

THE WATERFRONT AT KING'S LYNN - RECENT EXCAVATIONS

by Sarah Bates

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and an appendix by Paul Cattermole

SUMMARY

The Norfolk Archaeological Unit (NAU) has recently undertaken work at two waterfront sites in King's Lynn, the first such sites to be excavated in the town since the 1960s. The work took place on the south bank of the Millfleet and in the Corn Exchange at the west side of the Tuesday Market Place. Both sites produced evidence for the gradual reclamation of land from the water. Additionally, at the Corn Exchange, a bell casting pit was excavated. Substantial amounts of pottery provided information on local trade and foreign imports.

Background

Settlement developed at Kings Lynn on the estuary through which the Nar and Gaywood rivers and two small streams, the Millfleet and Purfleet, flowed into the Wash. Occupation seems originally to have been based on the salt-workings which occurred along the estuary banks; trade in salt was well established by the 11th century (Owen 1984, 5). Salt production resulted in waste heaps of sand. Gradually land was reclaimed and the salters moved nearer to the new shoreline while settlement developed on the new land.

With trade established and with its location at an important crossing for road, river and sea transport, King's Lynn was well-placed for growth. In the late 11th century Herbert de Losinga, the first Bishop of Norwich, founded the Priory of St Margaret and obtained rights to the local fair and to the 'sand market' which existed on the shore between the Millfleet and Purfleet (Parker 1971, 1; Clarke and Carter 1977, 412). Thus trade was regularised and the rapid growth of Lynn as a port was assured with development of the town first taking place in the area between the fleets and around the priory (Fig.1).

Within 50 years the town had outgrown its natural northern boundary of the Purfleet and, under Bishop William Turbe (1146 - 74), the 'Newland' was laid out to the north. This was a planned extension to the town and included the Tuesday Market Place, a fair and the chapel of St Nicholas.

The continued wealth and development of the town depended greatly upon trade from its hinterland. Good river connections meant that waterborne trade along the east coast of England, as well as across the North Sea, flourished (Clarke 1973). In addition to salt, exports in the 12th century included wool and grain from Huntingdonshire and Cambridgeshire and lead from Derbyshire. Spices and wine were imported from France and Spain and hawks from Norway.

Trade became more important during the 13th century, when the River Ouse became silted up at Wisbech. The changing course of the Fenland rivers allowed more water to flow through Lynn and made it accessible, via the Great Ouse, from a more extensive area (Clarke and Carter 1977, 413). Customs returns for 1203 - 1205 show Lynn and Boston to be the most wealthy ports in England after London and Southampton.

In addition to the goods traded during the 12th century exports now included ale and, during the later 13th century, cloth. A wide variety of goods were brought into Lynn from abroad.

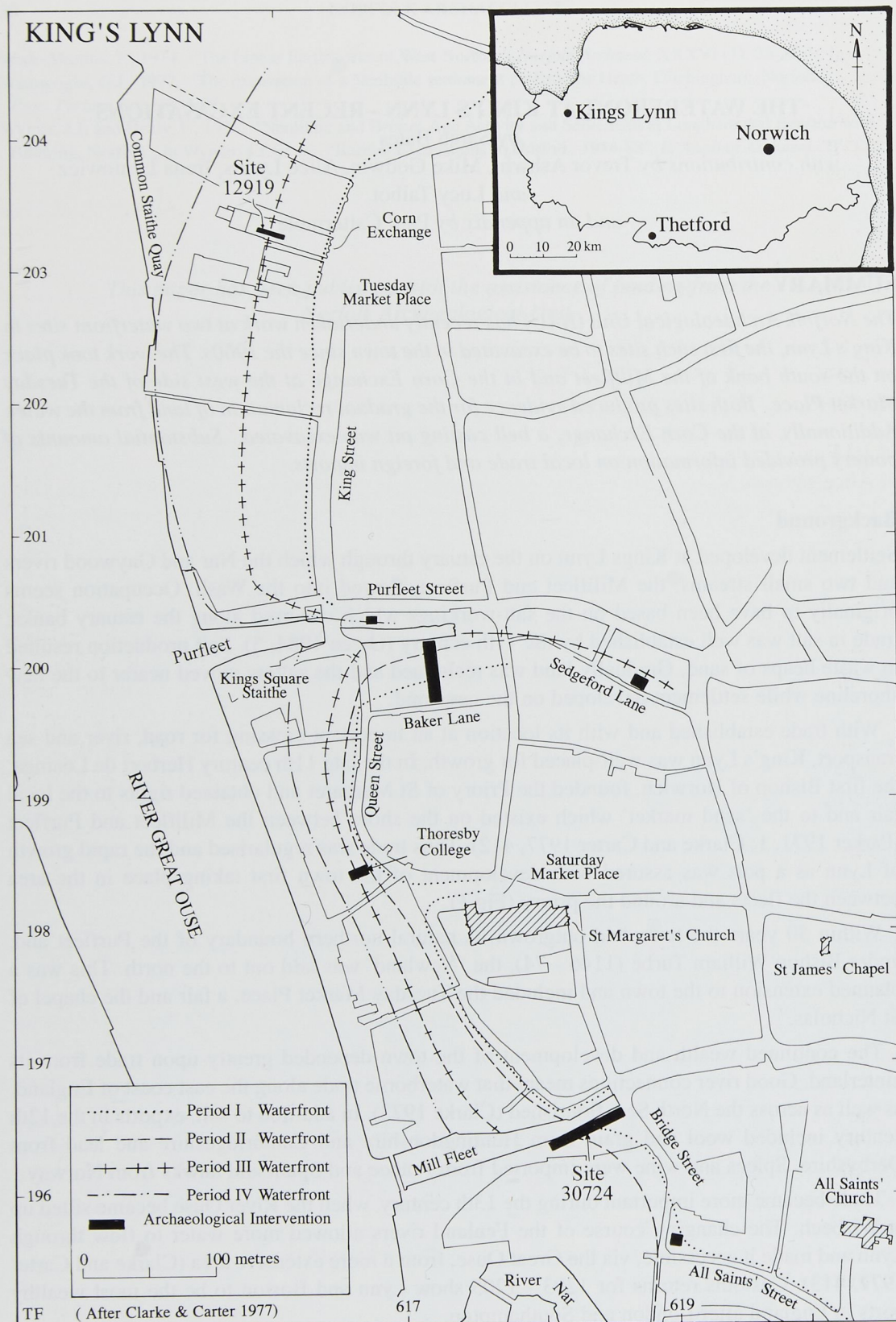


Fig.1

King's Lynn, showing location of excavations at the Millfleet (Site 30724) and the Corn Exchange (Site 12919), along with waterfront sites excavated by the Lynn Survey and positions of former waterfronts

These included furs, iron and other ores, brass, millstones, marble, wax, timber, fish and dyes (Owen 1984, 42-3). The main archaeological evidence for trade is the large amount of pottery recovered from excavations. This includes local Grimston Wares and imported pottery which may have been brought to Lynn in its own right or with other cargoes (Clarke 1973).

During the later medieval period there was a decline in exports due to the slowing of agricultural expansion, higher taxes on wool exports and an increase in imports of grain and salt from abroad. However, trade was still important to the economy of the town whose wealth is evident in the continued high level of investment in private and public buildings during the period (Parker 1971, 11-12).

The period up to the mid 13th century was the most formative in the development of the town and by 1300 its main plan was established, with staithes and quays reflecting the importance of access by water. The building of staithes and quays and the use of the river were critical elements in the continuing physical expansion of the town during the medieval period. Once a staithe had been constructed building upon it soon took place, with resultant shallowing of the water at the quayside being caused by natural silting and the disposal of rubbish into the water. Consequently landing stages were built out into the river with deliberate consolidation or infilling of the riverfront occurring (Owen 1984, 23). The use of larger ships during the 15th century also led to riverside expansion in order to provide deeper water for berthing.

Architectural and documentary research, as well as archaeological work on several sites as part of the King's Lynn Archaeological Survey (1963-71), has enabled the line of the medieval riverfront to be established at four different periods (Fig.1 - after Clarke and Carter 1977, 416, fig.191; Clarke 1981). *Period I* (1050 - 1250) pre-dates the re-routing of the rivers and increased traffic through the town. Even during this period, however, when most of the area between the two fleets probably consisted of sandhills, construction was taking place on the riverfront. A stone building stood at the west end of St Nicholas' church in 1187 and a building and quay existed to the south of St Margaret's church in 1220-30. In Newland, a pre-1270 survey mentions wharves along the west side of the Tuesday Market Place. Two houses, one to the east side of each of King Street and Queen Street (Clarke 1981, 132 - 133; Owen 1984, 3, 15), probably also indicated the line of the river, with private quays located across the road on the waterfront (approximately 60m to the east of the present riverbank).

There is no evidence for the line of the Millfleet during this period and, apart from work at All Saints Street in South Lynn (Fig.1), no excavation has taken place in this area. The work at All Saints Street recovered the line of a late 11th-century watercourse and buildings dating to the 12th and 13th centuries (Clarke and Carter 1977, 112).

In *Period II* (1250 - 1350), with the increased flow of water through the town, more wharves were built. At Thoresby College a timber wharf excavated in 1964 (Parker 1965) showed that the bank of the river lay 50m east of the modern waterfront during the 13th century (Fig.1). By the 14th century quays were also established on the fleets, which were themselves navigable for some distance. Excavation on the south bank of the Purfleet at Baker Lane in 1968-9 revealed evidence for deliberate infilling at the waterfront with warehouses and domestic buildings being constructed on the reclaimed area in the 14th century (Clarke and Carter 1977, 43).

On the main Ouse frontage the land was probably not sufficiently consolidated for substantial building during this period, and 'divided properties' - with the merchants' dwellings to the landward side of the street and their warehouses and private quays on the riverbank - were common.

In *Period III* (1350 - 1500) more building took place on the reclaimed land on the Ouse frontage. Nevertheless, with land on the waterfront becoming more important economically, divided properties were still common and the number of private quays grew, with further consolidation of the riverfront occurring. At the Thoresby College site the wooden wharf went out of use, land to its west was infilled and a brick warehouse was built above the earlier wharf. Waterborne traffic on the fleets was at its most important during the mid-15th century, and at Sedgeford Lane excavation in 1965 on the south side of the Purfleet revealed a brick quay supported on timbers acting as consolidation for the waterfront (Clarke and Carter 1977, 31).

In *Period IV* (post-1500) divided properties became less common due to more reclaimed land becoming available for use. However, infilling at the waterfront continued with new wharves gradually extending to the west. There was some abandonment of quays on the fleets during this period, partly due to the need for deeper water for larger vessels. At the same time there was an increase in the number of public wharves, with the main one (acquired by the Town Council from the Trinity Gild after its dissolution in 1547) lying close to the Tuesday Market Place at Common Staithe Yard (Fig.1). In the 1580s the council carried out major rebuilding here and the Yard provided public mooring, warehouses, a coalyard, and a crane which was used for loading and unloading cargoes and for stepping masts. The other main public wharf was at Kings Staithe just south of the Purfleet. In addition to these main wharves, there were in 1557 27 smaller public wharves, mainly on the Ouse but with some still on the fleet frontages.

