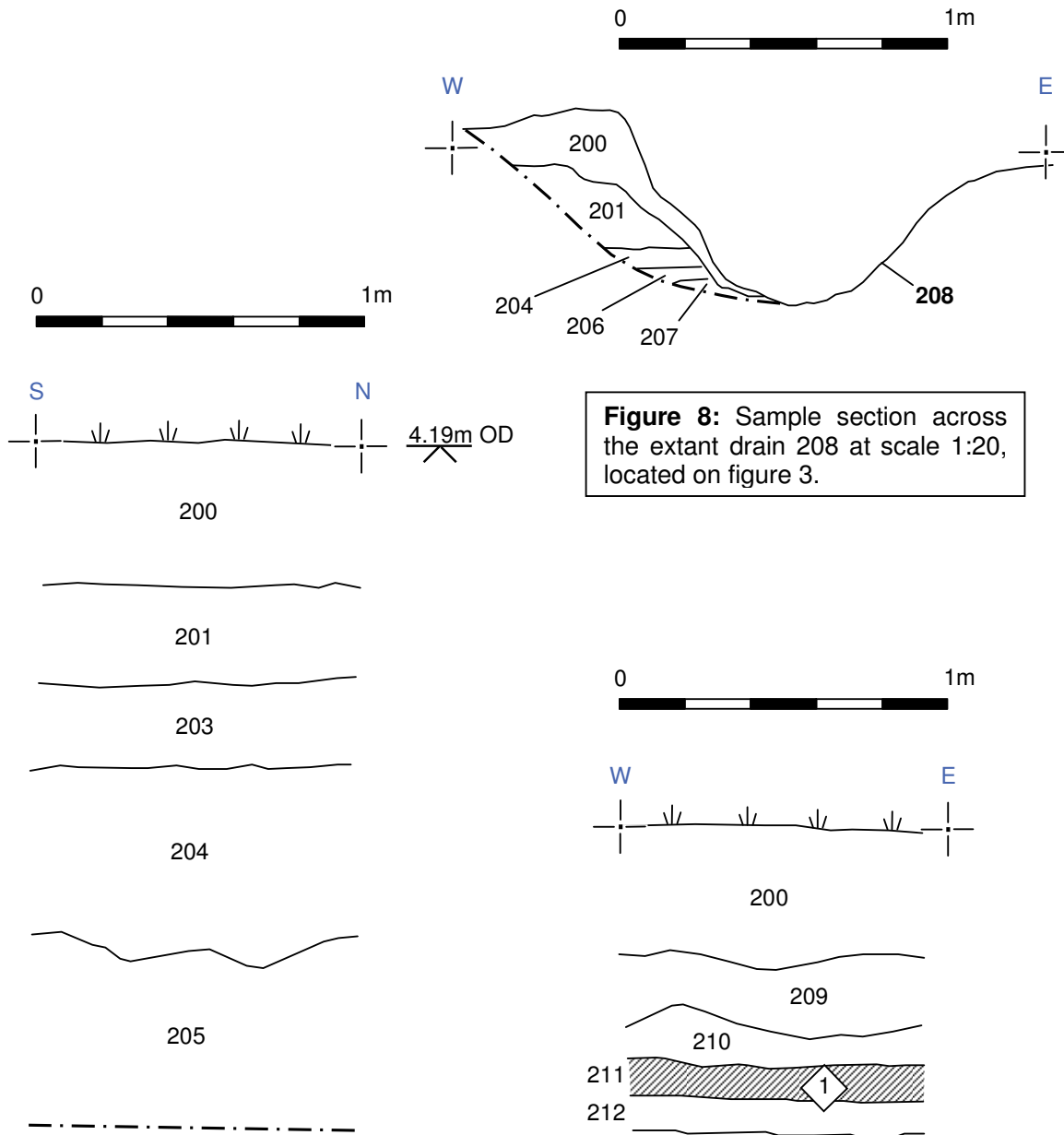


Figure 8: Sample section across the extant drain 208 at scale 1:20, located on figure 3.

Figure 7: Sample section at scale 1:20, located on figure 3.

Figure 9: Sample section near the Lound Rates drain, at scale 1:20, showing the location of environmental samples.

