

**CROWLE DRAINAGE IMPROVEMENTS, ISLE OF AXHOLME  
NORTH LINCOLNSHIRE: PHASE 2**

**ARCHAEOLOGICAL MONITORING AND RECORDING**

Planning Ref.: N/A  
NGR: SE 81327 12719 – SE 85085 15336  
PCAS Site code: CDSM 14  
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Report prepared for

Isle of Axholme and North Nottinghamshire  
Water Level Management Board

by

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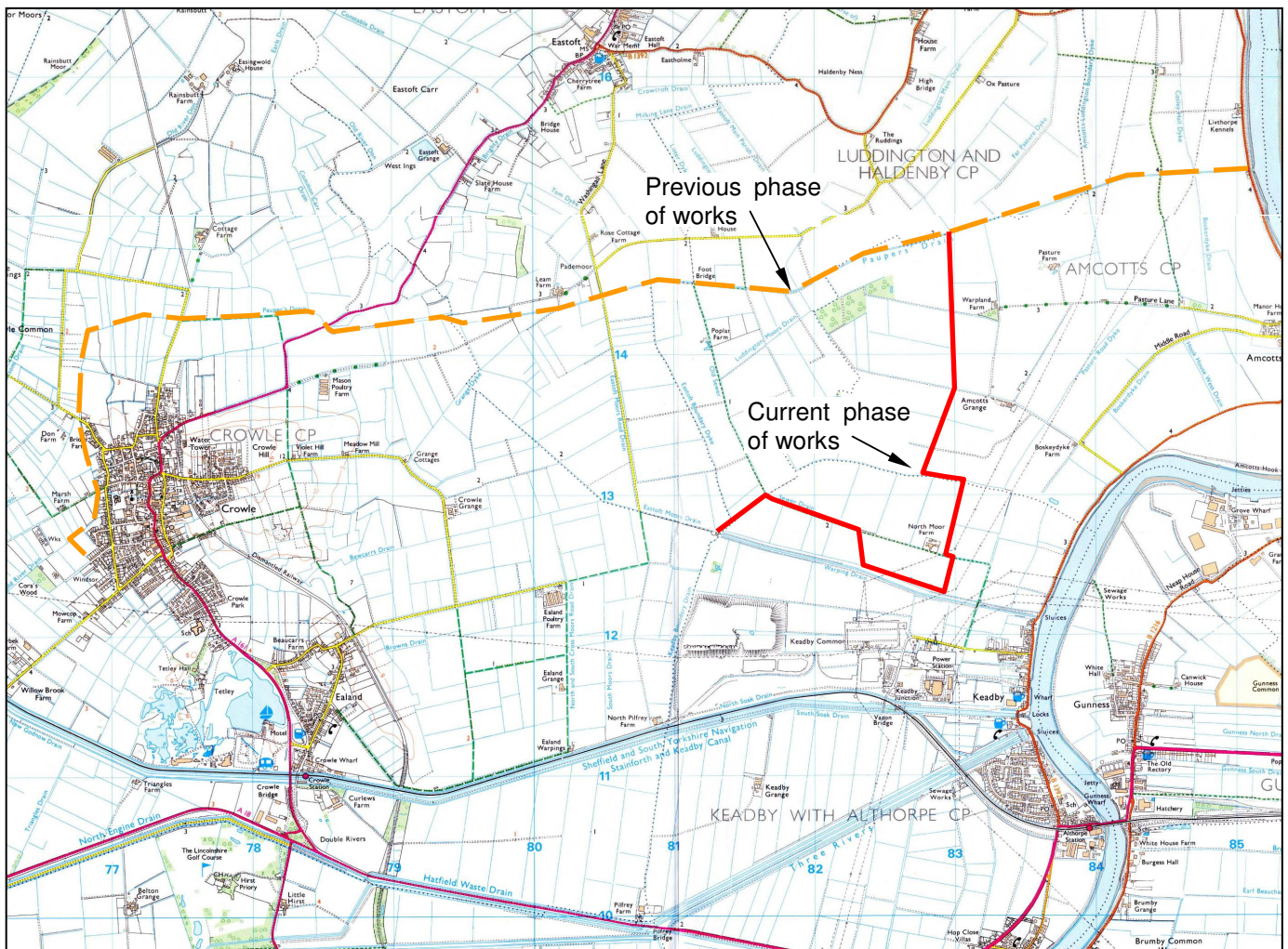
**Plate 8:** The peat layer as seen in L7, looking north-east

