

**HISTORIC BUILDING RECORD OF
THE FORMER MALTINGS (FYFE WILSON WORKS)
STATION ROAD, BISHOP'S STORTFORD
HERTFORDSHIRE**



Essex County Council

Field Archaeology Unit

May 2007

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FORMER MALTINGS (FYFE WILSON WORKS)
STATION ROAD BISHOP'S STORTFORD
HERTFORDSHIRE**

Client: Mantle Projects Ltd.

Planning Ref.: 3/04/1360

NGR: TL 4917 2097

FAU Project No.: 1669

Oasis Record No.: essexcou1-26567

Date of Fieldwork: 1st & 2nd August 2006

1.0 INTRODUCTION

A programme of building recording and archaeological monitoring was undertaken by Essex County Council Field Archaeology Unit (ECC FAU) in advance of redevelopment work to the former malting at the Fyfe Wilson engineering works, Station Road, Bishop's Stortford. Malting was one of Stortford's major industries from the mid 19th to mid 20th-century, benefiting from good transport links to breweries in London by water, by the River Stort, and rail. Many malthouses were located by the Stort Navigation and railway. The study of such structures is important to the history of Bishops Stortford and the development of the later malting industry in general.

The work was funded by the developers, Mantle Projects Ltd., and carried out in accordance with a brief issued by the Historic Environment Unit of Hertfordshire County Council (HCC HEU), who also monitored the work.

Copies of the report will be supplied to HCC HEU and the Historic Environment Record (HER), the LPA and the County Records Office (HALS). The archive will be deposited at Bishop's Stortford Museum and a version of this report uploaded to OASIS (<http://ads.ahds.ac.uk/oasis/index.cfm>).

2.0 BACKGROUND

2.1 Site location and description

The former malting lies immediately east of the London to Cambridge railway line, on the south side of Station Road, within the former 19th-century industrial zone (fig.1). The site is surrounded by modern commercial development. Much of the area to the east and south belongs to an American car dealership/garage and is used for showrooms and parking.

The site occupies an area of around 1500m² arranged in a rectangular plot, with the main malting structures and related buildings along the east and north side and later workshops around the south-west attached to the main malting range linked by concrete yard surfaces. The boundaries are clearly marked by brick walls to the north and south and corrugated iron fencing to the west, against the railway line. A narrow locked walkway extends along eastern side, between the main malting range and the garage.

Fyfe Wilson recently moved to new premises nearby and the old site was sold for residential redevelopment. Many of the 20th-century pre-fabricated sheds are dilapidated and vegetation has been allowed to grow. Graffiti has been scrawled on the walls, but no serious vandalism has occurred.

Topographically, the ground rises gradually to the east and London Road. The east side of the malting is terraced slightly into the slope. Natural geology is a mixture of clay and gravel.

2.2 Planning background

A planning application was submitted to East Hertfordshire District Council (3/04/1360) to demolish the 19th-century malting structures, 20th-century industrial buildings and the boundary walls and redevelop the site for residential purposes. Mindful of the local and regional importance of malting and the possibility of below-ground archaeological deposits on the site, the HEU team advised the local authority that a full archaeological condition was required to record the structures before conversion and to monitor/record groundworks for the new development, as this proceeded. The requirement was based on advice given in Planning Policy Guidance Note 16: Archaeology and Planning (DOE 1990).

2.3 Historical background

Stortford was a major malting centre for the London brewing market. Maltings were located close to sites where raw materials and finished goods could be transported effectively, i.e. the Stort Navigation, railway and roads.

Sources were studied at the HALS in order to identify and understand the origins and development of the malting and, from an archaeological point of view, previous site usage. No record of land use was found pre-dating the establishment of the malting. Before the coming of the railway, the land between the Stort Navigation and London Road was undeveloped (DSA4/21/2).

The malting is believed to have been built in the mid-19th century on a prime site close to the railway station (HCC HEU 2006), around the time when the Cambridge to London railway line was constructed (1842). Craven & Co.s Commercial Directory of Bedfordshire and Hertfordshire of 1854 lists several malthouses within Stortford. Joshua Miller & Son are mentioned as maltsters at the railway station and South Street, situated to the west of the station/navigation and there is no reference to maltings in Station Road. In later directories Miller & Son are described as being at the railway depot (Kelly's 1886) and opposite the station (Kelly's 1907), which could be a reference to the Fyfe Wilson site, but is not specific enough. The disparity between the few maltings mentioned in the trades directories and the many more that lay along the lines of the Stort Navigation and railway line seems perplexing at first. However, many may have been owned and used by the London breweries whose business was assured and therefore did not need to pay to advertise in the directories.

