

**NORFOLK ARCHAEOLOGICAL UNIT**

Report No. 822

**Building Survey and Photographic Record of the  
Former Malthouse, Kerrison Road, Norwich**

38193N

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May 2003

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Location: Kerrison Road, Norwich  
Grid Ref: TG 2400 0782  
HER No: 38193N

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## **Introduction**

This report represents the synthesis of two separate building surveys of the former Malthouse building on Kerrison Road, Norwich. The intention of this report is to produce a unified source of information for those interested in the history and architecture of this particular building.

The initial survey by Robert Smith in April 2002 recorded the malthouse building and associated cottage and commented on their significance within the built environment of Norwich. This work formed part of an archaeological evaluation for Norwich City Football Club, with the building survey included within Norfolk Archaeological Unit report 791 (Adams 2003).

As a result of this work, a further building survey was requested by Norfolk Landscape Archaeology (NLA Brief: AH/18/02/03). This was to include an enhanced photographic record and survey of previously inaccessible areas of the building. This was undertaken by Simon Underdown in April 2003.

Collins Commercial Property Consultants, on behalf of Norwich City Football Club, commissioned both elements of the building survey.

The former malthouse (Fig. 1, Plate 1) lies immediately north-east of Norwich City Football Ground, and is aligned to, and set back slightly from, Kerrison Road, formerly a continuation of Carrow Road. The building lies within a proposed redevelopment area, and demolition of the malthouse is planned in advance of construction of a new south stand, hotel, car park and other amenities, with new housing blocks proposed in the surrounding area.

The site archive is currently held by the Norfolk Museums and Archaeology Service, following the relevant policy on archiving standards

## **Part 1 Building Survey**

by Robert Smith

In April 2002 a record was made of the former malthouse in Kerrison Road. This formed part of the archaeological evaluation of the area prior to proposed development. The building stands parallel to, and away from, the road line and at the time of inspection it was in various uses ranging from a store for football ground maintenance equipment, offices, glass fibre supplies store and an upholstery workshop.

A stone plaque in the east<sup>1</sup> wall towards the north end of the building has the inscription C. B. 1824 (Plate 2) and confirmation that this refers to the date of construction is that the building is shown on Millard and Manning's 1830 map of the city. On this map the road, named the Yarmouth Road, is nearer to the malthouse and the overall plan (Fig. 2) with a long germination room, two furnace / kiln towers and the maltster's cottage at the west end are as they exist today,

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<sup>1</sup> The main axis of the building is aligned south-west to north-east but for ease of reading it will be described as being aligned north / south.

without the full-length extension along the west side of the block and the small addition against the north tower. The canal cut from the river, as shown on the 1885 Ordnance Survey map, does not exist and on that map a well is shown to the east of the building that was presumably the water supply.

The building is constructed with red bricks laid in English bond and there are two tiers of windows in the long side walls. The north gable (Plate 3) has three tiers of windows and all of the window openings have a segmental brick arch made up with two orders of headers between stretcher springers. The two-light windows have 3 x 3 panes and some of the top windows, if not all (later alterations make this difficult to assess), were bottom hung and the extent to which the windows opened was determined by triangular 'stops' (Plate 4). There are horizontal metal security bars across the outside face of the windows that are contemporary with the openings.

The gable has kneelers that consist of four orders of ovolo-moulded bricks and from the apex downward the central section of the wall has been rebuilt. At first sight this rebuilding appears to be associated with the removal of an external chimney stack although there is no evidence inside the building for an associated fireplace. The problem over quite what this rebuilding / repair relates to is further confused by the existence of a small, low structure with a pitched roof central to the gable that now has no obvious door opening and appears to be a later addition, possibly, because of a change in the character of the bricks, in two phases of construction.

To the right of this small structure there is a door opening that replaced a window and further to the right of this there is a pair of double doors. To accommodate these later insertions the surrounding brickwork plus the north-east corner were entirely rebuilt.

The long sides of the building are in eight bays demarcated by brick buttresses that have three offsets (Plate 5). The buttresses are not bonded into the main wall. They are however attached by metal ties that are visible on the inside face of the wall and this arrangement could suggest that the buttresses are later additions (Plate 6).

The bays on the east side of the building will be described from the north end to the south: -

Bay 1 has the date plaque mentioned above plus, on the left hand side, a door opening with a 20th-century door and an open-sided porch. The opening is part of the initial design and the sides have a straight chamfer that is terminated by a triangular stop. Above the doorway there is a window.

Each of the remaining seven bays have two windows on two levels and those in all but the second, fourth and seventh bays have been subjected to alterations, although in Bay 2 the brickwork has been replaced downwards from a level corresponding with the top of the sills. Similarly, in Bay 4 the brickwork has been replaced between the windows and across ten courses around the sill of the right-hand window, and in Bay 7, seventeen courses of the brickwork has been replaced between the windows.

In Bay 3 a door has replaced the lower window on the left-hand side and the sides of the opening and the arch are copies of the 19th-century design seen elsewhere throughout the building.

In Bay 5 the window opening on the right-hand side has been enlarged to accommodate double doors and again the new surround is a copy of the 19th-century design with a straight chamfer and triangular stops. The lower fifteen courses of brickwork have been replaced between the doorway and the window and this continues halfway across the window beneath the sill.

In Bay 6 the lower window on the right-hand side has been replaced by a large opening with an RSJ lintel and double doors. The brickwork above the lintel has been replaced and only the arch survives from the former window opening.

In Bay 8 the sides of the top right-hand window have been remade and the window opening below has been enlarged and double doors inserted.

The drying towers have been converted into offices that were used at the time of inspection as a Revision Centre and at ground-floor level in the north tower as an upholstery workshop. A doorway with an open porch has been constructed on the right-hand side of the east façade and a four-light frieze window inserted at first-floor level. Similar windows, although with three lights, have been inserted into the south wall at both floor levels between the corner and the maltster's cottage.

The pair of towers each have a truncated pyramid form and the sides are covered with slates. The top vents are now enclosed with glass panels and the cowls have been removed. The southern vent provides light to a reception area at first-floor level.

A small single storey extension with a pitched roof has been constructed against the west wall of the west drying tower and access is from within the main block. Between this and the north end of the building there is a single storey extension (Plate 1) the outside wall of which consists of a continuous frieze of fourteen windows above a vertical timber plank wall construction. When it was constructed there were two double doorways and between these a later opening has been created and a single doorway inserted at the extreme right-hand side. The end 5.70m is constructed with brick walls although it is not clear if this represents a rebuild or if the walls are contemporary with the extension. The entire extension is covered with a flat roof.

The maltster's cottage at the west end of the block (Plate 1) has a symmetrical east façade with a central doorway, to which an open-sided porch has been added, flanked by a single two-light casement window on both sides and has a smaller, single-light window above. The west façade initially had a symmetrical window arrangement with a central, single-light window at landing level lighting the stairs although the window at ground floor level on the left-hand side has been replaced by three casement windows to provide light for two toilets and a kitchen.

Internally the main block of the malthouse is now in four units although when it was first divided each unit consisted of an end bay plus one half of the central bay that was, and still, is divided along its long axis. The north unit has a two-roomed office / store against the north wall that has both internal and external access and the south unit has a series of four rooms against the south wall. Above these there

are two separate rooms and the stairs to the southern room are against the east outside wall and the other room is accessed from the west tower.

When the building was constructed access to the attic floor level was via a trap door at the south end of the main block and although the opening is still there, albeit partly blocked, the ladder has been removed. Some of the hoist machinery, and further openings that were associated with the working processes of the malt-house, are still evident in the present south and central units although due to the somewhat precarious mode of access to the attic these were only examined from the top of a ladder.

The part of the roof that is visible extends between the south wall, through which incidentally there is access to the kiln towers, and the 20th-century wall between the south and central units. It is in five and a half bays and has a queen post type of construction with down and outward raking struts from the posts to the tie beam and there are two further struts on each side between the tie beam and the down raking strut.

The interior of the maltster's cottage has been adapted for office use and appears to have been initially unheated although due to the conversion into offices this is not certain.

## **Part 2 Building Survey and Photographic record**

by Simon Underdown

### **Introduction**

A photographic record and additional historic building surveying on the former malthouse at Kerrison Road were commissioned by Collins Commercial, acting on behalf of Norwich City Football Club. The Brief issued by Norfolk Landscape Archaeology (NLA AH/18/02/03) required a record to be made in advance of proposed demolition, which was to identify and record machinery or features relating to the original industrial function of the building.