## Summary

Pre-Construct Archaeological Services Ltd. (PCAS) was commissioned by the Isle of Axholme and North Nottinghamshire Water Level Management Board to undertake a programme of monitoring and recording during the groundworks associated with improvements to the drainage system around Crowle in the Isle of Axholme, North Lincolnshire (NGR: SE 81327 12719 – SE 85085 15336).

The drains affected by this second phase of improvement works are situated in a typically low lying area, extending from the River Trent across the Isle and partially surrounding Crowle and branching southwards towards Keadby. The affected channel was Sewer Drain, which branches southwards of Pauper's Drain. This drain was originally cut in the early to mid 19<sup>th</sup> century to improve the quality of the land. The Drainage Improvement Scheme involved cutting back vegetation and increasing depths and widths.

Beneath topsoil deposits, an extensive deposit of peat was observed throughout much of the area monitored. No finds pre-dating the modern era were recovered, and no significant timbers or other objects were identified during the scheme.



**Figure 1:** Location plan of the monitored works at scale 1:50,000, showing the current phase of works in red and the previously monitored phase in orange. OS mapping © Crown copyright. All rights reserved. PCAS licence no. 100049278.

## **1.0 Introduction**

Pre-Construct Archaeological Services Ltd (PCAS) was commissioned by the Isle of Axholme and North Nottinghamshire Water Level Management Board to undertake a programme of monitoring and recording during improvement works, around and to the east of Crowle, in the Isle of Axholme, North Lincolnshire.

This Phase 2 improvement scheme extended over approximately 14km across the Isle of Axholme, and was focused on Sewer Drain, which branches southwards of Pauper's Drain.

The archaeological programme was undertaken as set out within a Specification for a Scheme of Archaeological Monitoring and Recording (Lane 2014), approved by the Planning Archaeologist for North Lincolnshire Council.

## **2.0 Site Location and Description (Figures 1 and 2, Plate 1)**

Sewer Drain branches from the south bank of Pauper's Drain (NGR SE 82950 14850), which itself is on the west bank of the River Trent north of Amcotts, towards Crowle, where it meets Old River Drain (SE 76836 14159) along the west side of Crowle.

The drain affected by the Phase 2 improvement works traverses the civil parishes of Luddington and Haldenby, Keadby with Althorpe, and Amcotts.

Crowle is the largest settlement within the immediate area: a small town and parish, lying approximately 12km west of Scunthorpe; a little over 6km west of the River Trent, and 9km south of the River Ouse. Keadby is the closest settlement to the Phase 2 improvements, situated 1km to the south-west of Sewer Drain.

## **3.0 Geology and Topography**

Bedrock geology for the entire route is recorded as Mercia Mudstone Group; commonly red mudstone and subordinate siltstone with halite (rock salt) occurring in natural hollows.

Drift geology is more complicated: at the east end of the route this is recorded as warp: artificially induced alluvium, generally multiple layers of alluvium deposited where the river was encouraged to flood the surrounding agricultural land, improving the quality of the soils (common in the post-medieval and modern periods). This geology encompasses the majority of Pauper's Drain, and all of Sewer Drain (<http://mapapps2.bgs.ac.uk/geoindex/home.html>).