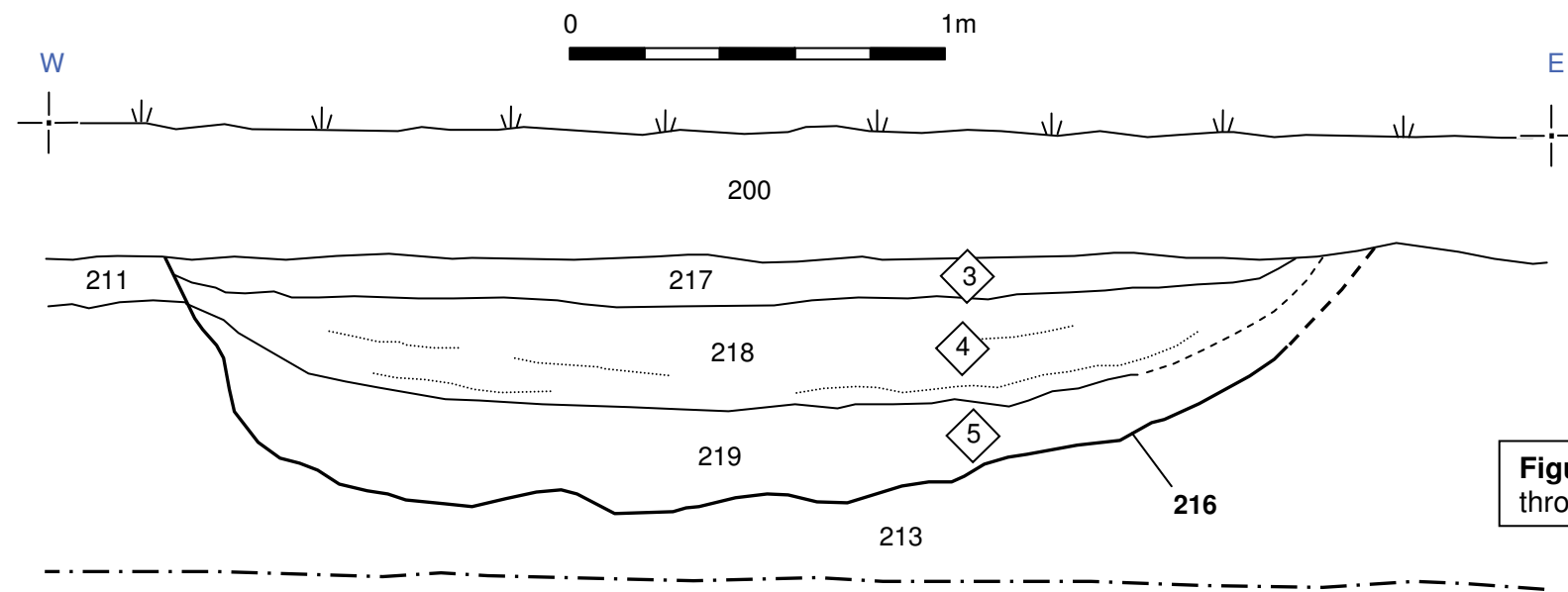
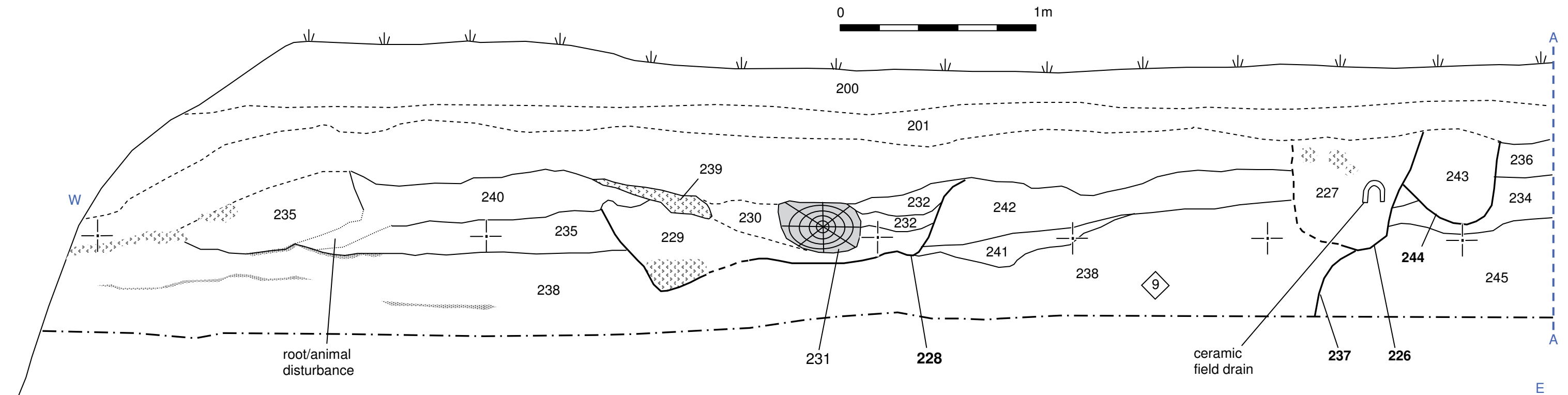


