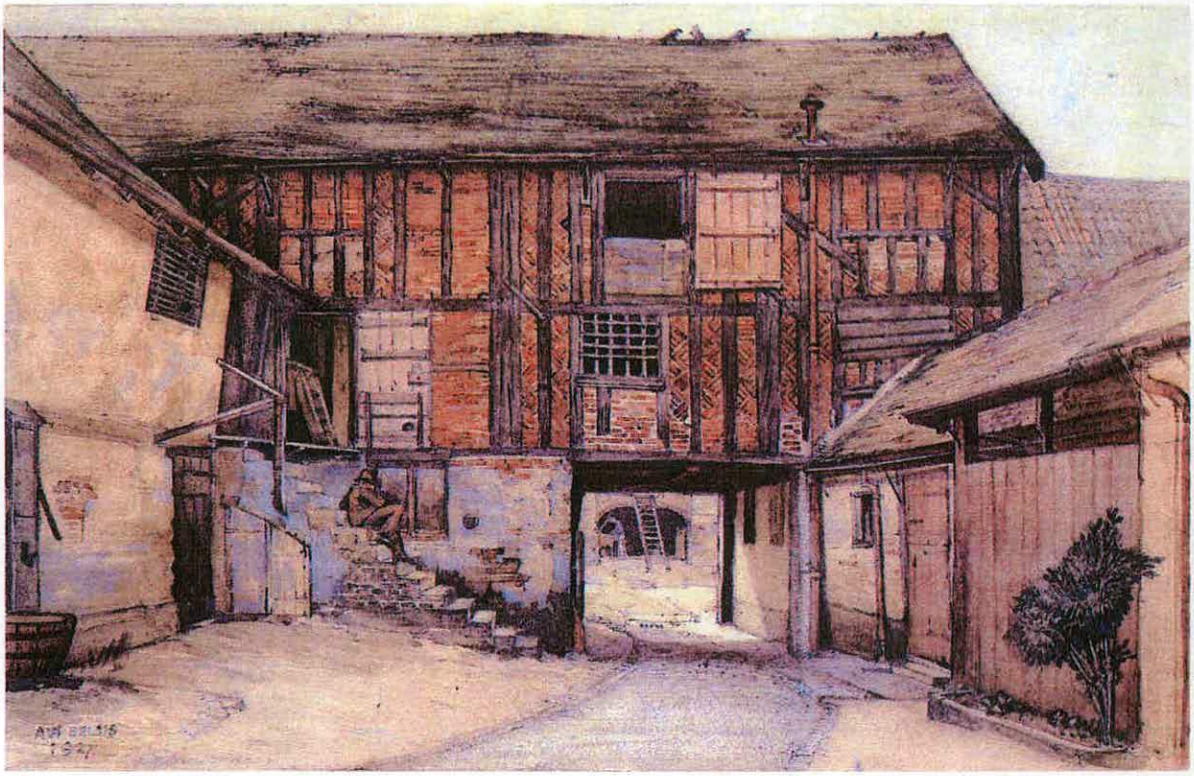
ISAAC LORD
Fore Street, Ipswich

A Report on the Historical Development of the Site

by
Richard Bond



Historical Analysis & Research Team

Reports and Papers 7
1999 (Revised 2002)

ENGLISH HERITAGE

'No.80a & 80a Fore Street is probably the last surviving example of a sixteenth to seventeenth century Ipswich Merchants house with warehouses at the rear opening directly on the dock front, where merchandise was unshipped, stored and distributed wholesale or sold retail in the shop on the street front'.

- extract from current DCMS listing description.

Cover illustration: **Lord's Granary, Ipswich** *(1927) by Alan Waddington Bellis (1883-1960)*

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The Historical Analysis and Research Team is part of the central Conservation Group of English Heritage, based at 23 Savile Row, London W1S 2ET

Contents

1.0 Introduction

1.1 This report has been produced by Richard Bond of the Historical Analysis and Research Team of English Heritage (HA&RT). Unless stated otherwise, all illustrations and photographs are by the author, copyright English Heritage. The report includes a summary of a tree-ring dating project undertaken by Dr Martin Bridge of the Dendrochronology Department of University College London.

1.2 The report was requested by Andrew Derrick of the East of England Region of English Heritage following proposals to redevelop the site and will be used to help inform a programme of repairs undertaken by Anthony Rossi and grant aided by English Heritage and Ipswich Borough Council. A detailed assessment of the historical development and significance of the complex was also requested by English Heritage's Urban Strategies and Listing team to inform a possible upgrading of part of the site to Grade I.

Figure 1 View from Fore Street looking southwards towards Common Quay

1.3 The aim of the report is to draw together all of the existing documentation for the site, and produce a dated chronology of its development from the medieval period onwards. The author first recorded the site in 1981 as part of a survey of timber-framed buildings in Ipswich undertaken on behalf of the Suffolk Archaeological Unit (SAU). Some of the warehouse ranges towards the rear of the site were inaccessible at the time of the SAU study, but were later investigated by the ex-Royal Commission on Historical Monuments for England (RCHME) as part a separate recording exercise.

1.4 The present report is a revision of an earlier HA&RT series report (volume 7) issued in July 1999, and incorporates the results of a second phase of tree-ring dating undertaken in range 3 (the Sale Room) in 2001-2, as well as a more detailed analysis of the structural development of the Sale Room (range 3) and its relationship to the Crossway (range 4). The fieldwork for the original HA&RT series report was undertaken in December 1998. The latest round of dendrochronology and fabric analysis was carried out during 2001-2 following the start of repair works to the roof of the Sale Room.

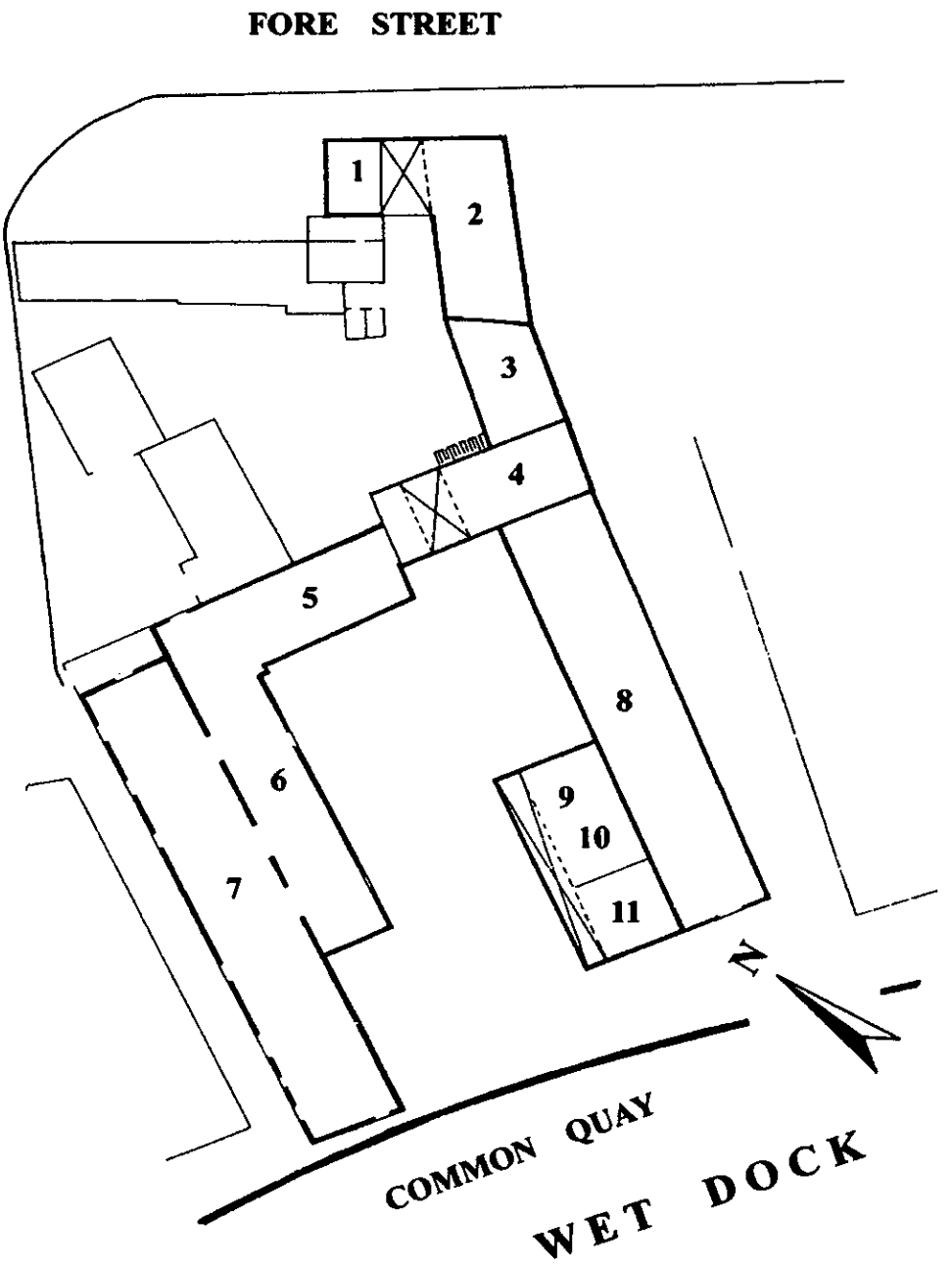

Figure 2 Plan of site showing location of ranges referred to in text

1.5 The site is roughly rectangular in plan and comprises eleven separate ranges, or building units *(fig 2)*. The site extends from Fore Street at the north to the Common Quay of Ipswich Dock. The buildings range in date from the early fifteenth century to the late eighteenth century and reflect the different functions and trades carried out on the site over the course of the past four centuries, and on a wider scale, the commercial development of Ipswich down to the medieval period.

2.0 Historical background

2.1 Medieval origins

2.1.1 It seems probable that the Isaac Lord site originated in the medieval period as commercial premises for the export of wool from East Anglia, and perhaps the wholesale trading of goods imported from Flanders and the Low Countries. Ipswich (the modern spelling is derived from the Old English place name 'Gipeswic': 'Gip' = *OE* personal name + 'wic' = 'harbour' or 'trading or industrial centre') emerged early in the medieval period as an important market for regional agricultural produce. Wool exports and wine imports became important in trade during the fourteenth century and by the end of the century grain featured prominently among exports of local merchants. Ipswich was one of only four East Anglian towns – and the only one in Suffolk – designated in the fourteenth century as 'staple' towns, i.e. the sole authorised centres for the sale of wool, the other three being Norwich, Lynn and Yarmouth, all in Norfolk. The town was probably also a convenient port from which to ship wool to the staple towns of Calais and Middleburg, and was used by merchants from Colchester, Harwich and Maldon which were all listed in the national customs system as subsidiary ports to Ipswich. There are indications of cloth, linen and hemp being produced in Ipswich in the twelfth and thirteenth centuries, however this was on a minor scale with commerce being of more importance to the town's prosperity than was industry. Cloth began to appear among exports from Ipswich in the thirteenth century and became an increasingly important commodity in the fifteenth century, however its trade was dominated not by local merchants but rather by the Merchant Adventurers (founded in London, with branches in Ipswich and other towns) and, by the end of the Middle Ages, the merchants of the German Hanse.[1]

2.1.2 Of the buildings dated by dendrochronology, the earliest was range 1. A sample taken from a rear wall post produced a felling date in the range AD 1418–1449.

2.1.3 The precise layout of the site prior to the seventeenth century is not known. Some have suggested that a water-filled channel may originally have extended northwards from the quayside through the centre of the site, to facilitate the loading and unloading of river barges. There are, however, no indications of any such channel in any of the historic maps of the site. Nor is there any physical evidence to support this claim since

[1] This account is a summarised version of *'History of Medieval Ipswich'*, part of the series *'Medieval English urban history'* a research facility for local history studies available through the Internet at http://www.trytel.com/~tristan/towns/ipswic13.html

the present second floor doorway over the central carriageway (through which goods were supposed to have been raised and lowered onto the waiting barges) is known to be a later insertion on the site of an original window opening (*figs 29 & 30*).

2.2 Seventeenth century

2.2.1 The earliest cartographic view of the site is John Speed's map of Ipswich, published in 1610 *(fig 3)*. Although essentially diagrammatic with houses and streets depicted in highly stylised form, the map does at least give an idea of the scale of development in and around the Fore Street area at this time, with the main dock area located at the western end of what is now Common Quay close to the Isaac Lord site.

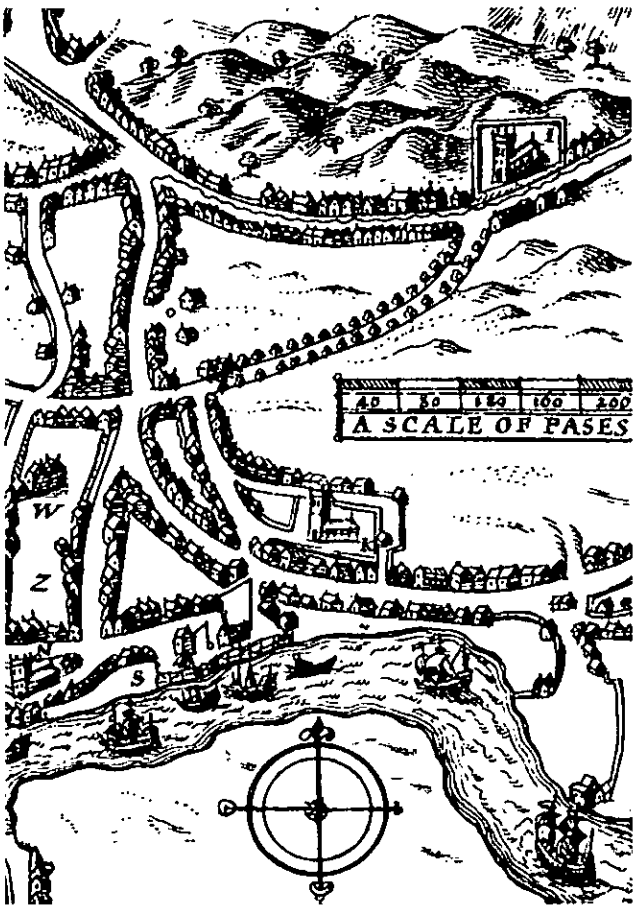

Figure 3 Detail of John Speed's map of Ipswich, published in 1610

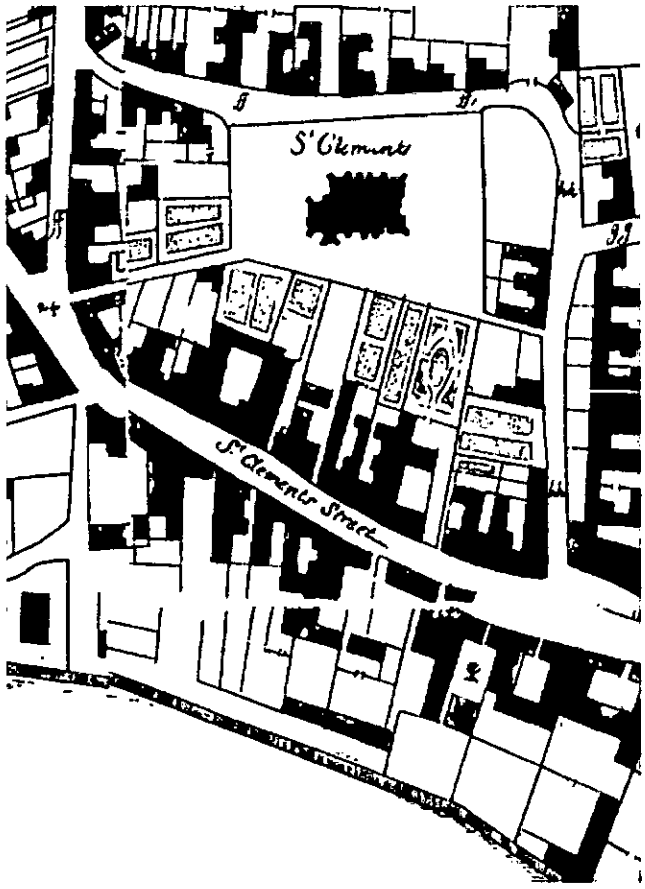

Figure 4 Detail of John Ogilby's map of Ipswich, published in 1674

2.2.2 The site at this time comprised the wool merchant's house (the present ranges 1 and 2) with warehouse ranges (including the present ranges 3 and 4) behind leading down towards the river frontage. John Ogilby's map of Ipswich, dated 1674 *(fig 4)* shows the buildings along Fore Street in considerable detail with the Isaac Lord site easily recognisable as the large N-S range with projections on its eastern side, situated opposite the large courtyard plan house on the north side of the street. Range 5 (or a predecessor of the present range) is shown as having existed at this date, as is a range on the opposite side of the rear courtyard, on the site of the northern end of the present range 8.