The Isle of Axholme comprises a series of low-lying mounds, around which runs an extensive network of natural streams and rivers. This flat, low-lying area was frequently flooded in the past, and layers of peat are commonly found below deposits of warping as a result.

The entirety of the route lies below 10m OD. The majority of the area is agricultural land, with multiple bisecting drains. Crowle itself lies on the western edge of a natural sand bank, which peaks at a little over 20m OD. Pauper's Drain cuts across this bank, and sand was clearly visible in the drain sides even before vegetation stripping commenced.

## **4.0 Planning Background**

Planning permission was not required for this work, which counted as permitted development, within the Town and Country Planning (General Permitted Development) Order 1995, Schedule 2, Part 14, Class A and is confirmed as such by the Local Planning Authority

Appendix 10.1. The Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 (as amended) require the production of an Environmental Statement for any works that are likely to have significant effects on the environment: consultation with Statutory Consultees forms part of the Environmental Impact Assessment process (Manning, 2013). The Planning Archaeologist for North Lincolnshire advised that a scheme of archaeological mitigation was necessary during the groundworks, as the drain passes through several areas containing known archaeological remains.

## 5.0 Archaeological and Historical Background

A full assessment of the archaeological potential of the area has been completed previously (Lane 2013) and is therefore summarised below.

Geological records show that the majority of the Isle of Axholme was below sea level in the last ice age, with Crowle an isolated island of slightly higher ground within the surrounding waters. As sea levels dropped, the Isle emerged, only for peat to develop from the late Bronze Age as sea levels slowly rose again; evidence of this has been obtained from borehole records and archaeological investigations. Recent monitoring of groundworks for the nearby Keadby Wind Farm recovered fossilised wood from the peat (Headland Archaeology Ltd 2013), indicating the preservation conditions for further bog oaks and potentially other organic artefacts to have survived within the acidic conditions within the peat. The accumulated peat may also have sealed prehistoric occupation layers. The environmental conditions would not have been favourable to permanent occupation; the presence of a dispersed scatter of early prehistoric finds from the Isle and surrounding areas may indicate seasonal movements between the wetlands and the higher ground away from the floodplains (*ibid.*).

Roman occupation along the route of the improvement works appears to have been concentrated around Crowle. A settlement grew here on the banks of the Old River Don, which was navigable by boat until the medieval period. It is suggested that the settlement grew as a trading post; domestic features have been revealed here as well as agricultural enclosures. Further evidence of occupation is anticipated on the summit of the sand dune east of Crowle; aerial photography has revealed cropmarks in this area thought to be Roman, and cropmarks of a trackway with associated enclosure close to Leam Farm are associated with a concentration of Roman pottery (*ibid.*).

The post-Roman period appears to have been initially characterised largely by social instability, but the area ultimately formed the northernmost boundary of the Saxon kingdom of Mercia after many years of conflict with the rival kingdom of Northumbria. After the late 8th century a succession of Danish invasions plagued the region with its numerous waterways that afforded access to the interior of the region. Danish dominance was ended in the early 11th century when Æthelred 'entering Lindsey, revenged himself severely upon the inhabitants by burning the country and putting them to death' (Stonehouse 1839:16).

Saxon occupation in the vicinity of the route is represented by two 9th-10th century pits identified in Crowle Market Place. The Domesday Book records that in 1086 the lord of the manor was Geoffrey de la Guerche, of St German Abbey at Selby. Only a small proportion of the land associated with the manor was ploughland, with 30 acres of meadow a small amount of woodland and 31 fisheries, which indicates the main economies were fishing and pastoral farming (*ibid.*).

The local marshland landscape was not suited to arable farming and only the small islands of higher ground were used for settlement and subsistence arable agriculture. Apart from pastoral farming and fishing, hemp production was common in the Isle of Axholme. By the

14<sup>th</sup> century, the lower reaches of the River Don had silted up and had become impassable to river traffic trying to trade along the Humber and its tributaries (Van de Noort 2004).