Several malthouses are shown in figs.2 and 3 that date from the late 19th-century. The first edition OS map of 1879-83 (fig.2) shows the malthouse range alongside a second structure, latterly the Fyfe Wilson offices, standing between it and the railway line (fig.2). The second structure may have been the maltster's cottage, which still stands today. The following map, the OS second edition of 1898, is drawn to a larger scale and therefore shows greater detail (fig.3). By this time other buildings have been added around the house. Two pumps are indicated outside the house and barley store. Water was vital in malting to start the grain germinating. Another building has been built along the Station Road frontage, which has now become part of the garage to the east (fig.1) and would appear to lie within the original malthouse boundary that stretched from the railway to London Road to the east (fig.3).

In 1921 the main structures were absorbed into the nascent Fyfe Wilson mechanical and electrical engineering works. The main range, containing grain and malt stores, germinating floors and kiln, was heavily altered to create workshops, offices and large open working areas for overhead cranes. Floors, kilns, windows and internal partitions were removed in the process. Fyfe Wilson left the site in 2002 for a new site on Raynham Hill (<http://www.stortfordhistory.co.uk>) and since then the site has been unoccupied.

2.4 Malt production (from Garwood & Letch 2001) Malting is the procedure where grain, usually barley, is allowed to germinate under controlled conditions. When the correct level of germination is achieved, the barley is then dried in a kiln (after which it becomes malt) to check the process. It is mainly used in the production of beer or whisky, but is also used in the food industry for products such as malt drinks, malt extract, malt vinegar and in baking. The most common malt produced is pale malt.

After the barley has arrived, it undergoes a number of processes to prevent deterioration to the grain. It is firstly cleaned and screened to remove unwanted foreign bodies and then gently dried or sweated to artificially ripen the grain in the kiln. This reduces the moisture content to prevent it spoiling during storage and improves the chances of effective germination. In the 20th century sweating was performed in mechanical drum dryers.

Once released from storage, the barley was steeped in water-filled tanks or cisterns in water for 2-3 days to begin germination. Before the repeal of the malt tax in 1880, the steeped grain was then heaped into a measuring device called a couch frame, where the excise-men could calculate the amount of tax to be levied. The couching procedure remained in use by many maltsters even after the repeal, as the heat generated by heaping the grain together accelerated primary germination.

The steeped barley was then spread out, to a height of between 4 and 8 inches, on the germination floors to grow. Louvered windows controlled temperature and ventilation. A strict temperature of between 13-22°C was required for germination. Therefore in the hot summer months when temperatures on the floors would exceed this range, many malthouses ceased production, to concentrate on cleaning and maintenance of the buildings. To ensure even growth and to prevent matting of the germinating rootlets, the barley was hand-turned using broad, flat-bladed shovels or tri-pronged ploughs. This laborious process was eventually superseded in many larger maltings by mechanical grain turners.

Once germinated and the grain shoots appeared, the green malt (as it was known) was banked up at the kiln end and shovelled onto the kiln floor through hatches for roasting to prevent further germination. Roasting took 3 to 4 days, during which the grain was periodically turned by hand or latterly by a mechanical turner. Afterwards, the kilned malt was dressed and polished to remove the rootlets, which were collected and sold as a by-product for animal feed. It was then transferred to the maltstore where it was sacked. The malt was stored for at least a month before it was ready for dispatch to the brewery.

During the late 19th century, pioneering individuals began to use mechanical power and labour-saving apparatus. As the malting industry developed, the malthouses became increasingly larger and more industrialised. Multi-storey malthouses emerged during the latter decades of the 19th century, built with integrated storage, grain preparation and cleaning facilities. New methods were introduced in the 20th century including pneumatic drum malting which germinated and kilned the grain inside revolving drums. This system saved on space and was independent of atmospheric influences and so could be operated all year round. Some traditionally-worked floor maltings adopted such methods, but many smaller ones remained un-mechanised.