Figure 10: Section through ditch 216

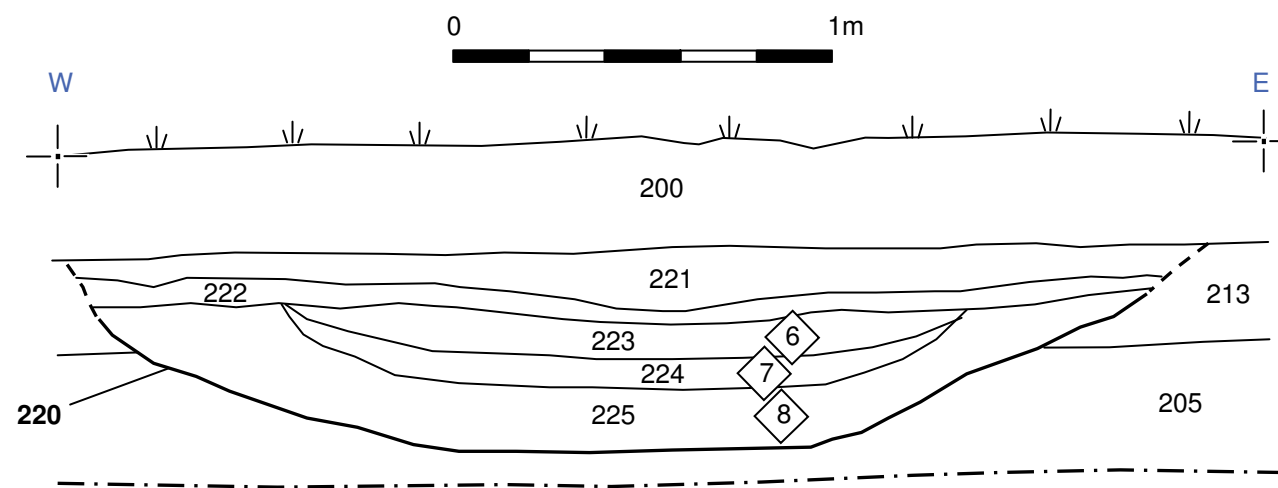
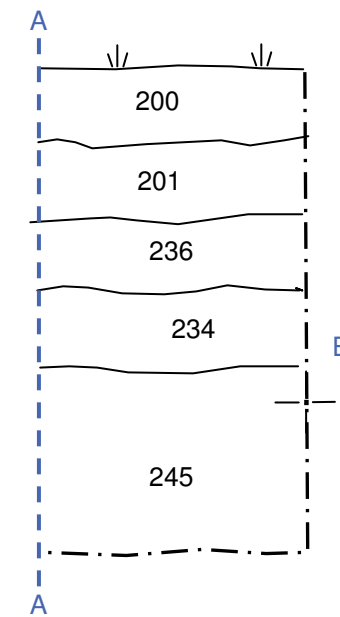


Figure 11: Section through ditch 220



KEY TO FIGURE 12




-  blue clay deposit
-  sand lens
-  timber

Figure 12: South-facing section of the new drain cut, showing features 237 and 228.

Figures 10-12: Sections through features encountered in the sections of the Zone 2 drain, at scale 1:20, showing the location of environmental samples. The drawings are located on Figure 3.

beginning of this project, terminating shortly before the field boundary along which the north-to-south running section of the new drain cut was excavated (old-maps.co.uk). The width of the gap between the end of the former drain and the field boundary indicates that it was left deliberately to allow access to the field to the north-east, and suggests that the west end of feature 237 was not seen because it lay within the new drain cut at the point where it turned to run northwards. The westward extension of the Lound Rates Drain is also shown on the 1906-7 25" map, but had been filled in by the time of the 1921 edition (*ibid.*). Three fills were seen in feature 237, whose base was not reached: fills 239/241 and 240/242, which appeared to correspond but were separated by the cut of a more recent feature, and an extensive peat deposit, 238, below them. An environmental sample was taken from this fill, but produced only archaeobotanical material commensurate with a naturally formed deposit (appendix 5).

The two upper fills of feature 237 were cut by a shallow pit, 228 (fig. 10c). This contained a rather confused melange of small fills and a piece of horizontal timber, whose disturbance by the machining probably accounted for the condition of the other fills. Timber 231, which could not be retrieved, did not appear to be worked. No dating evidence was retrieved, but the feature can be assigned by stratigraphy to the late post-medieval or modern periods. At its eastern end, feature 237 was also cut by a small linear feature, 244, which appeared to be a field drain, and which was in turn cut by field drain 226.

The layers sealing this group of features were difficult to distinguish, due to the battering of the drain sides, but topsoil 200 and subsoil 201 appeared to slump towards the west, indicating the presence of an earlier drain, probably running into the Lound Rates Drain along the field boundary. The height from which field drains 226 and 224 were cut suggested that another layer, possibly a buried soil, was present below the subsoil, but this could not confidently be identified in section.

7.3 Trench 3 (plates 8-11)

Like the topsoil in the rest of Zone 1, context 301 in the area recorded as Trench 3 was up to 0.40m deep. Fragments of modern brick and bottle glass were noted, but not retrieved; two sherds of pottery proved to date from the 5th to 8th and the mid-16th to 17th centuries respectively (appendix 3). No subsoil was recorded in this area: the topsoil directly overlay natural sand 304.