2.3 Eighteenth century

2.3.1 Joseph Pennington's map of 1778 shows that, by the end of the eighteenth century, the site had developed substantially into its present form. The area behind Fore Street is occupied by a series of long projecting warehouse ranges extending southwards towards the quayside. The Isaac Lord site is clearly discernible at the western end of the street, with most, if not all, of the present buildings standing by this date. Note

also the existence at this time of the short range aligned E-W between the southern end of ranges 8 and 6/7 (also shown in figs 8 and 9), since demolished[2].

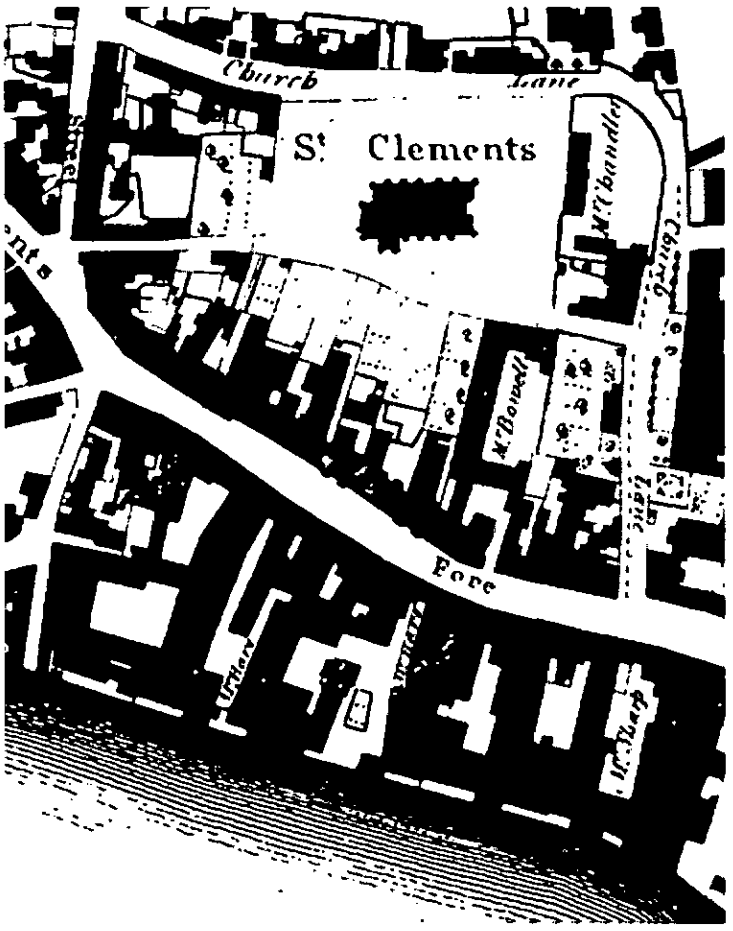

Figure 5 Extract from Joseph Pennington's map of Ipswich, published in 1778

2.3.2 The site was redeveloped as a maltings probably in the middle of the eighteenth century when a member of the local Cobbold family took over the site. There existed two parallel malting floors on either side of the courtyard, in ranges 6 and 7 to the west, and in range 8 to the east. The steeping tank on the eastern side was at the northern end in range 3, and there was a large drying kiln at the south end in range 11. A ground floor passageway running along the western side of ranges 9, 10 and 11 gave access to the kiln and eastern maltings range from the quay. The steeping tank on the western side was also situated to the north, in range 5, with the kiln at its southern end next to the quayside (the original kiln building on this side has been demolished). The ground floor surface in ranges 6 and 7 is paved in brick and tile. The upper floors are floorboarded instead of tiled and therefore more likely to have been used for storage of grain.

[2] Although apparently they are all shown on Pennington's map of 1778, at least one block, range 7, was extended to the quay of the new wet dock of 1840 while most of the other ranges have changes in brickwork indicating a degree of rebuilding.

2.3.3 As they now stand the buildings on the southern half of the site appear to be largely eighteenth century or early nineteenth century structures incorporating earlier elements. This would be consistent with the conversion of the Isaac Lord site to a maltings in the mid-eighteenth century occasioning considerable rebuilding. Ranges 5, 6, 7 and 8 all include the same type of large section softwood timber floor beams, their ends supported on timber plates built into the thickness of the walls. Apart from range 8, which has a timber-framed west wall, all the exterior walls are of brick. Range 5 was added to the western end of range 4 and a new door opening was cut through the western gable of range 4 to provide access through. Ranges 6 and 7 appear to be of the same date, the feet of the rafters forming the internal roof slopes meeting on a shared wall plate which in turn sits on a shared brick wall separating the two ranges. The internal ends of the large-section transverse floor beams running the length of both ranges sit on shared timber rails built into the dividing wall at first and second floor level, and the roof structure in each range features rafters joined by short, high collars.

2.3.4 The malting process itself involved the following stages:

1) Dried barley was steeped in water for a period of twenty-four hours.

2) The barley was turned out into the 'couch', an area next to the steeping tank enclosed by removable wooden boards, and piled up to a height of about sixteen inches.

3) The barley was turned out and spread across the tiled malt floor to a depth of approximately two inches.

4) The barley was spread out across the upper floor of the drying kiln. The floor tiles were perforated for this purpose, the furnace below burning anthracite. The finished product was malt.[3]

2.3.5 Figure 6 shows a detail of an engraving by Nathaniel and Samuel Buck first published in 1741. The viewpoint is from Stoke on the south of the river looking eastwards towards St Clements church and the common quay, and beyond it, the quayside serving the Fore Street area. Two parallel projecting rear ranges, their gables fronting the river, are shown in what appears to be the precise vicinity of the Isaac Lord site.

[3] I am grateful to the owner of the Isaac Lord site, Mr Stuart Cooper, for providing me with this information.

Figure 7 Detail of 'View of Ipswich', by John Clevely, showing Ipswich in the late eighteenth century

2.4 Nineteenth century

2.4.1 In Edward White's map, dated 1867, the overall layout of buildings to the rear of Fore Street appears little changed from the late eighteenth century. The quay was extended in 1840 and the earlier narrow thoroughfare at the south of the site widened, improving river access along the length of the quayside. Following the rebuilding of the quay range 7 was extended at its southern end, as evidenced by vertical construction breaks in both its side walls.

2.4.2 In the nineteenth century the malting side of the business ceased and the site was given over to grain processing, including grinding oats for horse feed and sifting and sorting (aerating) barley. This was at first combined with, and then superseded by, the shipping and merchandising of coal.

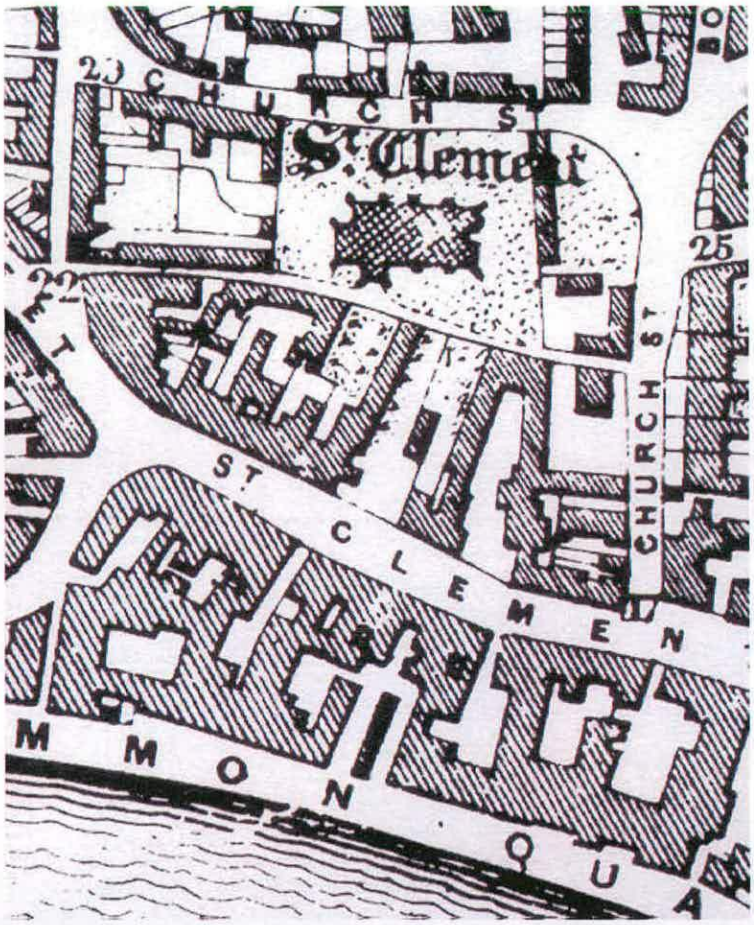

Figure 8 Extract from Edward White's map of Ipswich, published in 1867

2.5 Twentieth century

2.5.1 Figure 9 shows the Isaac Lord site as it appeared in the late 1920's, when the area around Fore Street was still a busy industrial district of the town with trades such as malting, corn-milling, the preparation of feeding stuffs and coal shipping all still active in the area. The various different buildings and ranges making up the Isaac Lord complex are shown in considerable detail, with features such as passageways, outshots and small outbuildings all clearly identifiable.

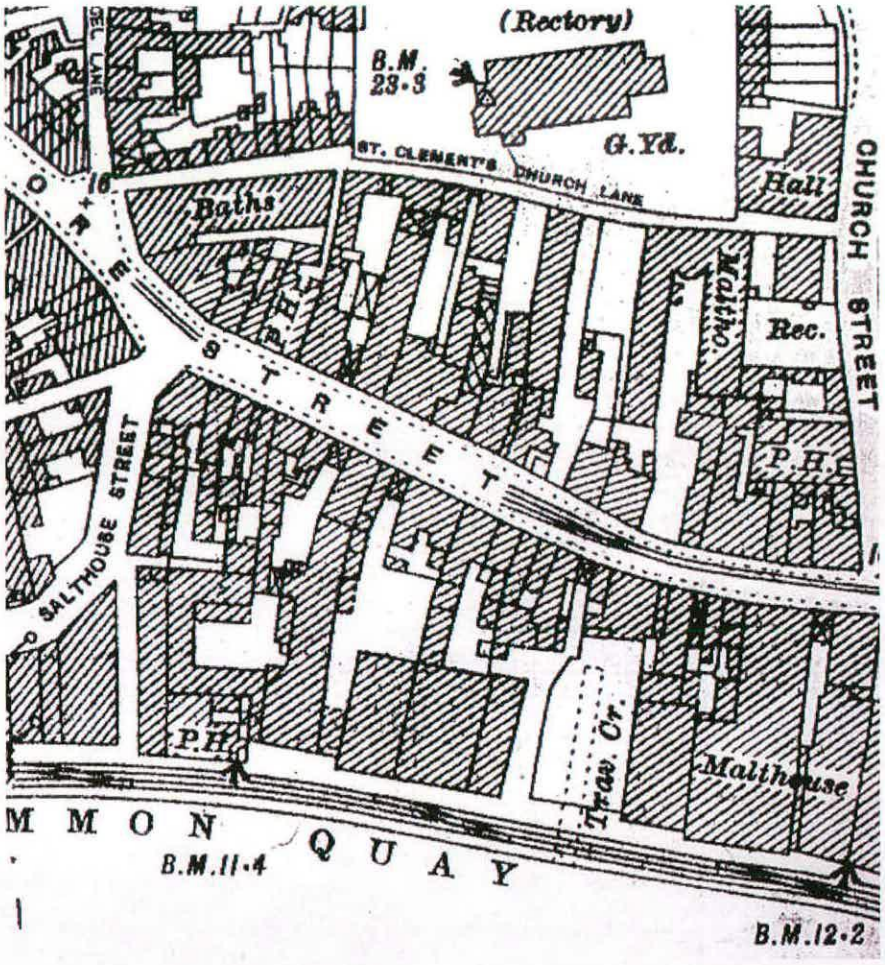

Figure 9 Detail of the 1927 25" edition Ordnance Survey map

3.0 Architectural description

3.1 Range 1, No. 80 Fore Street

3.1.1 No.80 Fore Street comprises the western half of the existing L-shaped timber-framed house at the north end of the Isaac Lord complex, with No.80a the cross wing at its eastern end. The range is aligned E-W and runs parallel with the street. Between the two ranges at ground floor is a central carriage entrance giving access from the street to the rear of the site.

Figure 10 Fore street frontage of the merchant's house, ranges 1 & 2, as it appears today

3.1.2 Although outwardly the house appears to have been designed as a single unified structure, the two ranges in fact belong to two separate periods of construction, with No.80 (range 1) probably dating from between *c.*1418 and *c.*1449, and No.80a (range 2) dated 1636. The central carriageway between the two ranges dates from the original construction of range 1 but was originally narrower, the opening having been widened probably when range 2 was constructed in the early-mid seventeenth century.

Figure 11 Fore Street elevation of ranges 1 and 2, c.1927

Figure 12 Fore Street elevation of ranges 1 & 2 (drawing courtesy of Mr. Andrew Rossi)

3.1.3 An *in situ* first floor beam extending N-S across the middle of the carriageway ceiling represents the eastern limit of the fifteenth century structure above first floor level. In the soffit of the beam is a series of empty mortice holes, indicating the line of the former cross frame (or possibly an end gable) wall at ground floor level. Mid-way along its length the N-S beam is intersected by a second beam that extends westwards towards the west gable cross frame of No.80. Where the two beams intersect can be seen the remains of what appears to be the head of an original wall post (this point is aligned directly below the easternmost crown post within the roof of No.80). At present it cannot be said precisely how far the original building extended eastwards; the N-S beam seen over the carriageway could have formed part of an external gable frame, or equally it may have belonged to an intermediate cross frame. If the latter, there is a possibility that the building may have been a *continuous jetty house*, i.e. a

building of two or more bays with a single pitch roof running parallel to the street, jettied at first floor level along its entire street frontage. This type of house was common in towns throughout England during the fourteenth and fifteenth centuries, with examples in York (Lady Row, Goodramgate, dating from 1316 (thought to be one of the earliest timber-framed terraced rows in the country) and, much nearer to Ipswich, in the town of Lavenham in Suffolk, where there are examples dating from the late-fifteenth to the early sixteenth century. In Lavenham, as at Isaac Lord, the terraced buildings often have crown post roofs with plain, unmoulded, crown posts. In these examples, the absence of carved decoration upon the roof timbers has prompted speculation that the main area for internal decoration was the first and second floor ceilings, rather than the roof structure itself.