Major improvement works to drain the marshlands began in the 17<sup>th</sup> century by the Dutch engineer Cornelius Vermuyden. However these early efforts were unpopular with the local communities that relied on the marshland for their livelihood. The project was interrupted by the English Civil War, although land improvement continued after the war and the enclosure of the Isle began in the late 18<sup>th</sup> century (Lane 2013). The parish of Crowle was enclosed in 1813, and a separate act for the construction of drains was passed in the same year. The act stated: *“lands in the present state are totally unfit for tillage, but the said lands may be rendered highly productive... if properly drained, embanked and warped. And where it may be necessary that a new sea sluice should be built or made, at or near a place called North Sewer Sluice ... in Amcotts, and that a new cut or drain should be made to communicate with the said River Trent ... shall be continued through Amcotts, across Eastoft Moors into the parish of Crowle ... and that divers other also in Crowle ... and in Luddington, Belton, Althorpe and Aldingfleet”* (Warping and Drainage Award 1862. Lindsey Award 164).

The record of the works lists details of not only Pauper’s Drain, but also Sewer Drain, Old River Drain and Wrays Drain, concluding that all the drains involved with the current drainage improvement scheme were first constructed in the same development in the 19<sup>th</sup> century. Pauper’s Drain in its present form dates from the building of the pumping station in 1978. Since the introduction of the drains to the Isle, arable farming has become the primary land use. Where possible, the land has been repeatedly warped, deliberately allowing the river to flood farmland in order to deposit a rich silt to improve the quality of the arable soils (Lane 2013).

Phase 1 of the drainage improvement scheme, from Crowle to Pauper’s Pumping Station (NGR SE 85085 15336) on the west bank of the River Trent, was monitored during 2014 but nothing of archaeological significance was encountered. Sand bars and substantial peat deposits were recorded, but no artefacts were retrieved, and the large quantities of timber seen within the peat at the east end of the works all appeared to be recent growth (Mandeville 2015).

## 6.0 Methodology

The drainage improvement programme was envisaged to take place in two stages in a similar manner to earlier works:

- A vegetation strip along one side of the drain: it was anticipated that up to 100m of the drain would be stripped per day.
- The excavation of a “wedge” from the working side, to increase the width and depth of the drains by 0.50m. This stage followed the route taken during the vegetation strip, and was expected to progress at a rate of 30m – 50m per day.

Correspondingly the archaeological monitoring was initially split into two phases. The vegetation strip was observed from the opposite side of the drain being cut back, with a view to identifying any potentially significant archaeological horizons, features, deposits or fossilised timbers.

For monitoring and excavation purposes, the length of Sewer Drain itself was split into nine ‘legs’ or sections of the drain. The first leg was at the western end, and the last was the northernmost area where it joined Pauper’s Drain. Spoil heaps from the excavations were monitored in order to recover artefacts. Much of the soil in the Leg 4 section had not settled

or allowed the growth of grass, indicating that work had been carried out in the last few years in this area.

Schematic sections of the monitored areas were drawn, to show the depth and thickness of the peat deposits along the length of the drain. These are reproduced in figure 3: in order to show the deposit depths in visible detail while compressing the sections sufficiently to display on the page, these drawings are at different horizontal and vertical scales. Written records of the deposits observed were made on the section drawings. A digital photographic record of the works was maintained – selections from this are reproduced in Appendix 1 – and a site diary was also kept.

Work commenced on 19<sup>th</sup> January 2015 and was completed on 9<sup>th</sup> June, with monitoring taking place on ten separate occasions by Michael Rowe.

## **7.0 Results (Figure 3, Plates 2-8)**

The monitoring scheme identified no specific heritage assets, excluding the ubiquitous ancient peat deposits which are common to the Isle of Axholme.