The only previously-excavated evidence from the Period IV waterfront comes from a site at Purfleet Street on the north bank of the Purfleet. Here the 16th-century fleet bank was located almost 8m further north than the modern bank and had been consolidated fairly rapidly to enable substantial building on it in the 18th century (Fig.1) (Clarke and Carter 1977, 168).

Excavated evidence for activity on the waterfront at Lynn during the medieval period is scarce and information about construction of revetments or wharves fairly limited. It was hoped that the excavation of two new sites, one on the Ouse frontage some 250m north of the site at Thoresby College and the other on the Millfleet frontage where no previous excavation had taken place, would reveal additional evidence for riparian activity. Both sites provided opportunities for the sampling of deposits to allow a better understanding of their origin and of the conditions at the sites at the time of their deposition.

Excavations on The Millfleet (Site 30724)

Introduction (Figs 1 and 2)

The Millfleet, formerly Sewoldsflet, is the southernmost of the two streams running into the Ouse estuary at Lynn (Fig.1). It forms the south boundary to the historic core of the town; at the time of the foundation of the church of St Margaret it had already been bridged, and a tidal mill lay on its banks upstream.

By the 14th century merchants had established quays along the Millfleet and it was navigable for some distance inland. In 1448 the mill was acquired for the town by the Holy Trinity Gild but the fleet did not always hold enough water to turn the millwheel, and channels were dug from the Gaywood and Nar rivers to bring additional water. The mill also caused problems to navigation on the fleet by stopping the regular flow of water unpredictably. By 1600 most of the quays on the Millfleet were abandoned. Although it survived as a tidal inlet until the mid-19th century, it is now largely culverted and covered to the west of modern Bridge Street.

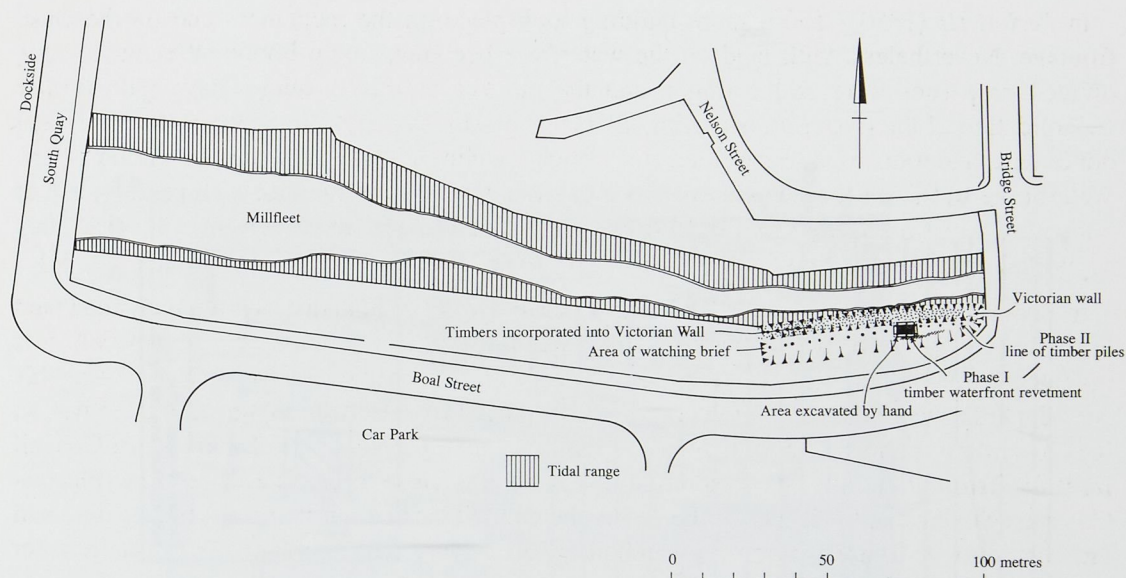


Fig.2
The Millfleet (Site 30724), location of watching brief

The Norfolk Archaeological Unit was contracted by engineers working on behalf of the Borough Council of King's Lynn and West Norfolk to carry out work during the demolition of the Victorian wall at the south side of the Millfleet (TF 6184 1966) prior to its rebuilding. The work took place in July and August 1994 and represented the first archaeological investigation on the banks of the Millfleet (Crowson 1994).

The area cleared for the rebuilding of the wall measured approximately 65 x 10m, and ran east-to-west along the Millfleet from its crossing at Bridge Street (Fig.2). Deposits were removed by machine to formation level, some 4m below the current ground level, in the area to the south of the wall. A watching brief was undertaken in this area. An 'island' of upstanding deposits (4.2 x 3.4m in area) was left *in situ* for excavation by hand. This was approximately 10m from the east end of the trench and was shored on three sides, with the standing riparian wall acting as a fourth side to provide a safe area in which to work.

Phases I-III and IV-VI have been used here to describe the sequence of waterfront development. The precise relationship between Phases III and IV is unknown, however. The relative dates of the two waterfront features were ascertained by associated pottery and by their position in relation to the fleet.

Phases I-III: The Earlier Waterfront Construction (Figs 2 and 3)

This structure was recorded approximately 12m to the south of the present south bank of the Millfleet (Fig.2). Riverine silt and dumped material had been truncated by the construction cuts for a timber structure (Fig.3).

Phase I

The earliest deposit identified was a substantial pale limey layer (19) which continued below the bottom of the trench. It probably represented sediment laid down by the fleet prior to its silting and infilling. Towards the east end of the