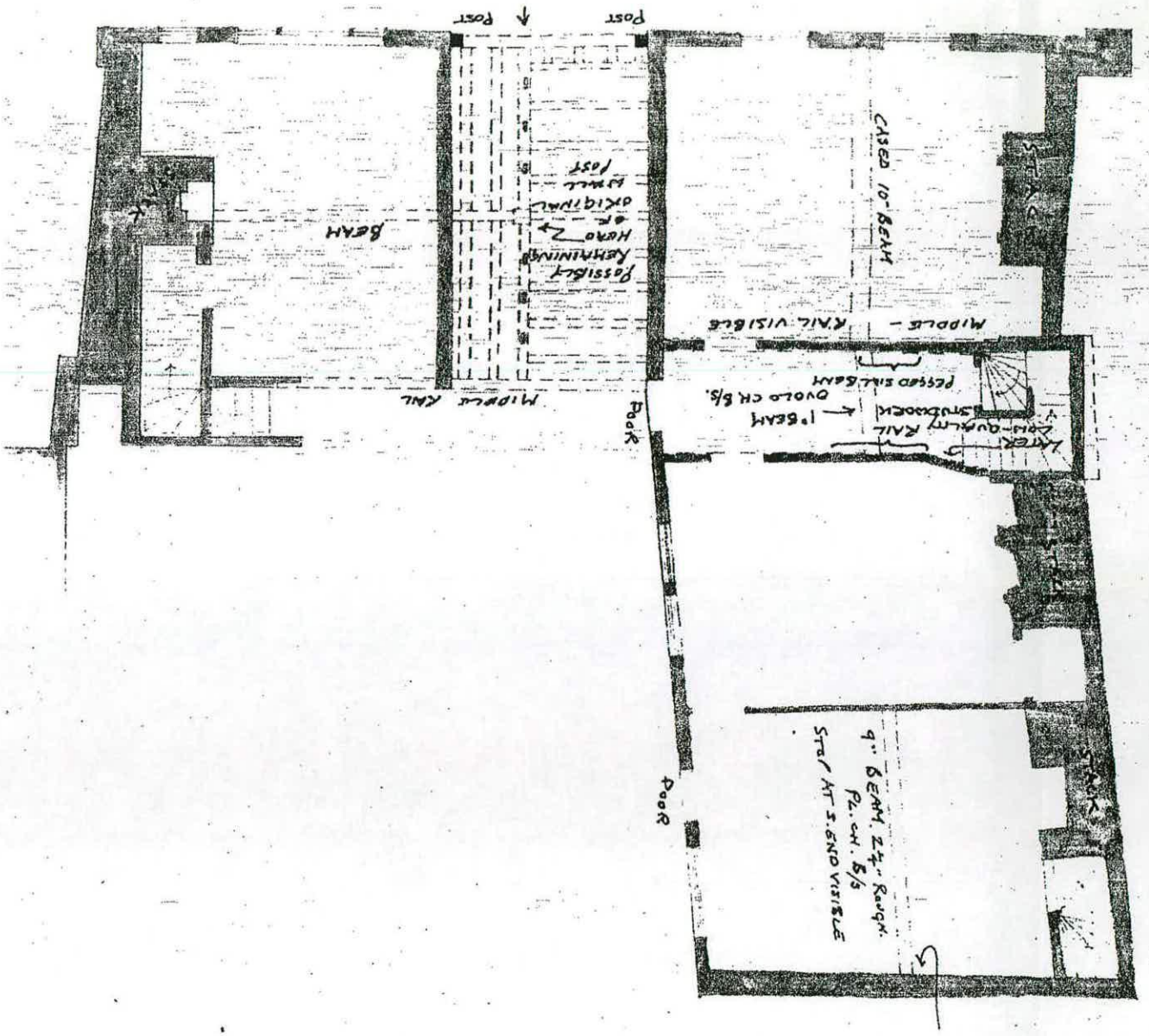

Figure 13 Ground plan of ranges 1 & 2

3.1.4 The first floor over No.80 is divided into two rooms of unequal size. The tie beams of the two extant roof trusses can be seen protruding below the surface of the plaster ceilings of the first floor rooms; however both beams are encased in panelling, and any evidence for an earlier room layout (e.g. stud partition walls constructed in line with the cross frames) at present remains inaccessible.

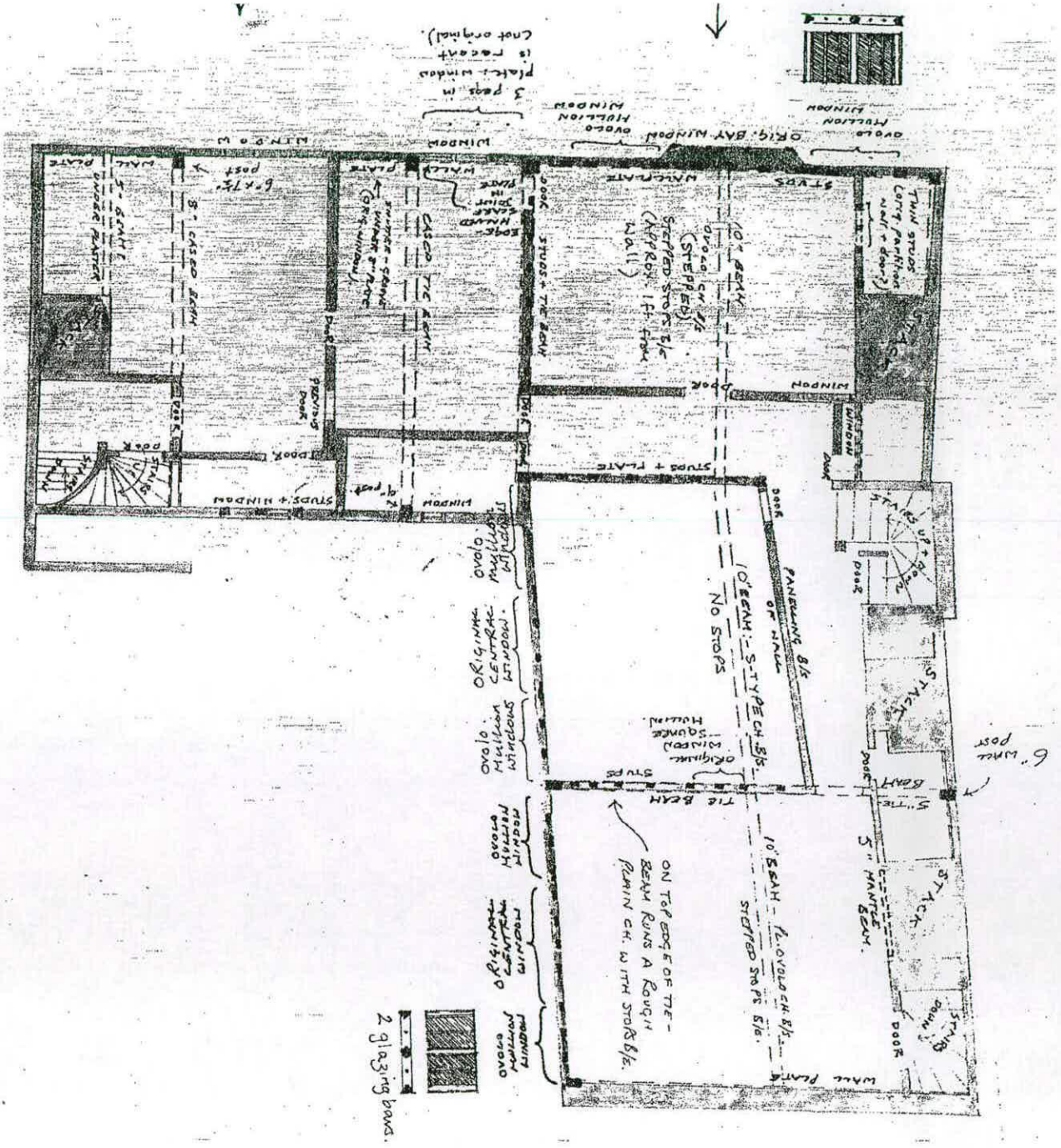

Figure 14 First floor plan of ranges 1 & 2

3.1.5 The door in the extant partition wall between the two bays is a later insertion, the original door having been situated some 2ft (600mm) along the wall to the south. The wall plate running along the front of the building has a shutter groove in its soffit, indicating an original window between the wall post (situated mid-way along the front wall of the smaller bay) and the east side of the partition wall. The present window opening in the front wall of this bay (extending from the east side of the wall post to the partition wall with no. 80a) was not a feature of the original building, the timber

studwork having originally been continuous along the wall in this area, as evidenced by a series of three peg holes in the wall plate. Approximately 1ft (300mm) to the east of the wall post in the smaller bay, above the edge of the present window, there is an edge-halved scarf joint in the wall plate. The position of a scarf joint so near to the end of the wall plate may indicate that the building has been truncated, and may originally have extended as far as the east wall of the central carriageway (exterior west side wall of no. 80a), or possibly beyond. In the rear wall of No.80 there is some exposed studwork around a small window (larger bay), although at present it is not possible to check its origin. There is another small window in the rear wall visible from the smaller bay. Beside the window is a 9" (225mm) wide wall post; this appears to form part of a cross frame with the wall post opposite in the front wall and a linking (at present cased) approx. 6" (150mm) wide tie beam. The rear wall post supporting the tie beam over the larger bay (again, an encased beam) is concealed behind the present wall surface; the opposing post in the front wall of the range measures 6" (150mm) x 7.5" (185mm). The fireplace opening on the first floor has been blocked; the chimney stack itself retains its square plan at first floor level, its overall dimensions being more or less the same as at ground floor. An approximately 5" (125mm) wide beam extends from the chimney stack across to the front wall of No.80; only the soffit of the beam is exposed below the plaster ceiling.

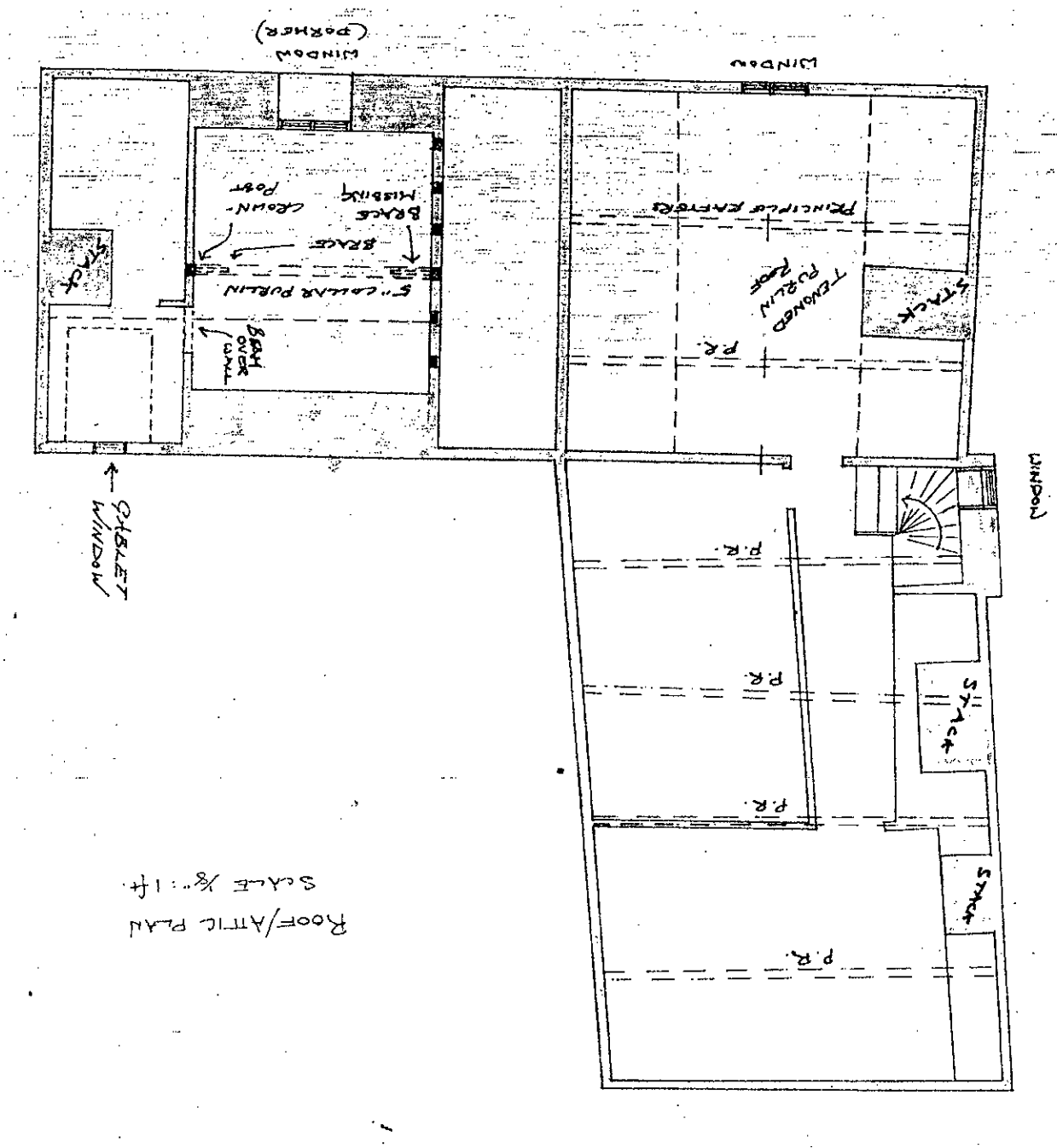

Figure 15 Attic floor plan of ranges 1 & 2

3.1.6 The attic area above the first floor has signs of domestic, as opposed to storage, use in both larger and smaller bays. The partition wall separating the two bays lies over the 8" (200mm) wide cased beam seen on the first floor, the eastern end wall of the larger bay laying over the other cased tie beam, seen running mid-way across the smaller bay of the first floor and also directly over the beam running front to rear over the ground floor carriage entrance (beam over original east exterior wall of No.80). The staircase

on running up to the attic is housed in a small gablet. The gablet is lit by a window (apparently original) in the rear-facing, southern, wall. The chimney stack can be seen to continue up into the attic space, again square in section and only slightly smaller than on the first floor. The roof over No.80 is of crown-post construction, the two crown posts that are visible being original timbers, and the post within the bay partition wall retaining an original brace *in situ*. The crown plate running over the larger bay between the two crown posts is 5" (125mm) wide. The soffit of the plate is exposed, but the rafter collars, which lay over it, are concealed by the present plaster ceiling. In the smaller attic room the ceiling is lower still and conceals the roof framing entirely. It seems possible that an alternative type of roof structure might exist over the smaller bay, perhaps with the internal chimney stack standing within a separate end bay (there is only a distance of some 3ft 6" / 450mm between the cross frame/partition crown post and the stack/chimney bay). The attic is also lit by a dormer window situated on the northern side of the larger bay. This window appears to be contemporary with the roof structure.

