LINDSEY ARCHAEOLOGICAL SERVICES

Ingoldmells Sewage Treatment Works Extension

Site Codes: ITW 99 and ITW 00
LCNCC Museum Accn. Nos. 126.99 and 2000.293
NGR: TF 5599 6762

Archaeological Watching Brief, Salvage Excavation and Evaluation

Report for Anglian Water Services Ltd

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Summary

Archaeological work undertaken during the two phases of extension of the Ingoldmells Sewage Treatment Works in 1999 and 2000 revealed a hearth area, briquetage, pottery, charcoal and animal bone from a previously unknown late Iron Age salt-processing site. Radiocarbon dates were obtained for a thin underlying peat layer, dated to late Bronze Age/early Iron Age, and from a wooden stake fragment within the briquetage deposit; the date for the briquetage deposit conflicts with the later date obtained from the typological parallels for the pottery.

Introduction

Lindsey Archaeological Services (LAS) was commissioned by Anglian Water Services Ltd in May 1999 to monitor groundworks during the extension of Ingoldmells Sewage Treatment Works.

The watching brief during the first phase of the extension started in June 1999 and immediately identified a restricted area of archaeological remains. These were investigated and recorded as they were revealed, with particularly dense remains becoming the subject of a rapid salvage excavation on 5th August 1999. Monitoring continued throughout the remainder of the first phase but no further significant remains were disturbed. Nineteen monitoring visits were made by Geoff Tann and Wendy Booth between 23rd June 1999 and 21st January 2000.

In preparation for a second phase of the extension in Spring 2000, LAS were again commissioned to undertake a scheme of archaeological investigation. A small scale archaeological evaluation was directed for LAS by Claire Angus with assistance from Wendy Booth between 5th and 7th April 2000. This produced virtually no trace of the archaeological site found in 1999, and was unable to add further information. An intermittent watching brief was maintained by Claire Angus, Jeremy Mordue and Geoff Tann during the remaining groundworks, resulting in observations of peat deposits but no archaeological features. 11 monitoring visits were made between 3rd April and 7th July 2000.

The work was carried out in accordance with the requirements set out in the *Lincolnshire Archaeological Handbook* published by the Archaeology Section, Lincolnshire County Council (1998), and procedures agreed at two meetings of LAS, the County Archaeological Officer and Anglian Water Services Ltd.

Site Location and Description

Ingoldmells Sewage Treatment Works is located to the east of Bolton's Lane in Ingoldmells, 0.8km south of Ingoldmells, and about 2.5km north of Skegness (Figs. 1 and 2). The development site was agricultural land prior to construction, immediately to the east of the previously existing sewage treatment works compound; the first phase lay to the north, and the second phase to the south of the site (Fig. 3). The farmland was virtually level, and at about 8m OD.

Archaeological Background

The site lies within the Lincolnshire Marsh, 1.5km west of the present coastline. The coastline in this area has changed frequently during the past 10,000 years as a result of marine transgressions and regressions, resulting in former land surfaces becoming covered by deposits of silt. In addition, a marine inlet has been deduced within a zone NE of Burgh-le-Marsh (Simmons 1980).

Salt manufacture is known to have been carried out on the edge of creeks in this area, and the remains of numerous salterns dating to the Iron Age and Roman periods have been recorded. Eleven salterns, at depths up to 2.5m below present ground surface, were identified during archaeological monitoring of an Anglian Water Services Ltd pipeline excavated between Burgh-le-Marsh and the Ingoldmells Treatment Works in 1993 (Tann 1995). The trench for that pipeline crossed the western edge of the development site, but no archaeological remains were seen. The project found an assemblage of briquetage (ceramic material associated with salt-making sites) 600m NW of the sewage treatment works. Other salterns have been identified 600m west of the site (SMR 41818), 800m NE, 600m SE (SMR 41646) and 800m SE (SMR 41647).

Archaeological Monitoring: Extension Phase 1

Methods

A meeting was held between Anglian Water Services Ltd and LAS on the development site prior to the start of groundworks. The initial operations were to be a topsoil strip of the site, using a 360º machine and a bulldozer, followed by lime stabilisation (a technique whereby a lime cement powder is incorporated into the upper part of the underlying surface by rotovation; the powder consolidates the working surface, reducing vehicle ruts and improving working conditions), and spraying of a film of a tar-based compound onto the resultant surface to create an impermeable working surface.

It was unclear whether these preparatory operations would affect any archaeological remains; there is potential for medieval and post-medieval sites at existing ground level, but earlier remains are below varying depths of silt cover. The results of nine boreholes sunk in August 1998 across this part of the site showed only Borehole 1 encountered ' traces of red brick, black ash and clinker', apparently at a depth of between 1.30m - 1.75m, but this description could have represented a modern land drain run (Fig. 4).

To minimise the number of monitoring visits over a protracted period when the machine actions would not produce good conditions for identifying archaeological features, two exploratory trenches were excavated within the extension area to a depth slightly lower than the rotovation would affect. Context numbers were assigned to identifiable deposits by LAS for recording purposes; these are used in bold in the report text, and appear on the accompanying illustrations. A context summary list is provided (Appendix 1).

The exploratory trenches produced no trace of archaeological deposits or peat, and very infrequent monitoring visits were made during the remaining preparatory processes. Four small sherds from a single medieval pottery vessel were retrieved from the topsoil layer **1** (Appendix 2).

After removal of the topsoil, a level surface was created by slight adaptation of the natural horizon (Pl. 1). Following consolidation and levelling of the stripped surface, a drilling rig was used to create the concrete piles needed to support tanks for the three cones and the other structures. It was thought unlikely that the drilling would produce any useful indicators of archaeological remains, but the first piles were drilled using a slightly different working method in order that some of the material derived from the bore could be watched safely. The process involved the addition of water, and virtually all the material produced was in the form of a slurry. Darker material, interpreted as evidence of peat, was seen, apparently together with one fragment of ceramic material which was suspected to be briquetage. The results were of little help, as the peat and briquetage were unstratified, but the finds alerted all involved to the probability of archaeological remains below. This first pile was in the centre of the SE Primary Settlement Tank, which coincided with the only identified concentration of archaeological material on either of the extension phase areas!

The archaeological watching brief began in earnest with the machine excavation of the inverted cone for the SE Primary Settlement Tank (Fig. 3). A 360º machine with a toothed bucket was used to remove silt from between the concrete piles, starting in the centre and gradually working to the shallower edges.

SE Primary Settlement Tank

The 0.35m thick lime-stabilised and rotovated silt layer **2a** had derived from grey brown silt layer **2b**, of which only 0.05m remained undisturbed. Beneath this upper marine flood-derived sediment was **3**, a 0.1m thick silt deposit with orange iron-panned laminations. This sealed **4**, a 0.2m thick layer of dark brown/grey silt, also derived from a period of marine inundations. Removal of this material exposed a 0.35m thick deposit with lenses of blue/grey and dark brown silt **5**, containing a spread of briquetage fragments. The silt and briquetage covered a 0.08m thick layer of peat **6** with its surface at 0.7m OD (Fig. 5; Pls. 2-4).

The sequence in which the deep centre and the sloping sides of the cone were excavated for the Primary Settlement Tank made it difficult to understand the extent and nature of the spread of fired

soil, charcoal and briquetage, but it was later recognised to have a virtually flat upper surface and a base that undulated by up to 0.2m (Pl. 5). The deposit incorporated numerous 'hand-bricks' (crude small pedestals and props for supporting evaporation trays) but fewer fragments of the thin-walled trays (Appendix 3). 7.2kg of briquetage was collected for processing from the SE Settlement Tank area (in addition to material in the environmental samples).

Pottery Scatter

Towards the base of the slope on the northern side of the Primary Settlement Tank, two sherds of pottery were found in deposit **5**, apparently in a shallow and narrow curvilinear feature **14**, punctured by one of the concrete piles (Fig. 6). As machining progressed around the cone, a concentration of sherds, including sizeable fragments, was seen about 4m further round, on the NE side, and the contractors were asked to pause their operations while its significance was assessed (Pl. 6). A rapid examination suggested that the sherds, together with briquetage 'hand-bricks', ash, and charcoal, were within the fill of a small gully, the same feature as **14**, with peat flanking its sides and lining its base.

Anglian Water Services Ltd and their contractors agreed to work at a different position on the cone in order to allow time for a rapid salvage excavation of the stratified sherds. This excavation was undertaken by Geoff Tann, assisted by Rob Schofield, while work continued elsewhere on the same cone. There was limited available time to complete this recording as concreting of the slope was already arranged and imminent. The excavation was also affected by the need to maintain a constant slope of undisturbed ground for concreting the cone base, despite archaeological deposits extending below the slope.

Initial cleaning of the ground beside the exposed pottery produced some finds which had been disturbed by machine action. These finds were recorded as context **10** in order to allow separation of unstratified material from artefacts from the archaeological excavation. The unstratified material produced a small curved piece of calcareous sandstone, derived from the Lincolnshire Wolds, which appears to be the fossil cast of a Cretaceous ammonite (Dr. Alan Vince, pers. comm). This is anomalous to the silt deposits, but it is impossible to tell whether it was deposited naturally by tidal action, or was imported by humans exploiting the saltmarsh. No other stones were seen, and it does not seem to have served a function.

As archaeological cleaning and investigation of the surviving deposits progressed in the vicinity of the pottery, it was found that a complete sequence of deposits adhering to the side of a concrete pile linked the pottery with the lime-consolidated stripped ground surface, and this enabled the stratigraphic context of the pottery to be confirmed (Figs. 7 and 8; Pl. 7). The lime-consolidated layer was up to 0.35m thick, with its upper surface at 1.7m OD. Beneath this distinct layer was 0.38m of brown silt **26** merging into a greyer hue at the base of the layer, representing the undisturbed remainder of the uppermost marine silt layer (and sub-divided elsewhere into **2b**, **3**, and **4**).

The combined 0.73m total thickness of silt covered **17**, a brown clay layer up to 0.2m thick with flecks of iron-panning (Pls. 7-10). Beneath it, at about 1.0m OD, was **19**, a dark grey/brown silt layer with briquetage inclusions. This layer sealed **21** (a light grey/blue silt) which filled a depression flanked by dense deposits of briquetage, fired soil, charcoal and pottery, **11** and **15**. The briquetage covered a thin peat layer **25** at about 0.7m OD, with a 0.05m thick blue/grey silt **22** below it which may have been a prehistoric topsoil layer. The lowest visible deposit was brown silt **23**, apparently an earlier marine flood deposit.

The pottery was at first interpreted as the fill of a shallow gully, but James Rackham has since advised that it almost certainly represents a naturally produced channel in which peat had formed some considerable time before archaeological activity took place. The marked difference in radiocarbon date between the fill lining the feature and the briquetage deposit above confirms his interpretation (Appendix 4).

In localised areas, the sequence of briquetage-producing layers and silts was more confused, and it seems certain than piles of saltern waste and silt became mixed by tidal action as the site was progressively inundated after its abandonment.

Hearth

A possible hearth area was identified on the SW side of the SE Primary Settlement Tank (Fig. 3). This was associated with some briquetage, but the ground appeared to have been discoloured by heat and was interpreted as a working area. The exposed area was about 2.5m diameter (Pl. 11). It is conceivable that the heat discoloration was the result of the clamp effect of a large heap of hot waste briquetage and ash from a hearth feature elsewhere beyond the monitored site.

Interpretation of all the archaeological remains was complicated by the appearance of the site during the watching brief. The working surface had been deliberately levelled, but this reflected the post-medieval field surface. The field was the product of thick deposits of post-Roman marine silt deposition, which had completely obliterated the underlying prehistoric ground surface and landscape. The sloping surface of the cone excavation created a further confusion, exacerbated by the deep central well.

NW Settlement Tank and **SW Settlement Tank** (Figs. 3 and 9; Pls. 12 and 13)

A trial hole was excavated near the centre of each of these cones. Although a similar sequence of silt deposits was seen as in the SE Primary Settlement Tank, no peat or briquetage was present (Fig. 8). Monitoring of the excavation of these tanks was stopped, and the contractors later reported that no peat was seen during the remaining works.

Pump House

The monitored groundworks consisted of the excavation of a 0.5m wide x 1.6m deep trench around an area 10.5m x 12.5m, with sheet steel piles being immediately inserted around the outside of this trench (Pl. 14). The trench quickly became waterlogged, partly because of a post-medieval drain which was truncated by the groundworks. No archaeological finds or features were seen in the trench, or in a 1m wide trench dug within the enclosed area.

Excavation of the remainder of the enclosed area revealed the same sequence of naturally deposited silts as had been recorded elsewhere on the site (Fig. 9; Pl. 15). A single briquetage 'hand-brick' fragment **50** was recovered at a depth of 0.65m below the surface, 5m from the NW side of the excavated area and 4m from the SW side of the area. There was no associated peat layer or burnt deposits, and the fragment appeared to be an isolated find.

Locating the extent of the briquetage spread was time-consuming, as no trace was present in either of the other two Primary Settlement Tanks excavated. This indicated that the feature stopped abruptly, rather than gradually merging across a broad area. The sloping sides of the excavated inverted cones meant that towards the edge of each tank archaeological deposits were below the excavated depth. Deeper excavations between the tanks were inspected, including the Distribution Chamber, and the Outlet pipeline linking the SE Primary Settlement Tank with the Pump House, but most of these were devoid of briquetage or peat. Similarly, there was no trace in the pipe trench connecting the SW Primary Settlement Tank with the Sludge Pumping Station, and the trench between the Distribution Chamber and the Sludge Pumping station was excavated and backfilled between monitoring visits. As each linking trench was excavated, it was realised just how restricted the spread was, at least in the directions where groundworks were being conducted.

Eventually the edge of the material was recorded in a narrow trench section connecting the SE Primary Settlement Tank with the Sludge Pumping Station (Pls. 16 and 17). This indicated the dense briquetage to cover an area at least 900m^2, but with any additional extent limited to the NE, east and SE of the SE Primary Settlement Tank (Fig. 3).

Extension Phase 2

During archaeological monitoring of the first extension phase, geotechnical boreholes were sunk in the area of the second extension phase, immediately to the south (Fig. 3). Geotechnical boreholes showed that boulder-clay was present 11.5m to 12.5m below the cultivated field surface; although flecks of peat were seen, no peat deposits were identified.

As a result of the discovery of the dense layer of briquetage, middle Iron Age pottery, and an underlying layer of peat during the groundworks for the first extension phase, an archaeological evaluation was required by Lincolnshire County Council Archaeology Section prior to construction of the second extension area, to the south. This work consisted of the excavation of three linear evaluation trenches in the area of the proposed aeration lanes, and a 10m x 10m evaluatory area at the centre of Final Settlement Tank 1 (Fig. 3). In advance of this investigation, LAS prepared a list of questions which it hoped the excavation would resolve. These were:

- What is the extent of the archaeological remains?
- Are the remains related to a creek?
- Are settlement features present?
- Are evaporation features, such as fire pits, present?
- Can good quality environmental information be recovered? (Tann 2000).

In practice, the archaeological investigations were less intensive than expected. With the agreement of the County Archaeological Officer, the evaluatory area was reduced in extent when no peat was encountered in its western half, and Evaluation Trench 2 was not excavated. An intermittent archaeological watching brief was maintained during excavation of the Final Settlement Tanks.

The Evaluation Trenches

Trenches 1 and 3 were machine excavated under archaeological supervision, using a JCB with a 0.9m wide toothless bucket. Construction activity, ground conditions and health and safety constraints restricted the depths of the trenches to between 1m and 1.5m.

The area had been levelled prior to the excavation of the evaluation trenches and the upper 0.3m consolidated. The consolidated layer **100** consisted of a mixed mid brown clayey silt which had been treated with lime and coated with a layer of tar, as in Extension Phase 1. This material was removed from the 10m by 10m area using a 360 back-acting machine. The subsequent deposits were excavated from the western half of the excavation area under archaeological supervision using a JCB with a 0.9m wide toothless bucket. A 1m wide north-south trench was excavated along the northern end of the trench and a 1m wide trench was removed to a depth of 1.2m along the eastern edge of the trench.

The trenches were cleaned by hand. A full written and photographic record of the trenches was made. Sections were drawn at a scale of 1:20 and plans were produced based on plans provided by the

client. Context numbers were assigned by LAS to all deposits for recording purposes, and these are referred to in the text and illustrations, and a summary list is provided (Appendix 1).

Results

Trench 1

Trench 1 was located at the eastern end of the development site, in the centre of the proposed Aeration Lane 1; it extended northwards to the site of the Blower Building. This north-south orientated trench measured about 45m in length and 2m wide.

The consolidated upper silt layer **100** overlay **101**, a 0.28m thick layer of blue/grey clay with brown mottling (Fig. 10; Pl. 18). Below this was a 0.04m thick layer of blue clay, **102**, covering **103**, a 0.16m thick layer of laminated mid brown silt. Layer **104**, a mottled orange/brown silt 0.28m thick, lay below this. Removal of this revealed **109**, a blue/grey clay with orange/brown mottling, which continued beyond the base of the trench.

A 2.5m wide west-east aligned ditch **105** was revealed near the northern end of the trench (Pl. 19). This had steep sides and a broad rounded base about 1.1m below the stripped surface (Fig. 10). It appeared to have been in use until relatively recently; it was sealed by the lime consolidated layer which had mixed the uppermost deposits and would have removed evidence of a feature cut from the post-medieval ground surface. Three fills were contained within this ditch. **106**, the primary fill, consisted of a mixed blue/grey and orange/brown silty clay, 0.2m deep. Above this was **107**, a mid orange/brown clayey silt, 0.45m thick. This intermediate fill had derived either from a marine flooding episode, or from marine silts washed from cultivated ground. The surviving upper fill **108** was a dark grey/brown clayey silt, 0.15m thick, possibly representing post-medieval or modern buried topsoil.

Trench 2

No archaeological evaluatory trench was excavated within Aeration Lane 2.

Trench 3

Trench 3 was the most westerly of the evaluation trenches, and was located in the centre of Aeration Lane 3. This north-south trench measured about 30m in length, 2m wide and was excavated to a depth of about 1.5m.

The consolidation layer **300** was 0.3m thick (Fig. 10). Immediately below this was **301**, a 0.25m thick layer of brown silty clay with blue/grey mottling (Pl. 20). A 0.05m thick band of blue clay, **302**, lay below this, probably representing the ground surface with peat seen elsewhere. This overlay **303**, a laminated mid brown silt, approximately 0.5m thick. Below this was another 0.5m thick layer of mottled orange/brown silt **304**. Layer **305**, a blue/grey clay with orange/brown mottling was revealed below this, extending to the base of the trench. A small isolated deposit of peat **306** was recorded at

the northern end of the trench, between layers **304** and **305**; it was 0.02m thick and extended for 0.8m along the trench.

Trench 4 (Evaluatory 10m x 10m Area)

Trench 4 measured 10m by 10m and was located in the centre of the intended position of Final Settlement Tank 1.

The consolidated brown silt layer **400** overlay **401**, a 0.45m thick layer of brown silt with blue/grey mottling (Fig. 11; Pl. 21). Below this was a 0.05m thick band of blue clay **402**, which may represent the horizon on which peat was seen elsewhere on the site. Beneath this layer was **403**, a laminated brown silt, and a mottled orange/brown silt **404**. A blue/grey clay with orange/brown mottling, **408**, was revealed at the base of the excavated trench. Context numbers **405**, **406** and **407** were assigned for photographic purposes to three faces of the trench that were cleaned.

The Watching Brief

Despite the unproductive results of the exploratory excavations, a narrow band of peat and briquetage was discovered when the contractors' excavations commenced. A watching brief was undertaken during the excavation of the cones for the Final Settlement Tanks.

Three cones were excavated, each measuring 25m in diameter. These were machined to shape, sloping at approximately 30º from 0.1m at the edge, towards a depth of 1.3m at the centre. The deposits recorded here resembled those revealed during the excavation of Trenches 1, 3 and 4.

Final Settlement Tank 1

The broader of the LAS exploratory trenches, Trench 4, had been positioned within the area of this Final Settlement Tank, but had encountered no peat deposits. During excavation of the cone for this tank, a band of peat (between 0.01m and 0.07m thick) was revealed close to the centre of the cone, at 0.7m OD, 1m below the stripped surface (Fig. 12; Pl. 22). The peat was densest to the NE, becoming mostly brown silty clay with peat inclusions towards the west and south; a few fragments of briquetage **503** were collected from the exposure, but these appeared to have been washed across the peat surface and were not associated with any archaeological feature.

Although it was frustrating that the LAS controlled excavation had missed the peat deposit within this tank, it illustrated the restricted nature of the surviving peat, and it is unlikely that there was any natural or archaeological feature defining the peat limits.