The limited machinery present included a belt-driven shaft in the loft, indicating some mechanisation, probably screening of malt, took place there. Structural features identified included blocked openings and timber elements in the roof space, and evidence of posts in the growing floor which help to reconstruct the original form of the building. This has facilitated a greater understanding of the activities which took place in the component parts of the malthouse, and the way in which these were integrated into the malt production process.

This building survey was undertaken in accordance with a Project Design prepared by the Norfolk Archaeological Unit (NAU Ref: AS/1550).

The work was designed to create a full photographic record to RCHME Level 3 (RCHME 1996) and to record and understand any machinery, equipment and features that relate to the structure's former use as a malthouse.



## **Historical Background**

### ***The Floor Malting Process***

Malt is grain (generally barley) that is artificially germinated before the germination is halted by heating in a kiln. It is a main ingredient in beer brewing and in whisky production.

Germination converts insoluble starch present in the barley grain into a soluble starch which the brewer can convert easily into a sugar solution for fermentation (Monckton 1966, 13).

Malt has been produced in England since at least the 11th century, and for the last four hundred years or so this process has taken place in buildings specifically designed and constructed for this purpose (Patrick 1996, 181).

Floor malting could only take place in the winter months prior to air conditioning because the temperatures were too high during the rest of the year. During harvest time, barley was brought in, screened to clean it, dried in the kilns if required and stored in a malthouse.

Malt production involved soaking the barley in water held in a steeping cistern for 60-72 hours to achieve a 40 to 45% moisture content. The malt was then dug out of the steep and couched (heaped up) on the growing floor to build some heat up before being spread out to a depth of 0.10m to 0.20m.

The malt was germinated for about 10 to 14 days, with temperature control achieved by the opening and closing of many windows and by turning and ploughing the green malt. Turning also helped to prevent the rootlets tangling and maintain even growth.

When the green malt was ready it was taken up by baskets to the drying floors of the kilns to be heated to arrest growth, and would stay there being turned on perforated tiles over a smokeless fire for two to four days.

The kilned malt was dressed by screening to remove the rootlets and after a month or so of storage was ready to be used for brewing.

Davison (1993) finds that there were over 140 maltsters in Norfolk in 1845, this number having been reduced to 45 by 1925. Since the late 19th century traditional floor malting has gradually been superseded by more efficient methods of malt production but floor malting was still practised at some sites in Norfolk until very recently.

### ***The Kerrison Road Malthouse***

The malthouse has a datestone inscribed 'C.B 1824' and the malthouse, kilns and endblock known as the cottage are clearly shown on Millard and Mannings' map of 1830. The road on which the structure is situated is shown as Yarmouth Road.

The 1885 O.S. 25" map shows the malthouse, kilns and cottage, served by a dedicated canal or cut running from the River Wensum at a point north of the old Carrow Bridge along the north-west side of Carrow Road (formerly Yarmouth Road now Kerrison Road) to the kiln end of the Malthouse. The end block has a distinctly domestic appearance with a greenhouse against the gable end and a front path and yard or garden fenced off from the main roadfront area. There is a

well marked at the north corner of the malthouse, which probably supplied water for the steeping tanks likely to have been situated at this end of the structure.

In Kelly's Norfolk Directories of 1900 and 1904 Thomas Matthews Read is named as Maltster at Carrow Road and also Cannon Wharf on King Street. Earlier directories do not specifically mention the Carrow Road malthouse as it was then.

The 1907 6" O.S. map names the structure as a malthouse and shows no significant changes apart from the absence of the small glasshouse at the south-west end.

The 1908 Kelly Directory does not record a maltster at Carrow Road, and Thomas Matthews Read is listed as maltster for Cannon Wharf only. In the Jarrolds 1911 Norwich Directory, no maltings are mentioned on Carrow Road but the Carrow Works Club House and Recreation Ground is, however, listed. That this is the former maltings is indicated by the 1914 O.S map, which names the building 'Carrow Club House'. It appears then that the building ceased to function as a commercial maltings between 1907 and 1911.

By 1914 additional structures had been built on to the north-eastern gable, the north-western kiln, and along the northern half of the north-western side which faces the adjacent former field, which by 1914 has become a football ground.

By 1928 the old Carrow Bridge had gone and Carrow Road had been diverted around the northern and western sides of a now reduced football ground to the new bridge. The former maltings remained the Carrow Club House, and the extension to the north-western side now ran the full length of that side.

In 1937 the O.S. map showed a football ground with stands and earth built terraces developed after Norwich City Football Club moved here in c.1935. The former maltings has no description on the map, but the structure is unchanged from 1928 and largely in the form recorded at the time of this survey.

The former canal serving the malthouse was infilled by Norwich City Football Club in c.1995 and surface car parking extended over the area.

Examples of the last surviving Malthouses in Norwich from the many that once existed include the Wensum Lodge complex on King Street and the Norwich Playhouse in St Georges Street.

## **Methodology**

The objective of this survey was to create a full photographic record of the malthouse to RCHM Level 3 (RCHM 1996) and to record and understand any machinery, equipment and features that related to the structure's former use as a maltings.

The Project Design determined that a photographic record be created using black and white medium format film, 35mm colour film and digital imaging. The photographs were to be marked and archived to standards set out in *Standards for Field Archaeology in the East of England* (Association of Local Government Archaeological Officers 2003). A list of archive components generated by the work is included in this report (see Appendices 1 to 3).

In practice it was found that the medium format camera was not suitable for all the work required, especially in the conditions pertaining in the roof space, so the record was supplemented with 35mm black and white film.

This report contains measured sections to illustrate aspects of the building's construction, and layout relating to its function as a maltings. Figure 3 restores removed posts and the putative intermediate floor, allowing the original form of the structure to be visualised. The report also contains descriptions and interpretations of features relating to the original function of the building with discussion of later alterations and use.

## **Building Survey**

### ***Main block (exterior)***

The long, low brick-built elevation with two rows of windows is typical of floor maltings in Norfolk and elsewhere in East Anglia. The many windows were of vital importance in controlling the temperature during the germinating process.

There were windows in every bay except that at the north-east end, probably because this bay would have contained the ditch steep, brick built and running right across the building. The date stone inscribed "C B 1824" is set into the upper wall of this bay.

The door openings on the south-east side are all, with the possible exception of that at the north end, later insertions or rebuilds. Brick buttresses have been added later on this and the north-west side in line with alternate roof trusses, probably to support the weight of the roof when the internal posts were removed. The door and the window above it in the second bay from the south have both been inserted (Plate 7). These lie immediately below a blocked access opening in the roof, and their insertion may be connected with the removal of a structure associated with this opening.

Five matching cast iron air vent grilles survive at ground level on the south-east side, one of which has been moved to accommodate a buttress and is consequently out of line with the corresponding grille on the inside of the wall. The grilles bear the legends ' KITE & CO LONDON NW' and 'NO 30'. These may date from the industrial use of the building, especially as they pre-date the buttresses.

The north-east gable has windows at three levels (Plate 3). Two are located in the first floor and attic storey, with only one on the ground floor which has clearly been inserted as the voussoirs are different from the others, but the same as the inserted doors and window on the south-east side. A modern door opening occupies the potential position of the other ground floor window.

A small, later additional brick building abutting the north-east gable end was constructed between 1907 and 1914 and represents all that is left of a larger structure. The south door jamb of the entrance can be seen on the north west side. The structure was related to an external stack, the scar of which can be seen running the height of the gable wall with the base of the stack surviving within the structure. This structure was probably a boiler house, constructed when the building was put to use as a club house.

A single storey flat-roofed extension to the north-west, with plank and muntin walls below boarded-up windows relates to the use of the building as a club house. The northern element was constructed between 1907 and 1914 and the southern half completed before 1928.

### ***Main block (interior)***

The interior of the main block has been sub-divided by modern partition walls, but originally would have formed one long open structure housing the growing floor at ground level with, probably, a first floor at the level of the top of the lower windows (Fig. 2).

At the northern end nine padstones survive in a later concrete floor (Plate 8), which originally supported Samson posts or columns. These are arranged in three rows beneath the roof trusses. Pillows, which concentrated the load from the roof trusses on to the upper posts (Plates 9 and 10), are seen attached to the tie beams at both ends of the building. The posts probably supported the first floor before rising up in the same line to support the roof trusses bearing the weight of stored grain and/or malt. The round scar on one of the pillows (Plate 10) suggests that iron columns may have been used, an increasingly common trait in industrial buildings from the late 18th century onwards. This is paralleled at Beaven's Maltings in Diss, where three rows of iron columns support the first floor in one of the malthouses.