3.0 OBJECTIVES

3.1 Historic building survey

The purpose of the historic building survey was, as outlined in the brief (HCC HEU 2006), to 'preserve by record' the malting structures before demolition and to place the findings within a local and regional context. Engineering structures associated with secondary use of the site were not included in the survey, but are briefly examined in the report to produce an overall interpretation of the site.

3.2 Archaeological monitoring

A requirement was included in the brief to monitor the excavation of groundworks associated with the re-development, in order to identify and record any buried archaeological deposits or features. The work was to seek to examine the relationship of below-ground evidence with the upstanding buildings and identification and interpret earlier material associated with the development of the town. In fact, during the building recording phase, it was seen that the western wall of the malting and southern boundary wall were built onto earlier flint walls. Underneath the maltstore floor was a former cobbled yard. These finds have been included in the main part of this report where applicable. However, it is intended that future archaeological monitoring during the forthcoming re-development of the site will produce further detail which will be the subject of an addendum to this report.

4.0 DESCRIPTION OF WORKS

Existing floor plans were drawn of the malting, based on a site survey (block plan) supplied by the client. 20th-century alterations, mainly office partitions, were added onto the plan

along with any surviving historic detail. External and internal architectural descriptions were made and the function of each element was assessed. A cross-section was drawn through the germinating floors. Built as a single-phase structure, the construction form is largely identical to all parts that have not been adapted. The individual components are identified and numbered on a block plan of the site (fig.1), though in many cases their characteristic elements have been removed during conversion to an engineering works. Although not specified in the brief, some recording works were carried out on the Fyfe Wilson office, presumed to be the maltster's house and therefore integral to the malting site.

A series of photographs (monochrome 35 and 120mm prints and digital images) were taken to record the building internally and externally. Specific shots were taken of areas of important architectural detail, fixtures and fittings. A representative selection is reproduced at the back of the report as plates 1-32. The remainder can be found in the archive.

Access was afforded throughout the building, which is generally safe and in a good state of repair. Some parts were more difficult to record and photograph, namely the east elevation, which is sited very close to the car dealership.

Cartographic and documentary sources (section 2.3) were consulted at the County Records Office (HALS) in Hertford, to help understand the development of the site. Enquiries were made at Bishop's Stortford Museum.

5.0 BUILDING DESCRIPTIONS

5.1 General description

The building group is defined by four interconnecting elements common to all maltings: stores for barley and malt, germinating floors and kilns. They form a linear range along the eastern boundary of the site. Only the two stores either end survive relatively intact, as offices and workshops. Floors and features were removed in the germinating floors and kilns to create the main working floor (winding shop and machine shop), served by an overhead crane almost across the whole span of the building. This removal included the steeps, the germinating floors, the two kilns and their floors and the characteristic kiln roofs. Descriptions focus on the surviving elements of the malting structure and fixtures and not on the subsequent development that significantly altered its character and spatial layout.

The plan form follows the principles of the Ware pattern, in terms of malting typology, following the logical process flow of grain to malt (Patrick 1996). The barley store is placed at the north end, on the roadside, with germinating floors, kiln and maltstore on the south end for dispatch by the rail station. There is no evidence for mechanisation, so the building evidently used traditional manual floor malting techniques throughout its life, which is not unusual for a small malting like this. There are remains of, and evidence for, shovelling hatches, hoists and floor hatches; all traditional methods of conveyance between different levels and functional areas. All elements appear contemporary with a 19th century date. Earlier occupation of the site is shown by flint walls at the bases of the germinating floor and the southern boundary wall.

The house in the north-west corner of the site is contemporary and may have been the residence of the maltster. The adjacent panel shop (fig.1) is slightly later than the house and malting, but built in the late 19th-century when the malting was still in use. Most of the 20th-century engineering works buildings are constructed from modern industrial materials and are easily distinguishable from the earlier structures. They are situated on the west side of the germinating floor and attached by iron steps and a large loading bay (fig. 1).

The prominent elevations of the malting range are painted a clean white with blue dressings (plates 1 & 2). The east elevation, hidden from view by the car showroom next door, is painted black (plate 3), while the rebuilt maltstore shows bare brickwork (plate 5).