Final Settlement Tank 2 (Pl. 23)

No peat layer was seen during excavation for the NW Final Settlement Tank. Below the uppermost 0.6m thick brown silt layer was a 0.2m-0.3m thick blue/grey silty clay layer, which merged through a 0.6m thick brown/grey layer to an underlying grey/blue silt 1.18m below the stripped surface, at the

base of the groundworks (Fig. 12). This lower silt contained rare flecks of peat. The absence of a peat layer suggests that this area may have remained within a salt-water regime with frequent flooding preventing peat growth. It is possible that peat may have been eroded from this area by rising sea level before further silt deposition occurred.

Final Settlement Tank 3

As in Final Settlement Tank 1, excavation of the cone for the SW Final Settlement Tank revealed a 0.05m - 0.1m thick peat layer at about 0.85m - 0.65m OD, 0.83m - 1.05m below the stripped surface (Fig. 12). The peat lay above a 0.2m thick blue/grey silt layer, with a thick brown silt layer below. The peat had formed in slight undulations on the horizon below, and these may have protected it from erosion. A flint scraper **501** (probably of Neolithic date) was found on a machine-scraped area; it was unclear where this artefact had derived from, and there was reason to suspect that it had been redeposited.

Distribution Chamber

During excavation for the Distribution Chamber, a 0.08m thick layer of peat, and fragments of fired clay or briquetage **502** were seen on the surface of the peat, and one briquetage 'hand-brick' **500** was collected (Pls. 24 and 25). These were in the same stratigraphic sequence and at the same depth as in Final Settlement Tanks 1 and 3, suggesting that a thin band of peat extends over a peninsula of slightly higher ground immediately east of Final Settlement Tank 2 (Fig. 11).

Existing Compound

During the watching brief, trenches were excavated by the contractors within the area of previous sewage treatment facilities to the west of the extension area. One of these trenches revealed a 0.05m thick peat band 1m below the concrete site access road (Pl. 26). No briquetage was seen.

Discussion

Saltern sites can be expected wherever deep excavations occur in this part of the Lincolnshire Marsh. The identification of new sites allows the distribution to be reassessed, and an attempt to be made to explain the locations and predict potential sites for others.

An unusual characteristic of this saltern site was the very restricted area in which archaeological remains were seen. During monitoring of the Burgh-le-Marsh to Ingoldmells Rising Main in 1993, each time that the trench encountered a saltern site, copious amounts of briquetage were present (Tann 1995). On this project, the opportunity to look at a much broader area than that pipe trench failed to expose the density or the extent of material encountered on the other sites. Within the SE Settlement Tank, further briquetage was extending under the upper silt layer where the cone sides sloped upwards. The inaccessible but known deposit is about 0.35m thick, which is most unlikely to represent the total briquetage from this saltern. The various groundworks of both extension phases probably only exposed a small part of the periphery of this site, and a much denser concentration of

briquetage may be present to the west. Within the sewage treatment works, this area is at present protected by the topsoil bund. Before works began, no trace of briquetage was evident in the boundary ditch sides, but scraping of the sides in future might expose the bright red material. Beyond the sewage treatment works are arable fields, but any archaeological remains here are assumed to be buried below almost 1m of later deposits and protected from ploughing.

The monitoring of groundworks to the north, south and west of the briquetage spread identified no recognisable trace of a natural creek or pool around which the saltern had been based, or any material to suggest a coastline (Fig. 13). It could be that the recorded briquetage was on relatively level ground on the west side of a creek running roughly west-east, or that salt collection was taking place on essentially level salt marsh without the assistance of a naturally channelled salt water supply. Previous studies have deduced from located saltern sites that a NE-SW aligned tongue of the North Sea occupied land east and NE of Burgh-le-Marsh until after the Roman period (Simmons 1980). The Ingoldmells Sewage Treatment Works saltern appears to have been near the NE end of this inlet, probably served by a coastline to the north, although existing information is not precise enough to determine its actual relative position.

The preponderance of briquetage pedestals/handbricks in the collected assemblage from this site indicates that brine evaporation was certainly occurring here. Dr Carol Allen suggests that the small proportion of tray fragments could be an indicator that trays of salt were transported off-site (Appendix 3). The absence of quantities of thin-walled trays could be partly an accidental retrieval bias under the salvage conditions of the excavation and watching brief. The pedestals are readily seen and fairly invulnerable because of their colour, size and density. Processing of environmental samples from contexts **5**, **11**, **15**, **17**, **18** and **21** (from where artefacts had not been removed) produced fragments of thin-walled briquetage. This material was not available when Dr Allen's report was written, and is not included. Only one 'hand-brick' was found in the residues, and the 'pedestal' quantities may include structural briquetage as well as supports. 35g of thin-walled briquetage was present in the nine litre sample from **15**, compared with 95g of indeterminate briquetage from the same sample; no pedestal fragments were identified. In the sample from **5**, 205g of pedestal fragments contrasted with 199g of thin-walled vessel fragments, and in **11** the sample produced more thin-walled briquetage than pedestal fragments (Appendix 4). This gives a more accurate picture of the amount of smashed tray fragments in the waste deposit. In 1993, 25% of the briquetage recovered from a site 600m to the NW was from containers, and 33% from supports (BLM 93 38B; Tann 1995, Appendix 4).

Five charred barley grains were recovered from a 4 litre environmental sample of **18**, and 11g of animal bone was collected from the samples. The animal bone fragments are probably from domestic animals (Appendix 4). The roundwood fragment from **15**, although very degraded, was suspected to have been part of a stake, representing a further sign of human activity on the site. The impression gained is of a brine evaporation site with low levels of occupation activity alongside, as one would

expect from a seasonal site on salt-marsh. The pottery was undecorated, and was probably used by a low-status community (Appendix 3).

Ascribing a secure date to the saltern activity has proved more difficult than had been anticipated. The 75 sherds of pottery included sizeable pieces, rim sherds and bases, and elements of this assemblage have been paralleled with vessels from other Ingoldmells sites, and excavated sites at Dragonby (100km NW) and Old Sleaford (64km SW). The Dragonby site was excavated 1964-73, and that at Old Sleaford between 1960-66, with further work in the 1980s. On the basis of the recorded stratigraphy at both of those latter sites, the Ingoldmells pottery is confidently dated to the Late Iron Age (first century BC). The *Report on the Prehistoric Pottery and Briquetage* notes that unlike the similar pottery forms from those sites, the Ingoldmells pottery is undecorated and the vessel surfaces have only been lightly brushed and finger smoothed (Appendix 3). Dr. Allen notes that most of the Ingoldmells pottery contains shell as temper, common in the late Iron Age in eastern England, and suggests that this could be derived from underlying chalk deposits or from contemporary marine shells. The borehole logs for the site show that redeposited chalk is present at depths of over 10m below ground level (Howland 1998). Assuming the handmade pottery to have originated on or near to the site, shells from the beach represent the most probable temper source. In this area, beach sand or shells could have been the most accessible non-vegetable temper throughout the period of the marine inlet (lasting over 400 years).

A conflicting date for **15**, a deposit containing much briquetage and 56 sherds of pottery from 11 vessels, was obtained from submitting a sample of roundwood found within it for radiocarbon dating at a Florida laboratory (Appendix 4). The roundwood was very degraded, but was chosen as it looked to be part of a stake, and was assumed to be contemporary with or later than the deposit. Other fragments of wood in the sample might have derived from the peat layer below, and were not chosen. The calibrated radiocarbon date (at 95% probability) of Cal BC 760-740 & Cal BC 560-200 falls within the early/middle Iron Age, second to seventh century BC. Nearby on the site, immediately below a very similar archaeological deposit, was a peat layer **6**, radiocarbon dated to Cal BC 900-750 & Cal BC 700-540.

The two dated samples appear to record that a marine environment became a freshwater zone after a fall in sea level in the early first millennium BC; this accords with data from the fens. Peat slowly developed, and later dried out with the underlying ground. The saltern activity relates to a period immediately before the site was next inundated by the sea. This phase of transgression has elsewhere been placed in the middle/late first millennium BC (as supported by the radiocarbon date). Although there must be a possibility that the environmental sample taken from **15** was contaminated with earlier natural or archaeological remains, the possibility is not believed to be great. Similarly, the stake could have derived from an older tree, but for such a piece to have survived in useable condition between the middle and late Iron Age is unlikely.

The anomalous early radiocarbon date from **15** needs to be treated with caution, but the OD heights for relevant deposits are thought to support a middle Iron Age date (James Rackham, pers. comm.). If the radiocarbon dates and the pottery dating are all correct, one explanation for the juxtaposition of the different deposits could be that tidal scouring occurred between formation of the peat deposit and occupation. Such scouring could have site removed an unknown thickness of intervening deposits. The dated stake fragment produced crystals after it was dried, and this may be an indication that it had been drifting in salt water for some time.

Conclusion

The archaeological monitoring of this development has produced a useful corpus of varied information relating to sea level change, prehistoric environment, local salt collection and pottery production. The site itself is a closely recorded saltern in a local spread of uninvestigated similar sites, and was one of very few in the vicinity to be seen almost in plan. All this information has been gained for a previously unknown site as a result of the conservation policies of Anglian Water Services Ltd Services and Lincolnshire County Council, and it shows the value of these policies. The Ingoldmells site will now be a comparative reference for future work in this area, and with its two radiocarbon dates will be of national as well as regional interest.

Grasping the opportunity to obtain the radiocarbon dates, in addition to the date from the good stratified pottery assemblage, may have produced far-ranging repercussions for the study of later prehistoric Lincolnshire. The potential information to be retrieved from other saltern sites in the Ingoldmells area is high, and further groundworks should be observed. In the meantime, the late Iron Age date for this saltern site is in line with other dates for salterns in this vicinity.

Acknowledgements

Throughout the extended watching brief for this scheme, LAS enjoyed a high level of co-operation and interest from Anglian Water Services Ltd (particularly Phil Moon, Nick Evison and Alex Still) and their contractors Mowlem (Andy Priestley and Mick Brocklesby). Further help was received from the staff of the Lincolnshire County Council Archaeological Section.

The pottery was initially dated by Maggie Darling. The briquetage and prehistoric pottery was examined and identified by Dr. Carol Allen and Dr. David Knight; it was illustrated by Jane Goddard. Medieval and later pottery and tile was identified by Jane Young. Dr. Alan Vince identified a stone fragment from the site.

The soil samples were processed by Jeremy Mordue, before analysis by James Rackham Environmental Consultancy. Radio-carbon dates were obtained from Beta Analytic Inc., Florida. Information from this project is to be sent to Professor Ian Shennan (Dept. of Geography, University of Durham) to be added to existing data on past sea level change.

The report text was written by Geoff Tann, with contributions from Claire Angus, Wendy Booth and Jeremy Mordue; the implications of the site were discussed with Dr. Carol Allen, Dr. David Knight, James Rackham, Naomi Field and Mick McDaid. Illustrations were prepared by Mick McDaid and Mark Williams; the report was collated and produced by Jane Frost.

Geoff Tann
Lindsey Archaeological Services
5th March 2001

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Archive Summary

correspondence

photographs: colour prints, LAS film nos. 99/74/6-11; 99/88/00-3; 99/89/4-36; 99/90/00-26, 32-36; 99/133/21-24; 99/136/6-20; 99/137/18,19; 00/17/20-24; 00/21/30-36; 00/37/31-37; 00/42/1-31; 00/63/22-33; 00/64/12-17; 00/74/1-4 (including those used for this report)

field notes and annotated copies of Anglian Water Services Ltd plans

field sections, plans and sketch plans

inked plans and sections

Anglian Water Services Ltd plans

borehole logs

archaeological finds: animal bone, pottery, briquetage, flint, stone, environmental residues

APPENDIX 1

Context Summary

APPENDIX 1

Context Summary (ITW 99 and ITW 00)

Site Code	Context No.	Area	Type	Relationships	Description	Surface OD (m)	Deposit Thickness	Finds
ITW 99	1	All	Layer	Above all	Modern topsoil	2	0.3	4 medieval pot sherds, medieval and later roof tile frags., post-medieval
ITW 99	2a	Ext 1	Layer	Below 1, above 2b and 26	Lime consolidated brown silt	1.7	0.2 - 0.4	
ITW 99	2b	Ext 1	Layer	Below 2a, above 3; same as 26	brown/grey-brown silt	1.4	0.05	
ITW 99	3	SE PST	Layer	Below 2b, above 4	brown silt almost entirely discoloured orange by iron salts	1.35	0.05	
ITW 99	4	SE PST	Layer	Below 3, above 5	dark brown/grey silt	1.3	0.25	
ITW 99	5	SE PST	Layer	Below 4, above 6	dark brown/grey silt, with lenses of light blue/grey silt; mixed with briquetage, red-fired soil, ash and charcoal	1.05	0.35	briquetage and pottery
ITW 99	6	SE PST	Layer	Below 5, above 7; same as 25	black peat	0.65 - 0.75	0.05	
ITW 99	7	SE PST	Layer	Below 6; same as 13 and 22	light blue/grey silt	0.6		
ITW 99	8	Not Used						
ITW 99	9	Not Used						
ITW 99	10	Exc.	Finds Ref.		Finds from cleaning vicinity of excavation after initial machining			pottery and briquetage
ITW 99	11	Exc.	Layer	Below 21, above 15; contains 20; same as	red/brown fired sandy soil with dense briquetage	0.95	0.2	pottery and briquetage
ITW 99	12	Exc.	Layer	Below 11, above 13; same as 25	peat	0.75	0.03	
ITW 99	13	Exc.	Layer	Below 12; same as 7 and 22	light blue/grey silt	0.7	0.02	
ITW 99	14	Exc.	Channel	filled by 25, cuts 22	shallow linear depression			
ITW 99	15	Exc.	Fill	Below 11, above 25	peaty black silt with frequent briquetage and pottery; may contain some ash	0.8	0.1	pottery and briquetage
ITW 99	16	Not Used						
ITW 99	17	Exc.	Layer	Below 26, above 19	light brown silt with yellow flecks	1	0.1	
ITW 99	18	Exc.	Layer	within 19	Thin lense of yellow/brown burnt soil	0.9	0.05	
ITW 99	19	Exc.	Layer	Below 17, above 21; contains 18 and 27	Thin layer of grey/brown silt with frequent charcoal and briquetage fragments	0.95	0.15	briquetage, recorded as 24
ITW 99	20	Exc.	Layer	within 11	yellow/brown burnt silt		0.05	
ITW 99	21	Exc.	Layer	Below 19, over 11	blue silt, probably redeposited	0.85	0.2	

Site Code	Context No.	Area	Type	Relationships	Description	Surface OD (m)	Deposit Thickness	Finds
ITW 99	**22**	Exc.	Layer	Below 14, above 23; same as 7 and 13	light blue/grey silt	0.7	0.03	
ITW 99	**23**	Exc.	Layer	Below 22	brown silt	0.6		
ITW 99	**24**	Exc.	fill	Same as 11	ashy silt with briquetage and charcoal	0.9	0.2	briquetage
ITW 99	**25**	Exc.	Layer	Below 15, above 14; same as 6 and 12	black peat	0.65	0.05	
ITW 99	**26**	Exc.	Layer	Above 17	Brown/grey-brown silt	1.4	0.3	
ITW 99	**27**	Exc.	Layer	within 19	Dark grey/brown silt, briquetage traces		0.1	
ITW 99	**28**	Not Used						
ITW 99	**29**	Not Used						
ITW 99	**30**	SE PST	Finds ref		Above 25, to east and SE of Exc. Area			briquetage and pottery
ITW 99	**50**	Pumphouse	Layer	Below 26, above 51	grey/brown silt with fine sandy silt and blue clay	1.05	0.2	1 sherd briquetage
ITW 99	**51**	Pumphouse	Layer	Below 50, above 52	orange/brown clayey silt	0.9	0.4	
ITW 99	**52**	Pumphouse	Layer	Below 51, above 53	orange/brown clayey silt with grey/blue clay	0.5	0.7	
ITW 99	**53**	Pumphouse	Layer	Below 52	blue/grey clayey silt	-0.2	0.1<	
ITW 99	**60**	NW PST		Below 26, above 61	brown, friable silt	0.8	0.3	
ITW 99	**61**	NW PST		Below 60, above 62	brown silt	0.5	0.1	
ITW 99	**62**	NW PST		Below 61, above 63	grey silt	0.4	0.1	
ITW 99	**63**	NW PST		Below 62	brown silt	0.3	0.4m<	
ITW 00	**100**	AL 1	Layer	Above 101, same as 2a	Lime consolidated brown silt	1.7	0.35	
ITW 00	**101**	AL 1	Layer	Below 100, above 102; cut by 105	Blue-grey clay mottled with orange-brown silty clay	1.35	0.3	
ITW 00	**102**	AL 1	Layer	Below 101, above 103	blue silt	1.05	0.05	
ITW 00	**103**	AL 1	Layer	Below 102, above 104	Orange/brown silt	1	0.2	

Site Code	Context No.	Area	Type	Relationships	Description	Surface OD (m)	Deposit Thickness	Finds
ITW 00	**104**	AL 1	Layer	Below 103, above 109	Brown silt	0.9	0.3	
ITW 00	**105**	AL 1	Cut	Below 106, filled by 108, 107, 106; cuts	Steep sided, irregular base; ?post-medieval drainage ditch			
ITW 00	**106**	AL 1	Fill of 105	Below 107 above 105	Mixed mid-blue/grey and mid orange-brown silty clay	0.7	0.4	
ITW 00	**107**	AL 1	Fill of 105	Below 108 above 106	mid orange-brown silty clay	1.35	0.5	
ITW 00	**108**	AL 1	Fill of 105	Below 100 above 107	Dark grey-brown clayey silt	1.35	0.18	
ITW 00	**109**	AL 1	Layer	Below 104	Blue clay	0.6	0.2<	
ITW 00	**300**	AL3	Layer	Above 301, same as 2a	Lime consolidated brown silt	1.7	0.3	
ITW 00	**301**	AL3	Layer	Below 300 above 302	Blue/grey clay with brown mottling; saltmarsh deposit	1.4	0.1	
ITW 00	**302**	AL3	Layer	Below 301 above 303	Blue clay; saltmarsh deposit	1.3	0.02	
ITW 00	**303**	AL3	Layer	Below 302 above 304	Laminated brown silt; estuarine deposit	1.25	0.25	
ITW 00	**304**	AL3	Layer	Below 303 above 306	Mottled orange/brown silt; estuarine deposit	1	0.25	
ITW 00	**305**	AL3	Layer	Below 304	Blue/grey clay with orange/brown mottling; saltmarsh deposit	0.7	0.1<	
ITW 00	**306**	AL3	Layer	Below 304 above 305	Peat	0.75	0.05	
ITW 00	**400**	10x10	Layer	Above 401; same as 2a	lime consolidated brown silt	1.7	0.3	
ITW 00	**401**	10x10	Layer	Below 400, above 402; saltmarsh	Blue/grey clay with brown mottling	1.35	0.2	
ITW 00	**402**	10x10	Layer	Below 401, above 408; saltmarsh	Blue clay	1.15	0.02	
ITW 00	**403**	10x10	Layer	Below 408, above 404; estuarine	Mottled orange/brown silt	1.1	0.1	
ITW 00	**404**	10x10	Layer	Below 408, saltmarsh deposit	Blue/grey clay with orange/brown mottling	0.7		
ITW 00	**405**	10x10	Photo ref.					
ITW 00	**406**	10x10	Photo ref.					
ITW 00	**407**	10x10	Photo ref.					
ITW 00	**408**	10x10	Layer	Below 402 above 403	Brown silt, estuarine deposit	1.2	0.1	

Site Code	Context No.	Area	Type	Relationships	Description	Surface OD (m)	Deposit Thickness	Finds
ITW 00	**409**	FTT1	Layer	Above 410, same as 2a, 400	Lime consolidated brown silt	1.7	0.3	
ITW 00	**410**	FTT1	Layer	Above 411, below 409	Brown/grey silt	1.4	0.3	
ITW 00	**411**	FTT1	Layer	Above 412, below 410	Brown silt	1.1	0.3	
ITW 00	**412**	FTT1	Layer	Above 413, below 411	Peat	0.8	0.05	
ITW 00	**413**	FTT1	Layer	Below 412	Brown/grey silt with peat flecks	0.75		
ITW 00	**500**	DC	Layer	Below 504, above 505; same as 502,	brown silty clay with infrequent briquetage fragments	1	0.4	briquetage
ITW 00	**501**	DC	Layer	Above 504	lime consolidated brown silt	1.7	0.35	
ITW 00	**502**	DC	Layer	Below 504, above 505; same as 500,	brown silty clay with infrequent briquetage fragments	1.1	0.4	briquetage
ITW 00	**503**	DC	Layer	Below 504, above 505; same as 500,	brown silty clay with infrequent briquetage fragments	1.1	0.4	briquetage
ITW 00	**504**	DC	Layer	Below 501, above 500	blue/brown silt	1.35	0.25	
ITW 00	**505**	DC	Layer	Below 500, above 506	peat	0.75	0.13	
ITW 00	**506**	DC	Layer	Below 505, above 507	blue silt	0.6	0.15	
ITW 00	**507**	DC	Layer	Below 506	brown silt	0.45		
ITW 00	**600**	FTT2	Layer	Above 601, same as 2a	lime consolidated brown silt	1.7	0.4	
ITW 00	**601**	FTT2	Layer	Below 600, above 602	brown silt	1.3	0.05	
ITW 00	**602**	FTT2	Layer	Below 601, above 603	brown silt	1.25	0.15	
ITW 00	**603**	FTT2	Layer	Below 602, above 604	blue silt	1.05	0.2 - 0.3	
ITW 00	**604**	FTT2	Layer	Below 603, above 606	blue/brown silt	0.75	0.25	
ITW 00	**606**	FTT2	Layer	Below 604, above 605	blue silt with infrequent peat flecks	0.5	0.05	
ITW 00	**605**	FTT2	Layer	Below 606	brown silt	0.45		

APPENDIX 2

Post-Roman Pottery and Tile Archive Lists

(Jane Young)

Pottery Archive ITW99

Jane Young *Lindsey Archaeological Services*

context	cname	full name	form type	sherds	vessels	part	description	date
1	TOY	Toynton Medieval Ware	jug	4	1	BS	? TOYII or earlier	13-15th

Tile Archive ITW00

Jane Young *Lindsey Archaeological Services*

context	cname	full name	frags	weight	description	date
100	MISC	Unidentified types	2	13	floor?	post-med
100	DRAINDISC	Drain (general) (discarded)	6	147	land drain	post-med to early modern
300	DRAINDISC	Drain (general) (discarded)	4	173	land drain	post-med to early modern

APPENDIX 3

Report on the Late Iron Age Pottery and Briquetage

(Drs. Carol Allen and David Knight)

INGOLDMELLS STW, LINCS

TF 5599 6762

ITW99 & ITW00

REPORT ON PREHISTORIC POTTERY AND BRIQUETAGE

FOR

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19 February 2001

INGOLDMELLS STW

SUMMARY

- A total of 75 sherds (1569g) of late Iron Age Pottery was found on this site together with 246 pieces (7307g) of late Iron Age briquetage from saltmaking.