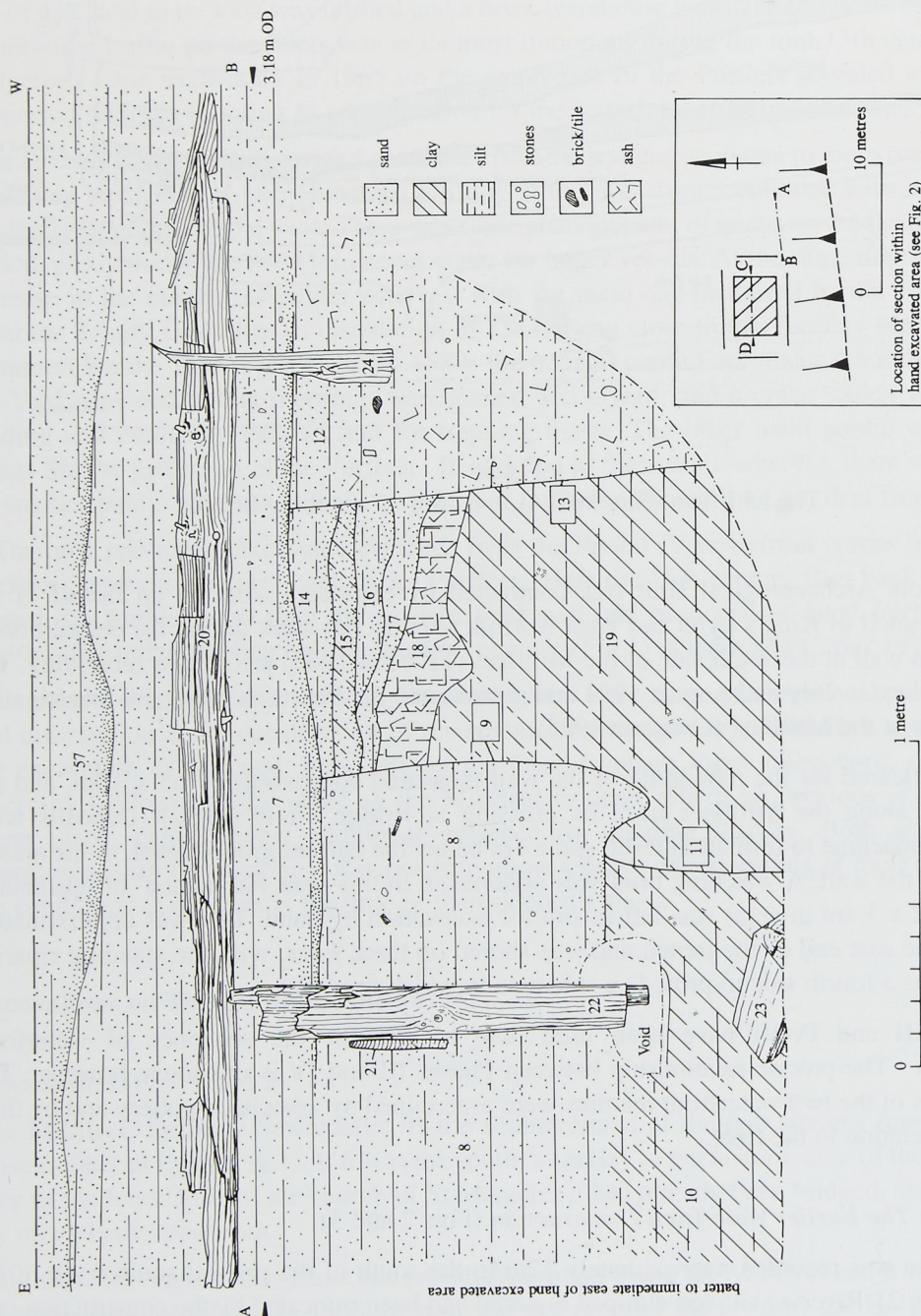


Fig.3
The Millfleet, section A-B

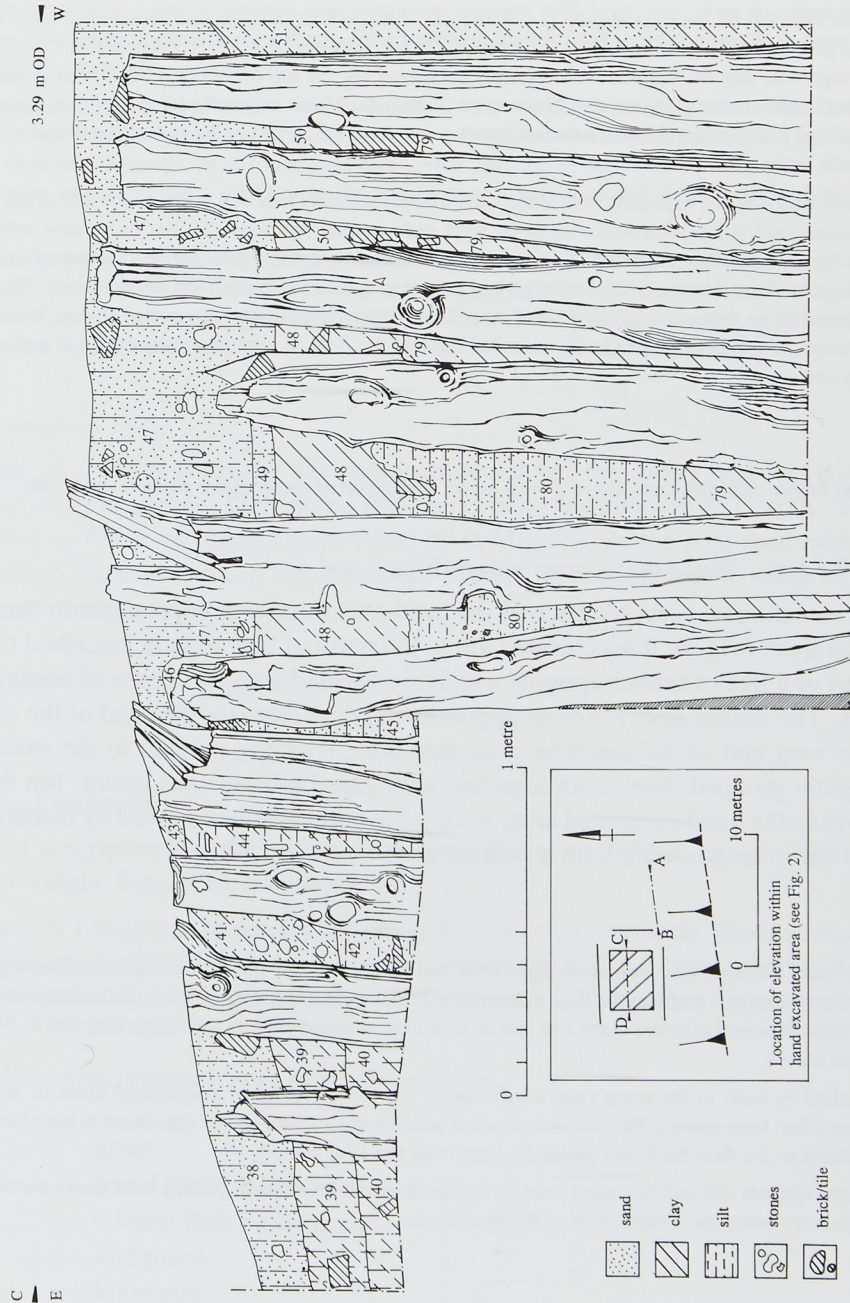


Fig.4
The Millfleet, section C-D

trench, immediately to the east of the area preserved for hand excavation, this deposit was overlain by a series of horizontal layers (14 - 18), which were often ashy and containing brick, tile, slate, coal and charcoal. They were interpreted as dumps of material into the fleet.

Phase II

The dumped deposits were cut by three 'post-pits' (11, 9 and 13). The earliest of these pits contained a large squared timber (23); this was possibly a sill beam which had slipped in the wet deposits to its recorded position. Cuts 9 and 13 contained timber uprights 22 and 24. Timber 24 was poorly preserved but the top of timber 22 had been tenoned into the underside of a horizontal timber (20); another tenon at its bottom may have originally joined it to the putative sill beam 23. Also associated with upright 22 was a timber board 21 set at a right angle to the rest of the construction and possibly a longitudinal brace.

The horizontal timber 20 was the easternmost of three such timbers partially exposed in the south side of the trench. Although in a degraded state, a lap joint was seen at its west end; another horizontal timber to its west still held a corroded nail which had presumably joined the two. At irregular intervals mortises were cut into the top of timber 20, possibly for supporting decking beams or planks (or perhaps suggesting that the timber had been reused). The timber assemblage was interpreted as representing the earliest waterfront structure within the excavated trench. It may have served as a landing stage, which perhaps originally extended out into the fleet. It was dated by associated pottery to no earlier than the 16th century.

Phase III

Around the top of the timber waterfront and above it were layers of dumped or accumulated rubbish and rubble 7 and 57.

Phases IV-VI: The Later Waterfront Construction (Figs 2 and 4)

An east-to-west elevation was recorded across the hand-excavated area approximately 8m south of the bank of the fleet, (Fig.4). It was located 4m to the north of that already described (Fig.2), and recorded part of a line of timber uprights which represented a second phase of construction on the fleet bank. The timber piles ran from approximately 6m from the east end of the site and continued to the west end of the machine-excavated area. Running parallel to the stream the timbers were tightly grouped, five or six together, with gaps between each group. Ten timbers were exposed within the hand-excavated area; some were successfully removed by machine and seen to be up to 6m in length, each with a pointed end.

Phase IV

The timbers were of oak. No bark was present; it is possible that this had rotted from the circular-sectioned piles but several roughly cut square timbers had had the bark deliberately removed. All the timbers were desiccated and the tops were split. One circular-sectioned pile was burnt and had an iron loop attached near its top suggesting that it, like other timbers, was perhaps reused.

Planks were attached by nails to the south (landward) side of the timber uprights. Trapezoidal holes in one of the planks suggested that it had been reused. This second recorded waterfront structure on the site seems to have functioned primarily as a revetment to the fleet bank and probably dates from the 17th century.

Two further upright timbers (66 and 67) were seen to the south of the line of piles. They were badly damaged but may have acted as braces during the construction of the revetment.

Phase V

On the south side of the line of timbers (seen behind them in elevation, Fig.4) thick deposits of riverine silts (79, 80 and 51) had built up.

Phase VI

Above the riverine deposits were dumps of rubble (38 - 45 and 47 - 50).

Further Observations

To the west of the hand excavated area, another line of timbers ran parallel to the fleet, north of the central line of timber piles. These had been incorporated into the Victorian wall at the west end (Fig.2) and veered slightly to the south of the wall further east; they were only seen when the wall was demolished. This third line of timbers may have been a jetty related to the 17th-century piled revetment.

To the north (fleet) side of the pile line, clay loam deposits with brick, tile, slate and mortar rubble represented dumping or infilling in front of the timbers. Two sawn oak boards from these deposits may have originated from the timber-piled revetment.

At the extreme west end of the trench a 6m length of wall was aligned roughly east-to-west in the south side of the trench. It was some 2m in height, of yellow bricks supported on a row of short squared and pointed timber stakes. Its date is uncertain; although on the landward side of the pile line in the centre of the trench, the wall is thought to represent an attempt to patch a breach in the revetment at a later date and so represent a third phase of waterfront structure.

At the east end of the trench several other timbers lay randomly within the lower fills of the Victorian construction cut. Some were squared with flat tops; one timber, 3.1m long, had three mortises cut into it, a large lap joint at one end and two circular peg holes at the other. Presumably the timbers had originally formed part of the revetment but had been disturbed by the later construction.

Environmental Data

Samples of timbers from the site were examined but the wood was too badly decayed for detailed study or dating. Occasional saw marks were recorded by R. Darrah. Two planks were identified as *Pinus sylvestris* (Scots Pine) by P. Murphy. By the post-medieval period this tree had already been introduced into Southern Britain, so it is unclear whether or not the timbers were imported.

Artefacts

Pottery

by Irena Lentowicz

Detailed descriptions of the pottery from each phase are held in the site archive. Percentages refer to weight. For abbreviations see Table 1

A total of 134 sherds of pottery weighing 4.673kg was recovered. Modern material, 18th- and 19th-century stonewares, slipware and china made up 20.7% of the assemblage. The rest of the pottery consisted of 17th-century post-medieval wares. The pottery is summarised in Table 2.

TABLE 1: *Abbreviations used in pottery reports*

g	gram
IGBW	Iron Glazed Black Ware
GRE	Glazed Red Earthenware
kg	kilograms
km	kilometre
LMT	Late Medieval and Transitional Wares
LMU	Local Medieval Unglazed Ware
Misc.	Miscellaneous
TGE	Tin-glazed Earthenware
DREW	Dutch Red Earthenware

Phase I

(Contexts 16, 19)

Sherds of Glazed Red Earthenware (GRE) were recovered from pre-waterfront riverine silts and dumps. GRE was produced from the first half of the 16th century; since no other fabrics were present, the dating of this phase cannot be further refined.

Phase II

(Contexts 8, 12)

Sherds of GRE, English Stoneware and Tin Glazed Earthenware (TGE) provide a late 17th-century date for the phase although the material retrieved is quite undiagnostic.

Phases III, IV and V

No pottery was recovered from contexts assigned to these phases.

TABLE 2: *Site 30724, summary of pottery by phase and fabric*

<i>Fabric</i>	<i>Phase I</i>		<i>Phase II</i>		<i>Phase VI</i>	
	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>
GRE	3	0.174	1	0.026	24	1.312
Metropolitan Slipware	-	-	-	-	1	0.020
Staffordshire Slipware	-	-	-	-	11	0.228
TGE	-	-	2	0.023	10	0.168
Westerwald Stoneware	-	-	-	-	2	0.042
English Stoneware	-	-	1	0.002	12	0.210
Modern Stoneware	-	-	-	-	5	0.160
China	-	-	-	-	2	0.012
Total	3	0.174	4	0.051	67	2.152

Phase VI

(Contexts 62, 63, 69)

Pottery was recovered from rubble build-up associated with the 17th-century waterfront. GRE was the most common fabric. The remainder of the assemblage is made up of non-local imports, including Metropolitan Slipware, Staffordshire Slipware and TGE. Two sherds of Westerwald Stoneware represented imports from continental Europe.

Unstratified

Sixty sherds (2.296Kg) were unstratified. Along with fabrics represented in phased contexts, this assemblage included a small sherd of Iron Glazed Black Ware (IGBW).

The range of post-medieval pottery recovered from the site is similar to the mid-late 17th century assemblage from phase IV at St Stephen's Street, Norwich (Jennings and Atkin 1984), although parallels for some of the forms represented at the Millfleet do not occur at the former site. The date is suggested by the presence of Staffordshire Slipwares and Westerwald Stoneware. However some of the Millfleet material was associated with 18th-century pottery and GRE continued to be produced into the early 20th century. It is therefore difficult to establish how much of the earlier pottery is residual material, probably redeposited during the building of the revetment wall during the Victorian period.

Animal Bone

by Trevor Ashwin

Animal bone weighing 0.534kg was collected from six contexts from the site. Bones of cattle, sheep/goat, pig and domestic fowl are represented. Butchered cattle bones were recovered from two contexts.

Brick and Tile

identified by Andrew Rogerson

Forty-eight pieces of brick and tile weighing 12.647kg were recovered. They included brick, floor and roof tile of medieval and post-medieval date. Fragments of Dutch painted 'Delft' type glazed wall tile, imported from the late 17th century to the present day, and a Flemish late medieval or early post-medieval floor tile were found. The dates for the brick and tile correspond to the pottery dates, although with a larger representation of medieval material.

Metal Finds

by Alice Lyons

A coin or token dating to the 15th-16th centuries (identified as a silver issue of the Spanish Netherlands, John A. Davies, *pers. comm.*) and a small nail were the only finds of copper alloy. Eight iron objects included nails, tool fragments, a possible hinge and two unidentifiable artefacts.

Other finds

identified by Alice Lyons

These included two fragments of stone (one possibly part of a window or door surround and one with mortar attached), a triangular fragment of tile or micaceous rock, fourteen fragments of window and bottle glass (all of post-medieval date), twelve fragments of shell (cockle and oyster) and small amounts of slag, slate, coal, and coke.

Discussion

The excavations on the Millfleet showed that large-scale disturbance caused by excavation of the construction cut for the Victorian river wall had removed most *in situ* archaeological deposits - probably including some of the earlier waterfront structure - in the area. It was also shown that the Victorian construction and later management of water in the fleet had had an effect on the preservation of organic material. The timbers from the upper levels of the trench were totally desiccated and from the lower levels also badly decayed. At least two phases of timber construction on the waterfront were identified, however, one of them with a possible landing stage or jetty.

The timber constructions dated to the 16th and 17th centuries and their position showed that the fleet frontage has moved 10m northwards since then to its present line. The excavated waterfront dated to Clarke and Carter's Period IV, *ie.* after the period of main use of the fleets in the town. However the present work suggests that the fleet was still in use during this period. No evidence was revealed for later buildings on the south bank.