All three malting structures were visibly affected to varying degrees by the establishment of the Fyfe Wilson works here in 1921. Repairs and alterations were made in modern materials not suited to their historic integrity. The kiln has suffered in particular from having its furnace, floor and roof removed when incorporated into the main structure. Modern windows have been added to the west wall of the germinating floors and the outer walls of the maltstore rebuilt. Inside, the ground, first and second germinating floors have been completely removed and partly replaced by a galleried office area at mid-height level. To stabilise the floors and carry the travelling crane, an internal brick skin was added, hiding important evidence of exact floor position and height; though the arrangement of original windows helps to determine this. The barley and malt stores retain much of their spatial layout although, again, important evidence is hidden. The outer walls of the maltstore were replaced during the lifetime of the engineering works. Lightweight office partitions artificially divide the barley store. Nevertheless, important fixtures and fittings associated with the malting remain, most notably in the loft spaces, out of the way and unaffected by subsequent alterations.

The four main malthouse components survive in various forms and are described in order of process flow, with little reference to post-maltings use except for its impact on the historic fabric. Annotated floor plans are provided for the existing levels and an interpretation of how the malthouse was originally structured and operated is offered in the discussion 6.0 towards the end of the report.

All except the barley and malt stores are brick-built using fairly hard 9 x 4½ x 2½ inch red bricks bonded in lime mortar and arranged in Flemish bond, a form common in the 19th-century. The main elevations are painted white while those on the rear are either unpainted (maltstore) or painted black. The gabled roof has a continuous slate-clad shallow pitch of c.35° and was built across the kiln area when the kilns and their roofs were removed.

The ground slopes upwards to the east, and this side of the building is terraced into the slope. Because of this, the ground floor windows are set below ground level and received light by a trenched light-well. The ground floor windows are now hidden from view inside by the inserted brick skin was added and the light-well is boarded-up (fig.7).

The structures are described below following the process flow of raw materials to finished product.

5.2 Barley store

The barley stores link to the germinating floors at the start of the production process from grain to malt. Sacks of barley were winched into the building from carts on the roadside by a hoist (not evident) into the attic. Once inside, the grain could be stored on any of the three floors or in the barley loft, until required. Often the upper floors of the barley stores oversailed the steeps to enable grain to be dropped directly into the tank.

During Fyfe Wilson's occupancy, the ground floor was opened up and used as stores. A stair was inserted up to the offices upstairs, divided by thin partitions. Much of the partition wall between stores and germinating floors was removed, posts/columns removed, ceilings and floors covered. Modern windows were punched into the wall fabric.

The plan form is oblong with a very slight taper on the west side (fig.1), caused because the malting range incorporates an earlier wall on a slightly different alignment to Station Road.

It is half-timbered construction, with the ground floor brick-built and the upper floors built in primary-braced timber-framing and clad in weatherboard. A small taking-in door is situated

on the north elevation inside the gable at loft level (plate 1). Other boarded-up apertures on this side are likely to be later in date.

External

On the west elevation (plate 2), the windows and barley store entrance with segmental headed arches remain on the ground floor with inserted modern fittings. Nicely-proportioned 16-pane wooden casement windows have been inserted at first floor level to light the office area. On the opposite side (east elevation) there remains a single ground level iron-grilled window (plate 7), that was used throughout the malting range, but only survive here and in the germinating floors. This one was blocked internally when the modern stairs were inserted, but would have been equipped with internal shutters to regulate the air flow.

Internal

Inside, the original spatial configuration has been disturbed by later alterations, namely the insertion of modern stairs and component stores, and offices overlooking the machine shop. On the ground floor (plate 8), three plain cast iron columns embedded in the modern concrete floor, support c.14 x 16cm-thick longitudinal joists. The joists are closely spaced at c.1.6m apart for the added strength required to carry the weight of grain. Other columns have been removed. Based largely on a few impressions left behind, the end bays, to north and south were wider (2.4 and 2.7m), producing 15 bays in all. The end bays could be wider because they were attached to load-bearing walls. The dividing wall between barley store and germinating floors, where the rear wall of the steeping tank is likely to have been located, was removed with the tank and replaced with a modern partition. The original wall remains as a line of heavy bay posts. The location of the steeping tank is postulated in fig.4.