The programme of works generated a small archive consisting mostly of photographs. A total of 45 photographs were taken:

- 37 images of general landscapes and site workings
- 3 images of specific peat layers
- 5 images of preserved tree roots

A total of 4 context numbers were issued.

The lowest level encountered was a layer of natural sand (001), which was for the most part covered by a clearly distinct layer of peat (002), ranging between 0.20m and 0.60m thick. This was covered by silty sand layer (003). The peat layer and the underlying natural sand correspond broadly to similar deposits observed in the eastern end of the previous Paupers Drain works; in the earlier phase, the silty sand overlying the peat was identified as a finely laminated warping deposit, and it is possible that this is also the case with layer (003), in keeping with the local drift geology recorded by the British Geological Survey (bgs.ac.uk). The whole of the bank was overlain by topsoil (004): in some areas the bank profiling works did not remove the topsoil to full depth over portions of the profile, while in Leg 4 of the works, the base of the topsoil was left *in situ* across the whole of the profile, so that none of the underlying stratigraphy could be seen (see Plate 4). A soil profile section was drawn for each leg of the monitoring to demonstrate the extent of the peat (Figure 3).

Nothing of archaeological interest was observed during the programme, and no timbers suitable for dendrochronological dating were identified during this work.

## **8.0 Discussion and Conclusion**

The possibility that the drainage improvement works would have some impact on archaeologically sensitive areas was high, and this potential had been identified prior to the monitoring programme. That said, such an impact was not evidenced.

Throughout the length of Sewer Drain, a large number of small wood fragments and tree roots were observed, commensurate with observations made during the earlier phase of works on the east end of Paupers Drain. As with the timber and tree root balls observed in

the previous phase of the works, the roots were of a fresh, light colour, suggesting that they were recent growth within the peat layer (plates 4 and 5). No 'bog oaks' of the kind recorded by other works were seen during either phase. Some of the wood fragments were within the peat and may thus have been contemporary with its accumulation, although it seemed more likely that the majority of this material derived from trees growing in the peat layer after its deposition, which in this area took place from the late Bronze Age onwards. An environmental sample taken from the same peat deposit during the earlier phase of works identified the remains of pine trees, including wood, pine cones and seeds; the report noted that Scots pine was native throughout Britain in early prehistory, potentially suggesting that the remains may have been contemporary with or not long post-dated the peat layer. Pine was reintroduced in many areas in the historic period (O'Brien, 2014); no coniferous plantations are marked on historic mapping, but the identification of the overlying layer as warpland suggests that the tree cover must, at least, have pre-dated these maps.

## 9.0 Effectiveness of Methodology

The adopted methodology was appropriate in order to identify, assess and record the horizons and features exposed.

## 10.0 Acknowledgements

Pre-Construct Archaeological Services Ltd. would like to thank the Isle of Axholme Internal Drainage Board for this commission.

## 11.0 Bibliography

British Geological Survey (BGS) consulted online at

<http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>.