Excavations at the Corn Exchange (Site 12919)

Introduction (Figs 1 and 5)

The Corn Exchange site (TF 6160 2045) lies immediately to the west of the Tuesday Market Place, and to the north and east of Common Staithe Yard (Figs 1 and 5). Henry Bell's Ground

Plan of Kings Lynn (1680) shows that the site was built upon and an early 19th-century map of Lynn depicts a series of buildings running back from the Market Place. Leases dating to the early 18th century indicate that these buildings included an inn fronting onto the market and a number of warehouses, some with cellars, behind this. A Market Hall was built on the site in 1830, and in 1854 the existing Corn Exchange was added to its south-east.

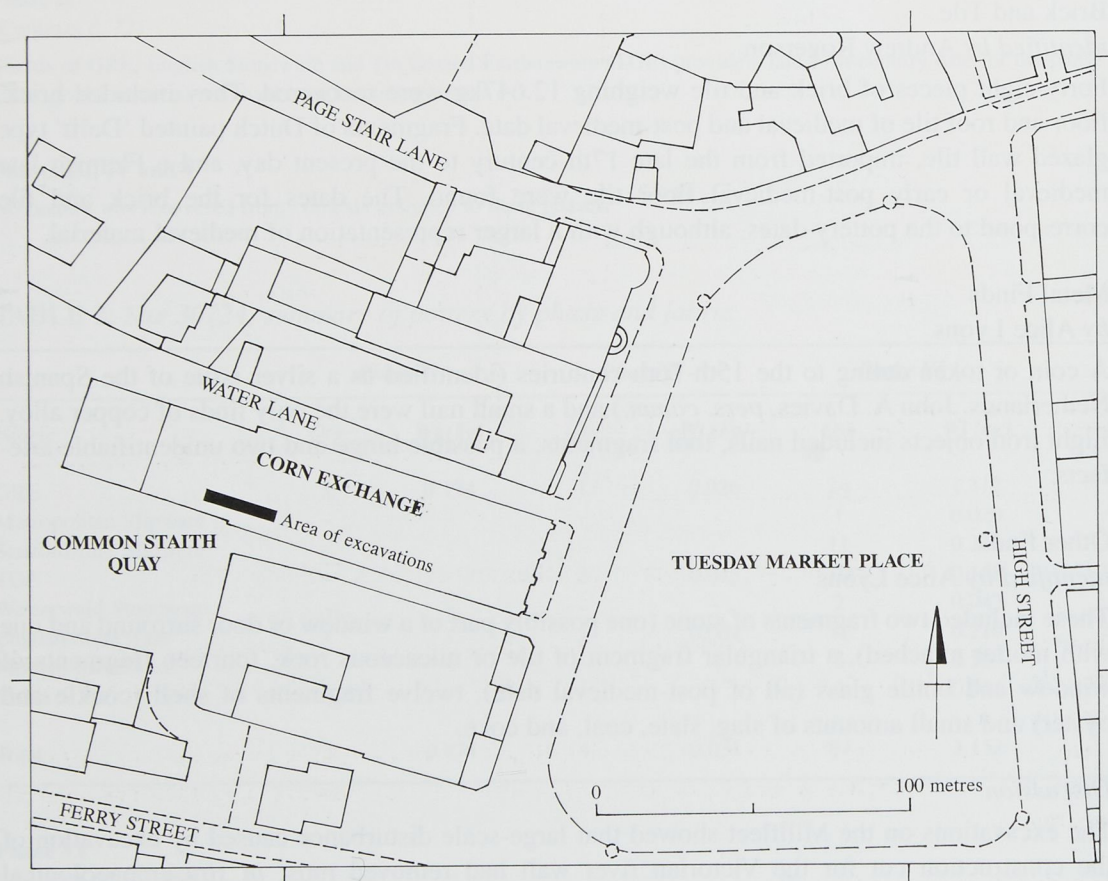


Fig.5

Corn Exchange (Site 12919), location of excavation

The Evaluation (Figs 1, 5-10)

The NAU was contracted by the Borough Council to carry out an archaeological evaluation of the site prior to its redevelopment as a Concert Hall. The work represented the first excavation undertaken on the former waterfront to the west of the Tuesday Market Place, and was conducted within the Market Hall and Corn Exchange (Figs 1 and 5). The standing walls of the building made three trial trenches necessary (Trenches A-C, Fig.6), each 2m wide and 20m long. These ran north-west to south-east at right-angles to - and approximately 100-120m east of - the present riverbank. The work was carried out during March and April 1995.

In Trenches A and C loose rubble and layers of make up were removed by machine until undisturbed archaeological material was observed at a depth of approximately 2m beneath the level of the modern floors of the buildings. The sides of the trench were shored as machining progressed. Hand excavation then took place within a central slot, the sides of which were stepped to comply with Health and Safety regulations, until a final depth below the original

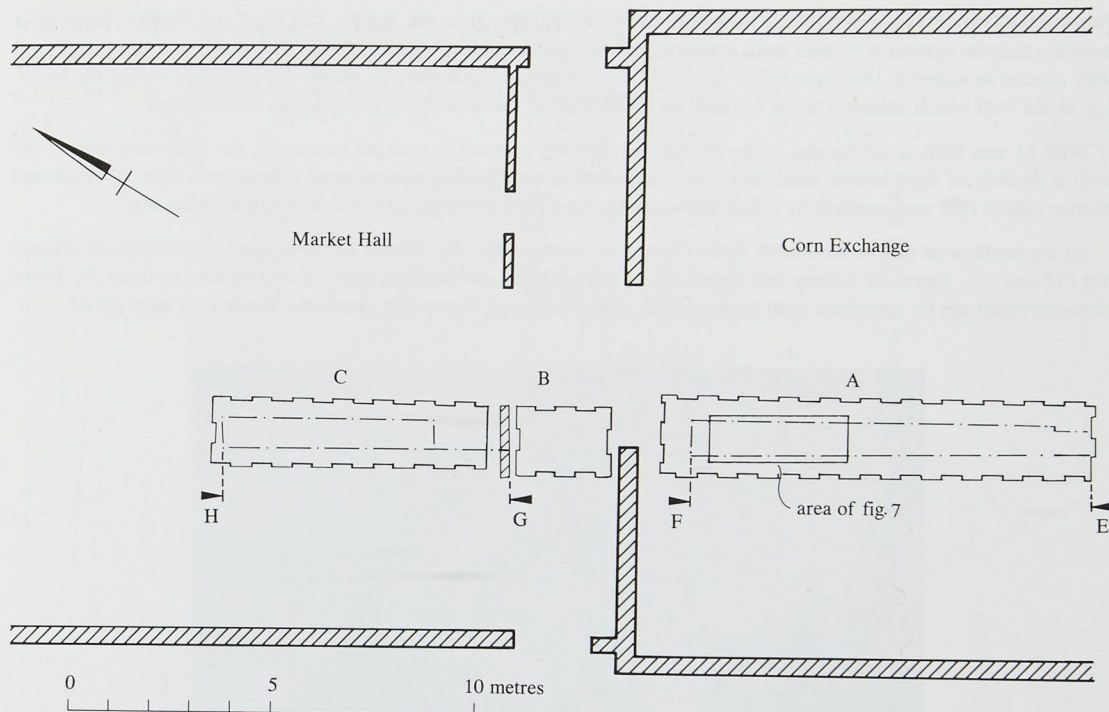


Fig.6
Corn Exchange, position of trenches and sections E-F and G-H

floor of 3.5-4m was reached. A running section along one side of each of the trenches was recorded (Figs 7 and 8). Excavation in Trench B was not continued since the area was too small for safe working.

Deposits are described in stratigraphic order. Since, however, it was impossible to correlate layers between Trenches A and C, deposits from different trenches are discussed and phased separately.

Trench A (Figs 7 and 9)

Phase A-I

The earliest deposit excavated in Trench A was a compact sand (90) exposed near the south-east end of the trench at a level of 1.93m OD. It was thought to represent the upper horizon of the undisturbed natural deposits. Augering at intervals along the trench showed a similar sand undulating downwards towards the north-west and the river. Overlying it were deposits 93 and 92 which consisted of silts from the river and organic cessy material. Both contained fragments of animal bone, tile and pottery. They were interpreted as representing the initial phase of dumping of cess and refuse into the river.

Above these silts, a substantial deposit of orange sand silt (89/91) was probably the result of incursion by the river. One sherd of pottery and two fragments of bone were recovered from this layer and pieces of shell and charcoal were observed.

Above this horizon, deposits of organic silt (88, 87, 45/78) represented a mixture of cess and other refuse thrown into the edge of the river. The latter deposit contained fragments of animal bone, shell and tile and a few sherds of pottery. To its south-east it was overlain by another dark cessy dump (34); this contained a large number of finds, including pottery, and was overlain by further organic silty layers 52, 50, 94 and 48 and by river-deposited sands 51 and 49.

Phase A-II

Deposit 34 was cut at its south-eastern end by feature 37/13 which crossed the trench and was apparently a construction cut for wall 81 (see above) (Figs 7 and 9). Cut 37/13 was excavated to a depth of 1.2m (its base was not reached) and was filled with redeposited natural silt sands. Some small organic lenses and pottery within the

construction cut probably originated from the lower cess layers since the feature had been cut through them. It is possible that the natural river silts were used to provide a solid base on which to build. A deposit of dark orange sand very similar in nature to the upper fill of the cut (33) is interpreted as being part of that fill disturbed during the building of the wall which slumped down towards the north-west as the underlying cessy layers decomposed.

Wall 81 was built of bricks and lumps of clunch randomly coursed in a cream mortar. To the south-east side of the wall a deposit of light brown sand (80) was interpreted as redeposited natural sand. Above it a layer of brick and mortar rubble (79) was overlain by a dark brown sandy clay (15), possibly a floor associated with the wall.

At the north-west end of the trench further layers of orange sand (86, 85 and 83) alternated with dumps of organic silt (84 and 39). Sherds of pottery and fragments of animal bone and building material were found in layer 39. These deposits could not be correlated with those already described to the south-east due to the location of later pit 18.