The first floor is divided into offices and welfare facilities using modern partitions (plate 9). Part of the north end of the germinating floor is too. This floor adopts posts rather than columns in its construction, where the load-bearing is less. In contrast to the ground floor, the ceiling joists run the opposite way, across the width of the barley store, knitting-in the floors and adding to the overall strength of the structure. Some of the longitudinal primary joists are hidden by modern suspended ceilings and modern floor tiles may obscure any hatches or trapdoors associated with grain conveyance, especially to the steeps below.

On this level, the southern end exists as a partially weatherboarded wall, now embedded within an office partition in the former germinating floors area (plate 12). The wall aligns with a solitary post on the west side (fig.5), but any further walling or signs of structure are absent. Thin primary braced framing is evident on the other three walls (plate 9), although it is hidden

by the stairs on the east side. Plastered brickwork rises to a height of 1.6m between narrow, c.10cm-wide, studs on the north and east walls. The studs are hand-sawn and are therefore likely to date the structure to the mid-19th century. Machine-sawn timbers were common by the latter part of the century. Above this, on all but the western wall, daubed plaster has been applied between the studs, which stand proud of the face (plate 9). The plaster reaches up into the second floor loft where it is fully-exposed (plate 10). The west wall has a brick in-filled frame up to the eaves. The two windows on the north wall are later insertions cut into the timbers, suggesting there were no first floor taking-in doors.

Fortunately, Fyfe Wilson's impact on the top floor, or attic, is negligible. Machine and hand-cut slender studwork continues up into the north gable, with an unpainted daubed infill occupying the lower portion up to the top of the loading hatch (plate 10). Thereafter the timber cladding is completely exposed behind the weatherboard. Roof trusses to a bolted king post roof, with bolted iron ties acting as queen posts, define four long bays on a lateral alignment. The two end bays are shorter at 1.25m each, a feature not replicated on the floors below.

The taking-in door on the north end (plates 10 & 11) opens inwards and is linked to the germinating floor barley loft by ramps and boards for barrowing the barley into the barley loft next door. 12cm-wide floorboards rest across the tie beams, now largely covered in insulating foam. Important floor hatches may be concealed here, for dropping barley down to the stores below for storage.

5.3 Germinating floors

The germinating floors (or growing floors) was the main working area of the malting. Traditional germinating floors are linear buildings with low ceilings, maximise space and height. As the work was manual, operating rakes and shovels, the height of the floors was not a problem. Many traditional maltings are two-storeyed, but larger industrial ones may have several floor. In the Ware pattern, the steeping tank and kilns stand at opposite ends, with the area between used for growing the grain. At Fyfe Wilson, the germinating floors and kilns are the least-preserved malting elements. Both were stripped-out to provide space for the machine shop travelling crane. In the process, important elements, steeps, kiln ovens and roofs were taken out. All the floors joists and posts were removed, making it difficult to understand the original floor layout and internal construction elements.

External

The walls of the germinating floors are constructed entirely of brick, to support the weight of the steeped barley on the heavy wooden floors. Lateral force was countered on the walls by tie bars manufactured by 'Goodfellow Ware', whose pink-painted plates contrast with the black background of the western wall (plate 14).

The inserted modern floor that surrounds the working floor is on the same level as the first floor store areas, whose levels have not been altered. Segmental arch wooden-framed windows are the original form of fenestration throughout (plate 7) and survive relatively intact on the east elevation. Where unaffected, they are arranged in rows of three, reflecting the number of original floor levels (fig. 8, plate 13). The original windows are on every alternate bay so that none of the gridded windows face another, thus limiting cross-ventilation. Some have been blocked and others lost to modern fenestration, especially at the barley store end. More are retained on the east side of the germinating floor where, to some extent, the proximity of the car dealership negates the benefits of new windows. Because of the sloping ground to the west, the east side is built into the slope, with the lower set of windows lit by a linear light well set into the surrounding concrete and now covered by boarding (plate 13). This may have been caused by levelling the land to the west when the garage was added.

On the west elevation, the modern casements continue on first floor level into the initial bays of the germinating floors, which also provided office space and stores in its later function. Thereafter, where there is no first floor to the open machine shop, double height 24-pane windows have been inserted to maximise light into the factory space (plate 3).