3.1.7 There is a splayed edge-halved bridled scarf joint with sallied abutments in the rear wall plate *(fig 16)*. The gable of the (formerly exterior) eastern end cross frame has been rebuilt and the original crown post removed. The projecting eastern end of north wall plate is weathered.

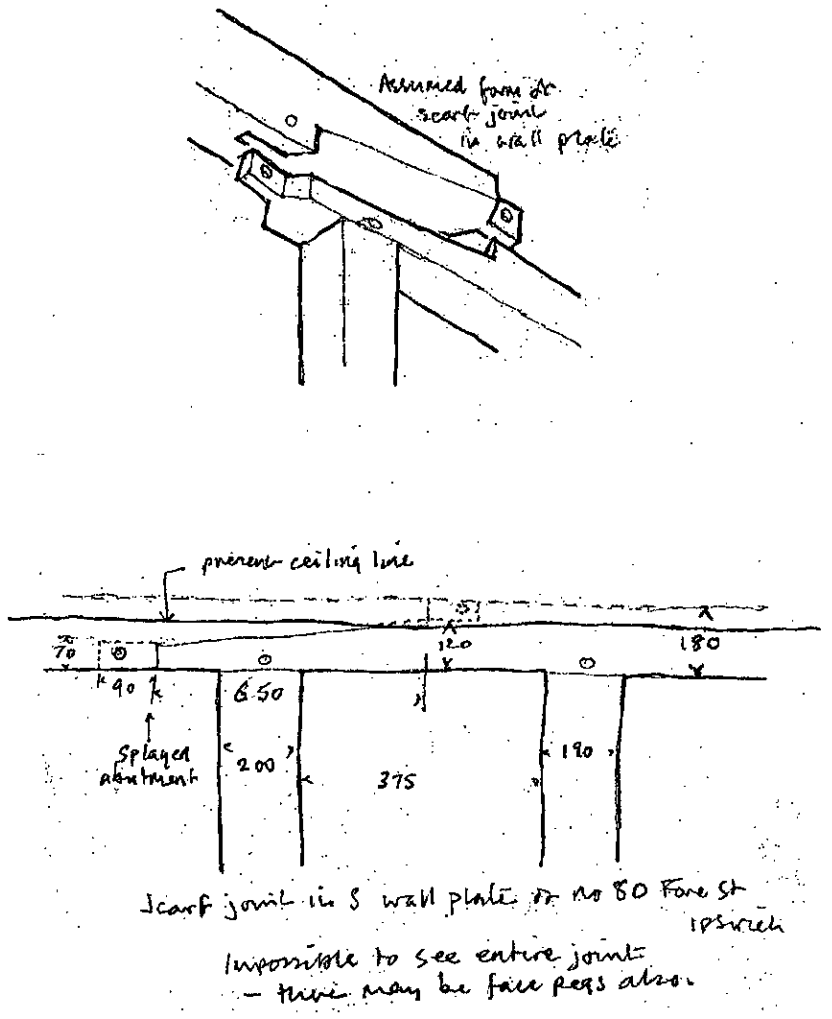

Figure 16 Range 1. Details of scarf joint in rear wall plate (survey drawing)

3.1.8 During the course of recent repair works to range 1 there was discovered behind the present exterior render on the rear (south) wall over the central carriageway an area of early wall plaster with painted imitation brickwork.[4] The bricks were painted red and the mortar joints white; there is no attempt to create a diaper pattern effect. The discovery of this painted decoration is very significant since it gives an indication both

[4] Found during exploratory investigations for repair works in July 1999. The painted decoration was examined by Adrian Heritage of English Heritage, and recorded by the Project Architect for the current repair programme, Mr Anthony Rossi. A specialist report on the discovery has also been prepared by Andrea Kirkham.

of the status of the site and of the appearance of the courtyard following the creation of the carriageway and construction of range 2 in the early seventeenth century. The existence of even a small amount of painted plaster could be evidence of a formerly extensive decorative scheme that may have extended across the whole of the rear elevation of range 1, and perhaps also the courtyard elevation of range 2. Furthermore, since during this period the use of brick was preferred over timber-framing for building, it could reasonably be argued that the same kind of painted brick decoration was likely to have been applied to the main street front elevation. Clearly, the implications of this discovery for the conservation of other early seventeenth century houses in Ipswich and elsewhere are potentially very far reaching.

3.2 Range 2, No. 80a Fore Street

3.2.1 The cross wing at the eastern end of the house is aligned N-S and consists of two storeys and an attic, with a cellar under the front bay. The cross wing is double-jettied with a projecting gable over the upper storey, and a jetty at first floor level in line with that of No.80. At both first and second floor level is a decorative carved timber bressumer, and the projecting gable is supported on carved brackets. The gable bressumer has the date 1636 and the first floor jetty bressumer the initials H. above W.F. The front wall of the first floor room has exposed timber framing, and includes an oriel window with a carved wooden frame and supporting brackets (similar in style to the Neptune Inn, No.86 Fore Street), and small flanking high-level wooden framed leaded lights. (Range 1, No.80, has a pair of mullioned and transomed casement windows at first floor. On the ground floor, the cross wing has two double-hung sash windows, and the range 1 has one three-light double-hung sash window and one twentieth century casement window). The ground floor walls in both ranges 1 and 2 have been faced (or rebuilt) in brick. The rear of range 2 extends southwards along the eastern side of the courtyard with two further bays with two large, slightly projecting, gables on the front and with exposed timber framing at first floor. The attic space is lit by casement windows in the gables. The first floor is lit by a pair of three-light windows, and the ground floor has one paired double-hung sash window and one twentieth century steel casement window (replaced with a timber casement during the current programme of repairs). The ground floor walls are of brick and have been painted over.

Figure 17 Cross section through range 1, and west (courtyard) elevation of range 2 (drawing courtesy of Mr. Andrew Rossi)

Cellar

3.2.2 The cellar has exposed ground floor beams and a brick vaulted arch at its eastern end supporting an internal chimney stack heating the ground and first floor rooms above. The cellar area has been sub-divided into a number of smaller rooms through the insertion of later partition walls. The stairs leading down into the cellar appear to be original to the building.

Ground floor

3.2.3 The ground floor is reached from the rear of the central carriage entrance through a door leading into a lobby/stairwell between the front and central bays. Directly opposite the door opening on the eastern side of the range is a dog-leg staircase leading up to first floor and down to the cellar. The walls forming the sides of the lobby/stairwell both have exposed timber studwork; the wall framing on the north side wall includes the sill of a former original window opening which would have given light to the lobby/stairwell from the front bay. The southern side wall also includes a length of rail mid-way between its girding beam at first floor level, and its ground sill.

At the western end of the lobby/stairwell a pair of opposing doorways lead into the front and central ground floor rooms of the cross wing.

3.2.4 The ground floor ceiling of the front bay is bisected by a cased, 10" (250mm) wide axial beam, extending N-S. The southern end of the beam intersects with a transverse beam running E-W and following the line of the northernmost lobby/stairwell partition wall. On the south side of the transverse beam is another N-S beam; this beam is visible over the lobby but is concealed by the present panelled ceiling of the middle bay of the cross wing. The southern end of the beam is jointed into a second transverse beam on the line of the partition wall/cross frame between the middle and rear bays. On the southern side of this wall a third N-S beam extends southwards to meet the rear wall of the cross wing; the beam is 9" (275mm) wide with 2 ¼" (56mm) plain, roughly carved, chamfers on both sides terminating in run-out stops at the south end. The central and rear bays both include internal fireplaces along their eastern wall heating their ground and first floor rooms. At the south-eastern corner of the southernmost bay is a very steep staircase (presumably a service staircase) linking the ground and first floor rooms.

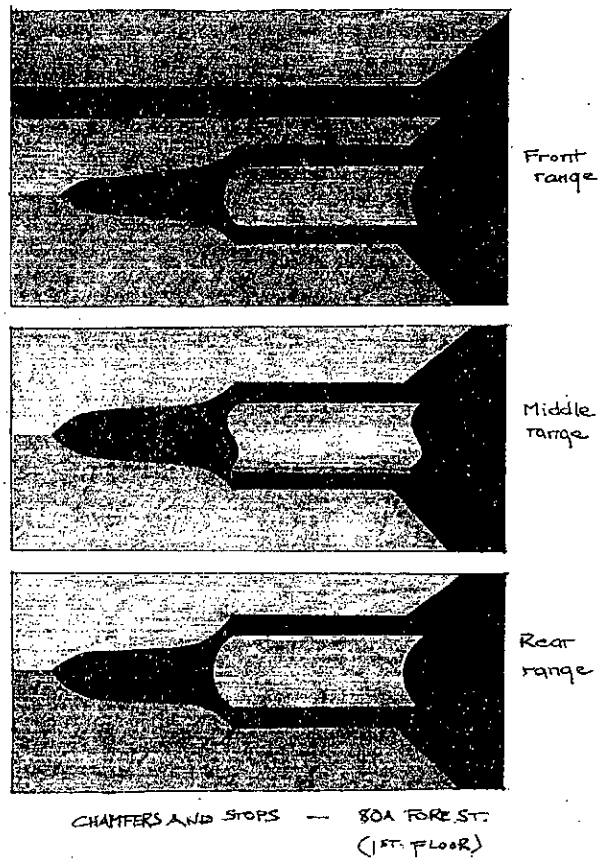

Figure 18 Range 3. Decorative chamfer mouldings and run-out stops to ceiling beams over front, central and rear first floor rooms

First floor

3.2.5 The oriel bay window and ovolo-mullion windows to either side which light the main first floor bay at the front end of the cross wing all appear to be original features (none of the studwork in the area surrounding the windows appears to have been disturbed). There is evidence in the exposed timber framing along the west wall of the front bay for a former low door at first floor level linking the cross wing with range 1 (No.80). The present door opening at the south end of the cross frame is a later alteration. As in the range 1, the internal chimney stack backing onto the east end wall of the front bay of the cross wing stands within its own narrow bay (this is most evident on the first floor where more of the timber framework of the original partition wall survives). At the south end of the partition wall at first floor is a high-level window opening.

3.2.6 Empty halvings in the faces of the exposed timber studs within the rear wall of the front bay indicate that the wall frame originally included a pair of substantial arch braces. The first floor axial beam linking the front and rear walls of the front bay is 10" (250mm) wide, and has stepped ovolo chamfers on both sides; the chamfers terminate at each end in stepped run-out stops. Behind the front bay to the south is the staircase/lobby bay. The staircase rises from the ground floor to the attic within a compact stairwell at the eastern end of the staircase/lobby bay; there is a slight outward projection of the eastern side wall of the cross wing to accommodate the stairwell. To the south of the staircase is a chimney stack serving the middle bay of the cross wing. The first floor fireplace is now disused following a remodelling of the interior of the room, probably during the late seventeenth or eighteenth century (this included the construction of a thin partition wall some 3ft / 900mm from the face of the fireplace). The first floor windows along the west external wall of the central bay date from the initial construction of the building (two ovolo-mullion windows flank a large 9-light central window). The same window arrangement is repeated along the rear bay. The second floor axial beam running N-S over the central bay is 10" (250mm) wide, and has cyma chamfers along both sides (no run-out stops). The south end of the beam is jointed into the tie beam of the cross frame partition wall separating the middle and rear bays. The tie beam is 5" (125mm) wide. Both of the wall posts supporting the tie beam are visible today, the east post standing inside a cupboard area between the central and rear chimney stacks. Some of the original studwork of the cross frame partition wall can be seen from inside the middle bay; these contain evidence for a former square window opening in the wall to the east of the ceiling beam/tie beam intersection.

3.2.7 The tie beam has a plain, rough chamfer along its top edge, visible from the rear bay; there are run-out stops at both ends. The wall plates on both sides can be seen from within the rear bay. Running N-S over the rear room is a 10" (250mm) wide axial beam. The beam has plain ovolo chamfers on both sides terminating in stepped run-out stops at each end. The fireplace in the rear bay is now disused. The fireplace has a 5" (125mm) deep mantle beam. In the south-eastern corner of the room, in the space between the internal chimney stack fireplace and rear wall, is a small service staircase that is entered from a doorway opening off the rear room.

Roof

3.2.8 The roof over the cross wing is of tenoned-purlin type. The roof consists of nine roof trusses, including the gable trusses. At the front of the range, the western wall plate follows the line of the eastern side wall of the central carriageway. Between this wall plate and the eastern end wall of the larger (eastern) attic bay of range 1 there is an approximately 5 ft 6" (1650mm) wide void. There is presently no access into this space (there is a possibility that it may have been entered from a doorway at the eastern end of the attic over range 1 originally) with the void being completely sealed off on both sides.

3.3 Range 3 ('Sale Room'), two-storey warehouse range at rear of No.80a

3.3.1 The exterior ground floor walls are of brick laid to English bond and probably date from the original construction of the present structure. There is no evidence (for example, empty peg holes along the bottom of the middle rail) to indicate that the side walls were timber-framed below first floor level originally. Brick pillars have been added and extra ceiling beams inserted below the original first floor beams. The inserted beams are the same size as the floor beams found in the later ranges to the south of the site, i.e. generally about 13" (330mm) square or larger.

3.3.2 A 'steep' (i.e. a tank used for soaking the raw barley at the start of the malting process) survives at the northern end of range 3. There are also two water pumps with the inscription 'JC 1802' cast in the lead tanks (the initials are thought to stand for John Cobbold, the head of an important family-run brewery business in eighteenth and nineteenth century Ipswich, and forerunner of the present Cobbold's Brewery).

3.3.3 On the first floor the entire timber frame is exposed to view including the crown post roof structure. The original north wall of the building appears to have been removed and the range slightly truncated following the construction of the later rear domestic wing behind No.80a Fore Street (the northernmost arch brace in the east wall frame is actually truncated by the brick wall separating the two ranges). The studwork along the western side of the building between the most northerly tie beam and the surviving original corner post has all been renewed with new timbers added. The wall plate above has also been replaced (explaining the absence of a wind brace in this position).

3.3.4 The roof is of crown-post construction and divided into four bays. The crown posts of the three intermediate roof trusses are plain and square in section. Each crown post is braced on both sides to the crown plate. The crown plate is made up of three equal length timbers, bridle-jointed together over the tops of the crown posts. The northern and southern crown posts are braced downwards to their respective tie beams on their eastern side only. The central crown post is not braced to its tie beam at all. An interesting feature of the roof structure is the use of double collars, the top collar being some 2'6" (780mm) above the lower.