Two linear features were seen in the sections of the pipe-trench. Ditch 302, which crossed the trench at an oblique angle at the point where the trench cut through the end of a track, continued the line of an active drain to the south-east, indicating that it was a relatively modern feature (plate 10). Its fill, 303, was very mixed with lenses of what appeared to be redeposited natural sand, suggesting that back-filling had occurred relatively recently, but it was cut by ceramic field drains, suggesting a date range from the late 19th to the mid-20th century.

Ditch 305 was approximately 5m wide and 0.8m deep in section, but its apparent width may have been distorted by an oblique angle: it appeared to run north-east to south-west, perpendicular to the pipe-trench, but this was not entirely certain (plate 11). It contained two fills: fragments of natural wood were observed in the lower fill, 306, and so an environmental sample was taken, but there were no results of archaeobotanical significance (appendix 5). A sherd of late 17th to 18th century pottery and a leg bone from a domestic animal of the horse family were also retrieved from this fill (appendices 3 and 4).

Weather and ground conditions were particularly bad during the excavation of the pipe-trench in this area, and repeated collapsing of the trench sides meant that no drawn record could be made.

8.0 Conclusion

Only one sub-surface feature, undated pit 105, was encountered in Zone 1, excluding the area recorded separately as Trench 3. The feature may possibly have been dug as a retting pit, but if so, the absence of any organic material in its fill suggests that it was never brought into service. It seems more likely that pit 105 lies too close to the village to fall within an area of retting activity, since this part of the textile production process was normally kept at a distance from settlements due to its foul smell, and that it was dug for another, unknown purpose.

The majority of potential archaeological features encountered lay towards the south end of Zone 2, near its outfall into the Lound Rates Drain. Feature 237, which occupied the last 6m of the most southerly section of the new drain, seems most likely to have been part of a redundant former extension of the Lound Rates Drain itself, visible on old Ordnance Survey mapping. The purpose of feature 228, which cut the fills of 237, could not be ascertained, although it can be confidently assigned to the modern period, as the drain extension ceases to be mapped between 1907 and 1921.

Ditches 216 and 220, also encountered at the south side of Zone 2, were of the greatest archaeological significance, as both could be identified on the North Lincolnshire SMR's aerial photographic record of cropmarks. The area of cropmarks in which both features lay had not previously been interpreted as a potential retting industry site, as the distinct ditch complexes and rectangular pit scatters visible in the surrounding areas could not be made out here, but archaeobotanical sampling identified retting debris in the earliest fill of ditch 216. Since poorly drained areas are less conducive to the formation of crop-marks (Deegan, 2004, p. 9), the lack of clarity of the features above ground may be associated with better archaeobotanical survival below. The presence of retting debris in fill 219 alone, although other similar peat fills had been sampled across the project, may suggest that this area was marginal to a nearby industrial site or was soon abandoned, accumulating only a small amount of debris, or that this site has been more heavily disturbed than the others, so that little of the archaeobotanical evidence remained. It may be significant in this context that the drawn section of ditch 220 suggests that this ditch may have been cleaned or recut on at least one occasion, while the fills in ditch 216 appear to have accumulated undisturbed.

Of the two linear features encountered in the Trench 3 portion of Zone 1, ditch 302 appeared to be a redundant (or possibly culverted) portion of an extant drain, back-filled in order to construct a track on the same line. Ditch 305 was tentatively dated to the post-medieval period by a single sherd of late 17th to 18th century brown glazed earthenware: it could not be associated with any of the crop-marks recorded by the North Lincolnshire SMR, nor could a drain in this position be identified on old Ordnance Survey maps, suggesting that it was a minor, probably temporary, feature associated with field drainage.

9.0 Effectiveness of methodology

The methodology employed during this project achieved its primary objective, demonstrating the presence of archaeological remains associated with the significant

local industry of flax and hemp textile production, and recording those remains effectively, while causing the minimum of disruption to the construction process.

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11.0 Acknowledgements

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12.0 Site Archive

The project archive is currently held at the offices of PCAS Ltd, Saxilby, Lincolnshire, and will be deposited with the North Lincolnshire Museums Service in June 2011.

Appendix 1: Colour Plates



Plate 1: General shot of Zone 1 before the start of the groundworks, looking south-east from the Graizelound Fields Road crossing across the paddock.



Plate 2: The beginning of groundworks in the cultivated field to the west of the Graizelound Fields Road, looking north-west from the road crossing.



Plate 3: Feature 105 in the Zone 1 pipeline strip, looking east.



Plate 4: Zone 2 before the start of the groundworks, looking west from the end of the Lound Rates Drain.



Plate 5: Working shot of drain widening in Zone 2, looking north.



Plate 6: Linear feature 216 in the Zone 2 drain cut, looking north: peat deposit 219 can be seen at the base of the feature.



Plate 7: Linear feature 220 in the Zone 2 drain cut, looking north.



Plate 8: The area of works recorded as Trench 3, before the start of groundworks, looking south-east from the east end of the Zone 1 works.