There is no obvious evidence for the support of the removed first floor in the side walls which would have been expected. Joists from the first floor might have been joined into a rail embedded in the wall which has been removed and replaced with a row of bricks. There is a parallel for this type of construction in the north-east gable (Plate 11). Although the rough brickwork has been painted, there is a slight lip visible on one course at the right height for the floor.

The ceiling throughout the main block is composed of thin boards spanning between the tie beams and sometimes nailed to the underside of them. This was fitted after the attic floor and the internal posts were removed. The present holes and access hatches in the ceiling probably do not relate, therefore, to the original function of the building but to later use.

A later partition wall divides off the first bay at the south end, which consists of office space on two floors.

There are two entrances to the south-east kiln at ground level (Fig. 4). The northern entrance is blocked and may be later. It possibly formed an entrance to a former chamber beside the actual furnace. These areas were sometimes used to store malt, and by the malt-floor workers as a rest space (pers. comm. Robert Moody). If this is the case there might be more entrances, as there was usually a space either side of the furnace, though other examples have this space running across the building rather than longitudinally. There is no opening to the north-west kiln at ground floor level, though there may have originally been one which is blocked and not visible. At first-floor level there are symmetrically placed entrances to the drying floors of both kilns.

The south-western face of the tie beam of the end truss and a pillow block are visible in the partition wall (Plate 9). This tie beam has joist mortices which are set lower than those in the other tie beams, with a row of smaller mortices above

different to those seen elsewhere. These were designed for diminished haunch tenons, although the reason for this is unclear.

### ***Main block (attic floor/roof)***

The roof space is divided by partition walls into three main sections corresponding with the main divisions created by partition walls in the body of the building. Access by hatches, reached by a ladder, was obtained to the end sections of the roof. The central section was viewed through a small hole in the ceiling and two bays of this section, the 7th and 8th from the south end of the building, could not be seen at all.

The roof is constructed in 16 bays following the arrangement of the window spacing. Fifteen queen post trusses span the 12.3m internal width of the structure supported on the walls between the windows (Fig. 3). The trusses are spaced at 9' centres.

The queen posts with splayed heads rise from tie beams to which they are joined by an iron stirrup bolted through the posts. There is a central strainer beam between the heads of the queen posts and raking blades or short principals from the heads of the queen posts to the ends of the tie beam to which they are joined by through bolts. Alternate trusses have bolted three way straps reinforcing the joint between blade, post and strainer beam.

Lower side purlins sit on the blades which are supported at that point by raking braces rising from the tie beam with a short straining sill tensioning them against the bases of the queen posts. The purlins are held in place by blocks attached to the top of the blades. Short subsidiary posts also rise from the tie beams to the blades. The upper side purlins are joined to the splayed heads of the queen posts in the angle with the strainer beams.

The common rafters are not aligned with the trusses but sit evenly spaced on the purlins meeting at a ridge piece. They are jointed at their bases to wall plates that sit on the brick wall and on the ends of the tie beams which are let into the wall so that their upper faces are flush with the top of the wall.

The tie beams carry mortices for floor joists which have been removed, the mortice holes being spaced at approximately 0.25m intervals across the central part of the roof but stopping 2.00m short of the eaves (Fig. 3 and Plate 12). Presumably the eaves were left unfloored because the height made bulk storage impractical and it was therefore a waste of time, money and materials. The space would also allow air circulation to keep stored malt or barley dry. A parallel is seen in Biddles Warehouse, Gloucester (Brunskill 1985, plate 90, 182).

Carpenters marks in the form of scratched Roman numerals were seen on some of the upper joints in the roof trusses.

In the second bay from the south-west end on the south-east side of the roof is a blocked former opening running from the eaves up to a top member 0.56m above the side purlin (Plate 13). The purlin is interrupted across the 0.90m width of the opening and its ends have been rounded off, suggesting there was perhaps frequent movement of sacks of grain/malt and workers through here. The side members of the opening are more substantial than the common rafters, with a shallow rebate on their upper inner face indicating either that they supported the

wooden side walls of a lucam or dormer or that a door or hatch was fitted flush with the roof line.

On the north-western side of the roof in the 3rd and 6th bays from either end are blocked openings extending between the lower purlin and a top member placed just below the upper purlin (Plate 14). The openings are made by interrupting two common rafters and the sides are made by the adjacent rafters creating a space of about 1.00m width. These are not as substantial as the access opening, and appear not to have rebates. They were probably for light dormer windows, allowing light into the roof space to aid working and provide ventilation.

The only evidence of machinery found (apart from the fan mentioned below) was a short belt-driven shaft with three belt wheels. This was attached to the north-east side of a tie beam in the south-west roof section (Plate 15). This shaft would have transferred drive from a power source to a piece of machinery. The position of this shows that some mechanisation was introduced in the loft, most likely for screening malt to remove rootlets before storing, or for screening barley. The position of the shaft over the weak ceiling prevented record by measured drawing.

In the apex of the south-west gable a circular opening in the brickwork, as can be seen from the exterior, is a later rebuild. This houses an extractor fan covered by wire mesh on the outside (Plate 16) and by a wooden housing on the interior.

Below this is a small arched opening (approximately 0.8 x 0.8m) with a wooden door (Plate 16) allowing access onto the valley between the kiln roofs for maintenance of roofs, cowls *etc.* Below this opening, visible on the interior, are two brick voussoired arches in the gable wall which, although difficult to see because of paint and obstructions, probably have blocked openings below (Fig. 4). These are low and wide because of their location below the level of the kiln roofs, giving access from the attic into the kilns. These openings were possibly for taking malt from the drying floor up into the roof for storage, or barley into the kilns for drying, and out again for storage.

The roof space at the north-east end of the building extends for five bays before being blocked by a wooden partition. The fourth truss from the gable end has additional bracing and iron tie rods between the tie beam and strainer beam and has no mortice holes visible in the central section of the tie beam (Fig. 5, Plate 17). Two additional longitudinal beams are half lapped across the strainer beams of all the trusses in this section and are let into the gable wall (Plate 11), with ties through to the outside of the wall. These beams bear two iron hooks, one adjacent to the strengthened truss, and one in the next bay north. The beams, extra bracing and hooks suggest that these features were for hoisting grain or malt by rope and pulley to and from the floors below. The absence of mortice holes in the centre of the strengthened truss implies that there was an opening here for hoisting barley/malt that was an integral part of the design.

On the interior face of the gable a blocked arch is visible (Plate 11). The arch does not appear in the exterior wall face but the blocking shows as a darker area of brickwork, extending lower than the bottoms of the windows. The arch is level with the window arches and is off-centre, being nearer to the north-west window. This opening would have given access to the roof space from the north-east. This doorway was probably blocked-up when the building ceased to be used as a maltings, at around the time the chimney stack associated with the small extension

to the gable was built (between 1907 and 1914). The blocking of the scar of the stack removal cuts the blocking of the doorway.

Above the blocked arch the ends of a strap with round cast plates attached extend out from the wall by about 0.40m. This strap would have supported the external stack and has been pushed halfway through the wall, becoming embedded when the stack was demolished and the scar blocked.

Iron pipes of about 0.10m diameter ran along the inside of the eaves at both ends of the building, and across the centre of the roof. At various points these had curved ends which originally led to downpipes and a large stopcock valve. These pipes were presumably part of a later heating system connected with the additional building and stack on the north-east gable, rather than connected with malt production.

### ***The Kilns***

The north-west kiln tower has a single storey pitched roof extension which was again constructed between 1907 and 1914. The roofline of this crosses the blocking of an arched opening in the upper floor of the kiln. The other windows in this kiln tower and the upper windows in the south-east kiln all have chamfered brick surrounds and are later insertions. The interior south-west wall of the extension bears the scars of three partition walls, dividing it into four cubicles, perhaps originally housing toilet facilities for the club house. The north-west kiln has an original door opening to the exterior in its north-west side and corresponding to an opening in the south-east wall of the south-east kiln. This is probably in its original position, but has been subject to alteration.

The kilns have retained their slate tiled pyramidal roof structures, the venturi effect of which was relied upon to draw the fires. The original cowls have been replaced by glass skylights.

The ground floors of the kilns have been converted to office lobby and reception areas, having originally housed the furnaces and probably chambers beside the furnaces (as discussed above). No traces of these are left. The north-west kiln has four square columns arranged in a square rising from floor to ceiling, and these may contain original boxed-in supports, or be later additions.