- The pottery is handmade and can be compared with similar vessels from late Iron Age sites in Lincolnshire, particularly Dragonby, Old Sleaford and earlier excavations about 2 km from this site at Ingoldmells. The pottery is dated to the 1st century BC.

- The briquetage can be compared with material of late Iron Age date from other sites in the county, such as Cowbit, Burgh Le Marsh and earlier excavations at Ingoldmells.

- The material was found within a number of deposits lying in a hollow or depression. Much of the pottery is unabraded and was probably broken and discarded.

- Most of the briquetage consists of pedestals and few containers are present. This type of material was only used once and then discarded. The lack of ceramic containers amongst the briquetage material suggests that the containers may have been used to transport the salt from the site.

- Fabrics of the pottery and briquetage contain shelly limestone, quartz and organic tempering, and all this could have been obtained locally.

- This material was probably rubbish deposited in the hollow in the late Iron Age. Saltmaking must have been taking place very nearby and there may also have been some contemporaneous settlement close to this location.

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INGOLDMELLS, LINCS

TF 5599 6762

REPORT ON PREHISTORIC POTTERY AND BRIQUETAGE

1 INTRODUCTION

1.1 Ceramic Types

Both prehistoric pottery and briquetage were found on this site: briquetage is the overall term for ceramic material which was used in the making of salt. The late Iron Age pottery came from five contexts (5, 10, 11, 15 and 30) all of which also contained briquetage, and briquetage was also found in another six contexts (1, 24, 50, 500, 502, 503). The pottery and briquetage is quantified and described separately, and the evidence of all the ceramics is then brought together in the discussion at the end of the report.

1.2 Methodology

The assemblage of ceramic material was analysed according to the guidelines of the PCRG (1997). All pottery sherds were counted, weighed and recorded as detailed in Table 1, and the briquetage is recorded in Table 2. All the ceramic material was examined with a X4 binocular microscope and grouped into fabric types on the basis of the type, quantity and size of inclusions within the clay. The abrasion level of each piece of pottery was also noted.

2 POTTERY

2.1 Quantification

A total of 75 sherds of pottery weighing 1569 g were found during the excavation of this site, and the assemblage originated in a number of contexts listed on Table 1. There are no complete vessels but some profiles can be partially or completely reconstructed. The average sherd weight of the pottery is 20.9 g, and the sherds vary in size from large pieces comprising about a third of a vessel to small fragments less than 10 mm across. The sherds vary in levels of abrasion but generally are in an unabraded condition as discussed later in section 4.3. The fabric types and wall thicknesses are recorded in the catalogue, and indicate that at least 17 separate vessels are represented in the assemblage. Sherds from seven vessels are illustrated.

2.2 Fabrics

2.2.1 General

Three main fabric types were noted and these are described in detail in Appendix I. The quantities of inclusions within the fabrics of this prehistoric pottery are not homogenous and therefore there is likely to be some variation within each fabric group. However, the description of each group does indicate apparent differences, possibly reflecting the intentions of the potter. The quantification and sizes of the inclusions shown below which are included in the clay of the pot are detailed in Appendix I.

2.2.2 Types

Fabric Type	*% of Total Wt*	*Code*	*Inclusions/quantity/size*
1	66%	SHMM/	shelly limestone/moderate/medium
		VERV/	vegetable matter/rare/very coarse
		QURF	quartz/rare/fine
2	16%	SHMM	shelly limestone/moderate/medium
		VESV/	vegetable matter/sparse/very coarse
		QURF	quartz/rare/fine
3	18%	SHSM/	shelly limestone/sparse/medium
		QUSF	quartz/sparse/fine

Shelly limestone tempering of medium size and in moderate quantities dominates the assemblage, and 82% of the pottery also contains vegetable matter. It is apparent on prehistoric sites that the types of fabrics used in pottery changed with time (Allen 1991, 4: Cleal 1995). In the eastern region of England the use of shell and limestone tempering is common in the late Iron Age period (Allen

and Hopkins 2000, fig. 8). Thus, the inclusions employed for pottery manufacture in prehistory depended on local traditions of the period and also upon obtainable materials.

2.2.3 Source of fabric inclusions

The site lies on Cretaceous chalk beds (Kent and Gaunt 1980, 84) which contain fossil shell material and limestone (Swinnerton and Kent 1976, 61). However, it is not clear from macroscopic examination whether the shelly material in the pottery is of fossil type or if contemporaneous marine shell was broken up and used as tempering. Both types of shell are known to have been employed in pottery making in the Iron Age (Bell 1977, 124: Allen 1991, 4-5). The inclusions which appear to be of limestone type could have been found in local clays, but thin section analysis would be required to be certain of the origin of these inclusions.

Vegetable matter can be clearly seen in freshly made breaks in sherds of fabrics 1 and 2, and impressions of small chopped stalks can also been seen on the exterior of many of the sherds. The occurrence of these impressions has been recorded in Table 1. The vegetable matter preserved within the pottery appears to be fine grass or cereal stalks, measuring about 1 mm in diameter and from 2 to 18 mm in length. The presence of the vegetable matter is discussed further in the section on briquetage where the material also occurs.

There is every indication that the pottery was made on the site. The pottery has a rough and sandy surface which leaves an orange sandy deposit after handling, and this is very reminiscent of the briquetage ceramics also found on the site. This strongly suggests that both were made on the site from similar materials.

2.3 Iron Age Pottery Typology

2.3.1 General

This is a typical late Iron Age assemblage for this region with an apparent emphasis on bowl forms. There is no decoration apparent, but a few vessels show some light brushing and some sherds have finger smoothing (context 10, pot 2). The forms are similar to wheel-made vessels of the period, but all vessels on this site seem to be hand made. Most of the sherds represent small necked bowls or ovoid shaped vessels: one ovoid form has perforated handles and another has a footring. A necked bowl has a hollow pedestal base.

2.3.2 Description and Comparative Vessels

Sherds from one ovoid bowl with two handles perforated horizontally (Fig.1.1), were found within two separate contexts (10/1 unstratified and 15/2). The rim of this vessel is everted and rounded and the pot has light brushing on the exterior. A similar ovoid bowl with two handles was found at the Iron Age site of Dragonby in Lincolnshire (May 1996, fig.19.30.193: ceramic stage 6). The ovoid bowl form and everted and rounded rim shape were commonly seen at Dragonby (*ibid,* fig. 9.30.197) and also at the late Iron Age site of Old Sleaford, Lincs (Elsdon 1997, fig. 51.10). A sherd from the rim and upper body of another vessel of possible ovoid form was also found in context 15 (pot 3); this has a rounded rim expanded externally and internally (Fig. 1.3). A vessel with a similar rim is apparent at Old Sleaford (*ibid*, fig. 51.7) and a pot with comparable rim and form was found at Ingoldmells during earlier excavations (May 1976, fig. 75.3). A number of ovoid vessels were recorded from these early excavations of a saltmaking site at Ingoldmells, which probably lay about 2 km from the present excavations (Baker 1960, figs 1 & 2). A rim sherd from a possibly ovoid pot with a high girth and a thin everted and internally tapering rim (Fig. 1.4) came from context 15 (pot 4), and similar vessels can be seen at Dragonby (May 1996, fig 19.26.124: ceramic stages 2-3).

Several handmade vessels comparing closely with the necked bowls which are a common element of late Iron Age ceramic assemblages in this region, were also found during the current excavations. These can be compared with vessels from the late Iron Age pottery (ceramic stages 2-3) from Dragonby (May 1996, *e.g.* fig. 19.26.121-4) and from Old Sleaford (Elsdon 1997, fig.51.6). Rim and body sherds of a necked bowl with an everted rounded rim tapering internally were found in context 15 (pot 1). Brushing was apparent on the body below the shoulder of the pot (fig.1.2). A round shouldered vessel with short upright everted neck and thin everted and tapering rim was found in the same context (15, pot 9: Fig. 2.6). Another necked bowl with an externally rounded rim and high upright neck was also found in this context (15, pot 6: Fig. 2.5). The complete profile can be reconstructed and the pot has a hollow pedestal base, similar to one found at Old Sleaford (fig. 56.64). A pot with a footring was also found in the current excavations (context 5) again as seen at

Old Sleaford (fig. 58.86). Sherds from a bowl with a pronounced rounded girth, recalling strongly the carinated bowls which are a well-known feature of late Iron Age assemblages in the region, were found in context 30 (pot 2: Fig. 2.7). This vessel form and necked bowls, both undecorated (Baker 1960, fig. 2) and decorated (May 1976, fig. 75.5), were apparent in earlier Ingoldmells excavations. Sherds of a further two undecorated necked bowls (not illustrated) with rounded rims were also found in context 15 (pots 7 and 8).

The base and body sherds of a pot with slightly thicker walls, flat base and straight sides were found in context 15 (pot 5), and this was similar to the more slab sided pots noted in Baker's 1950s excavations at Ingoldmells (May 1976, fig. 73.11). Similar pottery was also found by Swinnerton during his investigations into a number of Lincolnshire saltmaking sites (1932, fig. 3a). This could be a salt container but the function is not clear. All the pottery from the current Ingoldmells excavations has a sandy feel and most is orange to pale orange and buff in colour.

2.3.3 Typology and Dating

A clear typological similarity is seen between the vessels from the current and previous excavations at Ingoldmells, and late Iron Age vessels from the key Lincolnshire assemblages from Dragonby and Old Sleaford, as described above. Evidence for the influence of La Tène III pottery types is apparent at Dragonby and Old Sleaford, where necked bowls, ovoid vessels and other forms which compare closely with the Aylesford-Swarling pottery of south-eastern England have been recorded in abundance (Knight forthcoming: Elsdon 1996, 433). Decoration on pottery of this type at Dragonby and Old Sleaford could also be compared with southern types, but pottery from the current excavations at Ingoldmells is mainly undecorated. A date from the 1st century BC, based on present evidence, is suggested for these forms of pottery which reveal a complete fusion of elements derived from the La Tène II and III ceramic traditions (Knight forthcoming fig. 2).

These Ingoldmells vessels are clearly in the Lincolnshire late Iron Age potting tradition and lie within the ceramic stages 1 to 5/6 devised for Dragonby (Elsdon 1996, 409 and fig.19.6). Within these stages the key sequence shows similar forms to the vessels from Ingoldmells, particularly necked and ovoid vessels together with pedestals and footrings, and all the rim types. Pottery from Dragonby within these stages is dated by stratigraphic relationships and by typology mainly to the 1st century BC, although some pottery on the site may be slightly earlier in date (Elsdon 1997, 106). At Old Sleaford handmade vessels comparable to those from the current and previous excavations at Ingoldmells have been dated from the mid-1st century BC (*ibid*), although it is possible that these types continued in use into the early 1st century AD. Pottery from sites of similar date in the East Midlands shows great similarities of form with the vessels from Ingoldmells (Elsdon 1993). From this evidence it seems very likely that the pottery assemblage from Ingoldmells should be dated from the 1st century BC and possibly into the earlier 1st century AD.

A sample of peat was submitted for radiocarbon dating from a layer of peat, context 6. This underlay deposit 5 which contained pottery and briquetage (Table 3). The dates obtained were Cal BC 900-750 and Cal BC 700-540 (2610±70 BP: Beta-151214), and this could therefore be a satisfactory date for the level below the late Iron Age pottery. A further sample of round wood was submitted for dating from context 15. The dates obtained were Cal BC 760-640 and Cal BC 560-200 (2330≡80 BP: Beta-151213). Typologically the pottery associated with this wood cannot be of this date, as shown above. The date range obtained is quite wide and indicates either contamination of the material, or if the date of the stake is correct, that this was an older piece of wood, perhaps used for fuel, which had been deposited with the material in context 15.

3 BRIQUETAGE

3.1 Quantification

A total of 246 pieces of briquetage, or ceramic material used in saltmaking, weighing 7307 g was found during these excavations. The briquetage was found in eleven contexts listed in Table 2, where the type, number and weight material found is also detailed, and seven typical pieces are illustrated.

3.2 Fabrics

3.2.1 Fabric types

Only one distinct fabric type could be discerned in the briquetage material. This fabric (designated SHSM/QURM/VERF) is described in detail in Appendix I. The clay matrix contains shelly limestone

in sparse quantities and this is also shown by elongated boat-shaped voids which strongly suggest the former presence of this material. Also rare amounts of quartz and a rare quantity of vegetable matter, or rounded or oval voids suggesting the former presence of organic material, were also present. The resulting fabric is light in weight and porous in appearance. There is no difference apparent in the fabric of the different types of briquetage, as the material used to fabricate the containers is very similar to that used for the pedestals and other pieces. Slight variations in quantities of inclusions were noted but these were not consistent or attributable to the different types of briquetage.

All the material is orange externally with an orange/grey core and is very rough and sandy to the touch, leaving a sandy residue when handled. Some impressions of vegetable matter such as fine cut stalks, are apparent on the exterior of some of the pieces particularly the containers. At other saltmaking sites in the Fens it has been pointed out that chronological changes in fabric type were apparent (Morris forthcoming) but the small sample of material seen here from Ingoldmells appears only to cover the late Iron Age period.

3.2.2 Source of fabric inclusions

Fabrics containing shelly limestone material, alongside quartz and vegetable matter, are seen to have been used for briquetage manufacture on Lincolnshire sites elsewhere in the county, for example at Cowbit further south (*ibid*). Shelly limestone, quartz and organic material were also used for briquetage manufacture at Burgh Le Marsh, about 5 km to the south-west of the present Ingoldmells site (Allen 1994). The pottery at the present site is better made and fired than the briquetage but a similar fabric type was used for both ceramics which have a similar sandy feel. It is not possible to be certain that the shell is of fossil type but this seems possible and, as with the pottery fabrics described in 2.2 above, it seems very likely that the clay with shelly limestone and quartz inclusions for the briquetage was obtained locally.

3.2.3 Vegetable tempering

The vegetable/plant matter being used in the briquetage is generally about 1-2 mm in diameter and between 2 and 10 mm in length, but there are some impressions of more random shape and size. However, it is not possible to identify the nature of the vegetable matter without detailed macroscopic examination of every piece and specialist advice. At other Fenland sites it has been possible to identify some of the plants as cereals remains, including the rachis nodes and awns of spelt wheat and barley, although most of the vegetable matter could not be unidentified (Morris forthcoming). Thus although cereal waste seems very likely to have been used at Ingoldmells the possibility of non-cereal vegetable matter being used cannot be discounted. In Essex, where the Red Hills resulting from briquetage and thought to be late Iron Age have been investigated, plant material was also used for tempering. There the awns and grains of barley, oats and evidence of two types of wheat were found together with chopped straw and chaff (Fawn et *al* 1990).

It seems likely that the organic material was used to assist the forming of the clays. Many of the pedestals and clips do not appear to have received any careful finishing and were squeezed into shape and then fired during the saltmaking process. The presence of vegetable material on the exterior of the pieces would enable them to be roughly formed whilst wet and pushed onto the containers' edges as required. The opening up of the clay with organic material would also assist porosity and so aid the firing.

3.3 Typology

3.3.1 General

The following proportions (by weight) of different types of briquetage were found:

Containers	*Pedestals*	*Clips*	*Structure*	*Misc Pieces*
12%	63%	4%	11%	10%

The number and weight of each type, by context, are shown on Tables 2 and 3.

Pedestals appear to dominate the assemblage both by weight and numerically but this cannot be an accurate reflection of the proportions originally in use on the site. More containers would be required to carry out the process and therefore it seems likely that the briquetage found is a small sample of a dump of material from a saltmaking site. Much of the briquetage was found in association with pottery dated to the late Iron Age, and all the types of briquetage shown below are

commonly found on saltmaking sites of this period (Morris forthcoming). The same types were also previously found on the late Iron Age coastal site at Ingoldmells (May 1976, fig. 74).

3.3.2 Containers

Four rim types were identified on this site. The most common were rims cut straight (rim type 1, Fig. 3.1) which probably came from rounded gutter-shaped troughs such as those found on the coast at Ingoldmells in the last century (May 1976, fig. 72). It is suggested that these were made from cylinders of clay which were cut in half whilst wet. Other rim types were also found: rounded pinched out internally (rim type 2, Fig. 3.2), rounded direct (rim type 3) and bevelled internally (type 4). However, only 21 rims (398 g) were found in total throughout the site, suggesting that this is only a small sample of those originally in use. In addition, 55 container body sherds were found (482 g). Many of the rims and body sherds had many impressions of vegetable material on the exterior and interior surfaces indicating that the organic material was used to assist handling and was also employed to line the containers. Almost all the container material is flat sided suggesting that straight-sided troughs with curved bases, as seen in the base/body sherd from context 15 (Fig. 3.3), were commonly used for saltmaking on this site. A few sherds suggest a flatter curved base similar to vessels found by Swinnerton in the 1930s (May 1976, fig. 73), but the function of these is unclear. The wall thicknesses of the containers vary considerably, as shown on Table 2, and this may reflect the construction of individual vessels or some unknown functional difference, but the sample is small.

3.3.3 Pedestals

A total of 70 pedestals were found on this site (4636 g). All were hand and finger moulded whilst the clay was wet and although they are remarkably uniform in appearance and size, they all differ slightly. The pedestals are generally around 40 mm in diameter, roughly circular or oval in section, and up to 60 mm high. Occasionally one end of the pedestal is flat but more often a ridge is indicated where it was moulded to sit upon or to support a gutter-shaped container (Fig. 3.4). A few pedestals are more squat in shape (Fig. 3.5) and only around 30 mm in height (Fig. 3.5). These pedestals are assumed to have been used to support and link a number of evaporation trays used during a heating process required for saltmaking.

3.3.4 Clips

Only 13 clips (286 g) were found on excavation and these vary considerably as each was moulded to adapt to the container position they were required to link and support. Several have a flat edge upon which a tray would have been placed, and below two lips could have linked adjoining trays (Fig. 3.6). One small piece shows a right-angled bend and may represent a small platform used to support a tray.

3.3.5 Structure

Ten large broken pieces with flat or rectangular edges were found on this site (765 g), and these are assumed to form part of blocks or structures on which the pedestals and containers were placed for evaporation during the saltmaking process. Often these pieces are rough on one side and smooth on another, and several have one surface coated with a thin green glaze about 2 mm thick, which presumably resulted from exposure to heated brine (Morris forthcoming). Figure 3.7 shows a rectangular piece of broken clay structure partially covered with a green glaze.