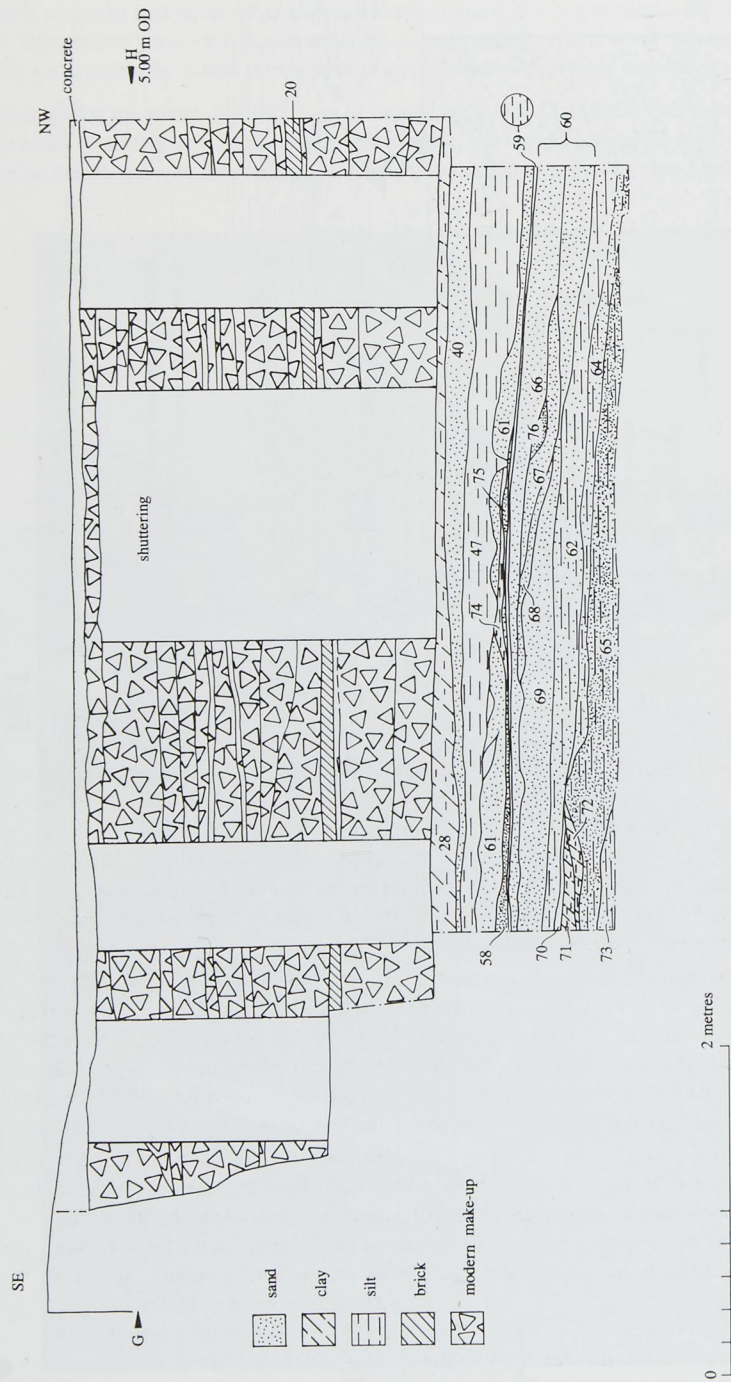


Plate 1

Interior of Corn Exchange, looking south-east, showing mechanical removal of rubble which overlay archaeological deposits in Trench A
Photograph FFR31 by Sarah Bates, Norfolk Museum Service.



Fig.7
Corn Exchange Trench A, section E-F



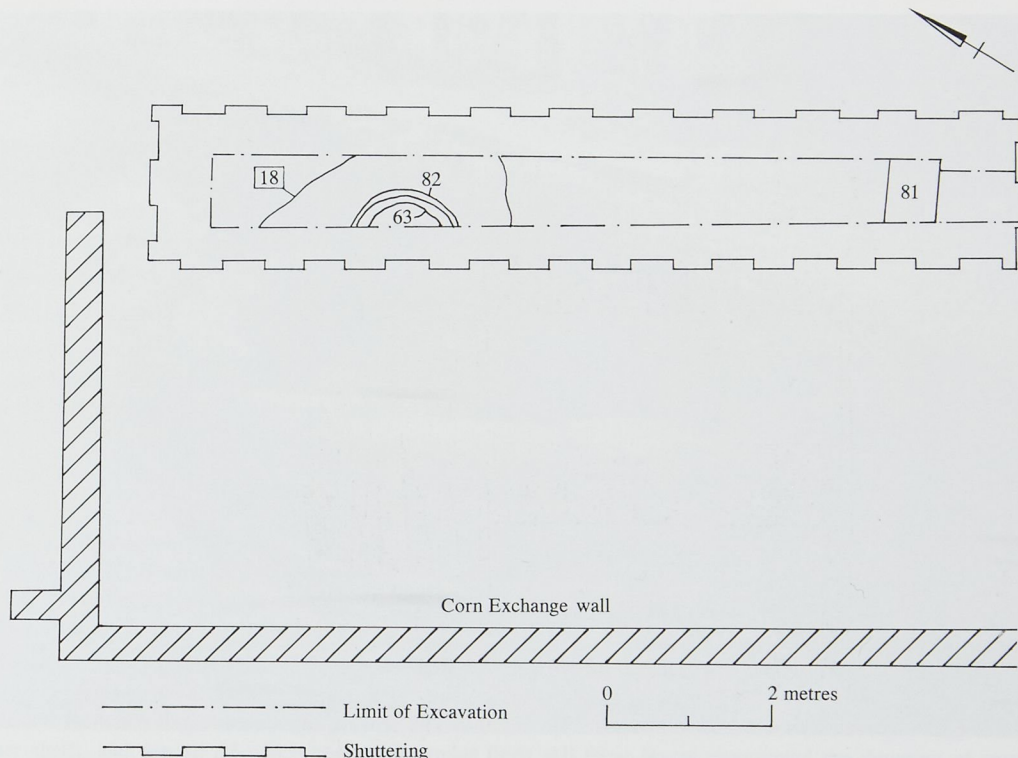


Fig.9
Corn Exchange Trench A, excavated features

Phase A-III

Half-way along the length of the trench, pit 18 was cut through the organic silts and river sands (Figs 7, 9 and 10). This was a subcircular feature, its north-east part lying within the excavated area, and was interpreted as the truncated lower part of a bell-casting pit. It was flat-bottomed but had a stepped slope at its north-west side which may have eased access during its use. Set within the main part of the pit, apparently centrally, a circular brick structure - the *pedestal* - would have supported the inner mould or *core* for the bell and allowed the lighting of a fire underneath for firing first the mould and then the *loam model* and *cope* or outer mould (Elphick 1988; Emery forthcoming). The pedestal consisted of three courses of bricks (63), bonded and partially coated with clay (Plate 1).

It is likely that just under half of the feature was revealed in the excavation slot, and that the bell produced from it would have been 1.25m (49 ins) in diameter (see Appendix). On top of the bricks a moulded rim of black burnt clay (83) was the only part of the core which remained *in situ*. On the flat pit bottom, within and to the south-east of the brick structure, a thin layer of compacted/orange material may have represented the firing of the mould. An orange brown silt sand within the brick structure (43), and a brown silt clay surrounding it (56), probably represented deliberate backfilling to hold the mould in place as the molten metal was poured into it (Elphick, 1988, 78).

Three deposits (46, 42 and 41) apparently related to the destruction of the upper part of the feature once the bell had been cast. Spread over the top of the feature, layer 42 contained numerous large fragments of burnt clay 41, (41) representing the broken cope which was discarded as the bell was removed. Some of the fragments were coated in traces of copper alloy from the casting process; one large piece retained an indented groove for a *moulding wire*, which would have keyed the false clay model to the cope as they were lifted off the core. Running into the south-east side of the bell-pit, and above the backfilled material, silt layer 57 contained flecks of charcoal, fragments of brick/tile and shell. This deposit must have developed during the period of the bell-pit's use as it was truncated by the destruction deposit 46. A gravelly deposit, 32, ran across the trench above the silt layer 57. It was interpreted as a possible path alongside wall 81, and may have been contemporary with the bell-pit.

Phase A-IV

The gravel layer 32 was overlain by another series of silts and thin layers of cess and rubbish, 55, 54 and 53. A small area of bricks (8), which had been dry-laid on top of these dumps approximately 3m south-east of pit 18, was interpreted as a possible hearth due to the deposit of ash and charcoal (7) recorded on its surface.



Plate 2

Corn Exchange: the bell-casting pit (Trench A), looking west, showing brick pedestal 63 with moulded clay rim 83. Photograph FFT5 by Neil Moss, Norfolk Museum Service.

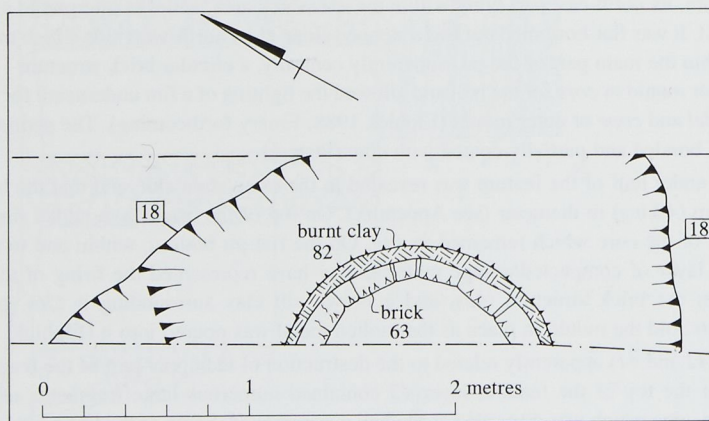


Fig.10

Corn Exchange Trench A, plan of bell-pit

Phase A-V

The ashy 'hearth' deposit and the upper fills of pit 18 were overlain by another build-up of silt (3/6). This was heavily truncated by later features.

Phase A-VI

A layer of gritty sand (4) sloped very slightly downwards towards the north-west and the river. It was of an even thickness along the length of the trench and seems to have been laid on an area that had been deliberately levelled. It

was interpreted as the bedding for a floor or other surface of some kind. A thin patchy layer of mortar on top of the sand (23) was probably bonding material for bricks or slabs since removed from the site. Such a floor is best interpreted as an extension of building out onto the land reclaimed from the river.

Phase A-VII

A layer of loose brick rubble just under 1.6m thick probably represented the demolition and infilling of the building or cellars represented by the floor. Above it lay make-up for the concrete and York stone surface which supported the modern suspended floor of the Corn Exchange.

Trench C (Fig.8)

The natural sand recorded in Trench A was not observed in Trench C. Augering at various points along the length of the trench revealed a clean light grey silt, probably the undisturbed natural subsoil, at approximately 0.5m OD, *ie.* almost 1.5m lower than the natural sand in Trench A.

Phase C-I

A series of grey and brown organic clay silts, representing material which had accumulated on the riverbank, was recorded in the auger profiles above the clean silt. The earliest deposit exposed by excavation in Trench C was a grey brown silt sand (73) which sloped down towards the north-west and the river. No finds were recovered, but its colour and composition suggested that it represented human activity. Groundwater ran into the trench at the level of this deposit, making further excavation impossible.

Above 73, and also sloping downwards towards the north-west, lay a series of organic silts. They included layer 65 which contained charcoal, pottery, animal bone, brick and tile and shell; deposits 72, 71 and 70; deposit 64, which contained relatively large amounts of pottery, animal bone, brick/tile, and oyster shell (including a large dump of oyster shell), and deposit 62 which contained similar finds. All these layers represented the dumping of cess and rubbish into the edge of the river.

Phase C-II

The dumped rubbish layers were overlain by clean fine sand deposits 69, 68, 67, 76 and 66; these ranged in colour from pale pink/grey to dark orange, and were interspersed with lenses of darker material. They represented the deposition of sands during tidal incursions. Finds were sparse, and were all assigned to a general context number 60.