The upper floors of the kilns have been converted into offices, the walls rendered and suspended ceilings fitted. The roof of the north-west kiln is lined with lath and plaster which is probably original. The inside of the south-eastern kiln roof was not seen.

### ***The Cottage***

The survey revealed that the endblock is a separate build. The walls are not bonded to the kiln walls but appear to be abutted by them or, possibly, the cottage walls have been chased into the kiln walls. A crudely incised inscription in the brickwork at the south corner of the cottage "A.B.8.22.1824" suggests that it is contemporary with the main malthouse block, and both appear on the 1830 Millard and Manning map. The cottage has no evidence of fireplaces and stacks, but these could have been removed and the scars hidden beneath plaster *etc.* Proximity to the kilns during the winter malt-making season may have provided enough warmth to the dwelling. A door in the north-western wall has been blocked.

Since this lies opposite to an opening in the front there may have been a through passage.

Often an endblock in this position on a malthouse would be for malt storage, but if this was the case here there would be openings onto the kiln drying floor. These could be blocked and hidden beneath rendering. However the cottage is small and appears domestic rather than industrial in its form.

The cottage has been modernised inside and has lost any original character, with rendered walls and suspended ceilings.

## **Conclusions**

The Kerrison Road (formerly Carrow Road) malthouse is a surviving but altered example of a 19th-century purpose built floor maltings

The ground floor would have been a germinating floor which would generally house the steeping cistern(s) for soaking the grain before spreading out on the floor to germinate at the opposite end to the kilns. At Kerrison Road no direct evidence for the position of the steep was found. However the location of a well at the north corner on the 1885 map and the absence of windows in the last bay on the south-east side suggest they were located at the north-east end.

The first floor of this malthouse has been completely removed. The height of the walls, the two rows of windows, the doors into the kilns at first floor level and the evidence of stone bases and pillows point, however, to its former existence. There are parallels for this in many similar structures in Norfolk and elsewhere. This floor was probably a second growing floor as the loft here was used for storage, but this is conjectural without knowing the construction materials, as a growing floor needs to be watertight, and it may instead have been a storage/screening floor.

The attic floor of this malthouse was used for storage, as evidenced by the pillows on the tie beams showing support for extra weight and by the blocked openings in the roof and gables. Unfortunately the original floor joists and boards along with any evidence of storage bins has been lost. A blocked opening in the south-east side was probably designed for taking malt out of the building to load onto wherries waiting at the end of the canal. This opening is near the openings from the kilns into the attic, where kilned malt could be thrown up and stored, malt generally needed storing for a month before use (Patrick 1996, 183). This usually happened at the kiln end of maltings. It could also have been for taking barley in during the harvest months close season, when malt making could not take place because of higher temperatures. At this time barley was brought in, screened if necessary and dried in the kilns if the moisture content was too high.

Four blocked openings on the north-west side were to light the attic space, probably with dormer windows, and possibly to ventilate it. Maltings were dusty places and a fan was later inserted into the south-western gable.

The blocked opening in the north-east gable may have been for taking in barley or simply for easy access to the attic. Barley was likely to have been stored at this end if the steeping cisterns were below. The strengthened truss and additional beams with hooks at this end of the attic suggest hoisting of grain took place here. This fits with the steeping cisterns and main barley storage area being located at this end of the building.



Little evidence of machinery relating to the use of the malthouse was found. A small belt shaft in the attic shows that some mechanisation took place, probably in the late 19th or early 20th centuries. It may have been used for transmitting power to a screen for cleaning the barley, or removing the rootlets or culm from the malt before storage. There is no evidence for the power source that was used.

The first floor, attic floor joists, boards and samson posts or columns were probably removed at the time malt production ended and the building became the Carrow Club house (between 1907 and 1911).

The brick buttresses were probably added at this time to relieve the walls of some of the weight of the roof trusses which was imposed once the internal posts were removed. The additional buildings on the north-western and north-eastern sides were added at this time to provide facilities for the club house.

The cottage is a separate build to the rest of the structure but may be contemporary if an incised inscription is recording the construction. The reason for it being a separate build is unclear. It appears domestic but has no evidence of heating apart from proximity to the kilns. Having a cottage for a maltster here makes sense because tending the kilns and the growing malt would require virtually 24 hour attention during the season.

Other examples of malthouses surviving in Norwich from the many that once existed are the Wensum Lodge complex on King Street and the Norwich Playhouse in St Georges Street. Both these examples appear to have been of a broadly similar type to that at Kerrison Road but differ in having a single kiln roof structure. The Playhouse has lost its first floor (and loft storey if it had one) and has a completely new roof structure over the former growing floor areas. The Wensum Lodge maltings have been converted into a residential block for an adult education centre. The Kerrison Road malthouse is probably the oldest and most original example of the three, and is different in having the two pyramidal kilns and an attached domestic block.

### **Acknowledgements**

Thanks are due to Norwich City Football Club for providing access to the malthouse and for funding this report. The fieldwork was carried out by the author with the valuable assistance of Dafydd Davies. Thanks also to Robert Moody, a former floor maltster who discussed the processes with the author. Original section and elevation drawings and photographic plates were by the author. The report was produced and illustrated by David Dobson and edited by Andy Shelley.

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## Appendix 1: Index to Black and White photographic archive

Norfolk Archaeological Unit – Black & White Photographic Archive			
Site: Former Malthouse, Kerrison Road, Norwich			
B&W Code: KHQ		HER Number: 38193N	
Frame No.	Description	Photographer	Date
1	North-east gable, looking south-west	S. Underdown	14/4/03
2	As 2	S. Underdown	14/4/03
3	Oblique view of gable and rear of Malthouse, looking south	S. Underdown	14/4/03
4	As 3	S. Underdown	14/4/03
5	As 3	S. Underdown	14/4/03
6	Oblique view of Malthouse, looking west	S. Underdown	14/4/03
7	As 6	S. Underdown	14/4/03
8	Oblique view showing cottage and Kiln towers, looking north	S. Underdown	14/4/03
9	As 8	S. Underdown	14/4/03
10	East end of front elevation, looking north-west	S. Underdown	14/4/03
11	As 10	S. Underdown	14/4/03
12	Central section of front elevation of Malthouse, looking north-west	S. Underdown	14/4/03
13	As 12	S. Underdown	14/4/03
14	South end of front elevation of Malthouse, looking north-west	S. Underdown	14/4/03

Norfolk Archaeological Unit – Black & White Photographic Archive			
Site: Former Malthouse, Kerrison Road, Norwich			
B&W Code: KHR		Number: 38193N	
Frame No.	Description	Photographer	Date
1	Detail of ground floor window at south end of front elevation, looking north-west	S. Underdown	14/4/03
2	Detail of ground floor window in north-east gable, looking south-west	S. Underdown	14/4/03
3	Front elevation of maltsters cottage and south-east kiln tower, looking north-west	S. Underdown	14/4/03
4	As 3	S. Underdown	14/4/03
5	South-west elevation of south-east kiln with later windows, looking north-east	S. Underdown	14/4/03
6	South-west elevation of north-west kiln also showing rear of maltsters cottage, looking north-east	S. Underdown	14/4/03
7	North-west elevation showing gable of cottage and both kiln towers, looking north-east	S. Underdown	14/4/03
8	As 7	S. Underdown	14/4/03
9	North-west kiln tower with later extension, looking east	S. Underdown	14/4/03
10	Elevation of gable of later extension to north-west kiln, looking south-east	S. Underdown	14/4/03
11	North-west kiln tower with later extension, looking south	S. Underdown	14/4/03
12	South-west end of rear elevation of Malthouse, showing later ground floor extension, looking south-east	S. Underdown	14/4/03
13	Central section of rear elevation of Malthouse, showing later ground floor extension, looking south-east	S. Underdown	14/4/03
14	View of Malthouse showing proximity to south stand of football ground, looking north	S. Underdown	14/4/03
15	View of cottage and kiln towers in relation to rear of south stand of football ground, looking north-east	S. Underdown	14/4/03