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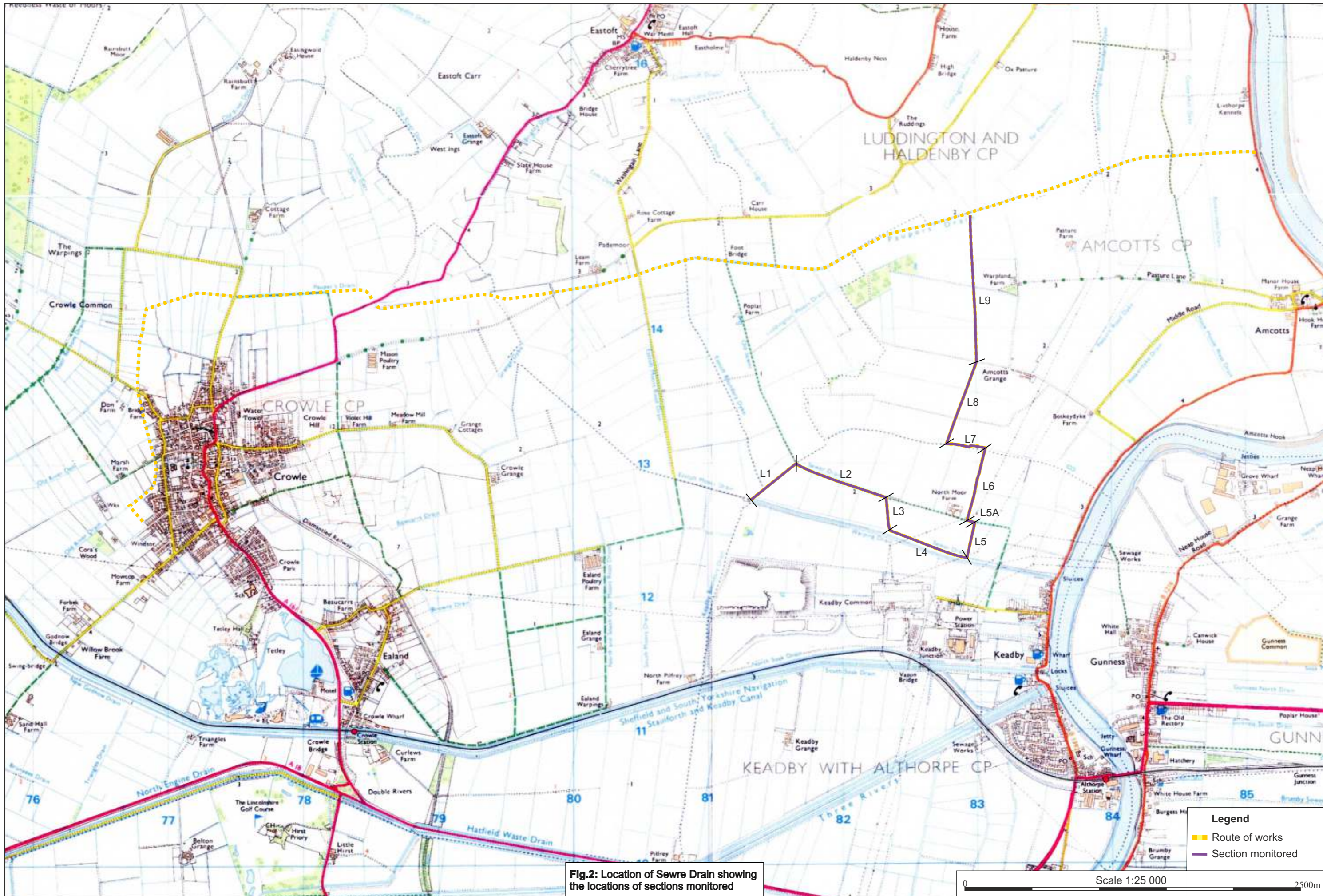
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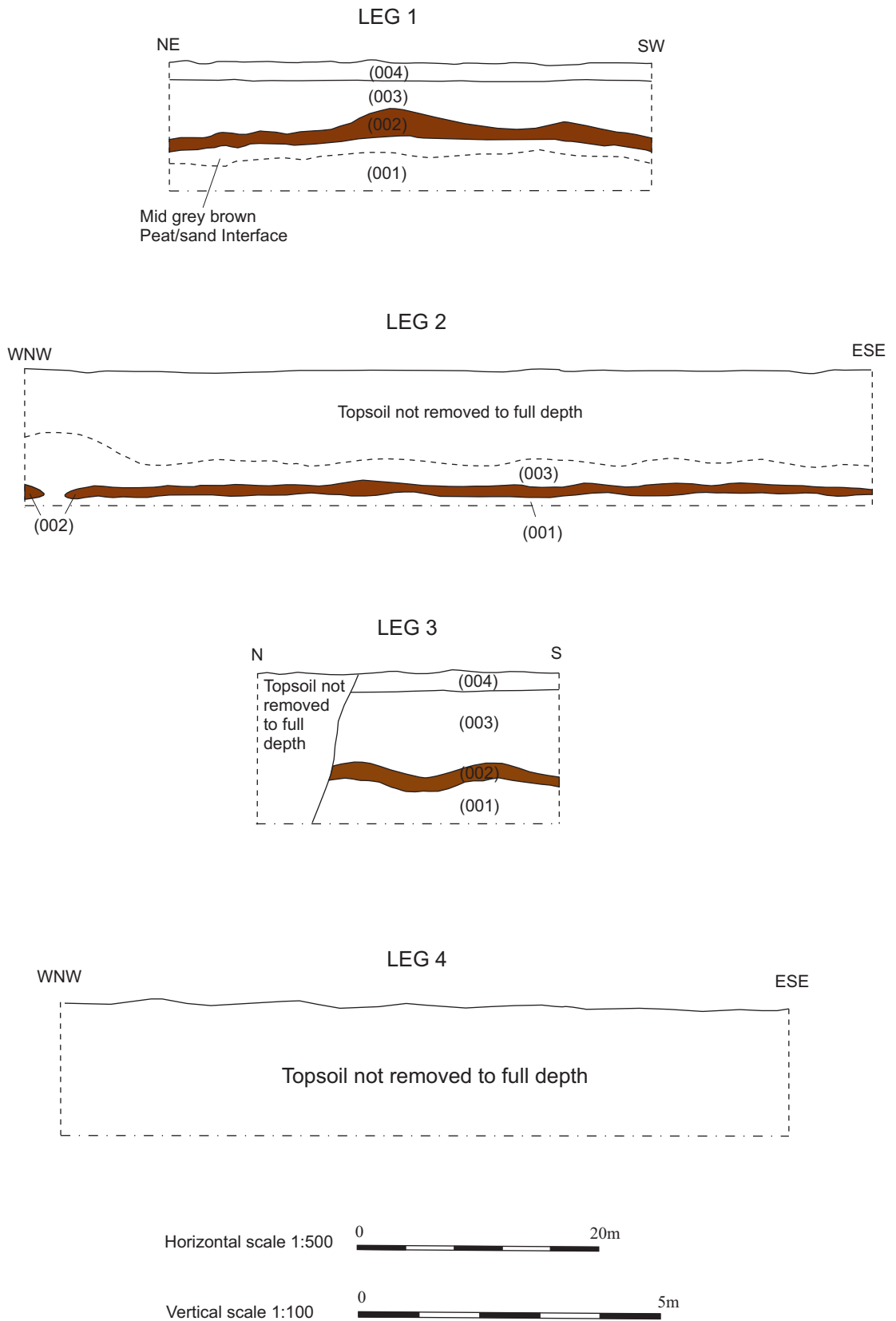
## **12.0 Site Archive**