Phase C-III

Above the riverine sands a very thin layer of dumped material (59) was recorded along the entire length of the section, but was intermittent across the width of the trench. It contained oyster shell, flecks of charcoal and sparse amounts of pottery, brick/tile and animal bone. It was overlain at the south-east end of the section by a gritty sand (58) which was quite unlike the lower sand deposits. This was stony with flecks of brick/tile, and was probably also a dump of material.

Overlying layer 58, another sequence of river deposited sands and silt and dumped organic material was represented by fine sand deposits 75 and 61; between these two deposits lay a dark grey silt (74) containing oyster shell and charcoal. Small patches of dark silt occurred as lenses within 61.

Above 61 a substantial layer of grey brown silt (47) was recorded along the entire length of the excavated trench, becoming thicker as it sloped down towards the river. It contained relatively large amounts of pottery, animal bone, and brick/tile as well as shell, slag, a flint flake, an iron nail and an copper alloy artefact. Above it was another layer of fine sand (40), probably deposited by the river. Above this latter deposit a layer of brown silt clay (28) contained fragments of brick/tile and pottery, and small amounts of animal bone and shell. It was the uppermost deposit in Trench C which could be dated to the medieval period.

Phase C-IV

Layer 28 was truncated at a level of c.3.35m OD; above this point, well-defined layers of compacted rubble, sand and ashy material were removed from the trench by machine. Approximately 1.5m below the concrete for the floor of Market Hall an intact surface of bricks (20) was recorded throughout the trench. This was post-medieval, but could not be dated more closely.

The Watching Brief (Figs 11 and 12)

During October and November 1995 a watching brief was carried out at the Corn Exchange during excavations for the new concert hall (Fig. 11). The stalls and understage area was excavated to a depth of 2.3m below the modern floor level. The orchestra pit was to be a further c.1.5m deep.

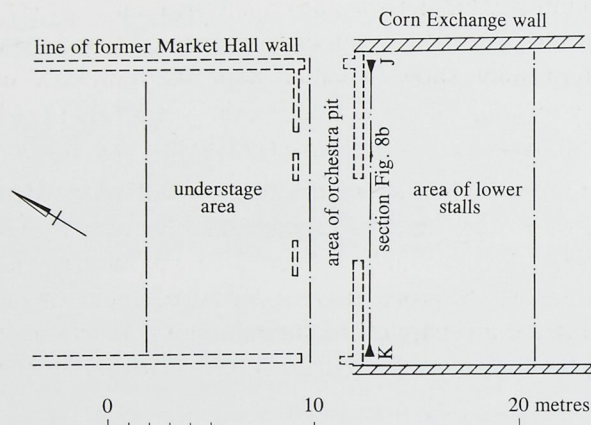


Fig. 11

Corn Exchange, area of watching brief

Compacted rubble was removed by machine from the stalls and understage area, and from the upper 0.5m of the area of the orchestra pit (Fig. 12, 104 and 107). Concrete piles, already in place across both areas, hindered careful machining and observation, but a series of organic silts and clays was observed beneath the rubble. One fairly substantial wall was seen running north-west to south-east; no foundation trench was observed, and the wall appeared to have been built directly on top of the underlying deposits. The north-west facing section of the orchestra pit area was photographed and from these photographs a drawing of the section was reconstructed (Fig. 12). The level of the top of the recorded section has been estimated as just over 3m O.D.

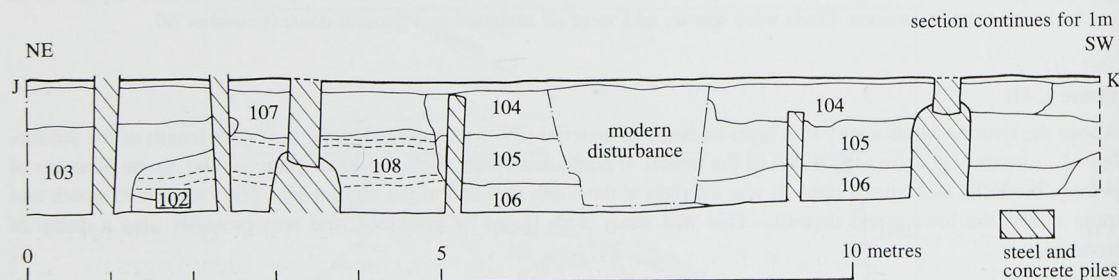


Fig. 12

Corn Exchange watching brief, section J-K

Towards the north-east end of the section, context 108 consisted of a number of clayey deposits with an irregular orangey-coloured layer possibly representing silting by the river.

At the north-east end of the section a large feature (102) was seen. It apparently 'cut' through deposits 108 and continued beyond the edge of the site. Its fill (103) consisted of grey silt deposits which contained organic material and a few sherds of pottery of 13th-16th century date. The feature was interpreted as a former water channel which would have flowed south-east to north-west towards the river. Such a watercourse may have led to the naming of Water Lane at the north-east side of the Corn Exchange.

At the south-west end of the section a deposit of dark grey silt (105) contained large amounts of organic material. Although no finds were retrieved from it during the watching brief the material was interpreted as a dump deposited on the former riverbank, of the kind recorded during the main excavation. Beneath it, a layer of blue-grey clay (106) extended below the deepest excavated level.

Environmental Data

by Mike Godwin

Six of the clean riverine sand deposits (contexts 83, 85, 89 and 90 from Trench A, 40 and 60 from Trench C) were sampled for the analysis of foraminifera (microscopic organisms which live in water and are extremely habitat-specific). Identification of different species can inform on salinity, oxygen availability, water velocity, temperature and type of sediment. Thus, analysis of foraminifera may show whether deposits represent intertidal or sub-tidal sedimentation, or if they were laid down during flooding. It is also possible that changes in the depositional environment over the period represented by the sampled deposits may be shown.

Analysis showed that the foraminifera assemblages from all of the samples were similar, and indicated deposition in slack water in the sub-tidal zone. However, the level of the deposits in relation to mean sea level (which would have been about the same as the present day, *ie.* 0.9m) showed that all of the samples had probably been deposited in the high inter-tidal zone. This is supported by the fact that the diversity of the foraminifera populations is more typical of high inter-tidal flats (although one species, *E excavatum* forma *clavata*, is relatively rare in the high inter-tidal zone).

It is possible that the area of the site was bounded by a sedimentary 'lip', which ponded up water at low tide and protected the area from current activity at other times. This would explain the diversity and large populations of sub-tidal foraminifera, as the pond would be flushed by the tide twice daily and oxygen levels sustained.

The foraminifera show that the deposits built up in the inter-tidal zone and not during flooding (unless the area had been reclaimed and protected by a sea wall; a situation not suggested by the archaeological evidence). Environmental analysis thus suggests that tidal incursions occurred at intervals, covering the dumped layers of cess and other refuse with deposits of clean riverine sand.

Artefacts

Pottery

by Irena Lentowicz

Since it was not possible to correlate the phasing from the three trenches and watching brief, the pottery is discussed by phase in four sections. Detailed descriptions of the assemblages by phase are held in the site archive. Percentages given refer to weight. For abbreviations see Table 1.

A total of 494 sherds of pottery, weighing 12.310kg, was recovered from the Corn Exchange. The majority was from Trench A (57.7% of the assemblage), with a sizable sample from Trench C (34%) and smaller amounts from Trench B and the watching brief (4.5%, and 3.8% respectively). The material was relatively unfragmented, with a high overall average sherd weight of *c.* 25g; its condition was variable, however, with some sherds worn and abraded and others noted as fresh.

Trench A

Pottery weighing 7.109kg was recovered from this trench. Although medieval fabrics were recorded, some sherds were residual and the assemblage was dominated by Late Medieval-Transitional wares. Grimston Glazed Ware was the most common fabric recovered. Post-medieval and later 18th century pottery formed the rest of the assemblage. The pottery is summarised in Table 3.

TABLE 3: *Site 12919 Trench A, summary of pottery by phase and fabric*

	Phase I		Phase II		Phase III		Phase V		Phase VI		Phase VII	
<i>Fabric</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>
Grimston Glazed Ware	146	2.715	19	0.380	26	0.539	20	0.282	-	-	2	0.045
Developed Stamford Ware	1	0.010	-	-	-	-	-	-	-	-	-	-
Scarborough-type Ware	5	0.215	-	-	-	-	1	0.020	-	-	-	-
Saintonge Wares	1	0.005	-	-	1	0.002	1	0.010	-	-	-	-
LMU	1	0.010	-	-	4	0.015	-	-	-	-	-	-
Non-local Med Unglazed	1	0.005	1	0.025	-	-	-	-	-	-	-	-
LMT	1	0.200	-	-	-	-	2	0.015	-	-	-	-
DREW	2	0.017	-	-	4	0.039	2	0.005	-	-	-	-
Langerwehe Stoneware	1	0.200	-	-	1	0.005	1	0.005	-	-	-	-
Staff-type Slipware	-	-	-	-	-	-	-	-	1	0.010	-	-
Westerwald Stoneware	-	-	-	-	-	-	-	-	1	0.045	2	0.100
English Stoneware	-	-	-	-	-	-	-	-	-	-	7	0.205
Misc. post med wares	-	-	-	-	-	-	-	-	-	-	6	1.510
Cream Ware	-	-	-	-	-	-	-	-	-	-	1	0.005
China	-	-	-	-	-	-	-	-	-	-	4	0.210
Total	159	3.377	20	0.405	36	0.600	27	0.337	2	0.055	22	2.075

Phase A-I

(Contexts 30, 31, 34, 38, 39, 78, 91, 92, 93)

This group was dominated by Grimston Glazed Ware represented by sherds from jugs and bowls. Sherds from deep bowls and the lustrous green glaze noted on some of the material indicate that the majority is late 14th-15th century in date. The other medieval pottery recorded from this phase is non-local in origin and includes material from Stamford (which is probably residual) and from Scarborough and another unidentified source (which could be contemporary). The Scarborough-type Ware sherds may come from a bearded mask jug, similar to Grimston Glazed Ware face jugs (Farmer 1979, fig.8). A sherd of Saintonge Monochrome Ware represents material imported from continental Europe; this pottery was traded until the 15th century. Later pottery was represented by locally-produced Late Medieval - Transitional ware (LMT) and continental imports, Dutch Red Earthenware (DREW) and Langerwehe Stoneware.

The earliest deposits with pottery (92 and 93) contained a Grimston Glazed Ware deep bowl rim, dating them to the late 14th-15th century. The remaining material was from a series of dumps of cess and refuse.

Phase A-II

(Contexts 14, 15, 35)

A small amount of pottery was recovered from contexts associated with the wall at the eastern end of the trench. Apart from a single sherd of non-local Glazed Ware, all of the pottery was 15th-century Grimston Glazed Ware, represented by sherds from jugs and a deep bowl.

Phase A-III

(Contexts 33, 41, 43, 56)

Just over half a kilogram of pottery, mainly Grimston Glazed Ware, was recovered. Medieval pottery was represented by a sherd of Saintonge Polychrome Ware and four LMU sherds. Some of the latter were sooted and were probably domestic refuse. Late Medieval-Transitional pottery was represented by sherds of DREW and Langerwehe Stoneware.

Much of the material came from contexts associated with the deliberate backfilling of the bell-pit. It included 15th-century Grimston Glazed Ware bowls and jugs and DREW, as well as medieval sherds. A Grimston Glazed sherd of 12th-14th century date came from destruction debris over the upper part of this feature, and was obviously residual.