3.3.6 Miscellaneous Pieces

A total of 77 broken ceramic pieces (740 g) were found on this site in a variety of contexts, and were recognisable as briquetage by the general sandy appearance, colour and fabric type. These could represent parts of broken pedestals, clips or pieces of structures, but unfortunately it was not always possible to decide into which category they should be placed.

4 DISCUSSION

4.1 Pottery

The pottery accounts for 18% (by weight, Table 3) of the ceramic material excavated on the site. The material found indicates a tradition of hand made pottery, mainly necked bowls but also ovoid vessels, with a variety of rim types. This type of pottery was current during the late Iron Age period and is datable to the 1st century BC from comparable traditions seen on other Lincolnshire sites such as Old Sleaford and at other Ingoldmells sites. Comparisons can also be made with vessels from Dragonby where stratigraphic and typological relationships confirm the late Iron Age, 1st

century BC date and connections. Unlike the other sites with vessels of similar forms the pottery from the present Ingoldmells excavation has no decoration, and the surface treatment is limited to light brushing and finger smoothing. This is a small sample but suggests the vessels were of low status in their time.

4.2 Briquetage

Alongside the pottery in five contexts and also from within another six contexts, pieces of briquetage used for saltmaking were excavated. This type of ceramic was only roughly made and was fired during the evaporation process. The material was in use only once after which it was discarded, and in this case undoubtedly thrown away in the deposits, sometimes with broken pottery. The briquetage accounts for 82% of the ceramic material found on the site (Table 3).

The briquetage consisted of a number of different types of ceramic material, including containers for evaporating brine and pedestals and clips for supporting and linking the containers. Also found were the broken remains of structures upon which the other pieces were placed whilst a fire was built around for heating and evaporation (Morris forthcoming). Hearths where such processes took place were found at the Ingoldmells saltmaking sites previously discovered by Swinnerton and Baker, which lie closer to the coast and probably about 2 km from the present site (May 1976, fig. 71).

Only 12% of the total briquetage material found (by weight) represented remains of containers, whilst 67% was pedestals and clips. It is possible that the containers were used to transport blocks of salt for a short distance from the site and therefore most of their remains are absent

4.3 Context.

The pottery is mostly in a good unabraded condition. A sequence of deposits was found on the site some of which were disturbed during machining, so that sherds from one vessel were found in two contexts (10/1 - unstratified, and 15/2). Over 58% of the total weight of ceramic material found on the site came from contexts 11 (27.9%) and 15 (30.6%) and these appear to be material deposited in a hollow or depression. Table 3 indicates the proportion of the ceramics found in each context on the site.

In context 15, which contained 80% of the pottery found, most of the sherds were unabraded, only three sherds were very abraded and a few were slightly abraded. This suggests that in general the pottery had not been exposed in antiquity and had probably been deposited within the hollow in the late Iron Age. This evidence strongly suggests that the material found on this site represents the remains of a late Iron Age rubbish dump, which was created close to the location of a saltmaking site. The presence of late Iron Age pottery in good condition suggests that this process may have taken place near to the location of a settlement. However, the lack of decorated examples of the pots may suggest that this was not a site of high status.

The fabrics of the pottery and briquetage have similarities and it seems very likely that all the raw materials for manufacturing the ceramics may have been obtained locally. Vegetable material was also used for tempering, handling and lining containers and would have been readily available to the Iron Age farmers in the location.

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INGOLDMELLS STW

ITW99 & ITW00

CATALOGUE OF ILLUSTRATED POTTERY AND BRIQUETAGE

Late Iron Age Pottery

Figure 1

1 rim, body and 2 horizontal perforated handles of ovoid with everted, rounded rim, random light brushing on body, fabric SHMM/VERV/QURF, slightly abraded, context 10 (1) & 15 (2).

2 rim and body sherds of necked bowl with brushing on exterior below shoulder, everted rounded rim, tapering internally, fabric SHMM/VERV/QURF, unabraded, context 15 (2).

3 rim sherd of possibly ovoid vessel, rounded rim, expanded internally and internally, fabric SHMM/VERV/QURF, slightly abraded, context 15 (3).

4 rim sherd, thin everted and internally tapering rim of a possibly ovoid pot with high girth, fabric SHMM/VERV/QURF, unabraded, context 15 (4).

Figure 2

5 rim, body and base sherds of a necked bowl, with high upright neck and externally rounded rim and hollow pedestal base, fabric SHMM/VERV/QURF, unabraded, context 15 (6).

6 rim sherds of rounded shouldered vessel with short upright neck and thin everted and tapering rim, fabric SHSM/QUSF, abraded, context 15 (9).

7 rim and body sherds of almost carinated bowl with round girth and tapering and everted rim, fabric SHMM/VERV/QURF, unabraded, context 30 (2).

Briquetage

Figure 3

1 rim of container with cut straight rim and organic impressions on exterior and interior, fabric SHSM/QURM/VERF, slightly abraded, context 15, 33g.

2 rim of container with rounded rim pinched out externally, organic impressions on exterior and interior, fabric SHSM/QURM/VERF, slightly abraded, context 15, 13g.

3 base/wall sherd of round gutter-shaped container, with thin base, hard fired pale encrustations, fabric SHSM/QURM/VERF, slightly abraded, context 15, 55g.

.

4 pedestal, hand squeezed, showing some voids and organic impressions, fabric SHSM/QURM/VERF, slightly abraded, context 5, 97 g.

5 pedestal, squat and hand squeezed, showing voids and organic impressions, fabric SHSM/QURM/VERF, moderately abraded, context 11, 51 g.

6 clip, with two grooves to fit over edges of two adjacent containers, voids of limestone and organic material, fabric SHSM/QURM/VERF, moderately abraded, context 15, 13g.

7 structure, broken piece, with some organic impressions and thin green glaze, fabric SHSM/QURM/VERF, slightly abraded, context 15, 55g.

APPENDIX I

INGOLDMELLS STW

FABRIC TYPES

I GENERAL

Both the pottery and the briquetage have a very sandy feel, leaving orange sandy deposits when handling the material. The briquetage is rougher and more sandy, but both types of ceramic seem to have been made from very similar materials, with the pottery being better made and fired.

II POTTERY

1 SHMM/VERV/QURF *[Inclusion type (SH), quantity (M) and size (V)]*

Contains a moderate quantity of moderately sorted, very angular to angular *shelly material and limestone* of low sphericity and medium size. *The vegetable matter* is rare in quantity, poorly sorted, sub-rounded and low in sphericity, and very coarse in size. This organic material appears in freshly made breaks as fine stalks, possibly cereal or grass, about 1 mm in diameter and between 2 and 18 mm in length. A rare amount of moderately sorted *quartz*, sub-angular to sub-rounded and of high sphericity and fine size is also present. Some of this may be naturally occurring sand within the clay but some is angular and may have been crushed for addition as tempering. The exterior and interior of the sherds is orange and the core is grey in colour, and sherds are oxidised on the exterior and interior and have an irregularly fired core.

2 SHMM/VESV/QURF

This fabric has a moderate amount of moderately sorted very angular to angular shelly *material and limestone* of low sphericity and medium size. It also contains a coarse quantity of moderately sorted *vegetable matter* similar to that described above, which is rounded, but low in sphericity and very coarse in size. A rare amount of *quartz*, moderately sorted and sub-angular to sub-rounded, high in sphericity and fine in size is also present and may be natural and added material. The exterior and interior of the sherds is grey and the core is dark grey. The exterior is irregularly fired and the interior and core are unoxidised.

3 SHSM/QUSF

Contains a sparse amount of moderately sorted and *angular shelly material and limestone* of low sphericity and medium size. Also the fabric has a sparse quantity of moderately sorted sub-angular and sub-rounded *quartz* of high sphericity and fine size. The exterior and interior of the sherds are orange in colour and the core is grey. The exterior and interior surfaces of the sherds are oxidised and the core is irregularly fired.

III BRIQUETAGE

1 SHSM/QURM/VERF

This fabric contains a sparse amount of *shelly and limestone material*, poorly sorted and sub-angular, low in sphericity and of medium size. Also there is a rare amount of *quartz*, poorly sorted and angular, low in sphericity and of medium size, together with a rare amount of *vegetable matter*, poorly sorted and angular, of low sphericity and of fine size. The ceramics material is orange and oxidised on the exterior and interior surfaces, but is grey and irregularly fired whenever the core is visible.

IV CODES FOR INCLUSIONS IN THE FABRIC OF THE POTTERY

Type: SH = shelly material and limestone: VE = Vegetable matter:
QU = quartz

Quantities: R = rare < 3%: S = sparse 3-9%: M = moderate 10-19%:

Modal Size: F = fine <2.5 mm: M = medium 0.25-1.00 mm:
C = coarse 1.00 – 3.00 mm: V = very coarse >3.00 mm

Ingoldmells Treatment Works - ITW99 & ITW00. Table 1: Catalogue of Pottery

SE Primary Settlement Tank

Context (Pot No)	Count No	Weight g	Fabric Type	Impression Vegetable Matter	Wall Thickness mm	Abrasion Level	Drawing Figure	Description
5	2	61	1	Yes	8	S		1 base with footring, 1 body
10 (1) & 15 (2)	4	114	1	Yes	7	S	1.1.	rim, body and 2 horizontal perforated handles of ovoid bowl
	10	281	1	Yes	7	S		everted rounded rim, random light brushing on body
10 (2)	3	40	1	Yes	6	S		grey body sherds, finger smoothing
11	3	20	1	No	6	S		body sherds
15 (1)	6	167	1	Yes	8	U	1.2	2 rim & 4 body sherds of necked bowl
								all sherds join, brushing on ext below shoulder
								everted rounded rim, tapering internally
15 (3)	1	15	1	No	7	S	1.3	rounded rim, expanded ext & internally
								possible ovoid vessel
15 (4)	1	17	1	No	7	U	1.4	thin everted & int tapering rim of poss ovoid pot
								with high girth
15 (5)	5	129	2	Yes	8	U		base & body sherds, burnt deposit inside
15 (6)	3	211	1	Yes	5 to 7	U	2.5	necked bowl, externally rounded rim, hollow
								pedestal base, high upright neck
15 (7)	2	20	1	No	5	S		rim sherds rounded & everted of necked bowl
15 (8)	1	14	1	Yes	6	S		everted rounded rim of short necked bowl
15 (9)	3	66	3	No	5	A	2.6	thin everted & tapering rim on round shouldered
								vessel with short upright neck
	7	36	3	No	5	A		undecorated body sherds
15 (10)	4	175	3	Yes	8	U		base & body sherds, finger smoothing on exterior
15 (11)	13	126	2	Yes	7	U		body sherds, finger smoothing on exterior

Context (Pot No)	Count No	Weight g	Fabric Type	Impression Vegetable	Wall Thickness	Abrasion Level	Drawing	Description
30 (1)	1	18	1	Yes	6	U		flattened & everted rim of short necked bowl
30 (2)	3	43	1	Yes	5	U	2.7	tapering & everted rim & body sherds of
								almost carinated bowl with round girth
30 (3)	3	16	1	Yes	7	S		body sherds undecorated
TOTAL	**75**	**1569**						
Abrasion level: U unabraded <5% wear: S slightly 5-25%: M moderately 25-50%: A abraded .50%.								
All pottery was associated with briquetage								

Ingoldmells Treatment Works – ITW99 & ITW00. Table 2: Catalogue of Briquetage																	
ITW99																	
SE Primary Settlement Tank																	
Context	**Containers**																
No	**Body sherds**		**Rim sherds**		**Wall**		**Pedestals**		**Clips**		**Structure**		**Miscellaneous**		**Totals**		**Drawing**
	No	**Wt g**	*No*	**Wt g**	**Type**	**mm**	*No*	**Wt g**	*No*	**Wt g**	*No*	**Wt g**	*No*	**Wt g**	*No*	**Wt g**	**Desc**
1	*2*	15	*1*	5	1	8 - 10	-	-	-	-	-	-	-	-	*3*	**20**	
5	*30*	189	*2*	18	1	6 - 10	*14*	1046	*4*	115	-	-	*26*	301	*76*	**1669**	
																	pedestal, Fig. 3.4
10	*1*	12	*3*	44	2,3,4	6 - 12	*8*	598	*2*	47	*1*	358	-	-	*15*	**1059**	
11	*3*	71	*2*	59	1	10 - 15	*30*	1945	*3*	63	*2*	166	*11*	137	*51*	**2441**	squat pedestal, Fig. 3.5.
									1	17	*(platform)*				*1*	**17**	
15	*11*	158	*8*	189	1,2,3	10 - 12	*10*	571	*3*	44	*7*	241	*32*	260	*71*	**1463**	rim type 1, Fig. 3.1
																	rim type 2, Fig. 3.2
																	base/body, Fig. 3.3
																	clip, Fig. 3.6
																	structure, Fig. 3.7
24	-	-	*2*	19	1	9 - 10	*6*	371	-	-	-	-	-	-	*8*	**390**	-
30	*2*	29	*3*	64	1,3,4	7 - 13	-	-	-	-	-	-	-	-	*5*	**93**	-
Pump House																	
50	-	-	-	-	-	-	*1*	41	-	-	-	-	-	-	*1*	**41**	-
ITW00																	
500	-	-	-	-	-	-	*1*	64	-	-	-	-	-	-	*1*	**64**	-
502	-	-	-	-	-	-	-	-	-	-	-	-	*4*	10	*4*	**10**	-
503	*6*	8	-	-	-	6	-	-	-	-	-	-	*4*	32	*10*	**40**	-
	55	**482**	***21***	**398**	-	-	***70***	**4636**	***13***	**286**	***10***	**765**	***77***	**740**	***246***	**7307**	

Ingoldmells Treatment Works - ITW99 & ITW00									
Table 3: Quantities of Pottery and Briquetage from each context by weight									
ITW99									
Context	**Pottery**	**Briquetage**	**Containers**	**Pedestals**	**Clips**	**Structure**	**Misc**	**Total per**	**% Each**
No	**Wt g**	**Wt g**	**Wt g**	**Wt g**	**Wt g**	**Wt g**	**Wt g**	**Context**	**Context**
1	*0*	*20*	20	0	0	0	0	***20***	***0.2%***
5	*61*	*1669*	207	1046	115	0	301	***1730***	***19.5%***
10	*154*	*1059*	56	598	47	358	0	***1213***	***13.7%***
11	*20*	*2458*	130	1945	80	166	137	***2478***	***27.9%***
15	*1257*	*1463*	347	571	44	241	260	***2720***	***30.6%***
24	*0*	*390*	19	371	0	0	0	***390***	***4.4%***
30	*77*	*93*	93	0	0	0	0	***170***	***1.9%***
50	*0*	*41*	0	41	0	0	0	***41***	***0.5%***
ITW00									
500	*0*	*64*	0	64	0	0	0	***64***	***0.7%***
502	*0*	*10*	0	0	0	0	10	***10***	***0.1%***
503	*0*	*40*	8	0	0	0	32	***40***	***0.5%***
Pottery & briquetage									
Totals	***1569***	***7307***	**880**	**4636**	**286**	**765**	**708**	***8876***	***100.0%***
for each type									
% of total	*18%*	*82%*	*10%*	*52%*	*3%*	*9%*	*8%*	*100%*	
Briquetage									
Each type as %		*100%*	*12%*	*63%*	*4%*	*11%*	*10%*		
of total briquetage									

INGOLDMELLS STW

ITW99 & ITW00

CATALOGUE OF ILLUSTRATED POTTERY AND BRIQUETAGE

Late Iron Age Pottery

Figure 1

1 rim, body and 2 horizontal perforated handles of ovoid with everted, rounded rim, random light brushing on body, fabric SHMM/VERV/QURF, slightly abraded, context 10 (1) & 15 (2).

2 rim and body sherds of necked bowl with brushing on exterior below shoulder, everted rounded rim, tapering internally, fabric SHMM/VERV/QURF, unabraded, context 15 (2).

3 rim sherd of possibly ovoid vessel, rounded rim, expanded internally and internally, fabric SHMM/VERV/QURF, slightly abraded, context 15 (3).

4 rim sherd, thin everted and internally tapering rim of a possibly ovoid pot with high girth, fabric SHMM/VERV/QURF, unabraded, context 15 (4).

Figure 2

5 rim, body and base sherds of a necked bowl, with high upright neck and externally rounded rim and hollow pedestal base, fabric SHMM/VERV/QURF, unabraded, context 15 (6).

6 rim sherds of rounded shouldered vessel with short upright neck and thin everted and tapering rim, fabric SHSM/QUSF, abraded, context 15 (9).

7 rim and body sherds of almost carinated bowl with round girth and tapering and everted rim, fabric SHMM/VERV/QURF, unabraded, context 30 (2).

Briquetage

Figure 3

1 rim of container with cut straight rim and organic impressions on exterior and interior, fabric SHSM/QURM/VERF, slightly abraded, context 15, 33g.

2 rim of container with rounded rim pinched out externally, organic impressions on exterior and interior, fabric SHSM/QURM/VERF, slightly abraded, context 15, 13g.

3 base/wall sherd of round gutter-shaped container, with thin base, hard fired pale encrustations, fabric SHSM/QURM/VERF, slightly abraded, context 15, 55g.

4 pedestal, hand squeezed, showing some voids and organic impressions, fabric SHSM/QURM/VERF, slightly abraded, context 5, 97 g.

5 pedestal, squat and hand squeezed, showing voids and organic impressions, fabric SHSM/QURM/VERF, moderately abraded, context 11, 51 g.

6 clip, with two grooves to fit over edges of two adjacent containers, voids of limestone and organic material, fabric SHSM/QURM/VERF, moderately abraded, context 15, 13g.

7 structure, broken piece, with some organic impressions and thin green glaze, fabric SHSM/QURM/VERF, slightly abraded, context 15, 55g.