Plate 9: Working shot in the Trench 3 area, looking north-west from the west end of the Zone 2 works.

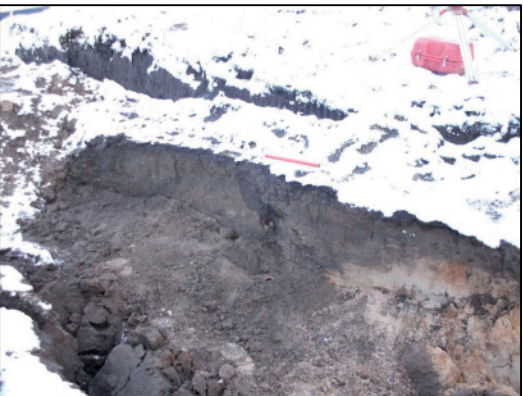


Plate 10: The west end of feature 302 in the Trench 3 cut, looking south-east.



Plate 11: Feature 305 in the section of the Trench 3 cut, looking south-west.

Appendix 2: Context Summary

Context No.	Type	Description	Finds/Dating	Samples
Zone 1				
101	Layer	Dark brown sandy silt topsoil, up to 0.40m deep	None	
102	Layer	Mid-brown sandy silt subsoil, up to 0.30m deep	Fragments of animal bone, not retained; 1 sherd early to mid-19 th century pottery; fragment 18 th -20 th century roof tile	
103	Layer	Mottled yellowish- and reddish-brown sand natural with light greenish-grey mudstone, frequency increasing with depth. Dark red clay at a deeper level.	None	
104	Layer	Bedding and surface of modern road: tarmac over sand.	None	
105	Cut	Large sub-rectangular feature with slightly rounded corners, very steep sides and flattish base; 2m wide x 0.30m deep, full length not exposed.	N/A	
106	Fill	Mid reddish-brown silty sand with clean appearance, filling pit 105	None	
107	Layer	Surface of track at S edge of paddock: brick hardcore in silt matrix	None	
108	Layer	Natural brown silty sand	None	
Zone 2				
200	Layer	Dark brown sandy topsoil, up to 0.44m deep	None	
201	Layer	Mixed light brown sandy silt subsoil with frequent mudstone fragments, depth ranging from 0.38m to 0.60m	None	
202		Void		
203	Layer	Mid-brown silty sand mottled orange-red, 0.26m deep, below subsoil 201 on W edge of N-S running drain	None	
204	Layer	Dark greyish-brown fine silty sand, 0.60m deep, below layer 203 on W side of drain	None	
205	Layer	Natural mudstone below layer 204 at S end of Zone 2	None	
206	Layer	Mottled white/orange fine sand, probably windblown, below layer 204 on W side of drain	None	
207	Layer	Mid-orange-brown sandy silt below layer 206	None	
208	Cut	Existing cut of drain, being widened as part of this project	N/A	
209	Layer	Buried soil under topsoil 200 in new drain cut: compact dark brown silty loam with flecks of shell, 0.24m deep	None	
210	Layer	Mixed deposit of mid-grey silt and fine sand in new drain cut	None	

Context No.	Type	Description	Finds/Dating	Samples
211	Layer	Peat deposit below layer 210	None	<1>
212	Layer	Grey silty clay below layer 211	None	
213	Layer	Laminated grey and white fine sand, probably windblown, below layer 212	None	
214	Layer	Peat deposit below layer 213	None	<2>
215	Cut	Irregular linear feature, probably a natural channel, on the same alignment as the Lound Rates Drain; 0.90m wide x 0.30m deep, filled by 2009	N/A	
216	Cut	Wide, shallow N-S aligned linear feature, 3.0m wide x 0.66m deep, cutting peat layer 211. May correspond to a cropmark feature.	N/A	
217	Fill	Upper fill in ditch 216, above 218: mixed light brown and reddish-brown silty clay and sand	None	<3>
218	Fill	Fill in ditch 216, above 219 and below 217: mid brown sandy silt with occasional laminations of reddish-brown sand	None	<4>
219	Fill	Dark brown silty peat fill at the base of ditch 216, below fill 218	None	<5>
220	Cut	Wide, shallow N-S aligned linear feature, 3.0m wide x 0.60m deep, cutting sand layer 213. May correspond to a cropmark feature.	N/A	
221	Fill	Mid reddish-brown silty loam upper fill in feature 220, above fill 222	None	
222	Fill	Mid reddish-brown sandy silt fill in feature 220, below 221 and above 223	None	
223	Fill	Deposit of mid reddish-brown silty sand in feature 220, below 222 and above 224	None	<6>
224	Fill	Deposit of dark brown silty sand in feature 220, below 223 and above 225	None	<7>
225	Fill	Mid reddish-brown silty sand fill at the base of feature 220, below deposit 224	None	<8>
226	Cut	Cut of modern field drain	N/A	
227	Fill	Fill of modern field drain 226	None	
228	Cut	Pit cutting fills of feature 237	Modern: dated by stratigraphy and documentary evidence to the early 20 th century	
229	Fill	Fill in pit 228	None	
230	Fill	Fill in pit 228	None	
231	Fill	Timber in pit 228	None	
232	Fill	Fill in pit 228	None	
233	Layer	Bluish-white natural clay	None	
234	Layer	Yellowish-brown natural sand	None	
235	Fill	Fill in feature 237, above fill 238	None	
236	Layer	Greyish-brown natural silty sand	None	