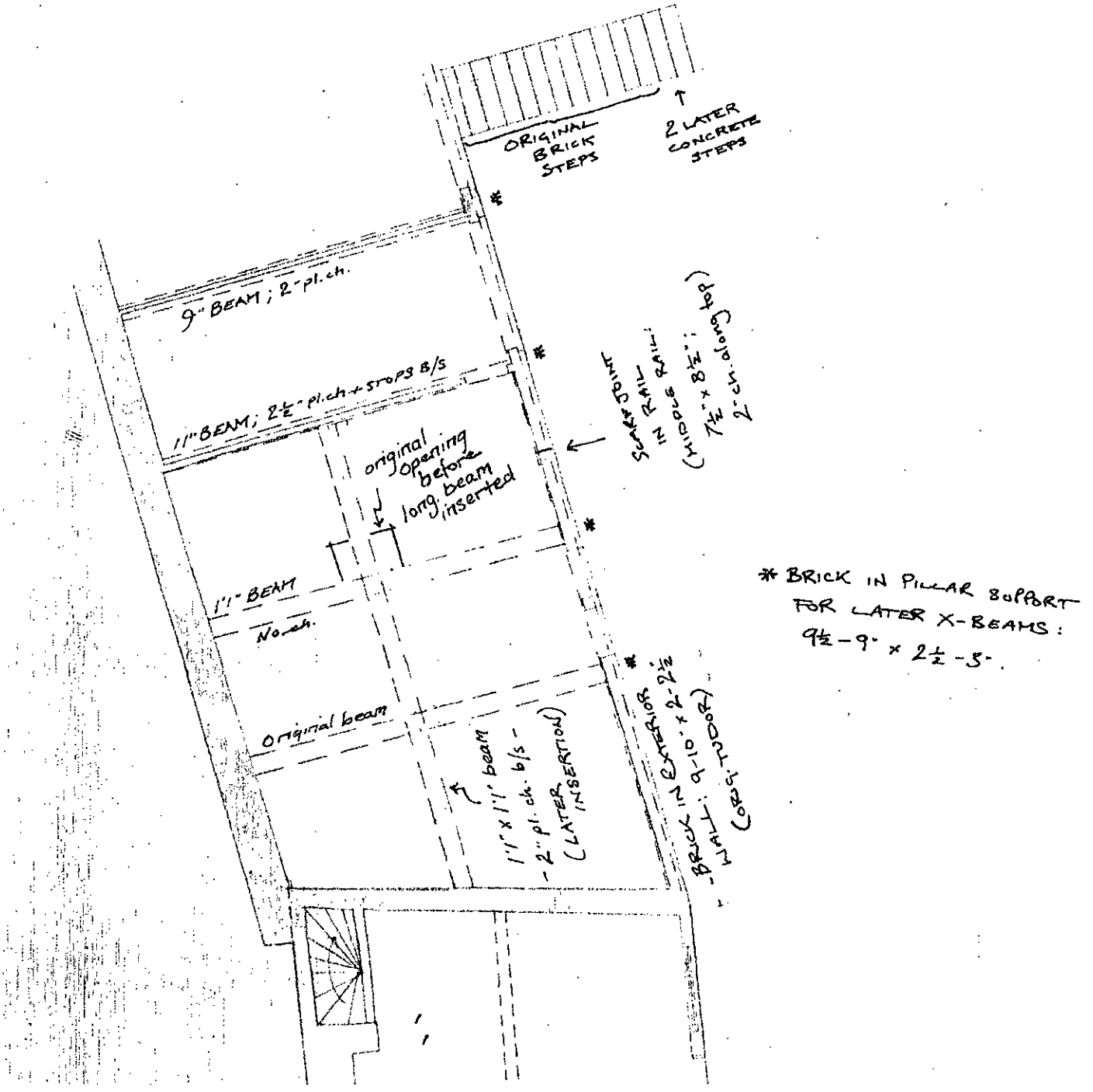

Figure 19 Range 3 (Sale Room). Ground plan

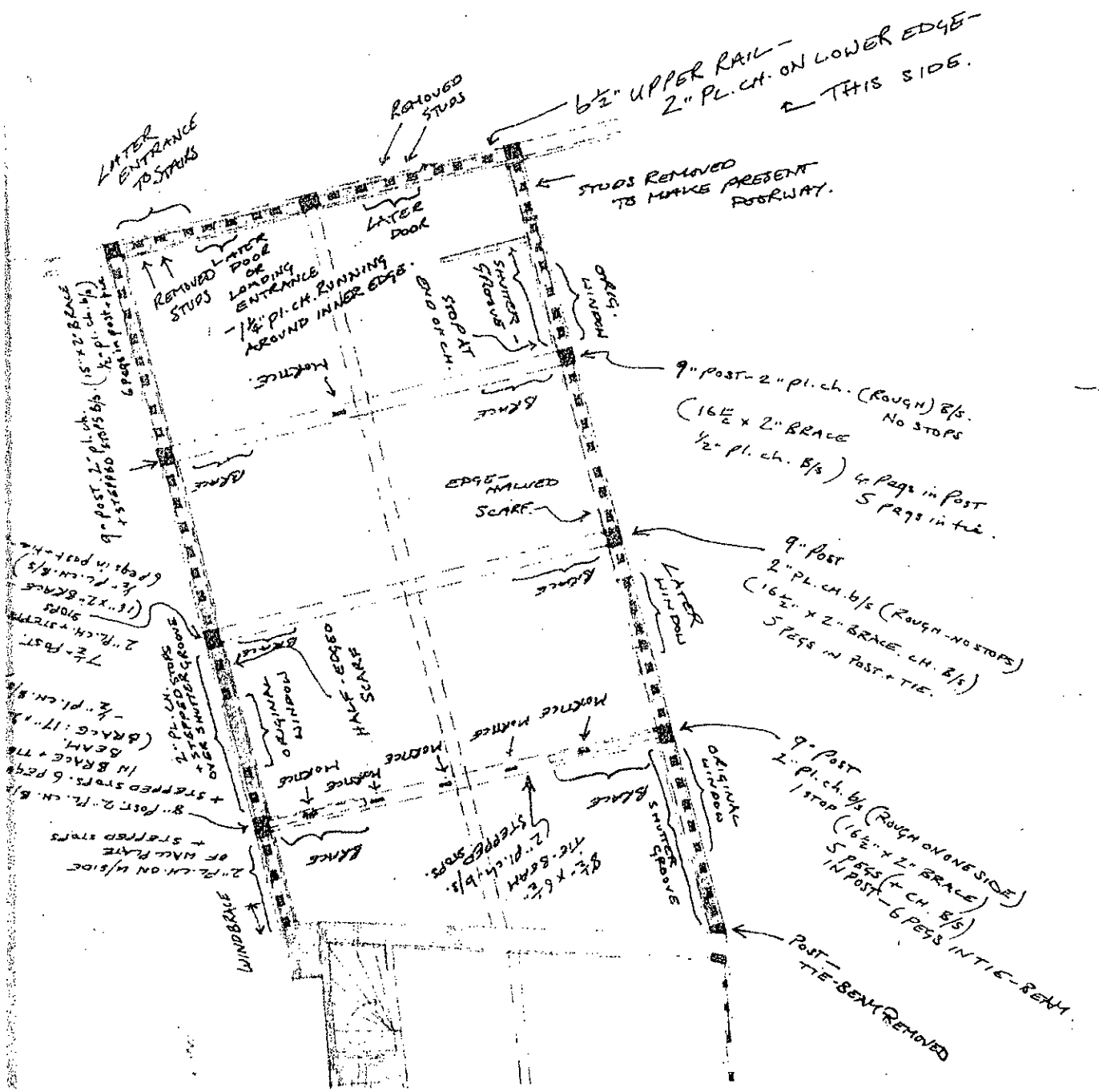

Figure 20 Range 3 (Sale Room). First floor plan

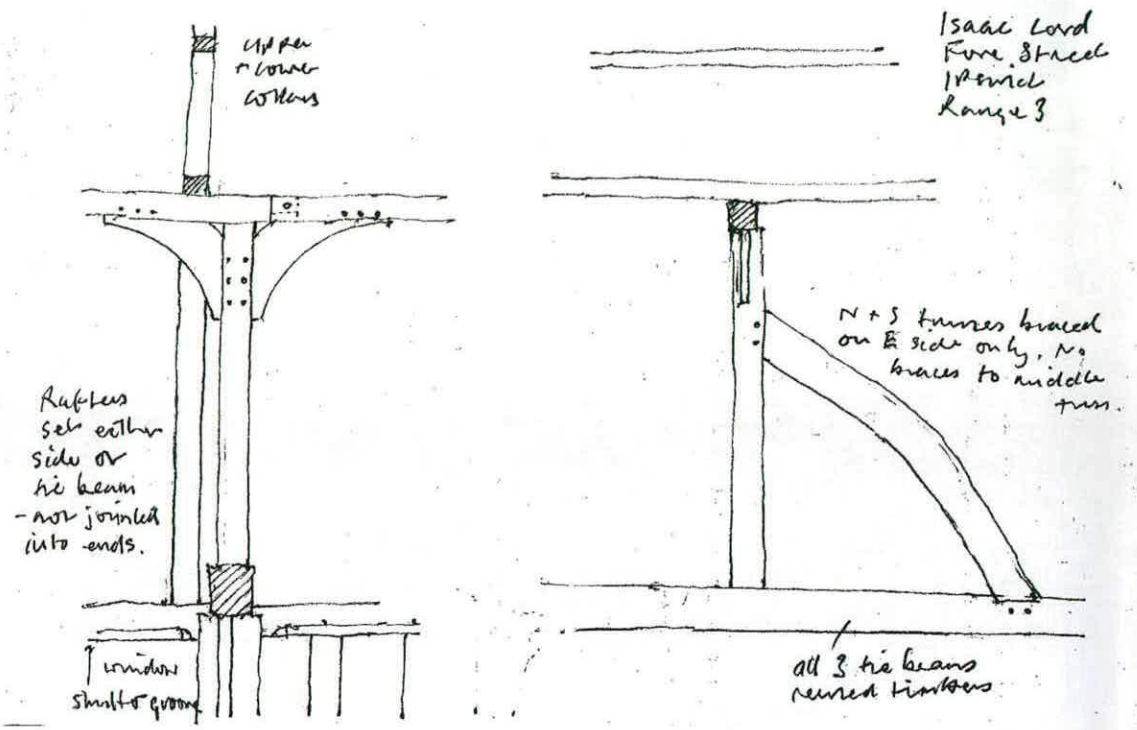

Figure 21 Range 3 (Sale Room). Details of crown post roof (survey drawing)

3.3.5 At its southern end the range directly abuts the north wall of range 4 which runs E-W across the middle of the warehouse complex. The south end of the crown plate is supported on a bracket attached to the easternmost wall post of the north wall frame of range 4.

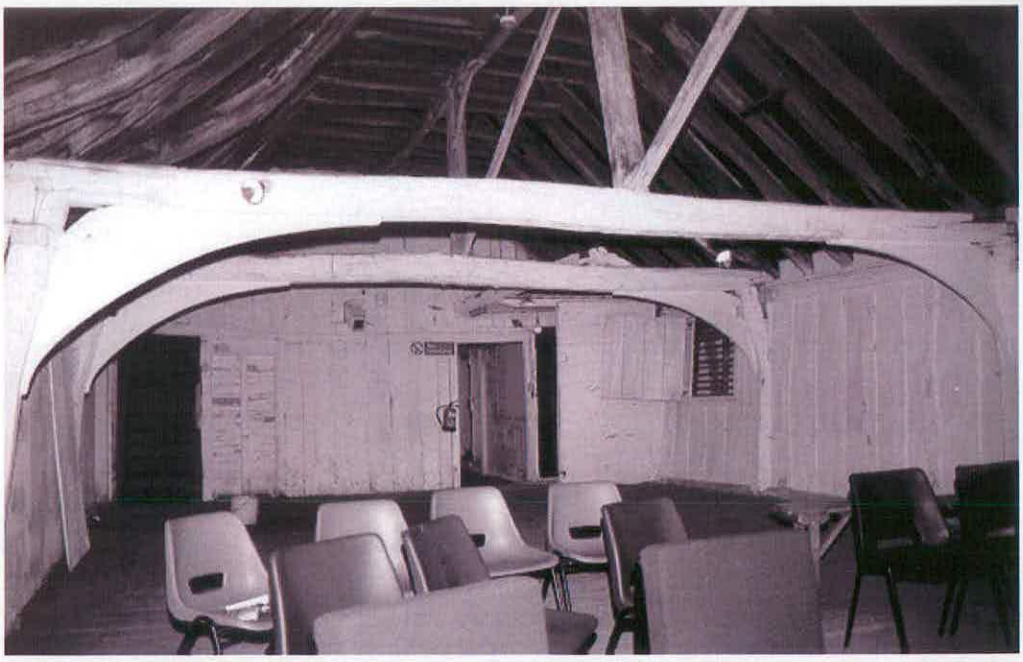

Figure 22 Range 3 (Sale Room). View of first floor looking south

3.3.6 Whilst the sequence of construction of the present range is far from certain, a close study of its timber frame has provided a number of clues to the structural development of the Sale Room and its chronological relationship to the rest of the Isaac Lord complex.

a) The roof of the range has been remodeled and included only one set of collars (the uppermost set in the present building) originally. Most of the upper collars are numbered with carpenter's marks scribed into the soffit of the timbers at their west end. The numbers match with an adjacent set of carpenter's marks scribed on the inside face of the rafters immediately above the line of the collars. The carpenter's marks do not appear to be in numerical order. None of the existing upper collars shows any obvious signs of reuse.

b) The lower collars differ from the upper collars in that they lack any carpenter's marks, nor is there any associated lower set of numbers to be seen on the inner face of the rafters. In addition, some of the lower collars include redundant mortices and halvings and are clearly reused timbers.

c) The series of carpenter's marks numbering the upper collars and the adjacent faces of the rafters is repeated higher up the face of the rafters approximately 1ft (300mm) from the apex of the roof. Above these numbers, however, is a second set of numbers, noticeably larger but of the same basic type, which appear to follow a more or less correct numerical sequence running from north to south. It seems likely that the lower set of carpenter's marks (together with the associated numbering of the upper collars) relates to the original construction of the range, perhaps in the late fifteenth century, whilst the upper set of marks relates to its re-erection (and partial remodeling), probably in the late sixteenth century.

d) Some of the rafters are also reused timbers, having redundant mortices on their outer faces.

e) The tie beam of the northernmost roof truss includes a series of empty mortices along its upper and lower faces, suggesting the former existence of a studwork partition. With the exception of the mortice at the extreme western end of the tie beam (the corresponding mortice at the east end – if present – is currently obscured), all of the mortices along the top of the beam are situated towards the southern edge of the timber. The westernmost mortice, by contrast, is set centrally in the timber, suggesting that it may originally have been a mortice for a principal rafter in a previous arrangement of the roof truss. In most crown post roofs the rafters are tenoned into the ends of the tie beams, and the fact that in this range the rafters simply abut the sides of the tie beams may be further evidence that the roof has been reconstructed.

f) The northernmost wall post on the eastern side of the range is a reused or repositioned timber that has been modified or adapted for use in the present building. There is clear evidence to show that the mortice for the existing tie beam brace has been re-cut and re-pegged (the existing pegs/peg holes replacing an earlier series of empty peg holes, some of which are now very close to, or actually bisected by, the face of the present wall post). Below the brace itself is the remnant of a second mortice (perhaps for a second, lower, brace) that has been filled with mortar as if to disguise it.

g) There is clear evidence that all three crown posts have been moved slightly westwards of their original positions along the tie beams. The mortices into which the feet of the crown posts are presently tenoned are all secondary features. The original series of (now empty) mortices can be seen a little to the east of the crown posts in the top face of the tie beams. In the case of the central tie beam, which included a plain chamfer along its upper edge on the south side, the chamfer terminates in run-out stops on either side of the former (i.e. empty) crown post mortice.

h) As originally constructed, the east end of the north wall of the Crossway (range 4), i.e. the section forming the present south wall of the Sale Room (range 3), included neither door nor window openings. The wall framing was infilled with herringbone-pattern brick nogging, much of which still survives today. The decorative brick infilling is continuous up to, and beyond, the point where the Crossway adjoins the Sale Room, suggesting that the wall was originally an external wall along its whole length when it was first built. The absence of door and window openings in the eastern end of the wall may be an indication that, when it was first built, the Crossway stood close to an earlier range on the site of the existing Sale Room.

i) The original layout of the door and window openings (now much altered) and the original size and positioning of the central cart entrance in the north elevation of the Crossway, lends further support the idea that the Crossway was built up against, or close to, an earlier range on the site of the present Sale Room. As originally constructed, the external central and western section of the north wall of the Crossway would have formed a balanced, symmetrical façade, with the central cart entrance lying mid-way between the line of the present west (courtyard) wall of the Sale Room and the west end of the Crossway.