****

Captions for Figures

Figure 1: 1-4, Late Iron Age Pottery

Figure 2: 5-7, Late Iron Age Pottery

Figure 3: 1-7, Late Iron Age Briquetage

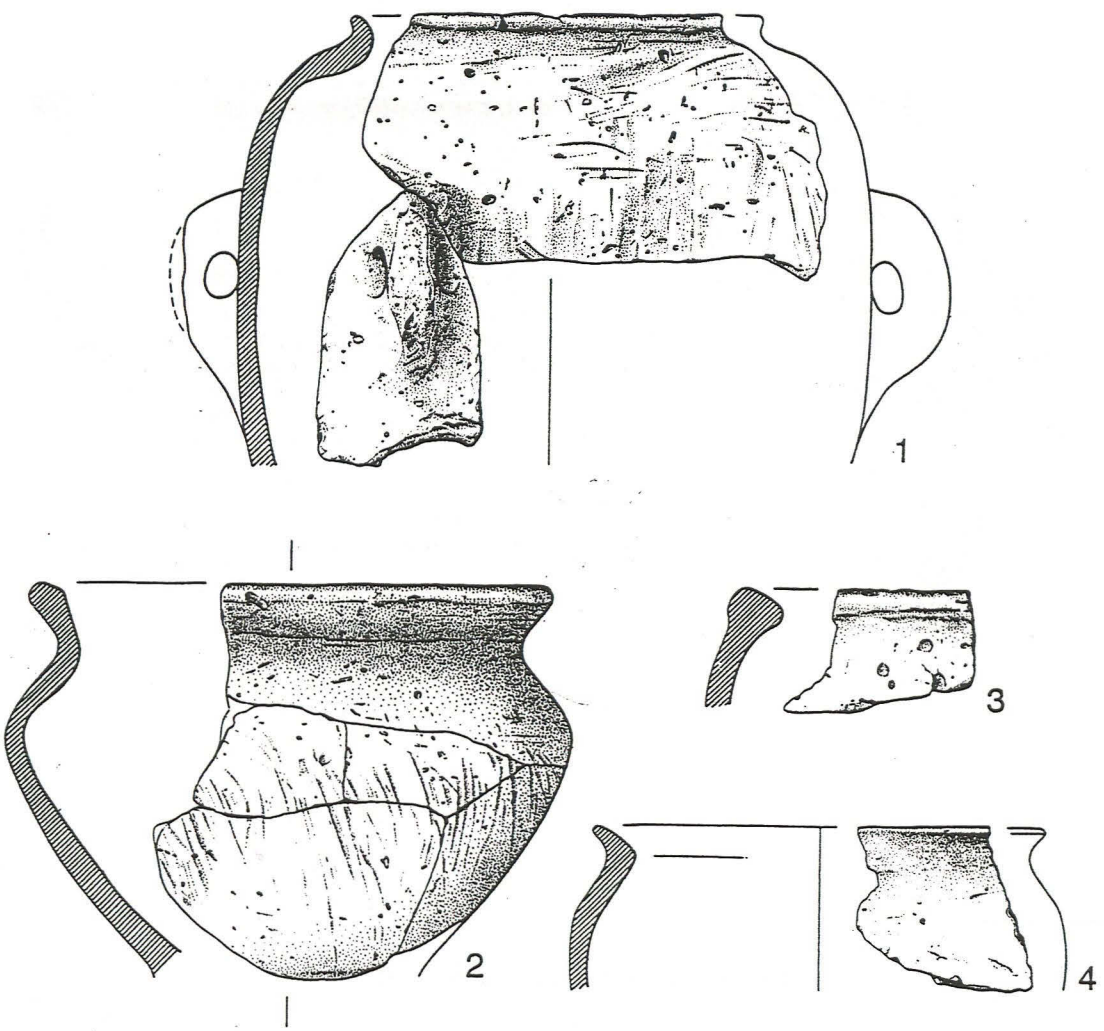


Fig. 1 1-4, Late Iron Age Pottery

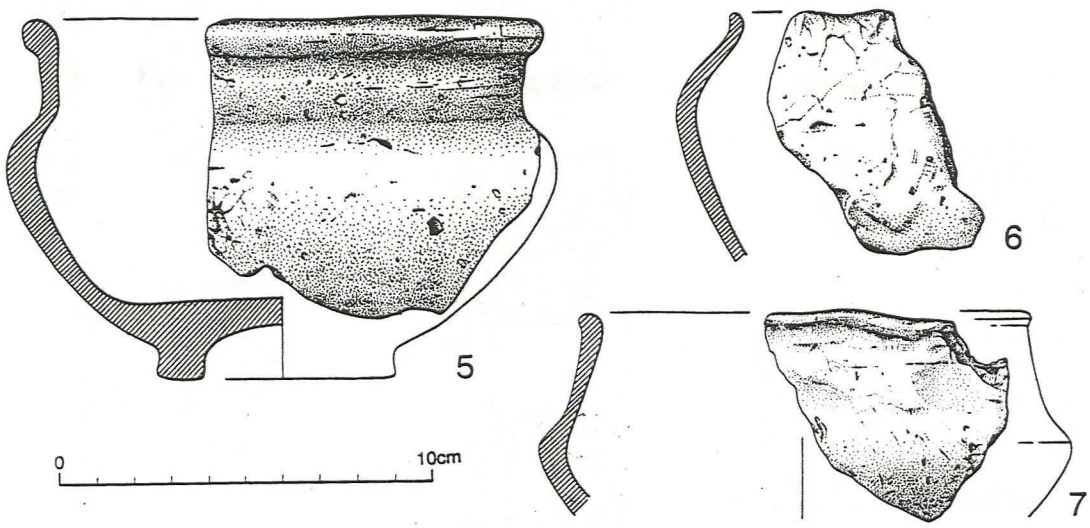


Fig. 2 5-7, Late Iron Age Pottery

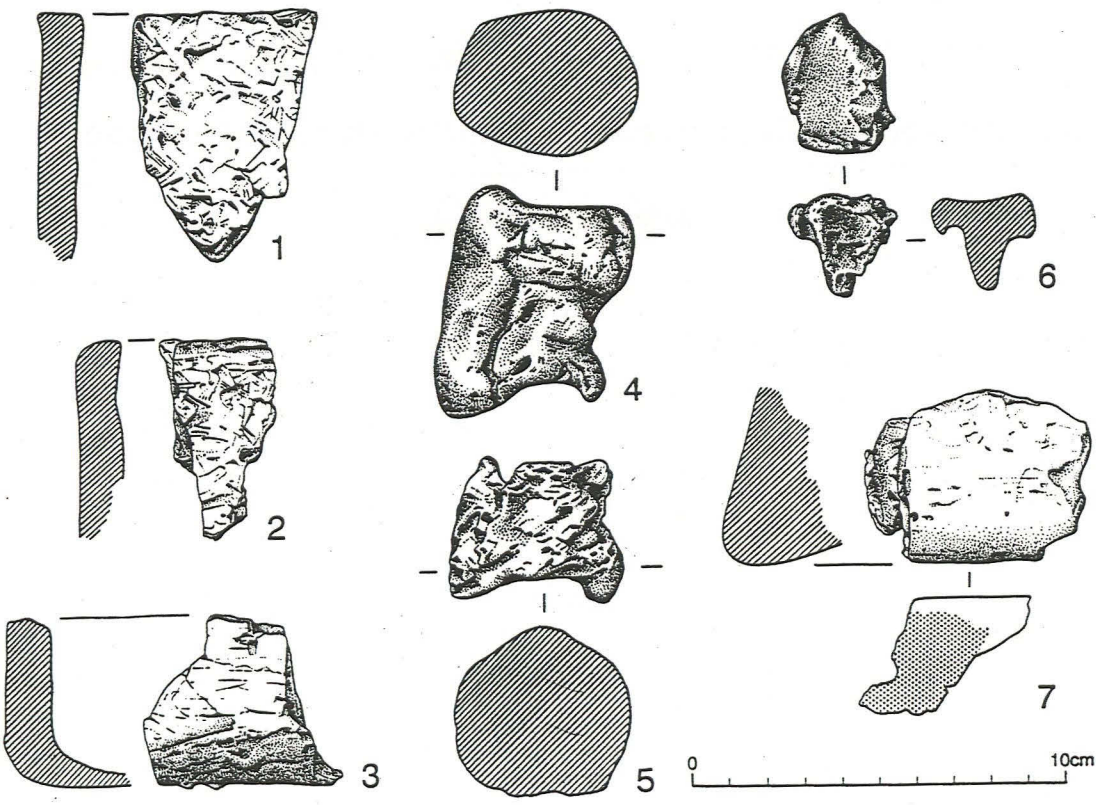


Fig. 3 1-7, Late Iron Age Briquetage

APPENDIX 4

Report on the Environmental Remains and Radiocarbon Dates

(James Rackham)

Ingoldmells – ITW99
Environmental Archaeology Assessment

Introduction
Watching brief excavations were conducted by Lindsey Archaeological Services on an Anglian Water Development at Ingoldmells. The excavations revealed a sequence of natural silt, clay and peat sediments within which were features indicative of a middle Iron Age saltern. Seven samples were collected for environmental analysis (Table 1).

Table 1: Samples taken for environmental analysis

site	sample	context	volume in l.	description	date
ITW99	1	5	5		MIA
ITW99	2	6	9		MIA
ITW99	3	11	4	red brown fired sandy soil with large quantities of briquetage	MIA
ITW99	4	15	9		MIA
ITW99	5	17	5	red brown clay and briquetage layer	MIA
ITW99	6	18	4		MIA
ITW99	7	21	5	light clay	MIA

MIA- MIDDLE Iron Age

Methods
The soil samples were processed in the following manner. Sample volume and weight was measured prior to processing. The samples were washed in a 'Siraf' tank (Williams 1973) using a flotation sieve with a 0.5mm mesh and an internal wet-sieve of 1mm mesh for the residue. Both residue and float were dried. The residues were then refloated for the efficient recovery of charred material. The dry volume of the flots was measured, and the volume and weight of the residue recorded.

The residue was sorted by eye, and environmental and archaeological finds picked out, noted on the assessment sheet and bagged independently. A magnet was run through each residue in order to recover magnetised material such as hammerscale and prill. The residue was then discarded. The float of each sample was studied under a low power binocular microscope. The presence of environmental finds (ie snails, charcoal, carbonised seeds, bones etc) was noted and their abundance and species diversity recorded on the assessment sheet. The float was then bagged. The float and finds from the sorted residue constitute the material archive of the samples.

The individual components of the samples were then preliminarily identified and the results are summarised below in Table 2.

Results
Sample 1, context 5
The whole of the residue, after washing, from this sample was composed of briquetage fragments, a number with intact surfaces. The flot was very small (Table 2) and included a few small fragments of mineralised wood, one or two uncharred seeds and humic peat fragments.

Sample 2, context 26
The residue from this sample was largely composed of compacted, humified, barely fibrous, partly laminated peat. 3 small fragments of briquetage (?) were also recovered (Table 2). The flot is largely composed of humified peat with uncharred seeds and insect fragments. The presence of earthworm egg capsules in this deposit indicates that the peat had dried out and been exposed to soil processes since worms would not have colonised a waterlogged peat deposit.

This deposit represents a change from a waterlogged freshwater marsh/bog environment to a drier terrestrial ground surface. Because of its stratigraphic position pre-dating the saltern activity and the evidence for a period of drying out, a sample of the peat was submitted for radiocarbon dating to Beta Analytic, Florida (see below).

Sample 3, context 11
The whole of the residue from this sample was composed of briquetage fragments, some with intact surfaces. Some of this material derived from briquetage vessels, and one 9 gramme sherd of pottery was present. The environmental finds were limited with a very small flot from the sample. This included a few fragments of charcoal, an unidentifiable fragment of burnt bone and a little humified, possibly mineralised, peat.

Sample 4, context 15
Much of the residue in this sample was composed of fired sediment, with some briquetage and several briquetage vessel fragments, a little iron concreted 'pan' and a single flint.

The environmental finds include a few fragments of unidentifiable mammal bone (domestic size), one piece of round wood (possibly a small stake end), a few fragments of charcoal, one charred cereal grain and several waterlogged seeds and insect fragments. The flot includes small fragments of wood, humified peat, tuberous and root matter.

Since this context and the piece of 'chopped' wood are clearly associated with the saltern phase of activity, the piece of wood was submitted for radiocarbon dating to Beta Analytic, Florida (see below).

Sample 5, context 17
The whole of the residue from this sample was composed of briquetage, some fragments with an intact surface.

The environmental evidence is limited (see Table 2) with a little charcoal, two tiny fragments of burnt bone and a few fragments of waterlogged seed and insect. The small flot includes a little dried organics, possibly from peat.

Sample 6, context 18
The residue of this sample is composed of reduced fired sediment, some briquetage, including four vessel fragments, a little concreted sediment, root pseudomorphs and rare flint stones. A little fuel ash slag is present in the sample flot.

Table 2: Ingoldmells – ITW99. Finds from the samples

cont	vol	residue vol in ml.	flot vol. ml.	brique-tage wt. g.	brique. vessel no.	pot no.	wood *	char-coal *	bone wt. g.	charr'd grain no.	charr'd seed *	un-charr'd seed *	insect *	
5	5	850	1	700			1					1		
6	9	2000	35	3								3	2	compacted humified peat residue
11	4	500	<1	450	23	1		1	<1					
15	9	200	30	12	19		1	2	5	1	1	3	3	
17	5	100	<1	112				1	<1			1	1	
18	4	150	8	20e	4		1	2	6	5				barley
21	5	50	<1	59				2	<1			1	1	

(* frequency: 1=1-10; 2=11-50; 3=51-150 items; e- estimate of briquetage in unsorted residue)

The environmental evidence is limited. A few small fragments of burnt and unburnt bone were recovered from the residue. The flot produced a little charcoal, mineralised wood and five fragments of charred grain, among which barley has been preliminarily identified.

Sample 7, context 21
Almost the whole of the small residue from this sample was composed of briquetage. A small piece of glassy slag (fuel ash slag?) was recovered when the magnet was run through the residue. A few tiny fragments of bone, some burnt were picked out of the resdiue.

The very small flot produced a few small fragments of charcoal and one or two preserved seeds and insect fragments, and a little organic debris.

Radiocarbon dating
Two samples were submitted for dating to Beta Analytic Inc, Florida. A sample of the humified peat underlying the saltern, and possibly used as a fuel during the salt production process, and a small round wood stake(?) within context 15 which was associated with briquetage debris and vessel fragments from the saltern activity.

Table 3: Radiocarbon results

Site	context	material	measured C14 age BP	Intercept	2 sigma (95% probability)	Lab. no.
ITW99	6	peat	2610±70	Cal. BC 800	Cal. BC 900-750 & Cal. BC 700-540	Beta-151214
ITW99	15	wood	2330±80	Cal. BC 390	Cal. BC 760-640 & Cal. BC 560-200	Beta-151213

The calibration curves are attached.

Discussion
The late Bronze Age/early Iron Age date for the humified peat is consistent with other evidence from the fens for a regression episode in sea level in the early 1st millenium BC (Waller 1994) with a consequent expansion of freshwater sedimentation and peat formation seawards. Further drying out and the formation of a terrestrial environment is indicated at Ingoldmells by the humification of the peats and the colonisation by earthworms.

The saltern activity indicates a trangressive phase with the sea level rising again and the contemporary upper tidal range presumably being very close to the site at the time the saltern was in operation. This is dated to the early/middle Iron Age and relates to the trangressive phase of sea level change in the middle to late 1st millennium BC. The silts and clays overlying the briquetage layers reflect this marine incursion and indicates that the saltern activity was taking place during a period of rising sea level.

The environmental evidence from the samples is limited. The uncharred plant and insect remains have some potential for considering the palaeoenvironment at the site, during both the saltern phase and the preceeding peat episode, but these are not the best samples for that type of study which is better conducted on a series of carefully selected samples taken through the

Wood – Gutch 15

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: est. C13/C12=-25:lab. mult=1)

Laboratory number: **Beta-151213**

Conventional radiocarbon age[1]: **2330±80 BP**

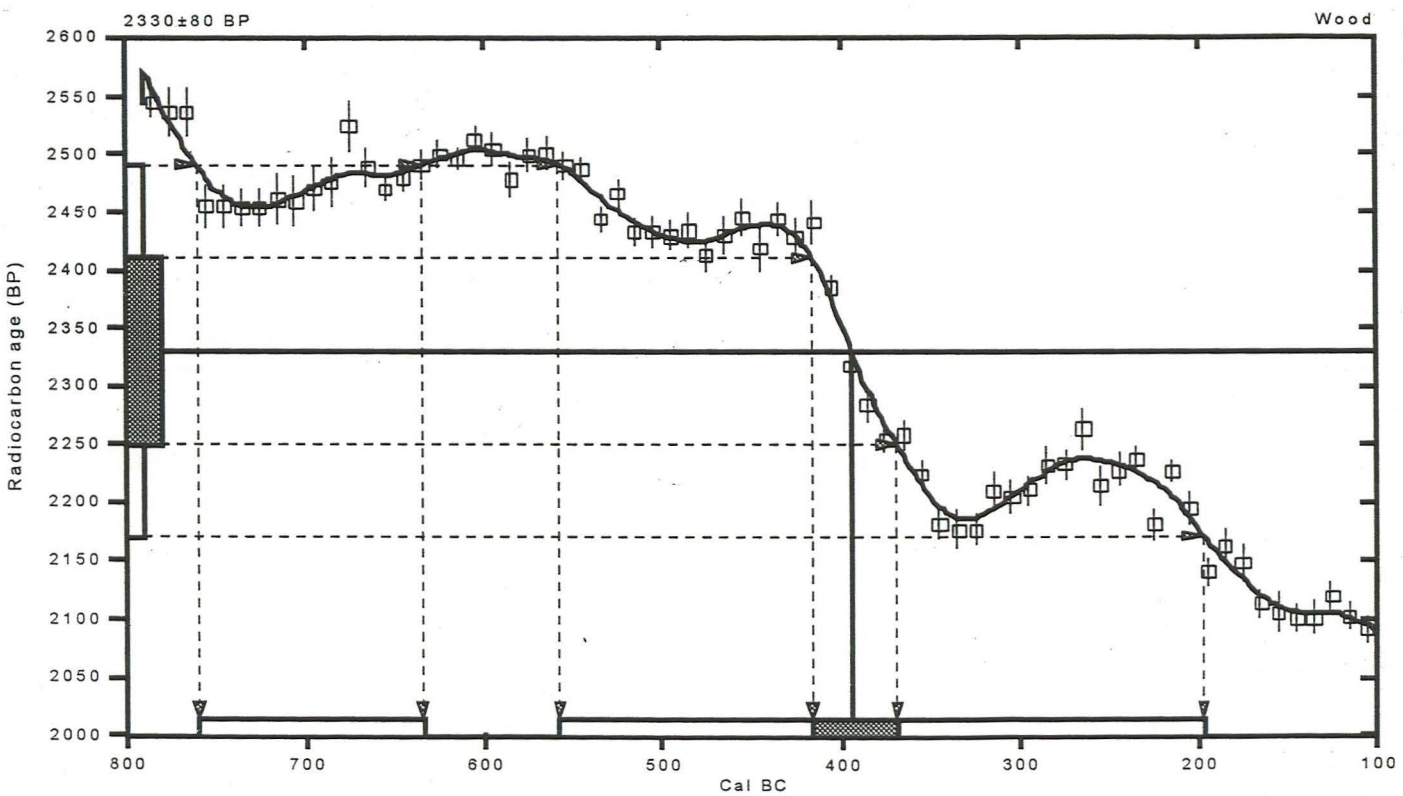
2 Sigma calibrated results: **Cal BC 760 to 640 (Cal BP 2710 to 2580) and**
(95% probability) **Cal BC 560 to 200 (Cal BP 2510 to 2150)**

[1] *C13/C12 ratio estimated*

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 390 (Cal BP 2340)

1 Sigma calibrated result: (68% probability) Cal BC 420 to 370 (Cal BP 2370 to 2320)



References:

Database used

Calibration Database
Editorial Comment
Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii
INTCAL98 Radiocarbon Age Calibration
Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Inc.

4985 SW 74 Court, Miami, Florida 33155 USA • Tel: (305) 667 5167 • Fax: (305) 663 0964 • E-Mail: beta@radiocarbon.com

Peat - Content 6

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: est. C13/C12=-25:lab. mult=1)

Laboratory number: **Beta-151214**

Conventional radiocarbon age[1]: **2610±70 BP**

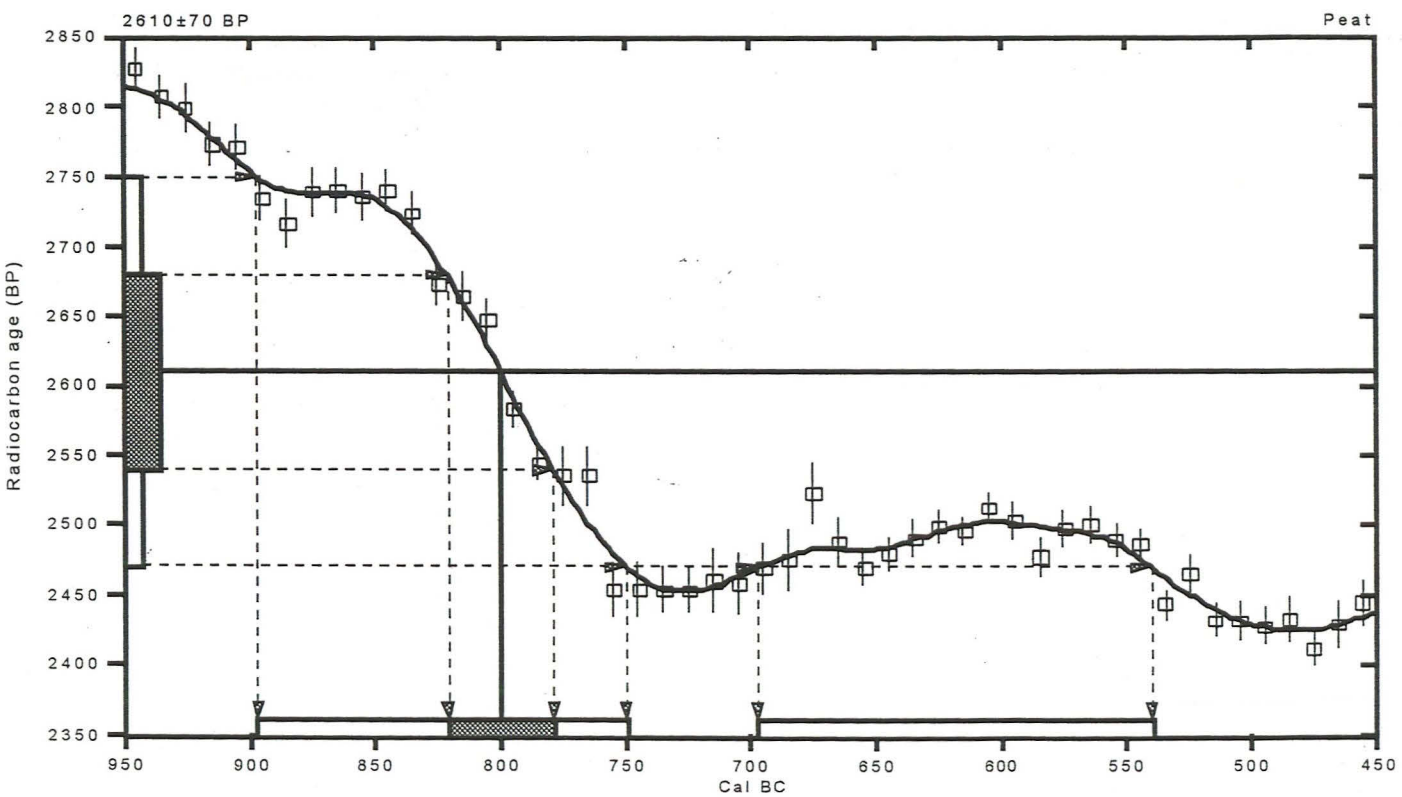
2 Sigma calibrated results: (95% probability) **Cal BC 900 to 750 (Cal BP 2850 to 2700) and Cal BC 700 to 540 (Cal BP 2650 to 2490)**

[1] C13/C12 ratio estimated

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 800 (Cal BP 2750)

1 Sigma calibrated result: (68% probability) Cal BC 820 to 780 (Cal BP 2770 to 2730)



References:

Database used

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

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Mathematics

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stratigraphic sequence specifically for palaeoenvironmental analysis. They also produced some evidence for the activities taking place on site. The few fragments of burnt bone and charred cereal are indicative of cooking and food consumption but so little is identifiable that further work is not warranted. The presence of charcoal, most of it small fragments, indicates fuel use either domestic in origin or from the salt making process, but whether wood or peat was the main fuel being used cannot be identified from these samples. Little more information can be expected from further work on these samples.