Phase A-IV

No pottery was recovered.

Phase A-V

(Contexts 2, 3, 16)

Only 0.337kg of Late Medieval-Transitional pottery was recovered. Once again, Grimston Glazed Ware was the most common fabric, again represented by bowls and jugs. The only other local ware represented was LMT, while the only other kitchen ware was DREW. The remainder of the assemblage consisted of non-local and imported wares, including Scarborough-type Ware, Saintonge Polychrome Ware and Langerwehe stoneware.

The pottery came from deposits of silt post-dating the infilling of the bell-pit. It has been dated to the 15th-16th century and is probably residual.

Phase A-VI

(Context 4)

Only two sherds of pottery were recovered. These were from a Staffordshire Slipware dish and Westerwald Stoneware chamberpot. They date to the mid-late 17th century and were from a layer of sand probably laid as bedding for a floor.

Phase A-VII

(Contexts 1, 12)

The two Grimston Glazed sherds recovered from this phase were residual. The assemblage also included fragments from a post-medieval ware vessel and sherds of Westerwald chamberpot and English Stoneware. A small quantity of Cream Ware and China was also found.

Trench B

Pottery weighing 0.562 kg was recovered from three contexts representing rubble and make-up layers above a brick floor. A small quantity of residual material was present and a range of post-medieval and later fabrics were recorded. Locally produced GRE was found, but non-local wares (Staffordshire Slipware and English Stonewares) and imports (TGE and Westerwald Stoneware) dominated the assemblage. Small quantities of porcelain and china were found. The pottery is summarised in Table 4.

TABLE 4: *Site 12919 Trench B, Summary of pottery by fabric*

<i>Fabric</i>	<i>Qty</i>	<i>Wt (kg)</i>
Grimston Glazed Ware	4	0.034
Saintonge Wares	3	0.015
GRE	2	0.010
Staffordshire Slipware	5	0.095
TGE	5	0.048
Westerwald Stoneware	8	0.270
English Stoneware	7	0.070
Porcelain	1	0.015
China	2	0.005
Total	37	0.562

Trench C

Pottery weighing 4.175kg was recovered. As in Trench A, Grimston Glazed Ware dating to the late 14th-15th century dominate the assemblage. The majority of the medieval pottery present was residual. Late Medieval-Transitional wares account for a smaller proportion of the assemblage than in Trench A but a similar range of post-medieval and later wares was recorded. The pottery is summarised in Table 5.

TABLE 5: *Site 12919 Trench C, Summary of pottery by phase and fabric*

<i>Fabric</i>	<i>Phase I</i>		<i>Phase II</i>		<i>Phase III</i>		<i>Phase IV</i>	
	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>	<i>Qty</i>	<i>Wt (kg)</i>
Grimston Glazed Ware	47	1.365	3	0.012	51	0.390	-	-
Developed Stamford Ware	-	-	-	-	3	0.020	-	-
Langerwehe Stoneware	1	0.005	-	-	-	-	-	-
LMU	-	-	-	-	1	0.020	-	-
Yarmouth-type Ware	-	-	-	-	-	-	1	0.008
Cologne-Frechen Stoneware	-	-	-	-	1	0.005	-	-
GRE (coarse)	-	-	-	-	-	-	15	1.035
IGBW	-	-	-	-	1	0.075	2	0.155
Staffordshire Slipware	-	-	-	-	-	-	2	0.025
Surrey White Ware	-	-	-	-	-	-	3	0.150
TGE	-	-	-	-	-	-	22	0.250
Westerwald Stoneware	-	-	-	-	-	-	9	0.375
Porcelain	-	-	-	-	-	-	2	0.045
English Stoneware	-	-	-	-	-	-	11	0.095
China	-	-	-	-	-	-	3	0.145
Total	48	1.370	3	0.012	57	0.510	70	2.283

Phase C-I

(Contexts 62, 64, 65)

1.37kg of pottery was recovered. Apart from a small sherd of Langerwehe Stoneware, the assemblage was comprised entirely of late 14th-15th century Grimston Glazed Ware jug sherds recovered from deposits of dumped and general waste.

Phase C-II

(Context 60)

Three sherds of 14th-century Grimston Glazed Ware were recovered from a layer of riverine sand. These were probably residual.

Phase C-III

(Contexts 28, 40, 47, 59)

Just over half a kilogramme of pottery was recovered. The assemblage indicates dumping of domestic refuse into the river and was dominated by Grimston Glazed Ware, including some sooted sherds. As well as sherds from jugs, medieval pottery included an LMU jar rim, Yarmouth-type Ware body sherds and developed Stamford Ware. This material is residual since it was recovered from contexts overlying deposits containing Cologne-Frechen Stoneware and 17th-century IGBW. This suggests that the Grimston Glazed Ware is also residual.

Phase C-IV

(Contexts 19, 21)

Over 2kg of pottery was recovered. One sherd of residual medieval material was recorded. The rest of the assemblage consisted of post-medieval and later pottery; LMT wares are conspicuous by their absence even as a residual element. Local wares, including a GRE dish and jar and IGBW jar and jug, dominate the assemblage, along with non-local wares including Surrey White Ware, Staffordshire Slipware, and English Stonewares. Continental imports were represented by TGE tablewares and Westerwald Stoneware drinking vessels and chamberpots. The remainder of the assemblage consists of 18th-century porcelain and China.

Watching Brief

Pottery weighing 0.464kg was recovered. The assemblage included sherds of Grimston Glazed Ware and a single sherd of Scarborough-type Ware. The pottery is summarised in Table 6.

TABLE 6: Site 12919 Watching Brief, Summary of pottery by fabric

<i>Fabric</i>	<i>Qty</i>	<i>Wt (kg)</i>
Grimston Glazed Ware	10	0.438
Scarborough-type Ware	1	0.026
Total	11	0.464

Grimston Glazed Ware dominates the pottery assemblage. This green-glazed pottery was produced at Pott Row, Grimston, 10km east of Kings Lynn, from the late 12th to the 16th centuries. The town provided a local market for the pottery as well as serving as the main port through which it was exported. The most common form recovered during the work at the Corn Exchange was the jug, represented by rims but more commonly by handles, bases and decorated body sherds. A small number of rims from deep bowls were also noted.

It is difficult to distinguish between Grimston Glazed Wares of medieval and Late Medieval-Transitional date. This problem is compounded by the fact that some medieval Grimston material occurs residually alongside Late Medieval-Transitional products. However, it seems that much of the pottery from the Corn Exchange dates to the later 14th-16th centuries rather than 12th-14th centuries (A. Rogerson, *pers. comm.*). This is supported by the range of forms recovered.

Other medieval fabrics present included locally-produced utilitarian wares (LMU Ware and Yarmouth-type Ware). Table wares were represented by regional imports (including sherds of Scarborough-type Ware and Developed Stamford Ware), as well as continental imports (Saintonge Polychrome and Monochrome Wares). These fabrics were represented by a small number of sherds and do not form a significant proportion of the assemblage. Two of the imports reflect seaborne trade, however; the distribution of Scarborough-type Ware is largely coastal, and the presence of Saintonge Wares indicates contact with France.

Late Medieval-Transitional wares are represented by small quantities of locally produced LMT and imports from Holland and the Rhineland (DREW and Langerwehe Stoneware). None are represented in great quantity but the imports attest to trade with the Rhineland and Low Countries, a pattern seen elsewhere on the eastern seaboard.

The post-medieval and later pottery is dominated by Westerwald Stoneware drinking vessels and chamber pots dating from the late 17th and early 18th century. Glazed Red Earthenware is also present in some quantity, along with smaller amounts of local (Iron Glazed Black Ware) and non-local products (Surrey White Ware and Staffordshire Slipware), and imports (Cologne-Frechen Stoneware and Tin Glazed Earthenware, probably Dutch). Eighteenth-century pottery included a small number of sherds of porcelain and Cream Ware, some of which may have been contemporary with the Westerwald Stoneware.

In conclusion, much of the assemblage appears to represent the disposal of cess and rubbish into the river. The medieval pottery is dominated by local and imported jugs, with few cooking wares present. Later Grimston Glazed Wares included table wares as well as jugs, and other Late Medieval-Transitional fabrics also included kitchen wares. The abundance of post-medieval Westerwald chamber pots may reflect the regular dumping of communal collections of night soil (a practise established in many towns in the mid-17th century) into the river.

Animal Bone

by Trevor Ashwin

Animal bone weighing 7.032kg was recovered from 36 contexts, mostly dumps of cess and refuse. It consisted mainly of cattle and sheep/goat bones although small numbers of pig, fish and domestic fowl bones were also found. Some of the long bones had been split to extract marrow, but relatively few butchery tool marks were seen. Numbers of metapodials may have been intended for bone working but no worked bone was found. Fragments of cranium and jaw might represent the disposal of inedible parts during the initial butchery of carcasses. Shell, almost all of it of oyster, was recovered from a number of contexts including a large dump in Trench C. It represented exploitation of this food resource on a considerable scale.

Brick and Tile

identified by Andrew Rogerson

Seventy-eight pieces of brick (weighing 35.687kg) and 273 fragments of tile (19.767kg) were recovered. One fragment of brick had a splash of glaze. The majority of the tile assemblage was flat roof tile; a few fragments were glazed or had peg holes. One possible floor tile and three pieces of Delft glazed wall tile were found.

Clay pipe

by Lucy Talbot

A total of 95 fragments of claypipe stems and bowls weighing 0.677kg were collected, almost all from a dump in Trench A. Several of the pipe bowls were stamped 'Taylors Lynn', presumably the maker's name. In addition to the pipes, and from the same dump, six fragments of finger-impressed clay strip weighing 0.034kg were found. These have been provisionally identified as kiln seals (*pers. comm.* S Atkin). It is therefore possible that a pipe kiln existed in the vicinity of the excavated trench, but the material was recovered during machining and was from the extreme south-east end of the trench. No related features or deposits were identified.

Stone

identified by Lucy Talbot

Three fragments of schist hone stone were found. These almost certainly originate from central southern Norway. Such whetstones have been found on many sites in Lynn, and indicate trade with Norway during the medieval and post-medieval periods (Clarke and Carter 1977, 449).

Metal Finds

identified by Sue Margeson and Bill Milligan

Sixty-six metal artefacts were recovered, twelve of copper alloy, one of lead and the rest (mainly nails) of iron. One artefact was identified after x-ray as being a knife tang of probable early medieval date. It was made of iron and horn which appeared to have been drilled, and may have traces of an adhesive remaining on it. A copper alloy artefact with applied gold foil remains unidentified.

Metalworking Debris

identified by Lucy Talbot

Thirty-three fragments of metalworking debris were recovered, almost half of these from the dump of cess and refuse 34 in Trench A.

Other finds

by Lucy Talbot

These included pieces of worked stone (most of which appeared to have been architectural), one small fragment of lava, fragments of mortar and three pieces of worked flint. Three pieces of worked leather and eighteen pieces of glass - including window and vessel fragments - were recovered either during machine-clearance or from the uppermost of the hand excavated deposits.