Context No.	Type	Description	Finds/Dating	Samples
237	Cut	Cut of large feature, not fully exposed: probable former part of the Lound Rates Drain	Identifiable on late 19 th century mapping: probably post-medieval	
238	Fill	Peat deposit in the base of feature 237, below fills 235 and 241	None	<9>
239	Fill	Fill in feature 237	None	
240	Fill	Fill in feature 237, above fill 235	None	
241	Fill	Fill in feature 237	None	
242	Fill	Fill in feature 237	None	
243	Fill	Fill in field drain 244: cut by more recent field drain 226	None	
244	Cut	Field drain	N/A	
245	Layer	Bluish-white natural clay	None	
246	Fill	No context sheets for these two fills: possibly redundant?	None	
247	Fill		None	
Zone 3				
301	Layer	Dark brown topsoil, 0.40m deep	Occasional modern debris, not retained; pottery from 5 th -8 th and mid 16 th -17 th centuries	
302	Cut	Backfilled drain cut, continuing the line of open drain to SE. Not further recorded due to trench collapse.	N/A	
303	Fill	Backfill of drain cut 302: layers of sandy silt and redeposited natural sand. Cut by ceramic field drains.	Stratigraphically dated to late 19 th -mid 20 th century.	
304	Layer	Light yellowish-brown sand natural	None	
305	Cut	Wide, shallow ditch cut, possibly NE-SW aligned; not further recorded due to trench collapse	N/A	
306	Fill	Mid-brown sandy silt primary fill in feature 305	Late 17 th -18 th century pottery; equid bone	<10>
307	Fill	Dark brown sandy silt upper fill in feature 305	None	

Appendix 3: Pottery and tile archives

by Jane Young

Pottery archive

context	cname	full name	sub	form	sherds	vessels	weigh	decoration	part	action	description	date
102/3	WHITE	Modern whiteware		cup	1	1	2	underglaze purple & green paint	BS	discarded		early to mid 19th
301	SST	Early to mid Saxon sandstone-tempered	fine	jar	1	1	8		neck		comm mainly fine-med quartz but some up to 1.5mm moderate to comm fine aggregated sst sparse flint sparse carbonised	5th to 8th
301	LHUM	Late Humber-type		jug/jar	1	1	4		BS		int & ext glaze	mid 16th to 17th
306	BERTH	Brown glazed earthenware	med orange sandy	large jar/bowl	1	1	44		base		int glaze	late 17th to 18th
u/s	ENGS	Unspecified English Stoneware	light grey	water filter	19	1	3320	applied white sprigged decoration; machine beading & roller	filter base & BS		applied vine leaf & grape dec; applied flower dec; several cartouches marked REGISTERED HYGENIC FILTER --PING STREET MANCHESTER; black writing on white panels; unglazed pierced	late 19th to early20th
u/s	WHITE	Modern whiteware		cup	1	1	4		rim	discarded	gold lustre line	20th
u/s	PORC	Porcelain		saucer	2	1	26	underglaze floral paint	base to rim	discarded	marked Victoria China Czechoslovakia	mid 20th

Tile archive

context	cname	full name	fabric	frags	weight	action	description	date
102/3	PNR	Peg, nib or ridge tile	fine orange sandy	1	14	discarded	possibly pantile	18th to 20th

Appendix 4: Animal bone report

by Jennifer Wood

Introduction

A total of three (816g) fragments of animal bone were recovered by hand during archaeological works undertaken by Pre-Construct Archaeological Services Ltd at Haxey Village, North Lincolnshire. The remains were recovered from unstratified deposits and deposit (306).

Results

The remains were generally of a good overall condition, averaging grade 3 on the Lyman criteria (1996).

No evidence of burning, gnawing or pathology was noted on the remains. A single large mammal rib from unstratified deposits displayed evidence of butchery. The cut marks are consistent with jointing of the carcass.

Table 1, Summary of Identified Bone

Context	Taxon	Element	Side	Number	Weight	Comments
U/S	Large Mammal Size	Rib	X	1	39	Chopped through the midblade
	Pig	Humerus	L	1	66	Distal shaft and condyle. Bd=53mm, BT=51 mm
306	Equid (Horse Family)	Humerus	R	1	711	Mostly complete, damaged on the proximal end. SD=41, Bd=80, BT=80

The assemblage is too small to provide meaningful information on animal husbandry and utilisation on site, save the presence/use of the animals on site.