Acknowledgments
I should like to thank Alison Foster for the sample processing and sorting.

Bibliography
Waller, M. 1994 *The Fenland Project, Number 9: Flandrian Environmental Change in Fenland*. East Anglian Archaeology, Report No. 70.
Williams, D.1973 Flotation at Siraf, *Antiquity*, 47, 198-202

Table 2: Ingoldmells – ITW99. Finds from the samples

cont	vol	residue vol in ml.	flot vol. ml.	brique-tage wt. g.	brique. vessel no.	pot no.	wood *	char-coal *	bone wt. g.	charr'd grain no.	charr'd seed *	un-charr'd seed *	insect *	
5	5	850	1	680			1					1		
6	9	2000	35	3								3	2	compacted humified peat residue
11	4	500	<1	413	23	1		1	<1					
15	9	200	30	130	19		1	2	5	1	1	3	3	
17	5	100	<1	112				1	<1			1	1	
18	4	150	8	131	4		1	2	6	5				barley
21	5	50	<1	59				2	<1			1	1	

(* frequency: 1=1-10; 2=11-50; 3=51-150 items; e- estimate of briquetage in unsorted residue)

Table 3: Ingoldmells ITW 99, Briquetage from residues

Sample No.	Context	vol	residue vol in ml.	flot vol.	briquetage, weight (g)	briquetage ?pedestal frags., weight (g)	briquetage thin-walled vessel frags., weight (g)/ [no.]	briquetage vessels, no.	briquetage, indeterminate frags., weight (g)	pot, no.
1	**5**	5	850	1	680	205	199/ [91]		276	
2	**6**	9	2000	35	3				3	
3	**11**	4	500	<1	413	76	111/ [68]	23	226	1
4	**15**	9	200	30	130		35/ [33]	19	95	
5	**17**	5	100	<1	112	32	14/ [12]		66	
6	**18**	4	150	8	131	11	19	4	101	?1
7	**21**	5	50	<1	59				59	

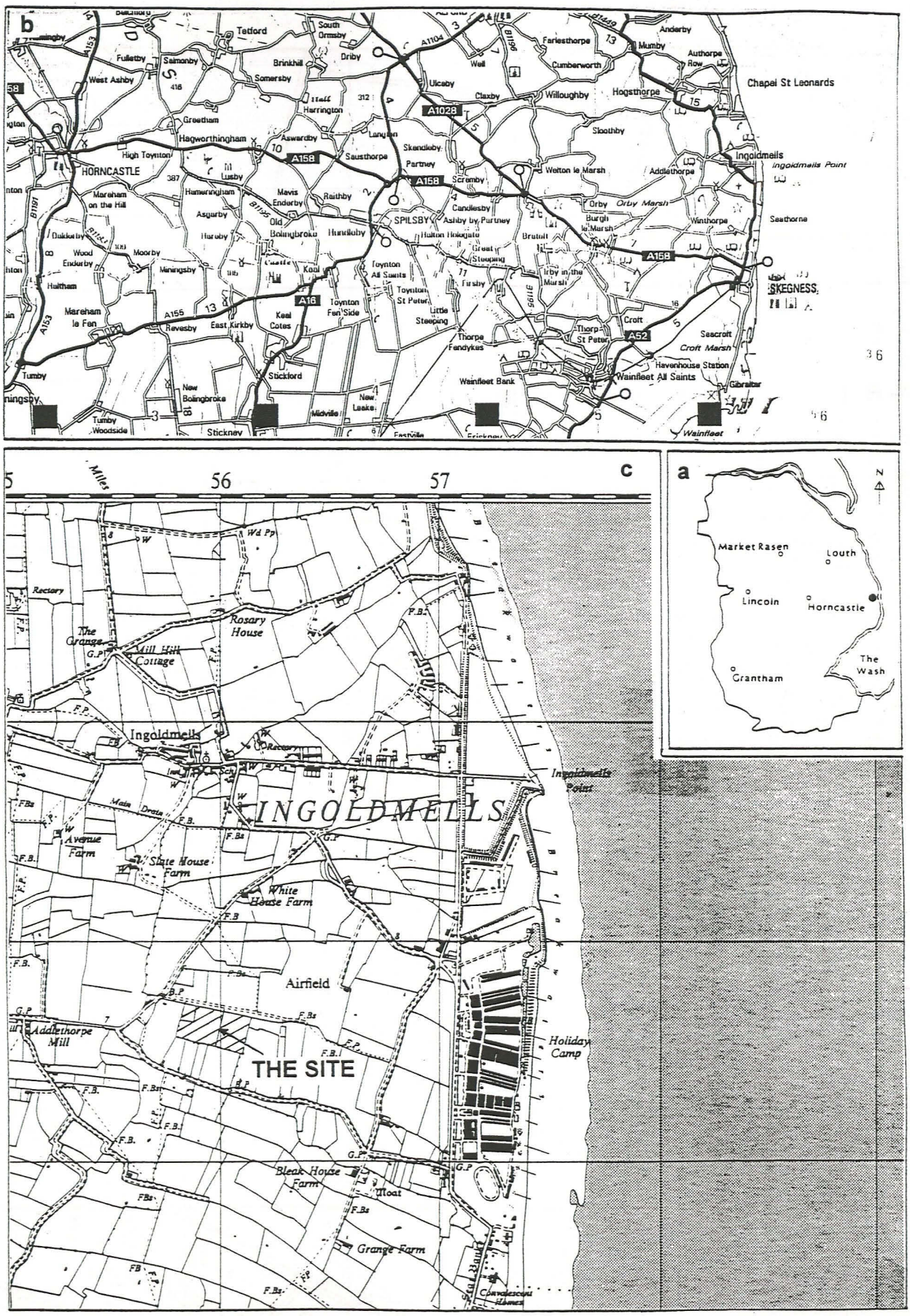


Fig. 1 Location of Ingoldmells (c based on the 1960 Ordnance Survey 1:25,000 map, Sheet TF 56. © Crown Copyright, reproduced with the permission of the Controller of HMSO. LAS Licence No. AL 50424A).

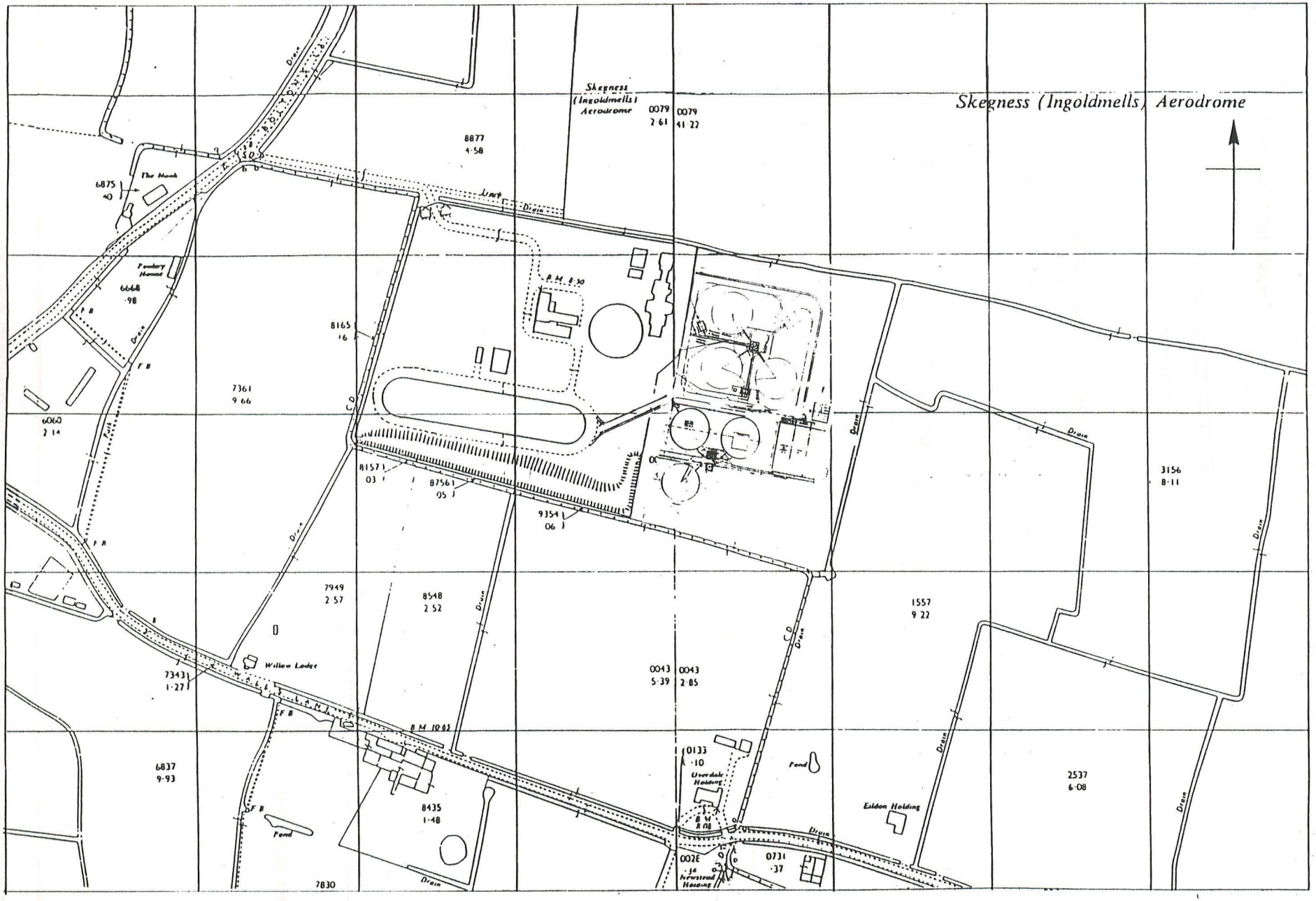


Fig. 2 The Sewage Treatment Works, showing the position of the monitored extensions (based on plans supplied by Anglian Water Services. © Crown Copyright, reproduced with the permission of the Controller of HMSO. LAS Licence No. AL50424A).

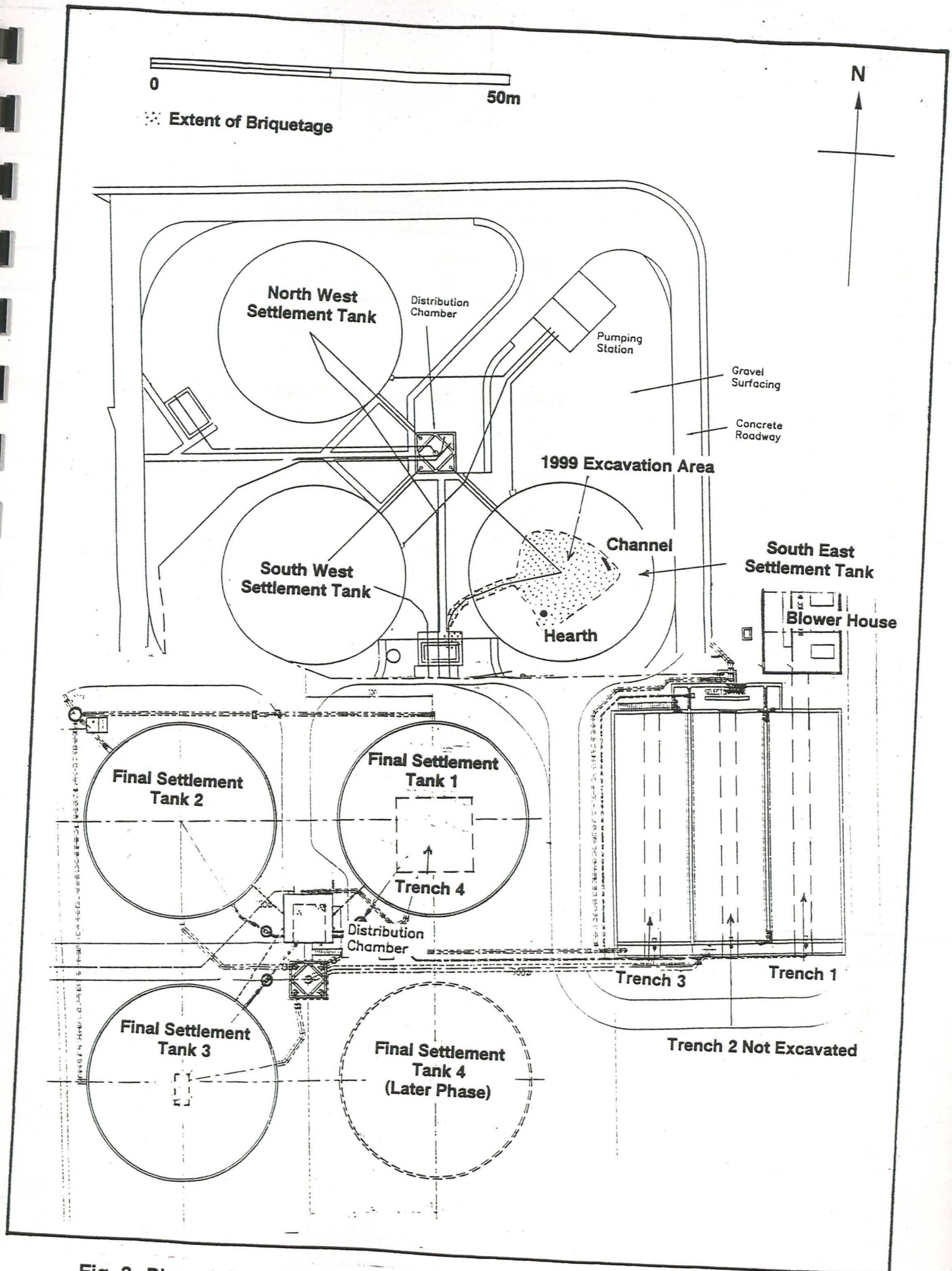


Fig. 3 Plan of the new development in Extension Phase 1 (upper part) and Phase 2 (lower), showing the revealed extent of briquetage (based on plans supplied by Anglian Water Services Ltd).

A F Howland Associates
Geotechnical Engineers

Boring Method: Cable Percussion	Diameter: 200mm Cased to 9.00m, 150mm Cased to 20.00m	Ground Level (mOD): 1.90	Site: INGOLDMELLS SEWAGE TREATMENT WORKS
Client: Anglian Water Services Limited, Lincoln	Job Number: 98.178	Location: 556056 E 367612 N	Dates: 04/08/98 - 05/08/98
Engineer	Sheet: 2/2	Borehole Number: 1	

Depth m	Samples / Tests	Casing Depth m	Water Depth m	Field Records	Level (mOD)	Depth m (Thickness)	Description	Legend
					1.85	0.05	TOPSOIL	
0.50	D1P						MADE GROUND (very stiff desiccated brown silty clay with occasional fine roots) ....becoming stiff, greyish brown and occasionally grey mottled and with occasional small pockets of orange fine sand	
1.20	D2P					(2.15)		
1.30-1.75	U1	0.00	DRY	14 blows			....becoming firm, brown and grey mottled, with traces of red brick, black ash and clinker	
1.80	D1							
2.00-2.45	U2	1.50	DRY	6 blows			....becoming very soft	
					-0.30	2.20		
2.50	D2						Very soft brown and occasionally grey mottled silty CLAY, with occasional small pockets of orange silt	
3.00-3.45	U3	2.90	DRY	5 blows		(1.80)		
3.50	D3							
3.50	W1			Wet(1) at 3.50m, rose to 3.40m in 20 mins, sealed at 12.00m.			....becoming brown, sandy and very silty, with occasional dark grey organic specks	
					-2.10	4.00		
4.00-4.45	U4	2.90	DRY	6 blows			Very loose greyish brown very sandy clayey SILT	
4.50	D4							
5.00-5.45	SPT N=3	4.50	3.40	1/,1,1,1		(2.10)		
5.00	D5							
6.10-6.55	SPT N=4	6.00	3.70	2/1,1,1,1	-4.20	6.10		
6.10	D6						Loose brown slightly clayey silty fine SAND	
7.00	D7						....becoming grey; oxidizes to brown in places	
7.50-7.95	SPT N=6	7.40	4.50	2/1,1,2,2				
7.50	D8					(3.90)		
8.50	D9							
9.10-9.55	SPT N=6	9.00	4.30	2/1,2,2,1				
9.10	D10							
0.00	D11			04/08/98:0.70m	-8.10	10.00		
				05/08/98:1.00m		(0.30)	Soft brown and dark grey sandy silty CLAY, with some subangular to subrounded fine to coarse siltstone gravel	
10.50-10.95	CPT N=15	10.40	0.50	3/2,4,4,5	-8.40	10.30		
10.50-11.00	B1					(1.20)	Medium dense dark brownish grey silty slightly chalky fine to coarse SAND, with some subrounded to subangular fine to coarse chalk, flint and mudrock gravel	
11.50	D12				-9.60	11.50	Firm dark brown slightly sandy silty CLAY, with occasional fine to medium quartz, chalk and mudrock gravel, and occasional pockets of brown silty fine to medium sand at top of stratum	
12.10-12.55	U5	12.00	DRY	72 blows				
12.60	D13							
13.00	D14							
13.50-13.95	U6	12.00	DRY	65 blows		(4.50)		
14.00	D15						....with occasional sandstone gravel in places	
14.50	D16							
15.00-15.45	U7	12.00	DRY	52 blows				
15.50	D17						....becoming firm to stiff	
16.00	D18			Fast(2) at 16.00m, rose to 7.10m in 20 mins, not sealed.	-14.10	16.00		
16.00	W2						Very dense greyish brown silty slightly shelly sandy subrounded to subangular fine to coarse GRAVEL size, and some cobble size, fragments of rock chalk, with occasional flint gravel	
16.50-17.00	B2							
16.50-16.95	CPT N=82	16.40	7.50	15/9,15,22,36				
17.50	D19							
18.00-18.45	CPT N=90	17.80	7.90	12/10,16,25,39		(4.00)		
18.00-18.50	B3							
19.00	D20							
19.50-19.91	CPT 114/255	19.30	8.00	18/12,18,34,50				
19.50-20.00	B4							
				05/08/98:8.00m	-18.10	20.00		

Fig. 4 Reproduction of log for Borehole 1, on site of SE Primary Settlement Tank (A.F. Howland Associates, 1998).