<b>Norfolk Archaeological Unit – Black &amp; White Photographic Archive</b>			
<b>Site: Former Malthouse, Kerrison Road, Norwich</b>			
<b>B&amp;W Code: KHS</b>		<b>HER Number: 38193N</b>	
<b>Frame No.</b>	<b>Description</b>	<b>Photographer</b>	<b>Date</b>
1	Tie beam, with mortices for joists, pillow block and post in later partition wall, south-west end of Malthouse, looking north-east	S. Underdown	15/4/03
2	As 1	S. Underdown	15/4/03
3	Exterior of south-west gable showing later circular opening with fan installed, access door to roof space and valley between kiln roofs, looking north-east	S. Underdown	15/4/03
4	Blocked opening in second roof bay from south, probably for hatch for taking in/out grain/malt, looking south-west	S. Underdown	15/4/03
5	Blocked opening in north-west side of roof, third bay from south, one of four, probably for skylights, looking north-west	S. Underdown	15/4/03
6	Southern roof space, looking north-east towards modern blocking wall	S. Underdown	15/4/03
7	Interior looking north-east towards gable end	S. Underdown	15/4/03
8	Interior at north-east end looking south-west	S. Underdown	15/4/03
9	Interior at south-west end looking south-west	S. Underdown	15/4/03
10	Interior at south-west end looking north-west	S. Underdown	15/4/03

<b>Norfolk Archaeological Unit – Black &amp; White Photographic Archive</b>			
<b>Site: Former Malthouse, Kerrison Road, Norwich</b>			
<b>B&amp;W Code: KHT</b>		<b>HER Number: 38193N</b>	
<b>Frame No.</b>	<b>Description</b>	<b>Photographer</b>	<b>Date</b>
1	Blank		
2	Blocked opening in second bay from south of south-west side of roof, looking south-west	S. Underdown	17/4/03
3	Blocked opening in third bay from south of north-west side of roof, looking north-west	S. Underdown	17/4/03
4	General shot of south roof space, looking north-east	S. Underdown	17/4/03
5	Exterior of south-west gable, looking north-east	S. Underdown	17/4/03
6	Roof of cottage from valley of kiln roofs, looking south-west towards river	S. Underdown	17/4/03
7	Access hatch in south-west gable, looking north-east	S. Underdown	17/4/03
8	Later inserted circular opening with fan installed in apex of south-west gable, looking north-east	S. Underdown	17/4/03
9	South-west side of roof space showing bracing of the trusses and empty joist mortices in tie beams, looking north-east	S. Underdown	17/4/03
10	Joint of Queen post, strainer beam and raking blade with three-way strap on second truss from south, looking north-east	S. Underdown	17/4/03
11	General view of Malthouse looking east	S. Underdown	17/4/03
12	Blocked door in rear of 'cottage', looking south-west	S. Underdown	17/4/03
13	North-west kiln and 'cottage', looking east	S. Underdown	17/4/03
14	Gable of 'cottage' with kilns behind, looking north-east	S. Underdown	17/4/03
15	South-west elevation of 'cottage', looking north-west	S. Underdown	17/4/03
16	General view, looking north	S. Underdown	17/4/03
17	South-west elevation of south-west kiln, looking north-west	S. Underdown	17/4/03
18	Bays 1-2 (counting from south) of south-west elevation, looking north-west	S. Underdown	17/4/03
19	Bays 1-4 (counting from south) of south-west elevation, looking north-west	S. Underdown	17/4/03
20	Bays 5-8 (counting from south) of south-west elevation, looking north-west	S. Underdown	17/4/03
21	Bays 9-12 (counting from south) of south-west elevation, looking north-west	S. Underdown	17/4/03
22	Bays 13-16 at north-east end of south-west elevation, looking north-west	S. Underdown	17/4/03
23	Date Stone in north-east end of south-west elevation, looking north-west	S. Underdown	17/4/03
24	Detail of gable kneelers, east corner, looking west	S. Underdown	17/4/03
25	General view of Malthouse, looking west	S. Underdown	17/4/03
26	General view of Malthouse, looking west	S. Underdown	17/4/03

27	Northern two bays of south-west elevation, looking north-west	S. Underdown	17/4/03
28	Inserted or rebuilt door, sixth bay from North end, looking north-west	S. Underdown	17/4/03
29	Inserted or rebuilt door and window, second bay from south, looking north-west	S. Underdown	17/4/03
30	Remnants of 'boiler house' and scar of stack in north-east gable, looking south	S. Underdown	17/4/03
31	General view of Malthouse looking south	S. Underdown	17/4/03
32	South end of north-west side of Malthouse and north-west kiln, looking south	S. Underdown	17/4/03
33	Blocked arch and adjacent later window in north-west wall of north-west kiln, looking south	S. Underdown	17/4/03
34	Gable of extension to north-west kiln, looking south-west	S. Underdown	17/4/03
35	Kiln towers and later extension, looking east	S. Underdown	17/4/03
36	Scars of cubicle partitions in early 20th C. north-west extension, looking south-west	S. Underdown	17/4/03

## Appendix 2: Index to Colour Slide Archive

Norfolk Archaeological Unit – Colour Slide Archive			
Site: Former Malthouse, Kerrison Road, Norwich		HER Number: 38193N	
Slide Nos.	Subject	Photographer	Date
1	North-east gable of Malthouse looking south-west	S. Underdown	14/4/03
2	North-east gable of Malthouse looking south-west	S. Underdown	14/4/03
3	Oblique view of Malthouse looking south	S. Underdown	14/4/03
4	Oblique view of Malthouse looking south	S. Underdown	14/4/03
5	Oblique view of Malthouse looking west	S. Underdown	14/4/03
6	Oblique view of Malthouse looking west	S. Underdown	14/4/03
7	Oblique view of Malthouse looking north, showing kiln towers and maltsters cottage	S. Underdown	14/4/03
8	Bays 1-4 (numbering from north-east end) front elevation looking north-west	S. Underdown	14/4/03
9	Bays 1-6 (numbering from north-east end) front elevation looking north-west	S. Underdown	14/4/03
10	Bays 1-4 (numbering from north-east end) front elevation looking north-west	S. Underdown	14/4/03
11	Bays 6-12 (numbering from north-east end) front elevation looking north-west	S. Underdown	14/4/03
12	As 11	S. Underdown	14/4/03
13	Bays 10-16 (numbering from north-east end) front elevation looking north-west	S. Underdown	14/4/03
14	As 13	S. Underdown	14/4/03
15	Date stone at north-east end of front elevation	S. Underdown	14/4/03
16	Detail of gable kneelers (ovolo moulded) at east end of north-east gable looking north-west	S. Underdown	14/4/03
17	Detail of gable kneelers (ovolo moulded) at east end of north-east gable looking west	S. Underdown	14/4/03
18	Close-up of ground floor window at south-west end of front elevation looking north-west	S. Underdown	14/4/03
19	Close-up of eastern ground floor window in north-east gable end looking south-west	S. Underdown	14/4/03
20	south-west (road front) elevation of south-west kiln tower and maltster's cottage looking north-west	S. Underdown	14/4/03
21	As 20	S. Underdown	14/4/03
22	South-west elevation of south-west kiln tower with later windows looking north-east	S. Underdown	14/4/03
23	South-west elevation showing gable end of cottage and kiln towers looking north-east	S. Underdown	14/4/03
24	As 23	S. Underdown	14/4/03