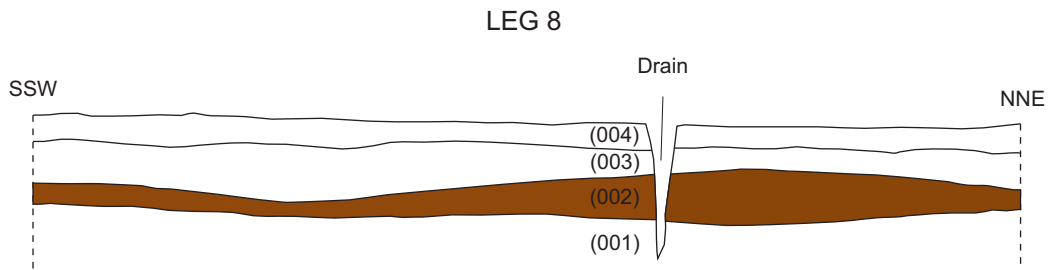
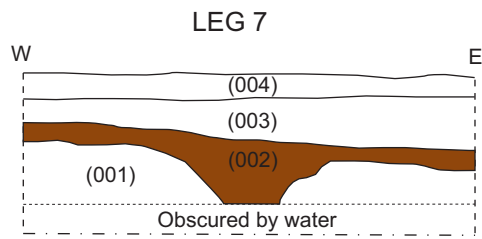
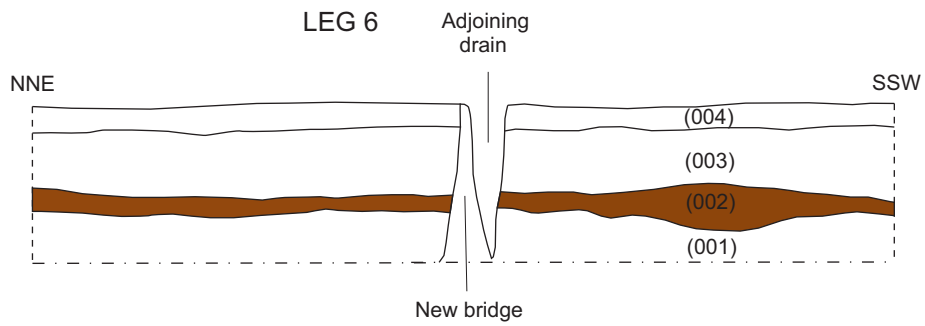
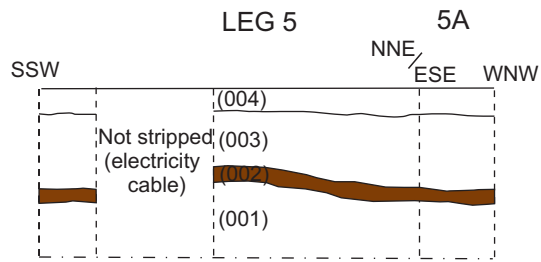
The documentary and physical archive for this scheme is currently in the possession of Pre-Construct Archaeological Services Ltd. This will be deposited at North Lincolnshire Museum (Scunthorpe) within six months of the completion of this report under the archive accession reference CWDI, jointly with the archive generated by the first part of the drainage scheme.