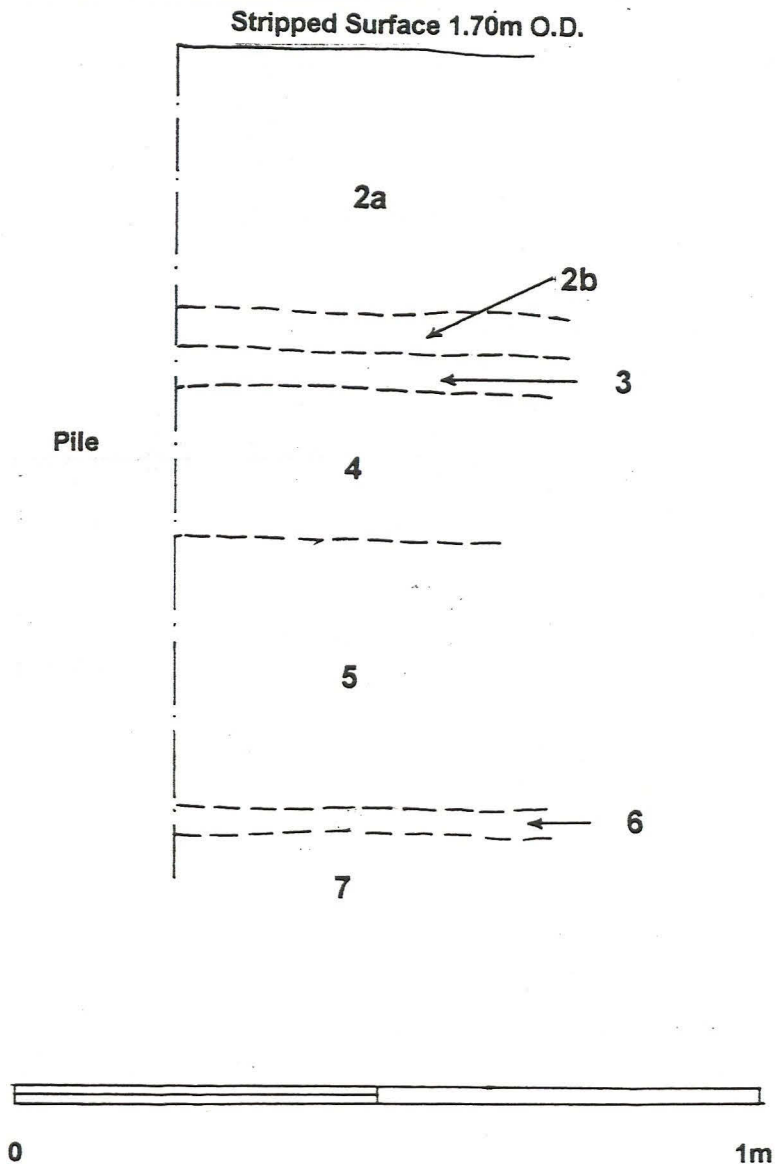


Fig. 5 Section through peat 6, briquetage 5, and overlying silt deposits NE of the cone centre, SE Primary Settlement Tank (McDaid, after Tann).

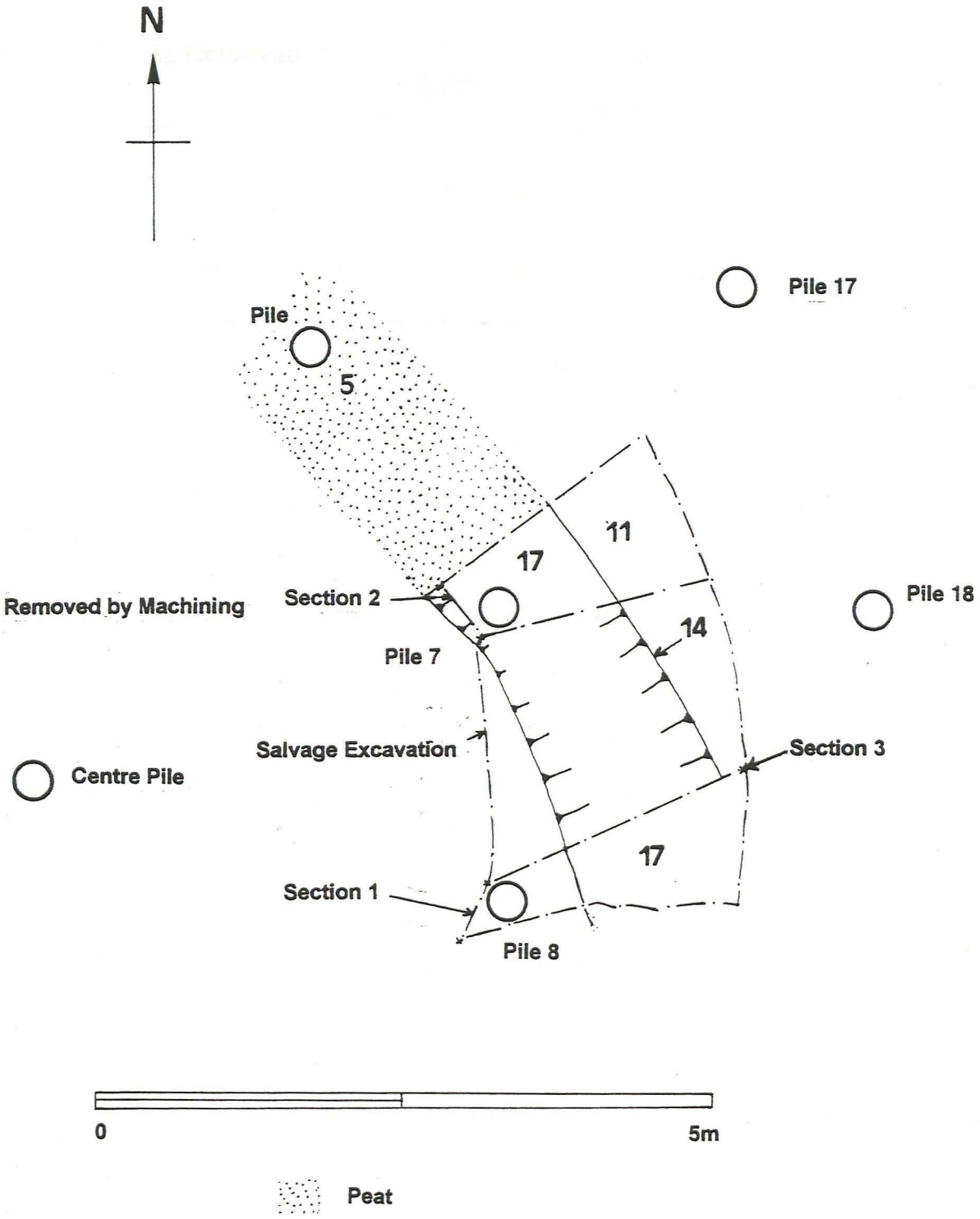


Fig. 6 Plan of the excavated length of peat-filled channel 14 (McDaid, after Tann).

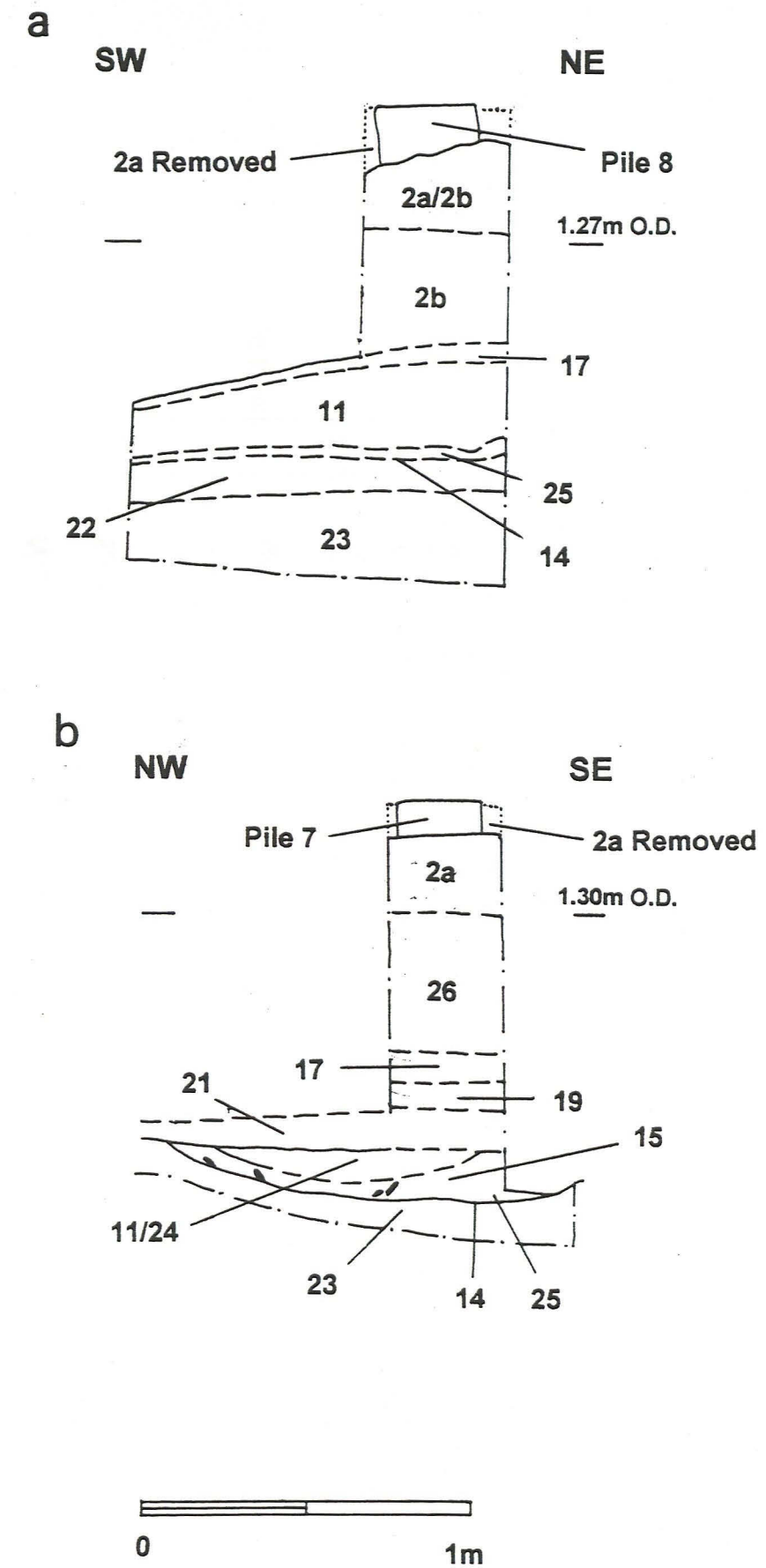


Fig. 7 Sections across small peat-filled channel 14, SE Primary Settlement Tank. a) Section Line 1; b) Section Line 2 (McDaid, after Tann).

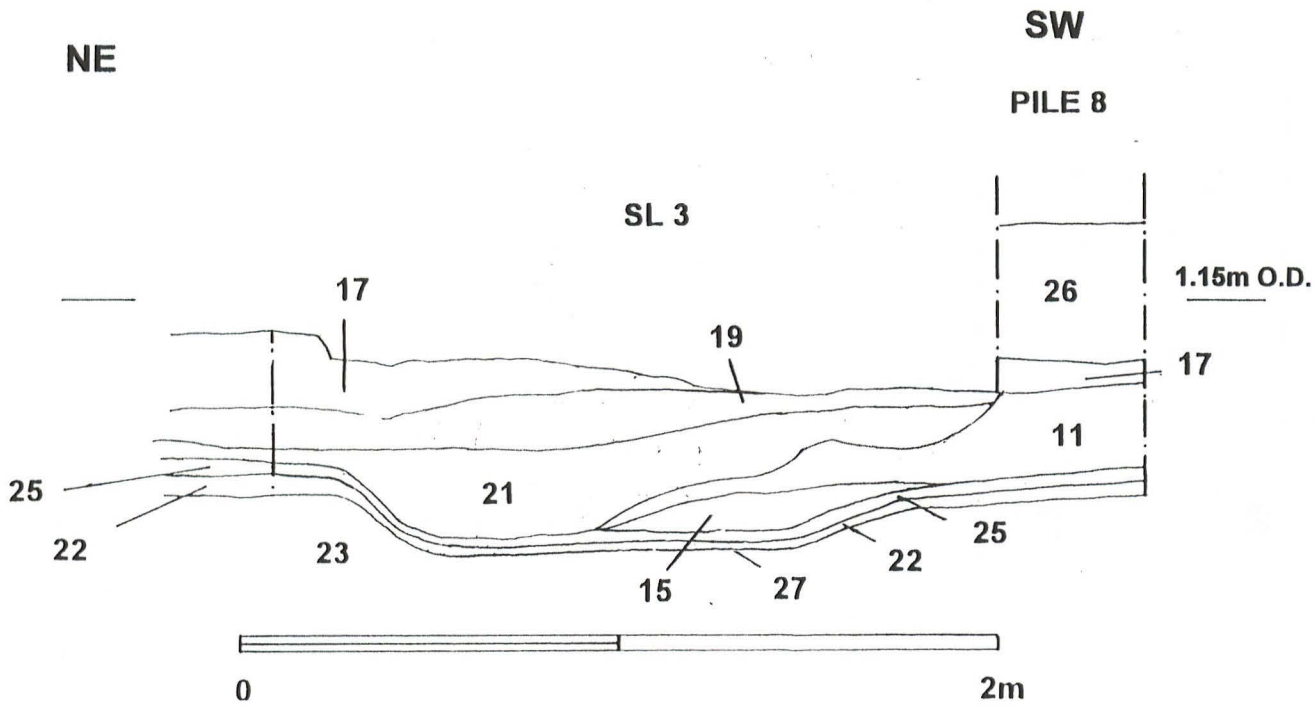


Fig. 8 Section (Section Line 3) across small peat-filled channel 14, SE Primary Settlement Tank (McDaid, after Tann).

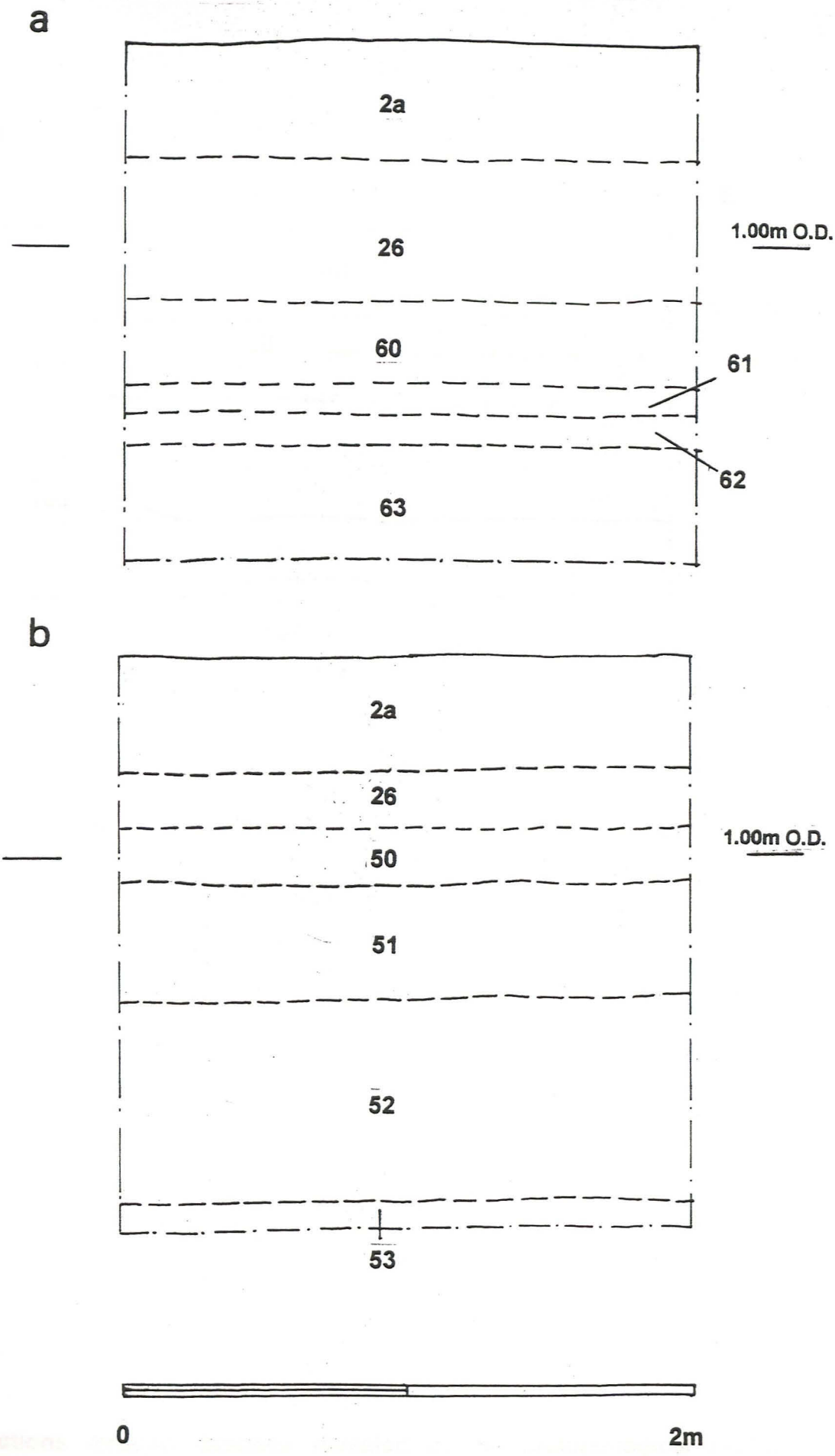


Fig. 9 Sections through deposits revealed in groundworks for: a) the NW Primary Settlement Tank; b) the Pump House (McDaid).

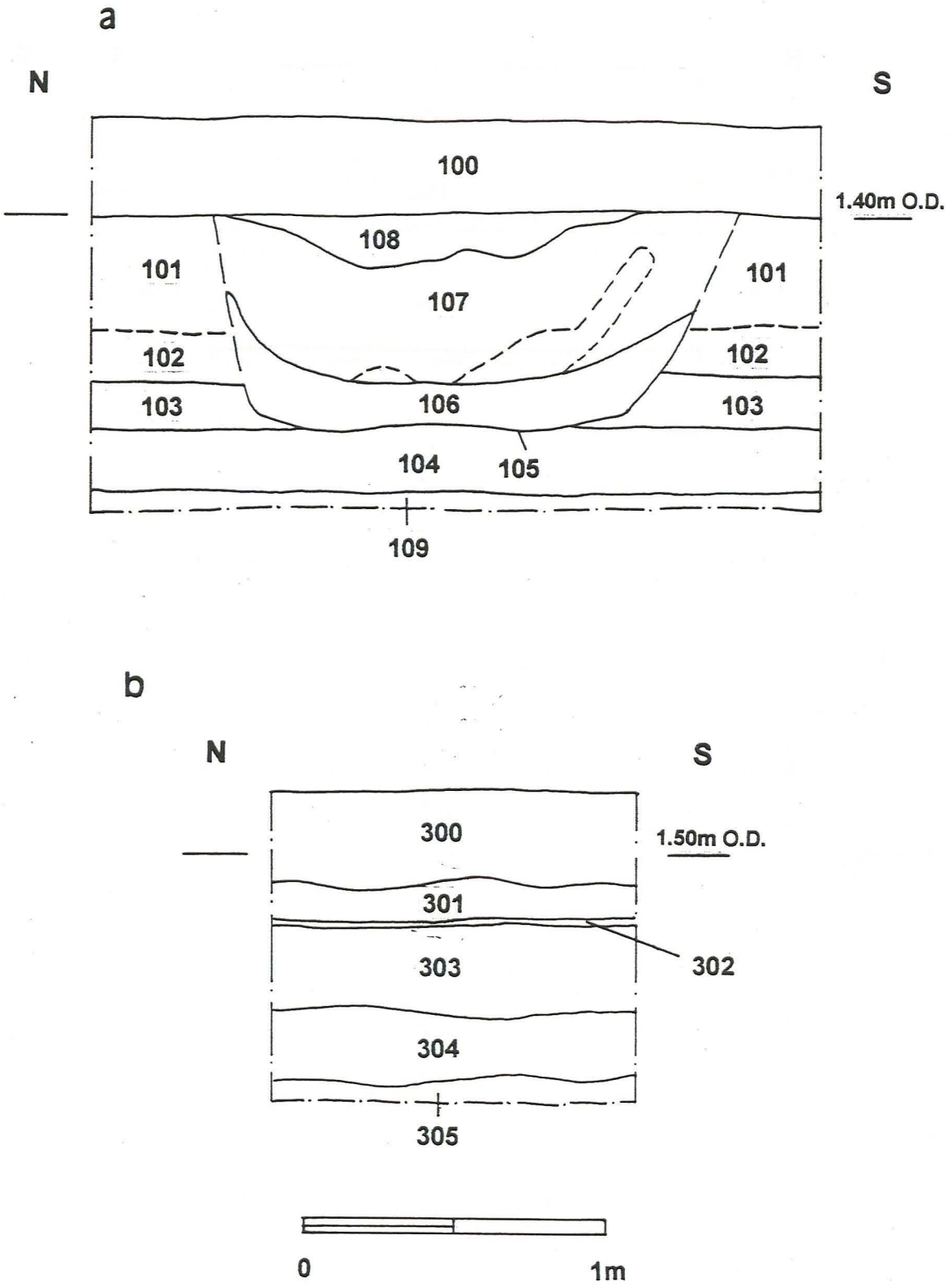


Fig. 10 Sections through deposits revealed in the archaeological evaluation trenches a) Aeration Lane 1; b) Aeration Lane 3 (McDaid).