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Appendix 5: Archaeobotanical report

by Anita Radini

Introduction

An archaeological evaluation was conducted at Haxey Village by Pre-Construct Archaeology ahead of drainage improvement. The site revealed possible peat deposits and evidence of fibre retting in the medieval period. Soil samples were taken from ditches, a pit and two layers to investigate the bio-archaeological evidence. The results of archaeobotanical analysis are presented here, with emphasis given to the significant evidence for hemp and flax retting on the site.

Sampling and processing methods

Ten samples were taken from waterlogged deposits. These were:

- two samples from peat layers: sample **1** (211) and sample **2** (214)
- three samples from ditch 216: sample **3** (217), sample **4** (218) and sample **5** (218)
- three samples from ditch 220: sample **6** (223), sample **7** (224) and sample **8** (225)
- one sample from the lower fill of a pit: sample **9** (238)
- one sample from a possible ditch: sample **10** (306)

NB within the same feature the samples are numbered from top to bottom.

Processing was carried out at ULAS, where appropriate volumes of the samples (see table 1) were wet-sieved using a 1mm aperture mesh for the retention of the heavy residue with flotation onto a 0.3mm mesh. The flots were then preserved in water in transparent boxes.

The sorting was carried out for the whole of the flot using a stereoscope, with magnifications ranging from x7 to x45, and a microscope with higher magnification of x200 to x400 for the identification of the smaller fibres. Morphological criteria were used for the identification of plant species, based on modern reference material and seed identification manuals (e.g. Berggren 1981; Anderberg 1994; Cappers *et al.* 2006). Plant names follow Stace (1997).

The abundance (1= scarce <10; 2= moderate 10-50; 3= frequent >50) of each archaeobotanical type was estimated on the basis of the minimum number of characteristic plant parts. The results are presented in Table 1 at the end of this appendix.

Roots and other plant parts, snail shells, and insect remains were also noted, with an estimation of their abundance, but were not removed from the flots. The results are presented in Table 1.

Results

The preservation of the archaeobotanical material was only fair, despite the waterlogged conditions of the deposits, and, in fact, a high degree of decomposition was observed. A large variety of small fragments of plant vessels, small root fragments, epidermis and a large number of leaves of mosses such as *Sphagnum* were recovered consistently, indicative of peat deposits. All the samples had a degree of mineral and organic fluvial materials, together with fragments of unidentified insect remains in low numbers, mainly fragments of larva cases and cocoons. Several 'ephippias' (eggs enclosed in hard dark brown cases) of water fleas (*Daphnia* sp.) were also encountered in the majority of the samples. As ehippias are an adaptation developed by water fleas to survive unfavourable conditions, this possibly suggests that there were dry phases in the past, which could explain why the remains had deteriorated. The sample with the least material was sample **2** (214), which mainly consisted of sand and lumps of decomposed organic matter. Water snails were recovered in large numbers in all samples except sample **5**.

The detailed results are outlined below by type of remains in order to facilitate their interpretation.

Wild plants

All samples show a remarkable consistency in their appearance and contained a large quantity of decomposed organic matter comprising mainly fragments of *Sphagnum* moss, small fragments of roots and unidentified plant remains such as leaf epidermis and plant vessels.

Identified plant remains associated with wet environments consisted of seeds of rushes (*Juncus* spp.), sedges (*Carex* spp.), and common spike-rush (*Eleocharis palustris*).

It was possible to identify some species of mosses on the basis of leaf morphology and these can be divided into two types:

mosses that are common in wet and humid environments of any kind and often grow on wood fragment such as *Antitrichia curtipendula* (Antitrichia Moss), *Eurhynchium praelongum*, a very common moss, and *Neckera complanata* (Neckera Moss).

Sphagnum species (fragments and leaves) which are the main component of peat deposits.

Samples **6** and **8** had fragments of hazel (*Corylus avellana*) and willow (*Salix* sp.), trees that could either be part of the natural environment surrounding the site or be indicative of human activity, as both plants were commonly used in basketry. Their occurrence would also be consistent with peat deposits.

Sample **5** had a few remains of docks (*Rumex* spp.), nettles (*Urtica* spp.), and goosefoot seeds (*Chenopodium* spp.), but the degree of decomposition did not allow the identification to species level; these taxa are usually indicative of nitrogen-rich habitats, present in waste grounds and/or cultivated soil. These plants are likely to have entered the archaeological samples as weeds associated with the hemp and flax crops (see below).

Economic plant remains

The most remarkable results of the analysis concern the abundant remains of hemp (*Cannabis sativa*) and flax (*Linum usitatissimum*), which were found in Sample 5, from the bottom layer of ditch 216. The samples contained uncharred stems, capsules (mostly in fragments) and seeds of flax, and stems and seeds of hemp. All the remains were highly decomposed apart from the hemp seeds, which were better preserved than those of flax, possibly due to the harder nature of the seed. Flax seeds were very pale in colour and smaller than mature seeds, suggesting that young plants were being harvested; a common practice when the crop is used for fibres rather than for oil. A very large number of small and microscopic fragments of flax and hemp stems were also recorded.