25	Slightly oblique shot of south-west elevation showing apex of Malthouse gable with mesh over circular opening looking north-east	S. Underdown	14/4/03
26	As 25	S. Underdown	14/4/03
27	North-west kiln tower with later single storey extension to the north-west, looking east	S. Underdown	14/4/03
28	Gable end of later (early 20th C.) extension to north-west kiln, looking south-west	S. Underdown	14/4/03
29	Roof line of later extension running across blocking of original arched opening in north-west kiln, looking south	S. Underdown	14/4/03
30	Detail of gable kneelers, chamfer and air vent on north-west extension, looking east	S. Underdown	14/4/03
31	South-west four bays of north-west elevation with later ground floor extension, looking south-west.	S. Underdown	14/4/03
32	Oblique view of cottage and kiln roofs, looking east	S. Underdown	14/4/03
33	Air vent grille at base of south-west wall, looking north-west	S. Underdown	15/4/03
34	Blocked door opening at rear of 'cottage' looking south-west	S. Underdown	15/4/03
35	Junction of 'cottage' and kiln wall showing courses not matched, looking north	S. Underdown	15/4/03
36	Window in ground floor, north-west side showing old paint and darkening of panes, looking south-west	S. Underdown	15/4/03
37	Air vent grille at base of south-west wall, looking north-west with 0.30m scale	S. Underdown	15/4/03
38	Tie beam, pillow block and post contained in later partition wall, looking north-east	S. Underdown	15/4/03
39	Exterior of south gable from valley between kiln roofs, showing inserted circular opening in apex and roof access hatch below, looking north-east	S. Underdown	15/4/03
40	Close up of Access opening with wooden door in south-west gable, looking north-west	S. Underdown	15/4/03
41	Roof space at south-west end looking north-east	S. Underdown	15/4/03
42	Blocked opening in south-west side of roof, second bay from south, looking south-west	S. Underdown	15/4/03
43	Blocked opening in north-west side of roof, third bay from south, looking north-west	S. Underdown	15/4/03
44	Close up of joint at top of Queen post to strainer beam, raking blade and purlin with three way strap, looking north-west	S. Underdown	15/4/03
45	South-west side of roof space showing bracing of trusses and empty mortice holes for joists stopping at subsidiary post, looking north-west	S. Underdown	15/4/03
46	Roof space at north-east end showing truss with additional heavy bracing, additional longitudinal beams across trusses and boarded partition beyond, looking south-west	S. Underdown	15/4/03
47	East corner of roof space showing lower end of rafters, cast iron 'heating' pipe and bridging beam from tie to gable	S. Underdown	15/4/03
48	Roof space looking towards north-east gable	S. Underdown	15/4/03
49	Power transfer shaft with three belt drive wheels, attached to side of tie beam in south-west end of roof, looking north-west	S. Underdown	15/4/03
50	Valley between kiln roofs and apex of north-east gable of 'cottage', looking south-west	S. Underdown	15/4/03
51	Interior of early 20th C. extension to north-west kiln showing scars of cubicle partitions, looking south-west	S. Underdown	15/4/03
52	Looking up to skylight at top of north-west kiln roof	S. Underdown	15/4/03
53	Ground floor of north-west kiln showing four columns which may contain boxed in original supports, looking south	S. Underdown	15/4/03
54	Interior ground floor looking toward north-east gable end	S. Underdown	15/4/03
55	Interior ground floor at north-east end, looking south-west	S. Underdown	15/4/03
56	Interior at south-west end, looking south-west	S. Underdown	15/4/03
57	Interior at south-west end, looking south-west toward later partition wall	S. Underdown	15/4/03
58	Stone base for post, preserved in later floor showing wear marks revealing post position, north-east end of Malthouse, looking north-east	S. Underdown	15/4/03

### Appendix 3: Index of Digital Images Recorded

Norfolk Archaeological Unit – Digital Image Archive			
Site: Former Malthouse, Kerrison Road, Norwich		HER Number: 38193N	
Image Ref. No.	Subject	Photographer	Date
38193N_01	Tie beam of south-west end truss with mortices for joists, pillow block and samson post preserved in later partition wall, looking north-east.	S. Underdown	15/4/03
38193N_02	As 1	S. Underdown	15/4/03
38193N_03	South-west gable of Malthouse showing later inserted circular opening with mesh over, and original arched access opening to valley between kiln roofs, looking north-east	S. Underdown	15/4/03
38193N_04	Blocked opening in south end of south-west side of roof, with rebates either for an opening access hatch or a dormer, looking south-west	S. Underdown	15/4/03
38193N_05	Blocked opening in north-west side of roof, looking north-west	S. Underdown	15/4/03
38193N_06	South-west section of attic floor, looking north-east	S. Underdown	15/4/03
38193N_07	Detail of roof truss joint of queen post, strainer beam, raking brace and upper purlin with 3-way iron strap.	S. Underdown	15/4/03
38193N_08	View of ends of roof trusses showing bracing and mortices for joists in tie not continuing to wall, looking north-east	S. Underdown	15/4/03
38193N_09	Purlin with rounded end and side member of former opening in south end of south-west side of roof, looking east	S. Underdown	15/4/03
38193N_10	As 9	S. Underdown	15/4/03
38193N_11	Interior of attic floor at north-east end showing truss with extra bracing, looking south-west	S. Underdown	15/4/03
38193N_12	Interior of north-east gable in attic, close-up showing blocked arch and iron strap which formerly supported external stack, looking north-east	S. Underdown	15/4/03
38193N_13	Interior of east corner of roof space showing cast iron pipes probably from later heating system, looking east	S. Underdown	15/4/03
38193N_14	Interior of attic floor at north-east end showing truss with extra bracing, looking south-west	S. Underdown	15/4/03
38193N_15	General view of interior of north-east gable in attic, looking north-east	S. Underdown	15/4/03
38193N_16	Shaft with belt wheels attached to north-east side of tie beam in south-west end of roof	S. Underdown	15/4/03
38193N_17	View of junction of wall of cottage and south-west kiln, looking north	S. Underdown	15/4/03
38193N_18	Oblique view of malthouse showing cottage and kiln towers, looking east	S. Underdown	15/4/03
38193N_19	Oblique view of Malthouse showing cottage and kiln towers, looking north	S. Underdown	15/4/03
38193N_20	Stone base for samson post preserved in later floor at north-east end of Malthouse	S. Underdown	15/4/03
38193N_21	Rear view of cottage and north-west kiln, looking east.	S. Underdown	17/4/03
38193N_22	Blocked door in north-west wall of cottage, looking south-west	S. Underdown	17/4/03
38193N_23	General view showing cottage, north-west kiln etc., looking east	S. Underdown	17/4/03
38193N_24	General view showing cottage, south-west kiln etc., looking north	S. Underdown	17/4/03
38193N_25	Date stone at north-east end of Malthouse, looking north-west	S. Underdown	17/4/03
38193N_26	Detail of gable kneelers at east corner, looking west	S. Underdown	17/4/03
38193N_27	Renewed door and window, 2nd bay from south, looking north-west	S. Underdown	17/4/03
38193N_28	First two bays at south-west end of south-west elevation, looking north-west	S. Underdown	17/4/03
38193N_29	south-west elevation of cottage and part of kiln, looking north-west	S. Underdown	17/4/03
38193N_30	Junction of brick buttress and Malthouse wall, looking west	S. Underdown	17/4/03
38193N_31	Junction of cottage and kiln walls, looking north	S. Underdown	17/4/03
38193N_32	Initials and date incised on bricks in cottage wall, looking north-west	S. Underdown	17/4/03
38193N_33	General view looking south, showing later extension to north-west side	S. Underdown	17/4/03
38193N_34	south-west gable showing scar of stack, remnant of 'boiler house' etc., looking south	S. Underdown	17/4/03
38193N_35	Blocked opening in south end of south-west side of roof, looking south-west	S. Underdown	17/4/03
38193N_36	As 35	S. Underdown	17/4/03
38193N_37	Pillow block with scar of post/column on underside of tie beam, north-east end of Malthouse	S. Underdown	17/4/03