Discussion

The excavated areas were located approximately on the line of the reconstructed Period III (1350-1500) waterfront (Fig.1; Clarke and Carter 1977, 416). Thus it was expected that any deposits or features identified here by excavation would probably represent infilling adjacent to the riverbank (dating to the 14th-15th centuries) and subsequent activity on the reclaimed land. The excavated evidence indicated the former, with all of the pottery from the stratified dumps and river silts dated to the 14th and 15th centuries. This supports Clarke and Carter's hypothetical reconstruction.

No waterfront structure of any type was seen in the trenches or during the watching brief, and there was no significant difference in the types or date of pottery found in Trenches A and C to suggest that such a structure - forming a break in the process of foreshore infilling - existed in the unexcavated area between them. The excavated evidence and the results of the analysis of the foraminifera suggested that during the 14th-15th centuries, the waterfront zone sampled by Trenches A and C lay within the river itself. Periods when rubbish and cess were dumped alternated with episodes of silt deposition, probably during high tides.

The wall exposed in Trench A probably represented the earliest use of the land reclaimed from the river within the excavated area. It seems most likely that the wall was not part of a building but represented a boundary, to the north-west of which the land remained marginal. The deep construction cut for the wall may illustrate the need for a firm base on which to build above the dumped layers of rubbish. The manner in which natural silt was apparently used for ground consolidation prior to the construction on the site is reminiscent of sites elsewhere in the town, notably at Baker Lane and Thoresby College (Clarke and Carter 1977 60, 111).

The digging and use of the bell-pit is considered to post-date the construction of the wall. This is due partly to the location of deposit 57 which pre-dates the disuse of the pit, but also because the excavated part of the pit probably represents only its lower part. It is likely that a furnace for smelting the bell metal would have been situated at least a metre above the base of the bell-pit to allow the flow of the molten metal down into the mould (*pers. comm.* P. Cattermole).

The construction of the bell-pit seems to have taken place on the recently-reclaimed land, riverward of the wall. This discovery of such a pit so close to the former riverbank was unexpected. Possibly it was deliberately located here, away from residential or other built up areas on this still-marginal land. Documentary research has shown that a bell cast at Common Staithe Yard in the early 17th century was a re-casting of a bell brought from Wiggenhall St Germans, situated on the River Ouse to the south of Lynn (see Appendix). Probably the bell-metal would have been brought to Lynn by river. If the excavated pit represents this casting, then this site - close to the riverbank - would have been a most convenient location.

Activity in the area to the north-west of the wall continued with the possible gravel path being laid down and the brick hearth being constructed. A layer of silt then built up, which was in turn overlain by the sand bedding for a surface or floor.

The small amount of 16th- and early 17th-century pottery recovered from the excavations at the Corn Exchange may have been due to truncation caused by the digging of cellars on the site in the 17th to 18th centuries, although a lack of 16th - early 17th century pottery has also been noted at other sites nearby. It is possible that the sand layer described above may have been related to a floor for such a cellar. Such truncation was probably also responsible for the removal of evidence for the upper part of the bell-pit.

Conclusions

The excavations at the Millfleet and the Corn Exchange were limited in their objectives. Their restricted scale meant that it was not possible to undertake work which would examine tenemental development adjacent to the river and fleet. Rather, it was proposed to examine the stratigraphic process whereby foreshore encroachment and consolidation occurred, to characterise this as far as possible, and to relate it to hypothetical models of urban development in King's Lynn.

Despite later disturbance, which caused truncation of deposits at both sites, each of the excavations revealed evidence for waterfront development in areas of Lynn where no previous archaeological work had been carried out. At each site the exploitation of the waterfront, whether through the *ad hoc* deposition of material or the deliberate construction of riparian structures, resulted in the gradual shifting of the land/water boundary and the subsequent use of the 'reclaimed' area.

Evidence for the edge of the Ouse river was seen in Trenches A and C at the Corn Exchange, where the deposits indicated the gradually sloping bed of the river margin (Fig.7). It is clear that initial infilling took place due to the intermittent rubbish disposal, with the refuse being covered on successive occasions by silts deposited by tidal incursions (Fig.8). Such sporadic dumping is not unusual, although in marked contrast to the deliberate extension of the foreshore characterised by successive dumps of material behind revetments as observed in London (*eg.* at Trig Lane, Ü Milne and Milne 1982), Hull (Ayers 1979) or even elsewhere in Lynn (Parker 1965). It is also clear that infilling was not a result of deliberate corporate initiative, as at Lübeck in the first third of the 13th century (Erdmann 1980). Instead the process of foreshore encroachment in the northern part of the town of Lynn appears, on the limited evidence of the Corn Exchange excavation, to have been a result of chance throughout much of the medieval period.

The absence of any evidence for timber structures, which is unlikely to be a result of poor conditions for preservation, suggests that the foreshore was utilised here by small vessels at low tide but was not developed, at least in the medieval period, for larger shipping. It is likely, therefore, that such shipping was concentrated further south, in the Purfleet and beyond, although the foreshore area of King Street remains untested and must be a priority for further research.

The apparent lack of mercantile activity next to the river at the Corn Exchange site is emphasised further by the extraordinary discovery of the bell-casting pit. This pit, which may be that excavated for the casting of a bell in 1616 (see Appendix), suggests strongly that the area of the Tuesday Market Place was restricted to urban trade and small-scale industrial activity with seagoing mercantile interest elsewhere (but see Clarke 1981, fig.123 which suggests wharves off Tuesday Market Place c.1557).

These conclusions are based upon restricted evidence, the north-west end of Trench C lying still some 100m short of the present day waterfront. It is possible that evidence further west may

complicate, or even contradict, the development process suggested here. The problems of interpretation are, to some extent, exemplified by the results at the Millfleet where Victorian consolidation of the fleet margin removed earlier archaeological deposits and appears to have accelerated desiccation of some surviving timbers. It is difficult to assess the effects of such variables without more comprehensive excavation, necessarily not possible at either site.

The work at the Millfleet did, however, provide an opportunity to examine an early post-medieval foreshore construction in timber. It was interesting to observe that detailed evidence - including the identification of a possible landing stage or jetty - could be recorded within a restricted excavation area. The putative jetty was a useful reminder that the foreshore of Lynn, while dominated by wharves and warehouses (some of which survive), would also have needed a variety of landing places, stairs and ramps in order to function effectively.

The excavations have underlined the value of environmental sampling, the data from the soil samples providing good corroborative evidence of riverine incursion. The recovered animal bone appears to represent food waste rather than byproducts from industrial activity. The exploitation of shellfish as a source of food was also marked at the Corn Exchange site.

The artefact assemblages were relatively small, reflecting the small scale of the excavations, and dominated by ceramics. Much of the pottery consisted of local wares, utilised for domestic purposes. The restricted numbers of imported pottery vessels has been commented upon for the Corn Exchange site, again probably reflecting its non-mercantile role. However, the range of imported material from both sites, while small in quantity, is broad in type: whetstones from Norway; pottery and a wall tile from the Netherlands; brick from Flanders; and jugs from south-west France. In short, the assemblages reflect the cosmopolitan status of Lynn as one of the premier ports on the east coast.

In summary, the excavation of the waterfront structures on the Millfleet and of the evidence for activity on the riverbank at the Corn Exchange have both shown the potential of waterfront studies to advance understanding of the topography and development of King's Lynn. The results have led to a greater appreciation of settlement diversity within a borough apparently monopolised by its role as an estuarine port, and have indicated key areas for future research.

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APPENDIX. Lynn St. Nicholas - a bell cast in 1616

by Paul Cattermole

Although there is documentary evidence for bellfounders working in Lynn, the bell-casting pit at the Corn Exchange is the first such feature to be excavated in the town. There is no trace of a founder's inscription on the excavated mould fragments so it is not possible to attribute the Corn Exchange bell with certainty. However, the location and size of the bell-pit, as well as its likely date, suggest that it represents the casting of a bell for the Chapel of St Nicholas at Common Staithe Yard in the early 17th century.

Church bells were probably first rung in full circles during the 15th century, and the development of bell-ringing as a secular occupation was probably an indirect consequence of the Reformation of the church under Edward VI and the reduction in the number of occasions when bells would be rung for religious purposes (Cattermole 1990). During the 16th century sets of three and four bells (and the occasional peal of five) were adequate for the fairly unsophisticated ringing that was practised but the development of scientific changering, which sounded far more interesting on a ring of five or six bells, provided the impetus for increasing the numbers of bells in church towers during the early 17th century.

It was against this background that it was decided by the wardens of St Nicholas Chapel to increase the number of bells there from four to five (Hillen 1978¹). Since the tower of the Chapel is not large this was done by replacing the old tenor bell by two new smaller bells. The exchange was probably completed in 1615, when John Draper of Thetford

supplied two new bells and took away the old tenor. However one of the new bells was found to be unsatisfactory and needed recasting. Perhaps as a result of disagreement with John Draper over the new bells, the recasting work was given to James Edberry, a Bury St Edmunds founder (Raven 1890, 109-110²) who cast a replacement bell in his furnace at Wigenhall St Germans. Hillen, in his *History of Lynn*, gives a transcript of the churchwardens accounts for 1616 - 1617 which shows that James Edberry was also unsuccessful in casting a satisfactory bell, and a warrant was served on him to appear before the Recorder of Lynn. As a result of this, Edberry was required to bring the bell-metal back to Lynn so that the bell could be recast under the eye of the chapel wardens.

The St Nicholas' accounts are definite in their record of 'Charges about casting the Bell in comon stath yard', and account for the purchase of bricks and sand for the furnace and bell mould. Clay was purchased for making the core and cope, as well as large numbers of billets of wood to heat the metal and the bell mould. When the founder discovered he was short of metal, pewter was purchased in the town, and the candlestick on the pulpit was sacrificed to make up the weight. As a result the bell came out of the mould slightly larger than was expected and it was necessary to take down the belfry door in order to get the bell in. The accounts also record payment for breaking up the furnace and levelling the ground after the work was complete.

This bell, the second attempt by James Edberry, was discovered not to be 'tuneable', and John Draper was approached for a second time and agreed to recast the bell at his foundry in Thetford. The record of recasting gives the weight of the bell as 13cwt 1 qu 18 lbs. The St Nicholas accounts for 1618 record that the sexton was paid 'for several peales of ringing the 4th bell, the great bell being broken this year', thus confirming that it was the tenor bell that was recast at this time. Draper's bell lasted ten years before it was once again cracked, and again had to be recast.

It is possible, from the details of weights, prices and rebates of the various castings given in the accounts, to estimate that the bell cast at Common Staithe Yard by Edberry was about 60 lbs heavier (approximately 14 cwt) than Draper's bell cast in 1618. The mouth diameter of a 14 cwt bell would be around 43 inches and its mould step around 48 inches. The mould step of the bell-pit excavated at Common Staithe Yard was 49 inches, and it thus seems very likely that the excavated bell-pit is that of James Edberry in 1616.

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1. The original is NRO PD39 355; the present writer has interpreted a few words differently.
2. His largest surviving bell is the tenor at Nayland, with a diameter of 44 3/4 inches. The weight of this bell is known to be 15 cwt 20 lbs. This information is entirely consistent with the record of the Lynn St Nicholas accounts for the 1616 bell and with the dimensions of the bell-pit discovered in the recent excavations.

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