Discussion

Layers (214), (211), and all deposits from ditches 220 and 306 and fill of pit 238 are consistent with natural deposits of peat which have been subject to recent spells of drying. The top layers of ditch 216 are also very similar in composition to those above, whilst the bottom layer of ditch 216 represented by sample 5 (219) is consistent with the degraded remains of hemp and flax retting. In order to process fibres of both hemp and flax, bundles of these plants were traditionally submerged in water, in a process known as retting, to facilitate the extraction of the fibres from the rest of the stalk. The process was normally completed in a couple of weeks; the fungal and bacterial activity in the water would decompose the inner part of the stalk leaving the outer layer, the useful fibres, intact and easier to process.

Both crops, but especially hemp, were very important in marine industries for the production of ropes; sails and also fishing nets (Gearey *et al.* 2005, 318). Flax and hemp were also commonly used for fabrics of different types and for a variety of uses. It is interesting to note the absence of most weeds normally associated with these crops that have been recovered from other sites in England and in the other area of northern Europe (Gearey *et al.* 2005, 319-20; Latatowa 1998, 97-104). The absence of these plants and the high level of decomposition of the remains of hemp and flax suggest that this deposit represents material that had been left behind when the bundles of fibre were removed.

The small numbers of water snails at the bottom of ditch 216 point to the presence of water in the ditch but with lower biological disturbance, which possibly allowed the evidence of retting to survive. The facts that the remains of retting were only found at the bottom of the ditch 216, while the above deposits from samples 4 and 3 were consistent with natural peat, suggest that the retting activity was abandoned in the past, and the ditch was left to be naturally filled by peat accumulation. This hypothesis is also reinforced by the fact the other features mainly consisted of natural deposits of peat. It is possible that other features on the site had been associated with retting in the past but the evidence only survived in ditch 216.

Conclusions

The archaeobotanical evidence indicates that activities associated with hemp and flax retting took place on the site, and that as the activity declined, natural deposits of peat then accumulated in the ditches, and was subject to spells of drying in recent times.

Note

Further work on pollen analysis could possibly provide more information on changes over time if future work allows.

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A special thanks to Alan Hall for the workshop on mosses which allowed the identification of some of the mosses found in the deposits to species level.

Sample	1	2	3	4	5	6	7	8	9	10	
Context	211	212	217	218	219	223	234	225	238	306	
Feature type	layer	layer	ditch 216	ditch 216	ditch 216	ditch 220	ditch 220	ditch 220	pit 237	ditch 305	common name
Dump ground											Dump ground
<i>Eleocharis palustris</i> (L.) Roem. & Schult	2	1	1	1		1	1		1		common spike-rush
<i>Carex</i> spp. 2 sided	2	1	2	2	2	2	2	2	2	2	sedges (2-sided)
<i>Carex</i> spp. 3 sided	2		1	2	1	1	1	1	1	1	sedges (3-sided)
<i>Juncus</i> spp.	2	1	1	1	1	1	1	1	1	1	rushes
Mosses											Mosses
<i>Antitrichia curtipendula</i> Bridel(leaves)	2		2	2	2	2	2	2	2	2	Antitrichia moss
<i>Eurhynchium praelongum</i> (Hedw.) Br.Eur. (leaves)	2		2	2	2	2	2	2	2	2	Moss
<i>Neckera complanata</i> Hübener (leaves)	2		2	2	2	2	2	2	2	2	Moss
<i>Sphagnum</i> sp. mosses (fragments and leaves)	3	1	3	3	3	3	3	3	3	3	Sphagnum moss
Unid. Mosses (fragments and leaves)	3	1	3	3	3	3	3	3	3	3	
Weeds/wild											Weeds/wild
<i>Chenopodium</i> sp.					1						goosefoots
<i>Rumex</i> spp.					1						docks
<i>Urtica</i> spp.	1		1		1				1		nettles
Wood											Wood
<i>Corylus avellana</i> L.						1		1			hazel

<i>Salix</i> spp.						1		1			willow
Economic plants											Economic plants
<i>Cannabis sativa</i> L.					2						hemp
<i>Linum usitatissimum</i> L.					2						flax
Other											Other
plant epidermis/leaf fragments	2	2	2	2	2	2	2	2	2	2	plant epidermis/leaf fragments
leaf veins (Dicotyledons)	1	1	1	1	1	1	1	1	1	1	leaf veins (Dicotyledons)
plant vessels (fibres)	2	1	1	1	1	1	1	1	1	1	plant vessels
<i>Daphnia</i> sp. (ephippias)	3	1	3	2		3	3	2	3	2	water fleas
insect remains	2	2	2	2	2	2	2	2	2	2	insect remains
water snails	3	1	3	2	1	3	2	3	3	2	water snails
Volume processed	1L	1L	1L	1L	0.5 L	1L	1L	1L	1L	1L	

Table 1: environmental remains

Appendix 6: OASIS summary