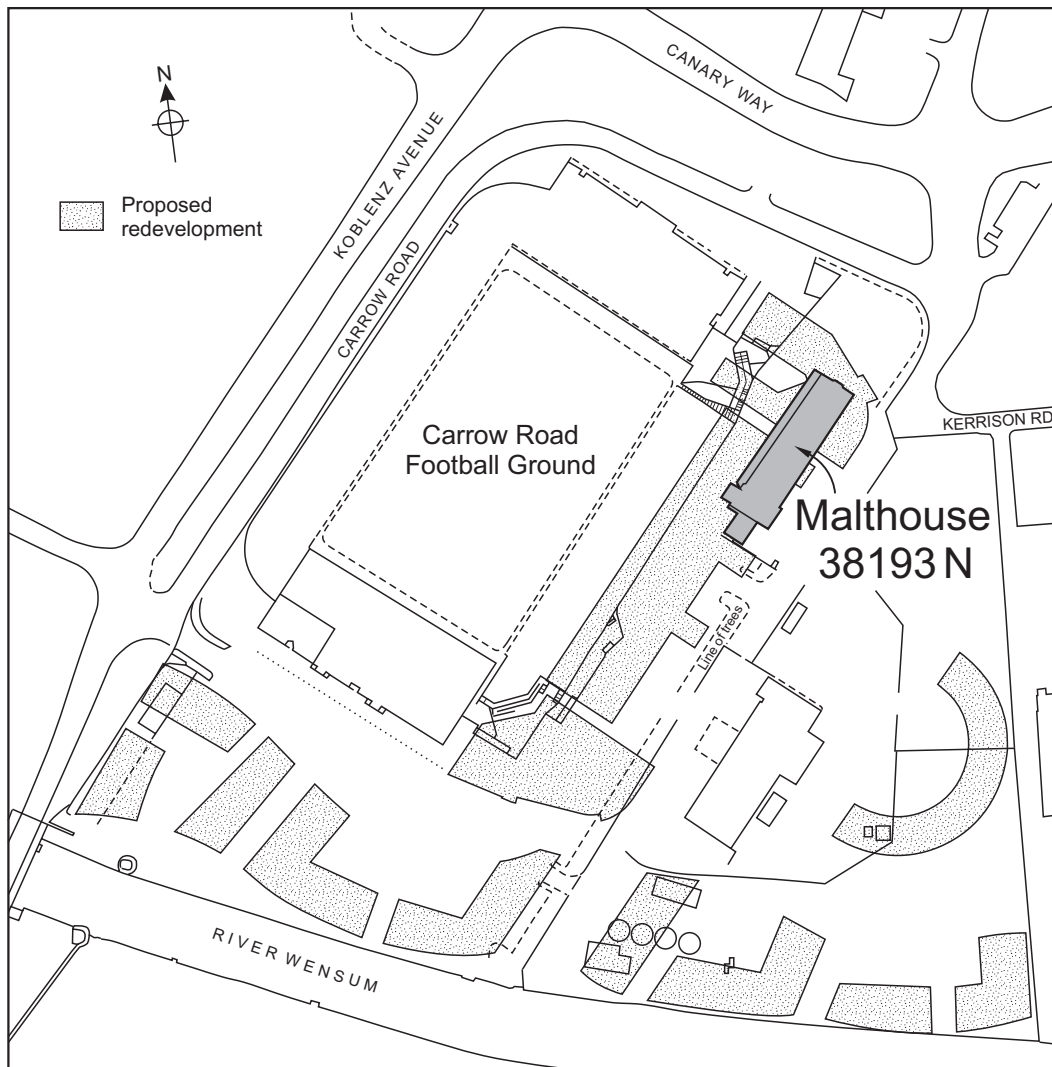
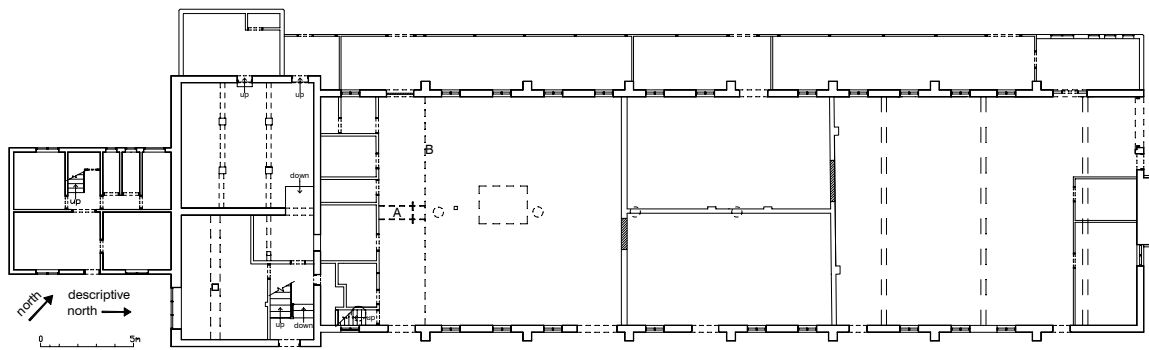


Fig. 1 Site Location. Scale 1:2500



A - former access hatch. B - change in ceiling height

Fig. 2 Plan at ground floor level. Scale 1:250



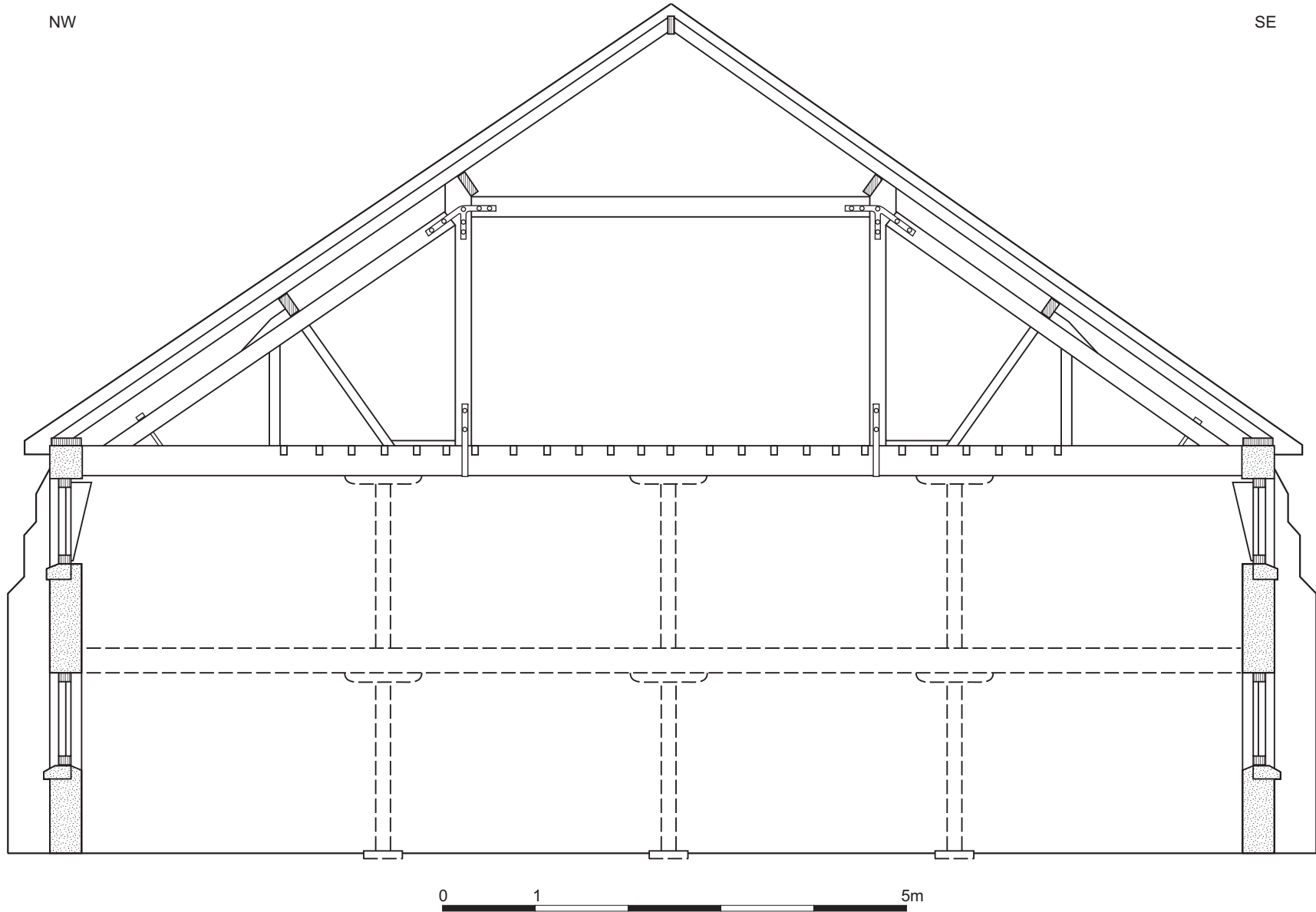


Fig. 3 Cross section of malthouse with positions of removed floor and posts marked. Scale 1:40