**Fig.2:** Location of Sewre Drain showing the locations of sections monitored

**Figure 3: Sewer Drain Improvement Scheme - schematic sections of peat deposits**





Horizontal scale 1:500



Vertical scale 1:100



## Appendix 1: Colour Plates

**Plate 1 (right):** The Sewer Drain before the commencement of works, looking south from its junction with the Paupers Drain.



**Plate 2 (left):** Stripping of L1 revealed an undulating layer of peat (002). This was observed throughout the monitoring.

**Plate 3 (right):** Peat layer (002) exposed in the bank profile, overlain by possible warping deposit (003).



**Plate 4:** The peat deposit at a particularly deep point in L7, looking NW. The embedded tree roots can be seen protruding from the peat, while more roots and the associated timber have been removed and are on the spoil heap behind.

**Plate 5:** L1 unearthed around fifteen tree roots, which appeared to be buried in the peat (002). The light colour of the wood suggests that they are of recent date.



**Plate 6:** The bank profiling in L4 did not remove the full depth of topsoil, preventing any meaningful recording.

**Plate 7:** The amount of material removed is visible in this working shot of L5.



**Plate 8:** The peat layer (002) as seen in L7. It is not continuous in terms of colour, content or thickness.

## Appendix 2: Context Summary

Context No.	Type	Description
001	Layer	Orange yellow, yellowish grey or brownish sand.
002	Layer	Dark brown greyish brown humic layer of peat. Tree roots appear buried by the peat. Thickness 0.20m – 0.60m.
003	Layer	Orange brown silty sand.
004	Layer	Topsoil.

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Details	Location	Creators	Archive	Publications
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