3.3.7 Taking the above fabric evidence as a whole, it seems likely that the site was developed along the following broad lines during the fifteenth and sixteenth centuries:

A) Mid fifteenth century

A two-storeyed, jettied range running E-W parallel with Fore Street and forming part of a longer terraced row of houses lining the street on its south side (range 1). This front range included a central carriage entrance (occupying the same position as the present entrance but narrower) giving access to the rear of the site. Behind the eastern end of the street-fronting range stood a rear range extending eastwards towards the quayside (on the site of the present range 3). This range had a crown-post roof with single collars and extended southwards to a line just north of the north wall of the present Crossway range (range 4).

B) Early sixteenth century

The Crossway (range 4) was constructed close to, but not physically adjoining, the southern end of the fifteenth century rear extension range (later replaced by range 3).

C) c.1540

The fifteenth century rear extension range was taken down and rebuilt – perhaps with the upper part of the earlier timber frame reconstructed on new brick ground floor walls, and possibly with new close-studded side walls at first floor topped with new wall plates – soon after the construction of the Crossway, probably around 1540. The rebuilt range (the present Sale Room) incorporated in its construction the roof of the earlier rear extension range, but with a second, lower, set of collars inserted, and the crown posts truncated and set in new mortices to the west of the earlier crown post mortices in the tie beams. The present braces on the eastern side of the north and south trusses may also have been inserted at this time. The present Sale Room structure includes a number of reused timbers presumably once belonging to the earlier rear extension range. These include the tie beams, the north-east wall post, the rafters and their associated upper collars.

The rebuilt range was built directly against the north face of the Crossway – there was no separate south gable frame – with the south end of the collar purlin made to rest on a timber bracket that was simply pegged onto the wall face of the Crossway. A doorway was created between the south end of the Sale Room and the east end of the Crossway. The door opening was made by removing two of the timber wall studs in the north wall of the Crossway, and adding a timber door head below the upper mid rail. The door opening was finished with a plain chamfer carried around the inner edges of the door head and the studs forming the door jambs. At a later date this door opening was blocked and replaced with the present door opening to its immediate east. This later door opening was similarly created by removing two of the timber studs from the north wall frame of the Crossway. However in this case there was no door head inserted, the upper mid rail above the door opening instead having being cut away to allow head room for a stairway leading from the Sale Room to the second floor of the Crossway. A late sixteenth or seventeenth century timber partition screen separating the staircase from the rest of the range still survives at second floor level within the Crossway.

Figure 26 Pre-war photograph of Crossway, showing single-storey outhouse destroyed by enemy bombing

3.4.2 Internally, the ground, first and second floors are divided into five bays by four intermediate cross frames. The cross frames comprise wall posts, bridging beams and tie beams, with roof trusses over. The tie beams are braced to the wall posts with long, shallow braces; the braces have a distinctive asymmetrical arched profile similar to the tie beam braces in range 3. The range has a clasped purlin roof divided into six

bays by five intermediate roof trusses. Each roof truss consists of a pair of principal rafters linked by a single collar. The purlins are formed in three sections, the timbers of which are joined using simple unpegged splay-halved joints at trusses 3 and 5. Between each roof truss there is a series of four common rafter pairs. Each of the common rafters is pegged through to the purlins. Curved windbraces extend between the principal rafters and the centre of the purlins. Most of the windbraces have a small V-shaped cut, located approximately mid-way along their upper edge. These are likely to be secondary features associated with the insertion of a later ceiling over the upper storey of the range.[5] The collars of the roof trusses are secured to the principal rafters with two pegs. There is evidence to suggest that the roof trusses were once closed (i.e. filled with lath and plaster) between the tie beams and collars. It is most likely that the infill was removed in the eighteenth century, following the insertion of a new ceiling (itself now missing) at collar level.

Figure 27 Detail of north wall of the Crossway, showing decayed feet of timbers at first floor level

3.4.3 The brickwork of the east gable is laid mainly to header bond, with some courses of English bond interspersed, in a manner similar to the east and west side walls of the Sale Room (range 3), and the lower half of the south wall of range 5. The north and south wall frames are infilled with brick panels laid in herringbone pattern. The brick infilling dates from the construction of the Crossway in the middle of the sixteenth

[5] It is not known precisely when, or why, this ceiling would have been added. It may have been inserted during the eighteenth century, following the change off use of the Crossway from a warehouse for wool, cloth and other imported goods, to a store for barley and other materials associated with the malting process. Alternatively, it may have been added in the early nineteenth century, when the main activity taking place on the site was the processing of grain for animal feed.

century. At second floor can be seen traces of what appears to be the original internal wall plaster. The plaster extends across the face of the brick infill panels and abuts the sides of the timbers. It is not possible to say whether the timbers themselves were left exposed originally, or whether they too were finished with a thin coat of plaster or whitewash, which has since been lost.

3.4.4 The central carriageway through the Crossway was originally a much narrower opening, with timber-framed walls on either side. The wall on the west side has been rebuilt in brick but remains roughly in its original position. That on the east side was taken down when the carriageway was widened, and replaced with the present brick wall on a line further to the east. The timber head piece (i.e. first floor plate) of the original timber-framed west side wall is still *in situ*, set back a little distance from the present brick wall. In the soffit of the beam is a series of empty mortices for a row of closely spaced wall studs with centres of approximately 15" (375mm). Running parallel to this beam along the centre of the carriageway is a second N-S beam, representing the head piece of the original timber-framed wall on the east side. The underside of the timber has been cut away, thereby loosing any evidence for mortices in the soffit of the beam.6 Between the two head pieces is a series of first floor joists running E-W, all with plain chamfers and cyma run-out stops. The joists are all clearly primary, *in situ* timbers, that were meant to be visible from within the carriageway when the Crossway was first built. The first floor joists to the west (visible from inside the adjoining ground floor room) and to the east (over the extended part of the present carriageway, but internal timbers originally) are not chamfered.

[6] The remains of a tenon can still be seen on the north end of the beam. The tenon was sawn off, and its corresponding mortice lost, when the lower mid-rail (with which it originally intersected) was reduced in depth (in similar fashion to the N-S beam itself) and raised, probably when the carriageway was widened in the early twentieth century.

Figure 28 Detail of underside of carriageway through the Crossway

3.4.5 The precise date when the carriageway was widened is not known, however the joinery of the newly created door and window openings suggests that the work was probably carried out during the early twentieth century. At the same time as the carriageway itself was widened, the horizontal beam running E-W over the front (N) side of the opening was reduced in depth (in a like manner to the N-S beam running along the middle of the carriageway) and the whole raised a few inches. (This timber – the lower mid-rail of the north wall frame – was in fact constructed in two sections, with a join in the beam a short distance to the west of the west wall of the carriageway. Only the east section, i.e. the part that runs over the carriageway, was raised when the carriageway was widened. The western section of the beam is still in its original position, some inches below the level of the east section). At the same time as the beam was raised and the carriageway widened, a short length of iron of a U-section was inserted underneath the lower mid-rail at the west end of the carriageway to give it extra support. Subsequently, a second, steel girder was installed, spanning the entire width of the opening.[7] The most likely explanation for reducing the depth of the lower mid-rail and raising the beam is that it would have allowed more headroom for carts and motor vehicles to pass through the carriageway. (It is noticeable how steeply the ground rises between the north wall of the Crossway and the front of the site, and easy to see how this might have hindered the flow of traffic between the street front and the quayside before the enlarging of the carriageway).

3.4.6 At the eastern end of the north wall of the Crossway (close to the steps leading to the first floor of the Sale Room) is a small, square, ground floor window opening. It seems likely that the window opening was inserted at the same time as the carriageway was widened, probably during the early twentieth century. Above the

[7] The owner of Isaac Lord, Mr Cooper, remembers seeing the work being carried out as a young man.

opening, the lower mid-rail has been cut away and replaced with a length of steel girder of similar cross section to that which has been inserted underneath the lower mid-rail as it passes over the central carriageway. The window has a frame similar to those of the door and window openings in the west wall of the carriageway.

3.4.7 Although the precise sequence of alterations is unknown, it is clear that there has been a long history of small-scale repairs and alterations to both the timber frame and brick infill panels of the north wall of the Crossway. In a number of areas at first floor level, where the feet of the timbers have either rotted away or been forced out of their original alignment, the brickwork panels between the framing members have had to be repaired or else completely renewed.

3.4.8 The first floor is divided into five bays by four intermediate cross frames, the exposed second floor transverse beams each measuring 12" x 12" (300 x 300mm). The transverse beams are linked by a series of longitudinal bridging beams, which in turn carry the common joists supporting the second floor. The mortice holes for the joists are rectangular with a step along the top edge, through which the peg is driven to secure the joists. The joists are not framed into the side wall frames, but simply rest on the tops of the timber rails. The easternmost two bays are separated from the remaining three by a later stud partition wall. At the eastern end of the south wall frame is an inserted rail, probably associated with the construction of range 8 in the eighteenth century.

3.4.9 In the north wall of the range are two diamond-mullioned unglazed windows, both original to the building. The windows have wooden shutters, hinged along their top edge and probably renewed; elsewhere throughout the range the windows originally had horizontal sliding shutters. At second floor, the heads of the shutters were located in a groove cut into the underside of the wall plate. The feet of the shutters were supported upon a series of timber rails (now all missing) which were pegged to the wall posts or studs.

3.4.10 The second floor exterior doorway in the north wall is an original feature dating from the mid sixteenth century construction of the Crossway. The doorway in the south wall at second floor is a later insertion.

3.4.11 At the eastern end of the Crossway a pigeon loft has been created by constructing a floor at wall plate level and making a closed partition screen on the line of the internal roof truss next to the east gable. The floor of the pigeon loft is constructed of poor quality salvaged timbers, many showing evidence of earlier fire damage and a number with carpenter's marks relating to their previous use. The floor frame abuts, and clearly post-dates the eighteenth century inserted lath and plaster roof linings. It seems probable that the pigeon loft was built at the same time as the east gable was given its existing weatherboarded cladding, i.e. during the early twentieth century. The boards are of softwood (as opposed to elm or oak as is traditional) and there is a row of neatly cut pigeonholes in one of the boards close to the apex of the gable.

3.4.12 The second floor, like the first floor, is divided into five bays by a series of four tie beams, which sit on the tops of the wall posts. The ends of the tie beams are not set flush with the adjoining posts but sit in a small 1" (25mm) wide rebate and are pegged to a tenon projecting upwards into them. The positions of the wall posts and tie beams do not correspond to the spacing of the principal rafter trusses within the roof structure; where a rafter, common or principal, meets a tie beam it has been halved against one side of it. There are large, shaped braces between the wall posts and tie beams, secured both ends with four pegs.

3.4.13 At second floor level on the north elevation, five of the wall studs include empty vertical mortices in their external faces. Each mortice is approximately 9" (200mm) long and located approximately half way along the timbers, i.e. mid-way between the second floor mid rail and the wall plate. The position of these mortices suggests the former existence of a series of oriel windows, the projecting frames of which rested on brackets tenoned into the faces of the wall studs *(fig 32)*. There is evidence for a further oriel window at the south end of the west (courtyard) wall of the Sale Room (range 3). In the faces of the studs forming the jambs of the former second floor door opening in the north elevation of the Crossway (now blocked) can be seen two further empty vertical mortices, suggesting there was a hood over the doorway in the original building. The wall studs of the north wall frame are numbered on their external face from east to west. The carpenters marks are located near the top of the timbers, close to the wall plate, and are seen most easily from inside the Sale Room (range 3) at first floor level.

3.4.14 The easternmost two ground floor bays of range 4 are accessible only through a doorway on the ground floor of range 3. The exterior walls of the range have been underbuilt in brick at ground floor, however at the eastern end of the building it is possible to trace the continuation at first floor level of the northern rail. The soffit of the rail is obscured by a later inserted beam which supports the southern end of a series of modern first floor joists extending southwards of the southernmost cross frame of range 3. Running parallel with the rail on its southern side at a distance of approximately 2' 6" (750mm) is a large, square-section softwood timber beam, measuring 13" x 13" (325 x 325mm); the beam sits on wooden plates built into the brick cross wall at each end of the bay, and is of similar type to the floor beams used throughout the later ranges to the south. Another beam of this type has been inserted below the second floor bridging beam; and another on the line of the rear (south) wall of the range. The original rear wall framing on the ground floor has been completely removed, so that apart from a recent partition wall, this end of range 4 continues straight through into the ground floor of range 8.

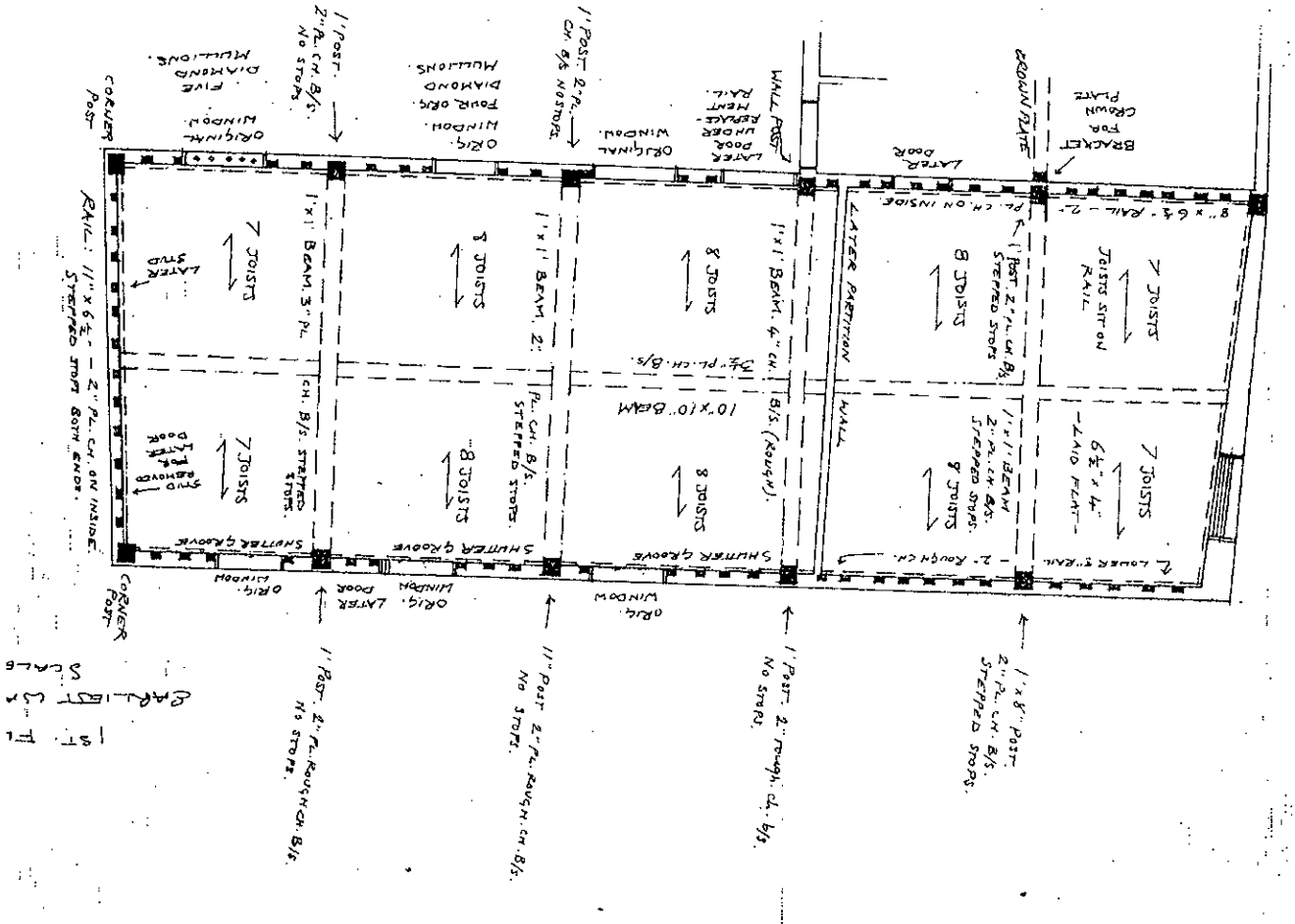

Figure 30 Range 4 (Crossway). First floor plan

Figure 31 North elevation of Crossway as existing

Figure 32 North elevation of the Crossway as it may have appeared in the mid-sixteenth century, incorporating information relating to the exterior decoration of sixteenth-century Suffolk houses provided by Timothy Easton. Digital photo-based reconstruction drawing by the author