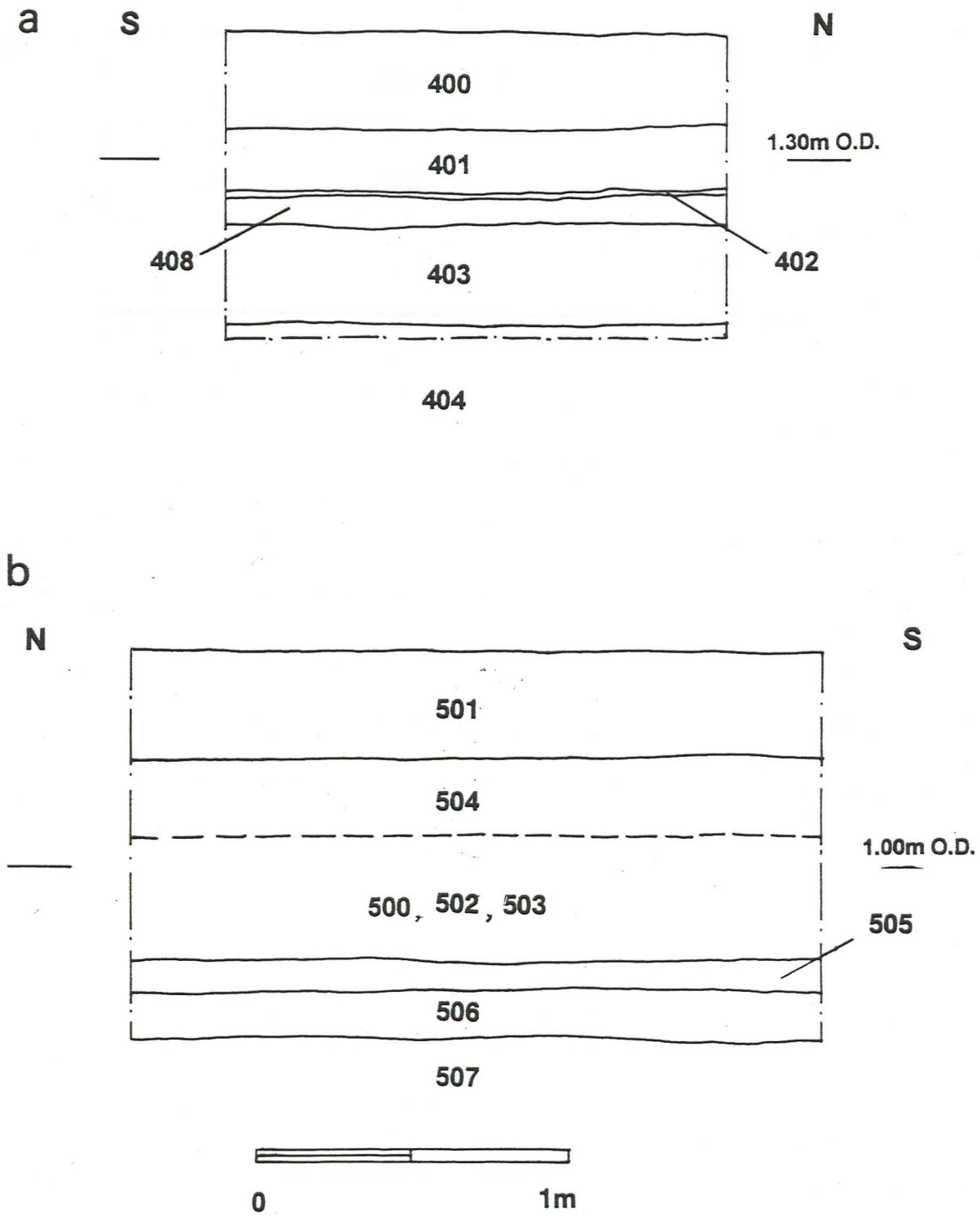


Fig. 11 Sections through deposits revealed in groundworks for a) the Exploratory Trench, and b) the Distribution Chamber (McDaid).

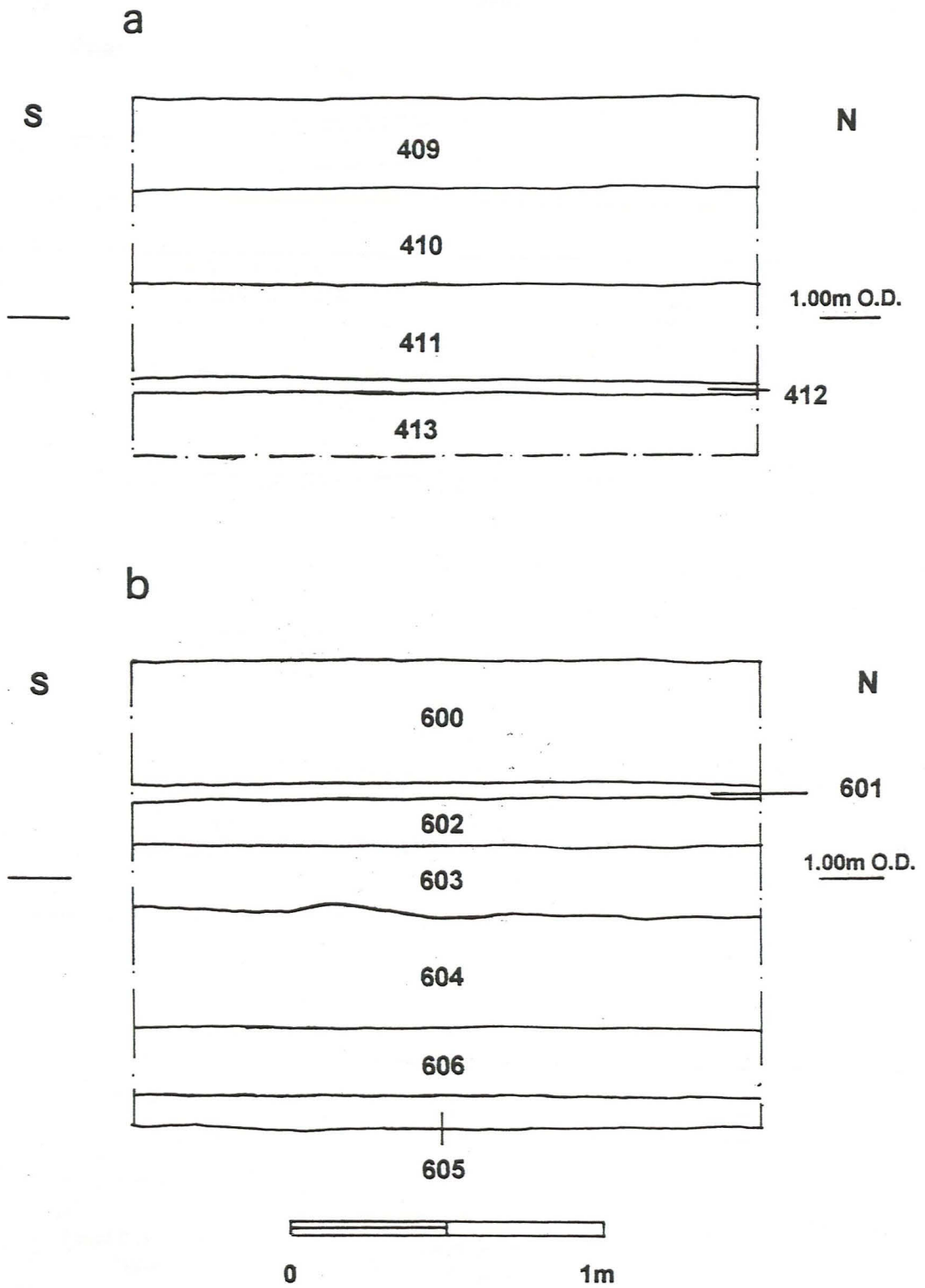


Fig. 12 Sections through deposits revealed in groundworks for a) Final Settlement Tank 1, and b) Final Settlement Tank 2 (McDaid).

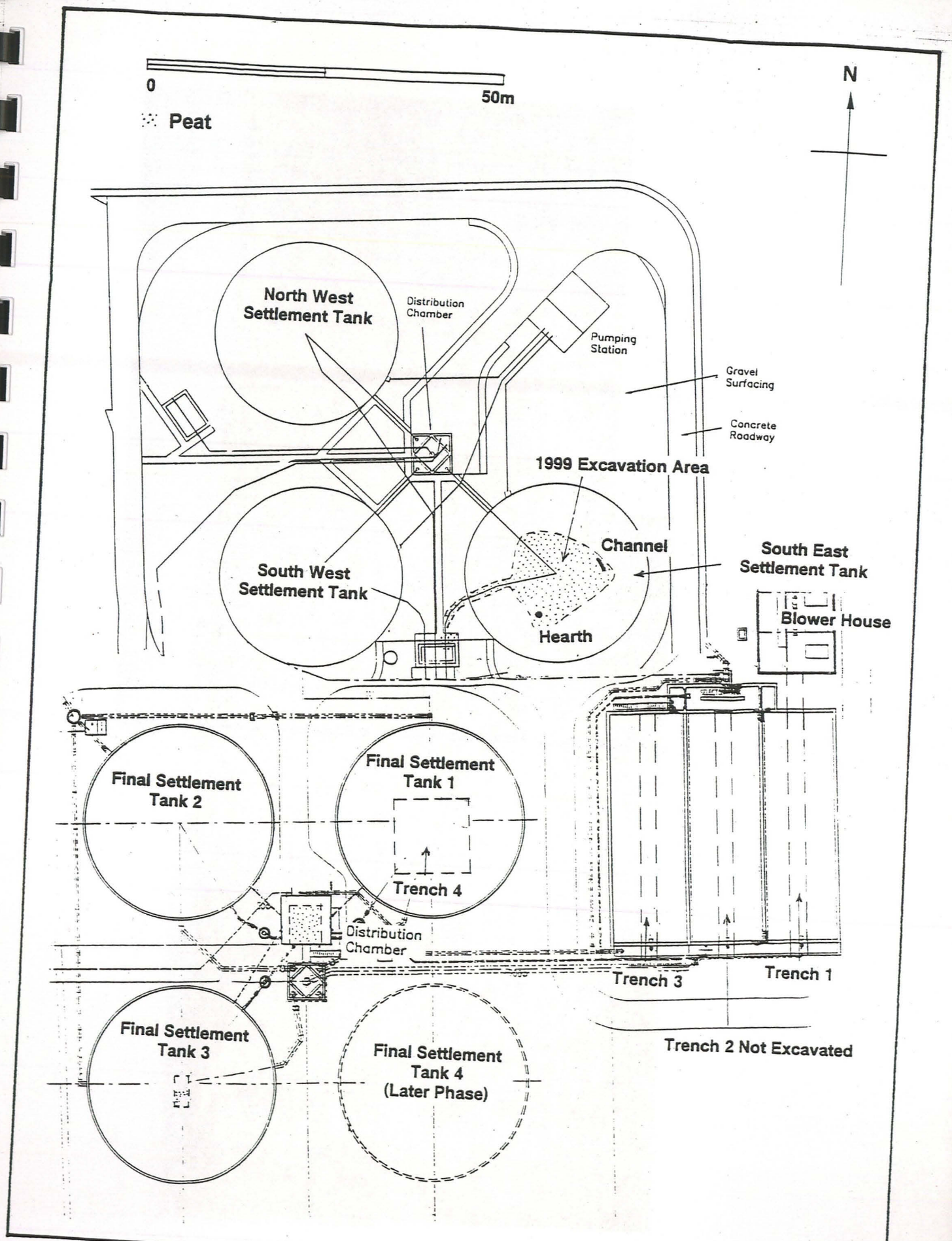


Fig. 13 Extent of the Late Bronze Age/Early Iron Age peat layer, as seen during the archaeological monitoring (based on plans supplied by Anglian Water Services). A small exposure of peat was also recorded 60m west of Final Settlement Tank 3.

Pl. 1 Area of Extension Phase 1 after topsoil stripping and levelling (looking NW).

Pl. 2 **Removal of silt from between the concrete piles of the SE Settlement Tank revealed layers of briquetage and peat below the marine silt (looking west).**

Pl. 3 **Soil deposits exposed in the trench sides beside a concrete pile (scale 1m). The peat band is at the base, overlain by 0.25m of briquetage, fired soil and silt.**

Pl. 4 The dark band of peat, as revealed in the centre of the SE Settlement Tank (looking NW).

Pl. 5 Detail of the peat band and overlying layer of fired soil with briquetage.

Pl. 6 Location of the pottery concentration investigated by salvage excavation (marked by tape). Looking NW.

Pl. 7 Monolith of intact deposits beside a concrete pile (scales 1m and 0.5m).

Pl. 8 Dark peat band marking the base of shallow channel 14. Looking SE, scales 1m and 0.5m.

Pl. 9 Section through deposits filling channel 14 (Looking SE, scales 1m and 0.5m).

Pl. 10 Detail of deposits at edge of channel 14 (scale 0.5m).

Pl. 11 The SE Settlement Tank during excavation, showing the position of the possible hearth area (foreground) relative to the pottery concentration (within taped area). Looking north, scales 1m and 0.5m).

Pl. 12 Positions of the three Settlement Tanks: SE Settlement Tank (foreground), SW Tank (unexcavated, top left), and NW Tank under excavation, background). Looking NW from topsoil bund.

Pl. 13 Deposits exposed at centre of the SW Settlement Tank (looking east to SE Tank).

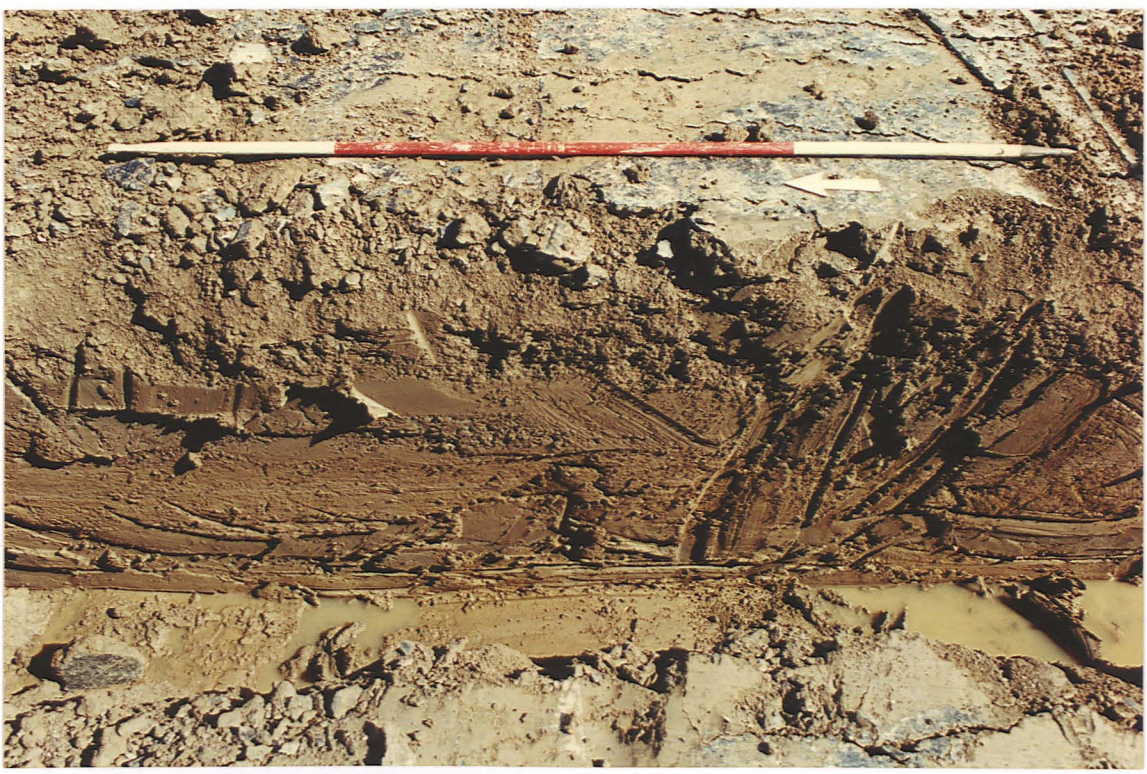
Pl. 14 Position of the groundworks for the Pump House, in front of NW Settlement Tank (looking NW).

Pl. 15 Deposits exposed on the Pump House site; below the smeared upper silt was a thin grey silt band which may represent the peat layer to the south.

Pl. 16 Trenches for pipework west of the SE Settlement Tank (looking north). This point was the western limit of the briquetage spread.

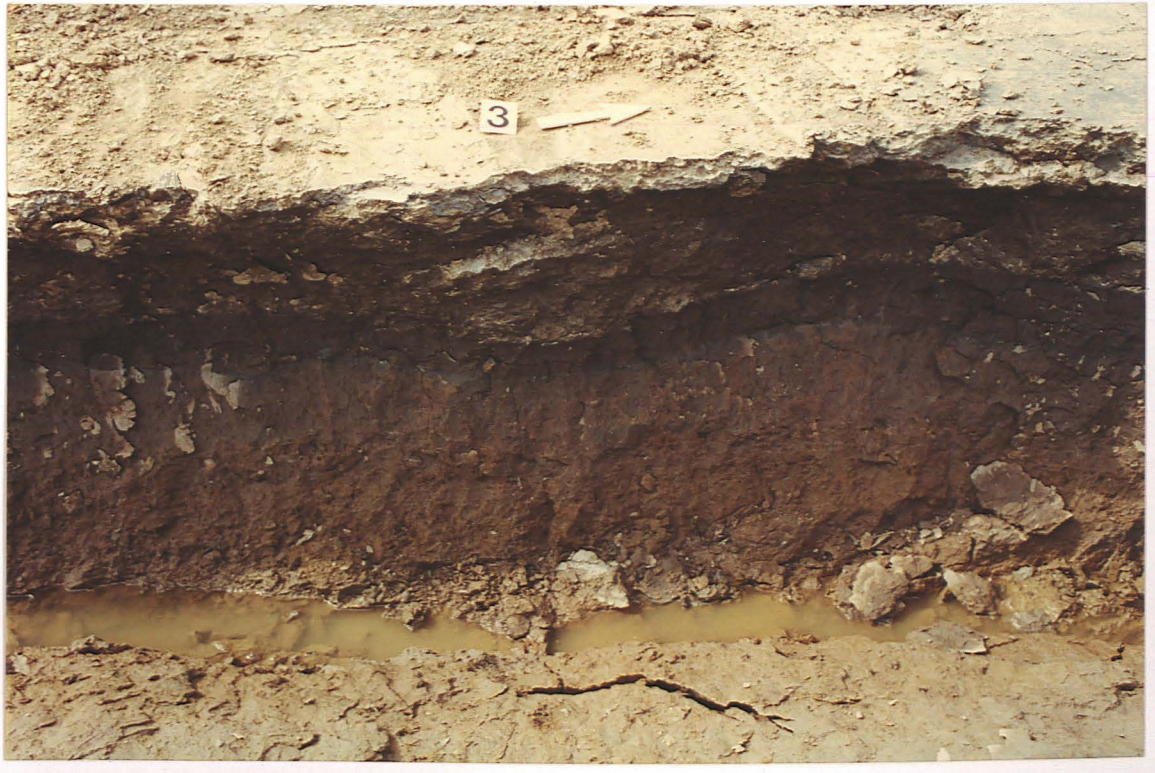
Pl. 17 Section through deposits west of the SE Settlement Tank. A piece of briquetage is visible near the trench base right of the red/white scale, marking the western limit of the spread (divisions 0.2m).

Pl. 18 Extension Phase 2: silt deposits in the centre of Aeration Lane 1 (scale 2m).



Pl. 19 Backfilled post-medieval ditch 105 crossing Aeration Lane 1 (looking west, scale 2m). The primary fill is the dark grey silt near the trench base.

Pl. 20 Section through deposits visible in Aeration Lane 3; the thin grey band below the upper lime-consolidated silt may represent the peat band seen to the NE.



Pl. 21 Extension Phase 2, Trench 4 (looking NW).

Pl. 22 A thin peat layer was exposed in part of Final Tank 1; part of the layer has been removed to demonstrate its thickness (scales 1m and 0.5m).

Pl. 23 Final Tank 3 during construction (looking north).

Pl. 24 Peat layer exposed in groundworks for the Distribution Chamber (looking NE towards the constructed SE Settlement Tank).

Pl. 25 Trench 4, showing the thin band of grey silt (scale divisions 0.5m).

Pl. 26 Thin band of peat seen during groundworks within the existing compound area west of Extension Phase 2 (scale 1m).