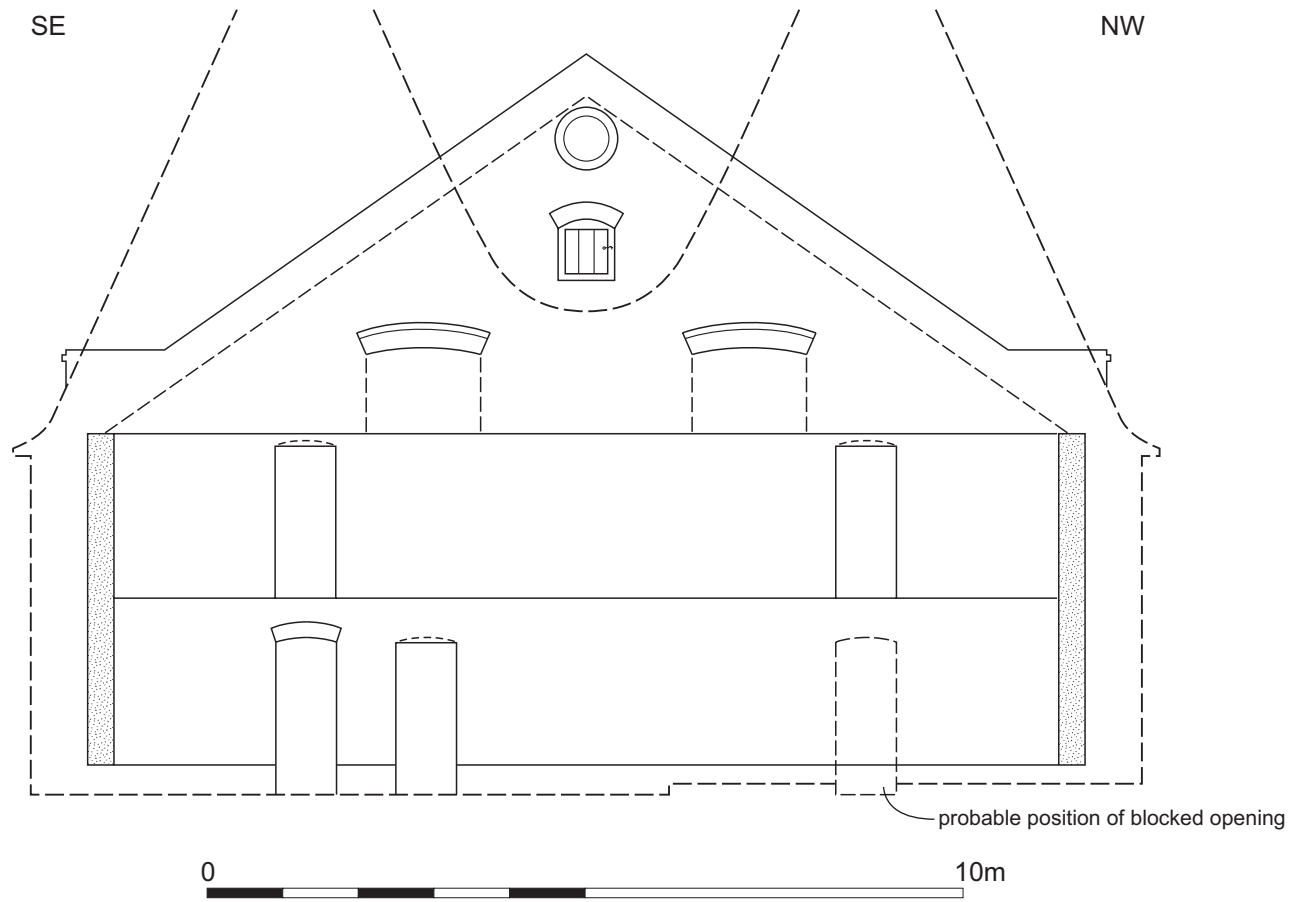


Fig. 4 Elevation of south-west gable showing openings into kiln towers. Scale 1:100

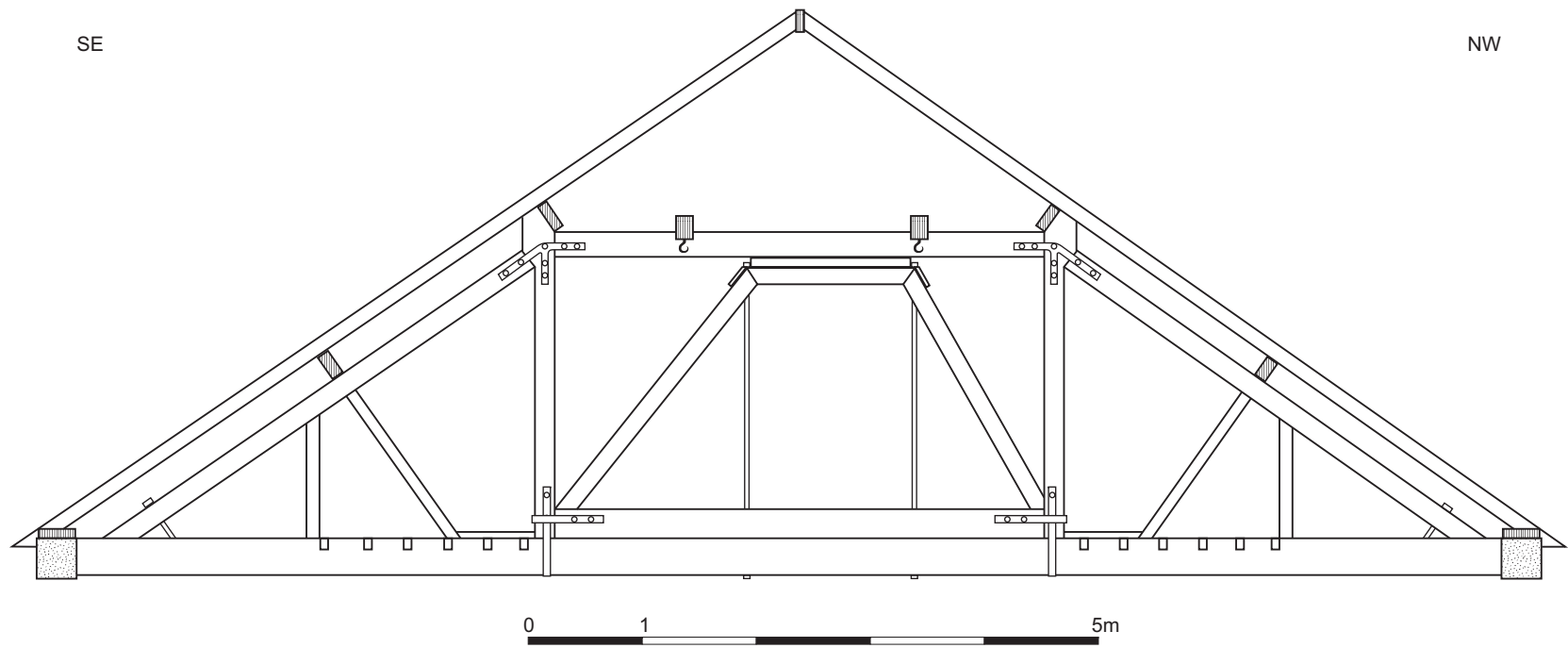


Fig. 5 Elevation of truss with additional bracing. Scale 1:40



Plate 1 The Malthouse and maltster's cottage from the north-west with the extensions on the north side



Plate 2 The date plaque on the south wall



Plate 3 The eastern gable



Plate 4 Triangular 'stops' on the upper windows



Plate 5 East-facing elevation of malthouse, by Robert Smith



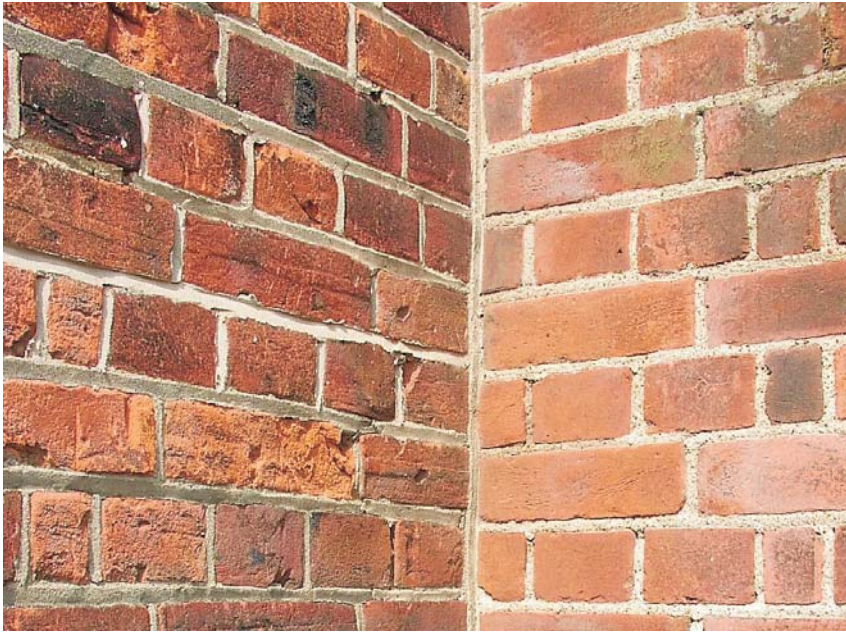


Plate 6 The junction between the outside wall of the building and a buttress. The difference in the characteristics of the bricks and the lack of bonding shows that the two are not contemporary



Plate 7 First two bays at south-west end of Malthouse showing renewed door and window and later buttresses



Plate 8 Stone base for Samson post preserved in later floor



Plate 9 Tie-beam of south-west end truss showing joist mortises, pillow block and post