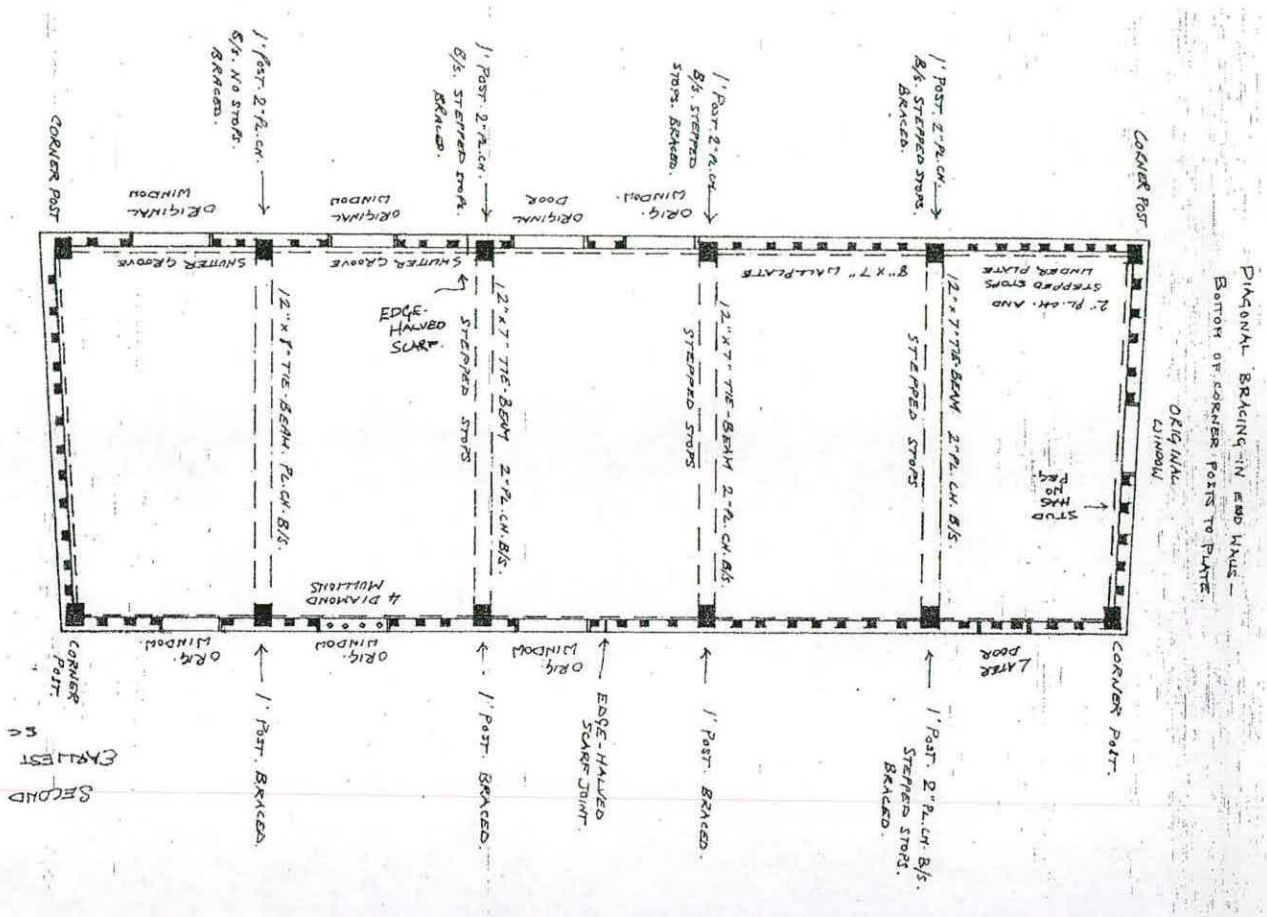

Figure 33 Range 4 (Crossway). Second floor plan

Figure 34 Interior of the east end of the Crossway at second floor (looking west)

3.5 Range 5, E-W block to west of range 4

3.5.1 This two and a half storey brick built range measures approximately 40ft x 20ft (12m x 6m) and is the earliest of the ranges on the western side of the south courtyard. The roof is clay tiled except for its eastern end, which has pantiles. The range abuts, and is set slightly southwards of, range 4, and upper access between the two ranges been cut through at the expense of a diagonal brace in the gable of range 4. The gable of the portion of roof beyond the roof of range 4 is of lightly framed wattle. The main roof has A-frame trusses with high collars and staggered butt purlins. It has no ridge piece. It now comprises seven and a half bays but the westernmost truss appears to have been moved eastwards (there are no pegs in the purlins and their ends are cut). This is consistent with some demolition when range 6 was added on an axis at right angles to range 5.

Figure 24 South wall of range 5, showing change in brickwork

Figure 25 Range 5. View of roof construction

3.5.2 The bottom 4" 6" (1350mm) section of brickwork in the southern exterior wall is built of smaller, possibly older bricks, than the upper section. Thus nine courses of bricks in the lower section total only some 1ft 11" (575mm) in height, as compared with a height of 2ft 3" (650mm) for the same number of courses above this level. This change may indicate the replacement of a timber-framed wall, suggesting that range 5 originally had an appearance similar to ranges 3, 4 and 8. The first floor comprises four transverse beams, each 13" (325mm) square, and a fifth beam inserted over the point where range 6 begins. At this point there is a straight joint formed by the ragged end of range 5 and the straight beginning of range 6. This confirms that range 5 pre-dates range 6 and was cut back with the addition of the latter.

3.5.3 There are relatively few window openings in range 5 (three on the ground floor, none at first floor and a single dormer window in the attic) and just one loading door at first floor level at the east end of the south wall.

Figure 26 View of south courtyard, looking northwards towards range 5.

3.6 Range 6, easternmost N-S range on west side of south courtyard

3.6.1 This three and a half storey range is built across the western end of range 5 and is some 90ft (27m) long by 19ft (5.7m) wide. To the west it shares a wall with range 7 but its eastern wall displays similar vertical discrepancies to these of the southern wall of range 5. The lowest 5ft 6" (1650mm) section is built in English bond of smaller bricks than the upper section, which is built in Flemish bond. The difference in depth of nine courses is some 4" (100mm). As in range 5, this change may indicate the rebuilding in brick of an earlier, possibly timber-framed, wall.

Figure 27 East elevation of Range 6, viewed from south courtyard

3.6.2 The roof is of softwood and clasped-purlin construction. The roof trusses have high collars and in this case there is a ridge piece. The tie beams have iron clamps connecting them to the wall plates and the tie beams of the adjoining range, range 7.

Figure 28 Range 6. View of attic showing construction of roof

3.6.3 The stub ends of two transverse walls, some 18ft apart, extend eastwards from the east exterior wall and these probably represent the remains of a transverse range whose eastern end may be incorporated in the present ranges on the eastern side of the courtyard. These walls are composed of small bricks with nine courses totalling only 1ft 1" (575mm) and they break back in thickness from double to single brick depth with an intermediate one and a half brick course.

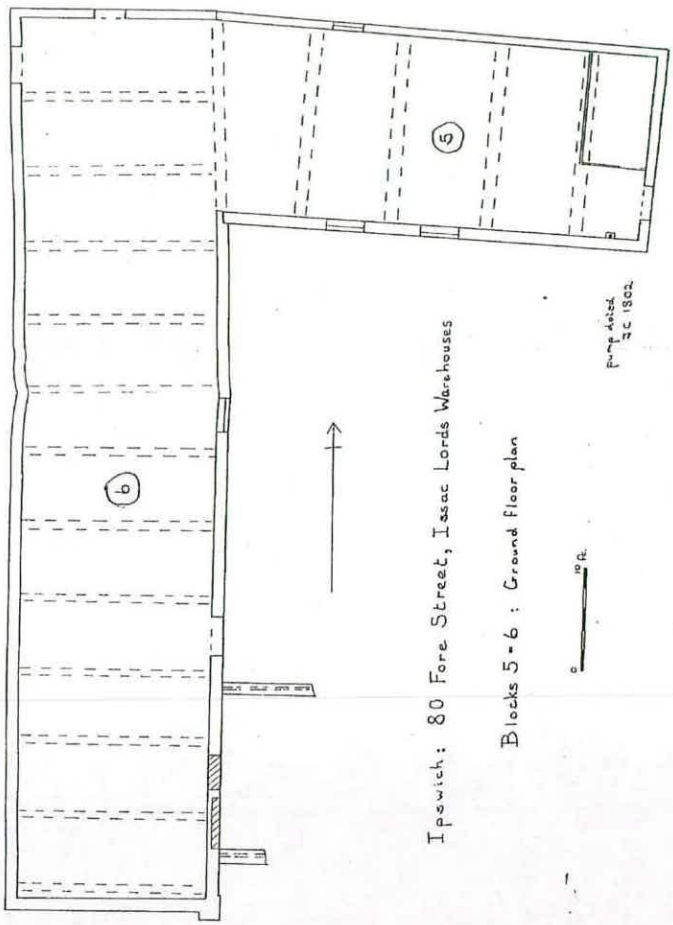

Figure 29 Ranges 5 & 6. Ground plan

3.7 Range 7, westernmost N-S range on west side of south courtyard

3.7.1 This range is built parallel to range 6 but extends further to the south. The roof appears to be identical to that of range 6 and the dormers to the west appear to be original. The small windows on the upper floor had top hinged internal shutters and the northern eleven bays (each measuring 6ft 10" / 1750mm in length) pre-date the four southern bays. The later bays totalling some 36ft (10.8m) were probably added when the quay was moved southwards with the construction of the wet dock in 1840. An internal transverse wall at this point was thus probably originally external.

3.7.2 Around the middle of the twentieth century range 7 was used as a warehouse for the storage of coal. The ground floor of ranges 6 and 7 are now used as an art gallery.

Figure 30 West elevation of range 7, looking southwards towards Common Quay

3.8 Range 8, main N-S range on east side of south courtyard

3.8.1 A three-storey range extending southwards from the south side of range 4 along the eastern side of the rear courtyard. The east exterior wall is of brick, and the west wall (facing onto the courtyard) is of brick at ground floor with timber framing above. The wall framing comprises vertical studs interrupted by diagonal braces (i.e. 'primary bracing) and is infilled with brick nogging. Internally, the first and second floor frames are divided into twelve bays by eleven transverse floor beams, supported on timber posts built into the walls. Second floor level is approximately 2ft (600mm) below wall plate level, and the floor frame includes upper (hanging) and lower knee braces. The roof is divided into twenty bays by nineteen principal rafter roof trusses. The roof is of staggered butt purlin construction. The roof trusses have straight collars.

Figure 31 West elevation of range 8 showing exposed timber-framing at first floor

Figure 32 Range 8. Interior of attic showing roof construction

Figure 33 Range 8. View of first floor

Figure 34 Range 8. View of ground floor

3.9 Ranges 9, 10 and 11 (the kiln block)

This appears to be a separate building attached to the western side of range 8 at its southern end. The circular kiln may date in part from the late eighteenth or early nineteenth century when much of the complex was used as a maltings. The kiln itself has a furnace with two fire holes and a baffle constructed of metal framing with perforated tiles. The kiln floor is also of perforated tiles while the kiln hood is of lath and plaster on a light wooden frame suspended from the roof of the building. This suggests that the kiln was inserted into an existing building and reinforces the suggestion that conversion to a maltings caused much piecemeal rebuilding and some demolition. Thus the archway through the kiln block cuts what may have been the timber-framed wall of the transverse range which formerly closed off the rear of the yard from the quay. Some courses of small bricks survive at a low level in the west wall of the kiln block.

Figure 35 General view of quayside showing part of ranges 7, 8 and 11

4.0 Dendrochronological analysis (based upon a summary by Martin Bridge)

4.1 Methodology

4.1.1 The site was visited in December 1998 when timbers were assessed for their potential use for dendrochronological study. Many of the timbers in the warehouse ranges were covered in limewash at the time of the investigation, making species identification and suitability for dendrochronological study difficult by examination of the external surfaces alone. The initial phase of the work therefore consisted of a close look at the various ranges in order to determine the variety of wood used in its construction, and its potential for dendrochronological study.

4.1.2 Some cores were taken from limewashed timbers simply to determine whether the wood was oak or not. Samples were taken of those oak (*Quercus* spp.) timbers judged suitable, i.e. having sufficient rings and preferably some sapwood. It is rare for sequences of less than 45-50 rings to be cross-matched with sufficient confidence to be dated.

4.1.3 Core samples were obtained using a 15mm auger attached to an electric drill. The cores were glued to wooden laths, labelled and stored for subsequent analysis. The locations of the cores are illustrated in figures 39 and 40.

4.2 Results

4.2.1 Upon close examination of the timbers, those in ranges 5, 6, 7, 9, 10 and 11 were immediately excluded from further study at this stage, either because the timbers were not oak, or because they evidently had too few rings, or because coring would cause unacceptable aesthetic damage.

4.2.2 Three cores from the heavily limewashed timbers in range 8, including a post, a tie beam, and a floor beam, were found to be of coniferous wood. No further sampling was therefore carried out in this range.

4.2.3 The oak timbers in range 3 were rejected both on grounds that they had too few rings to be of interest, and that several appeared to be reused timbers. The crown post appeared to be of elm (*Ulmus* spp.). The structure appears to pre-date ranges 1 and 2, which truncate it (see section 3.3 above). This left range 4 (the crossway) and ranges 1 and 2 (the Merchant's House) judged as suitable for sampling.

4.2.4 Range 4 (the crossway) Eleven samples were taken from a variety of structural elements *(fig 39)*. Four of the ring-width series were found to cross match each other and were combined into a single chronology, which was dated. One further timber did not match these timbers, but did date independently against several chronologies at a

later date than the other four. All five series were combined to produce a site chronology 'CROSSWAY'.

4.2.5 Ranges 1 and 2 (80 and 80a Fore Street) Given the uncertain structural development of the 'Merchant's House' these two ranges were sampled as if they were two separate phases, the locations of the samples being shown in figure 40. Cross matching was found between five timbers, which were combined to form a second site chronology '80/80a'. An overall site chronology 'ISAACLD' combining all ten dated timbers was formed and then dated against a range of available data. Sample IL1 22 (taken from a post in the corner of the first floor office at the rear) produced a felling date of between 1418 and 1449. The sample contained 10 rings of sapwood.

4.3 Interpretation and discussion

4.3.1 It is known that some parts of the complex are relatively recent. For example, range was extended following the rebuilding of the quay in 1840 (see section 2.4 above). Many of the younger ranges were constructed from softwood. Range 8 for example contains a large number of conifer timbers with many rings and a date known to within decades. Although the conifers were not sampled on this occasion because of budgetary constraints, they remain as an important resource for dendrochronology in years to come.

4.3.2 Range 3 has been truncated by the construction of range 2, and the present structure can therefore confidently be ascribed a construction date in the period before the early seventeenth century. Of those timbers sampled in range 3, only the wall plates dated, these samples being from different lengths of wall plate each with a felling date of *c.*1540. Whether the wall plates are primary elements or were replaced during a later phase of rebuilding remains open to question, however, and there is a possibility that some parts of the timber frame could be considerably earlier in date (see section 3.3 above). Given the apparent reuse or reassembly of many of the timbers in this range, and the general unsuitability of the material for sampling, it seems unlikely that dendrochronology will be able to throw much new light on this phase of the complex.

4.3.3 In range 4 (the Crossway) the grouping of four timbers without sapwood suggests a possible felling date in the middle of the sixteenth century. A sample from one of the tie beams had complete sapwood and a felling date of AD 1587, however there is evidence that the tie beam is probably a later timber and was inserted into the present range following its original construction.

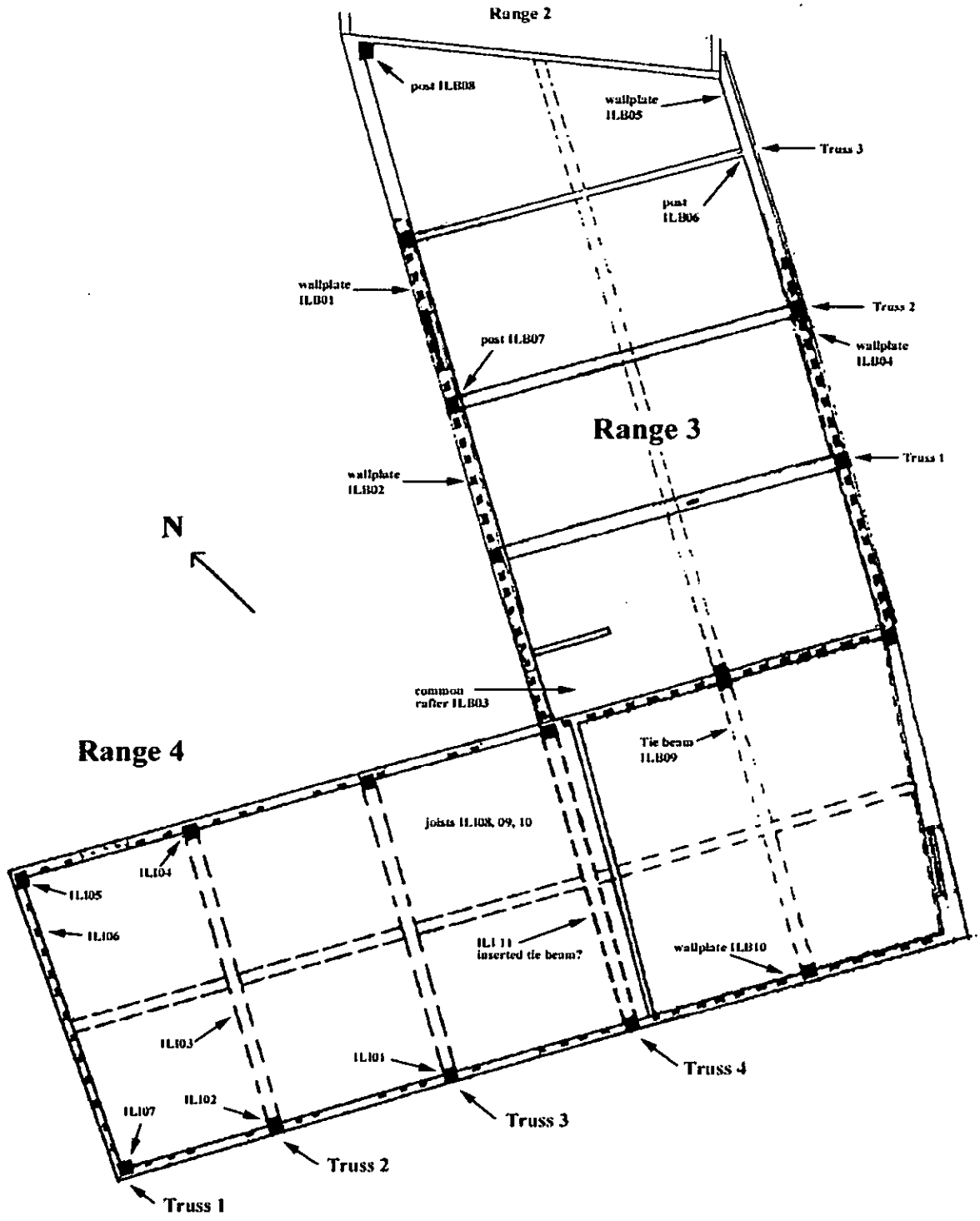

Figure 36 Range 4. Locations of samples removed for dendrochronological

analysis

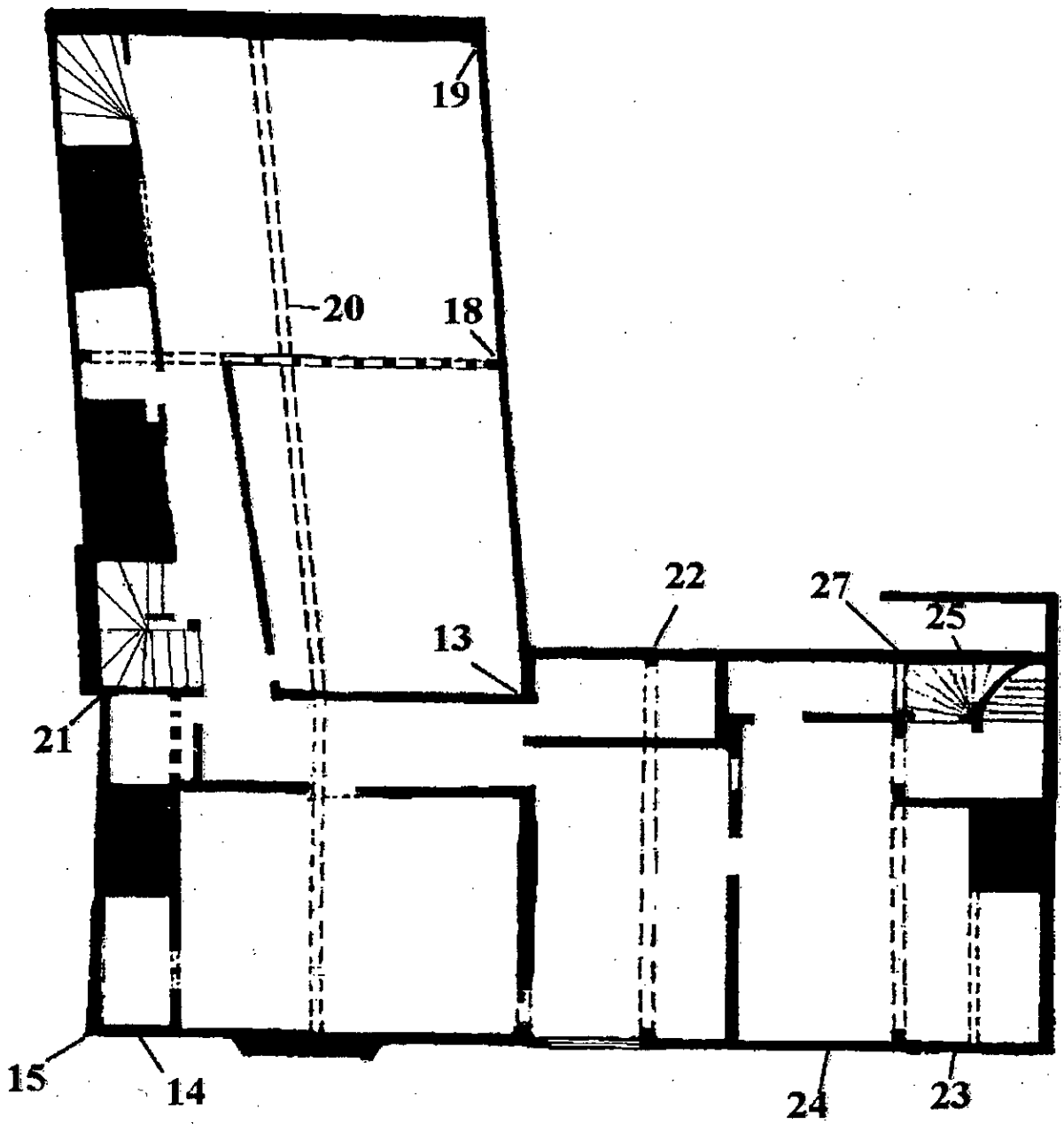

Figure 37 First floor plan of ranges 1 & 2 showing locations of samples removed for dendrochronological analysis

4.3.4 It was noticed during the formation of the site chronology ISAAC RANGES that the addition of sample ILB04 reduced the level of crossmatching with most of the reference material, even though it gave good crossmatching with the other dated timbers at the site. All the dated timbers from the Sale Room (Range 3) were wall plates which were not accessible in the previous study. The outer edge of the timber was noted at the time of sampling, although complete sapwood could not be definitely confirmed on the sample itself. The felling date of AD 1540 is therefore not certain, but very likely. Several of the other timbers sampled looked as if they may be re-used timbers. Although the new site chronology gave strong consistent matches against several chronologies, it did not give a significant match against the existing Isaac Lord chronologies (Table 3), suggesting that these timbers came from a different source to those used elsewhere on the site.

4.3.5 The single additional dated sample from the east end of Range 4 (Crossway) did match well with the other timbers from this range and does give valuable additional information because of it having five sapwood rings. Whilst one must necessarily employ caution in dating a phase on the basis of a single timber with sapwood, the similarity in date span with the dated timbers from the previous study (Bridge 1999) suggests that a felling date range of AD 1531-49 may be hypothesised for this group (timber ILI10 from the previous study being felled after AD 1531). From the dendrochronological evidence alone therefore it might seem reasonable to propose that the Crossway and the Sale Room are very similar in age, but which came first, or whether they were exactly contemporaneous, could not be determined. Structural analysis of the timbers suggests that the crown-post roof of the Sale Room, which bears similarity with the earliest phase of the house to the front of the property (early to mid fifteenth-century. Bridge 1999), has at some time been taken down and then re-erected. The evidence for this includes the crown-posts having been shortened, necessitating the addition of another level of collars. The upper collars appear to match the rafters, these having two sets of scribed assembly marks - one set almost on top of the other. One of these upper collars has a mark where it once sat on the crown plate. The braces to the collar-purlin are almost identical to those in No 80 Fore Street. The wall posts appear to be re-used. The lack of windows and overall plan of the Crossway strongly suggest that it was planned to have its east end built up against, hence Range 3 either already existed or was planned at the same time.

4.3.6 Combining the structural and dendrochronological evidence suggests that the roof of the Sale Room (Range 3) is older than the structure of the Crossway (Range 4), but that the roof was dismantled and re-erected following the erection of Range 4 (probably very soon after). The Crossway was constructed of timbers felled in the period AD 1531-49, whilst the new wall plates to take the re-erected roof of the Sale Room were most likely felled in AD 1540, or very soon thereafter.

4.3.7 Of the timbers sampled from No.80 Fore Street only one timber dated and this produced a felling date in the range 1418-1449. This dating is supported by the carpentry itself (in particular the crown post roof and use of splay-halved scarf joints) which would seem to point to a fifteenth century date. The rear wing and front range

of No.80a is built of timbers felled in the Spring of AD 1636, which ties in well with the date carved on the gable bressumer.

4.3.8 The combined site chronology '1SAACLD' matches well with other chronologies and will be of great use in dating other sites in the Suffolk area.

5.0 Historical significance

During the late fifteenth and early sixteenth centuries Ipswich grew to prominence as an important international seaport serving East Anglia and continental Europe. Lying close to the North Sea on the banks of the river Orwell, Ipswich was well placed as a centre for the export of wool and grain from East Anglia and the import of cloth, wine and timber from the Baltic and Low Countries. The development of the town during this period closely matched that of its more illustrious neighbour, King's Lynn, and was no doubt mirrored in other East Anglian ports such as Boston, Norwich and Harwich, as well as by the larger West Country inland ports such as Gloucester, Gainsborough and Bristol. Whereas today, many ports still retain their historic wharves, warehouses and some river traffic, in most cases the surviving riverside structures are of the eighteenth and nineteenth centuries, rather than dating from the fifteenth and sixteenth centuries.

At Kings Lynn, where the rate of survival of late medieval commercial riverfront buildings has been especially high, the plan forms of a number of warehouse sites closely resemble that of Isaac Lord, and (from the map evidence at least) many of the late medieval quayside sites in Ipswich. At both King's Lynn and Ipswich, the majority of riverfront properties were developed upon long, narrow plots, often with the house (or shop) lying parallel to the street and rear warehouse range built at a right angle and extending along the length of the property to the quay. An early eighteenth century illustration of King's Lynn looking towards the town from the opposite bank of the river Ouse shows that most of the warehouses included a ground floor opening (or 'watergate') on their river frontages through which goods could be loaded directly onto and off the waiting boats. Seventeenth century views of the London show a similar pattern of riverside development but on a much greater scale, with parallel ranges of warehouses extending down towards the quayside and alongside artificially created wharves and inlets such as Billingsgate and Queenshithe providing mooring for the ships and boats. As at King's Lynn, goods were unloaded directly from small boats into the warehouses, or could be lifted onto the quayside by means of cranes standing close to the river's edge.

Of those examples of combined riverside merchant's houses with warehouses surviving in King's Lynn, the building probably closest to Isaac Lord in terms of age and historical development is the grade I listed *Clifton House* at no. 17 Queen Street. Although much altered in the eighteenth century the site has a long history extending at least as far back as the fifteenth century, and perhaps far earlier. Beneath the northern half of the existing early Georgian house is a late medieval undercroft with flat brick ribs and octagonal piers with roll-moulded capitals and bases. Adjoining the undercroft to the south and set behind the front bay of the house are the extensive remains of the former tiled floor of the original medieval house, complete with a well preserved central hearth which would have heated the open hall. At the centre of the site stands a late sixteenth century prospect tower, five storeys high, complete with its

original doors, door cases and contemporary (but probably largely restored) wall paintings. Adjoining the tower are two sixteenth or seventeenth century brick warehouse ranges, built parallel with one another, and extending along the entire length of the site from house to quayside.

6.0 Acknowledgements

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