The main entry point into the germinating floors is a sliding wooden door at the south end, close to the kiln. It is modern, with a fan light over (plates 3 & 4), but may signify an earlier entrance, perhaps for carts. Much of the wall on the west elevation is built on a roughly-coursed flint wall bonded in lime mortar (plate 15) that pre-dates the malting.

Internal

The germinating floors were completely altered when Fyfe Wilson took over the site. The first and second floors were gutted to make one large working floor, providing room for a travelling crane (plates 16 & 17). The internal walls were lined-out to a height of c.4m in English-bonded brickwork to support the crane and outer walls, which, without assistance from the posts and joists were liable to collapse in on themselves. The floor was screed and a partial first floor linking the former kiln and barley stores was introduced around the new working area, built from fresh timber. Thus the existing floor layout has no resemblance to

the original. The windows were added at the same time, as their reveals are contemporary with the brick lining.

Extra beams have been added beneath the tie beams to control highly evident sagging of the ceiling. They are held together by iron ties that spread to the walls either side and fixed into the brick lining (fig. 7). The inserted first floor is shown in fig. 5, on the north and eastern sides overlooking the machine shop. The section in fig 7 gives an impression of how the floors were originally arranged, based on window-spacing.

Again, the only unaffected area is the barley loft in the attic space; a wide storage and walkway (plates 18 & 19) to transfer barley from store to kiln (for sweating) without interfering with the germination process. The barley loft was situated above the germinating floors with direct access to the kilns for sweating.

The area was latterly used for storage and there are some odd pieces of old electrical testing equipment left behind. It is accessed from the barley store loft and from the first floor of the germinating floors through a hatch in the north-east corner, which may be a former trapdoor used to lower grain down to the ground floor steeping tank. The loft floor is 5m-wide and boarded either side with 9" planks up to a height of just over 1m, perhaps representing the backs of grain bins. The floor is made from compacted lime mortar laid on 3 x 7cm wooden battens. Bolted roof trusses, identical to those seen throughout the malting, divide the area into twelve c.2.6m-wide bays that are lit by alternate roof lights that seem to be later replacements, many of which are corrugated Perspex sheets or asbestos panels, reducing light levels. Some fixed metal-framed windows on the north end date from after the conversion. More are situated on the east side rather than the west to take full advantage of the morning light. Originally the roof would have been open to the second floor and the loft lit by roof lights.

When the welding shop was furnished in the former kiln next door, the partition wall was replaced with a fire-resistant asbestos screen fitted to a light timber frame (plate 20). However, important malting evidence has been preserved at the south end where the germinating floor formerly met the kiln roof above the roasting chamber. The end framing is different here, comprising two timber struts forming a V-shape, braced either side and connected to the roof purlins either side (plate 20). This supports a winch, set above collar/head height (plate 21). The winch fed baskets of barley grains through a central floor hatch to the floor below (fig. 6), where it could be placed in the kiln for sweating before storage. Grain could also be dropped through hatches set in the floor either side (fig. 6). A

small viewing hatch is set within weatherboarding at the base of the wall that enabled the kiln to be monitored during the roasting process (plate 20).

5.4 Kiln

Nothing is known about the working kiln- the type of furnace, kiln floor, type of roof, etc., except there were two chambers, set side-by-side. This is shown by the presence of braced wall plates to the kiln roofs/chimneys. The kilns and north wall of the building were removed for the open machine shop and travelling crane. There is no sign of anything associated with the kilns, i.e. furnace bases. The floor is concrete and post-dates the malting.

Much of the west elevation is hidden from view by the adjacent large canopied loading bay that housed a second travelling crane built in the modern period (plates 3, 4 & 32). A single grilled window, like those seen in the germinating floors, stands in shadow in front of the steps in plate 4. The difference in height between this window and those in the germinating floors shows the floor levels were different in the kiln, which is normal. It also indicates the location of the roasting floor. The window on the other side is a replaced modern casement.

The interior has been completely stripped-out and a partial first floor has been built on the east side for an enclosed welding shop, accessed by a modern steel staircase (fig. 4, plate 23). Braced wall plates forming a figure '8' survive at eaves level that supported the two kiln roofs either side (fig. 5, plate 23), that could have been either conical or pyramidal. Given the remaining roofs was slated, the latter option is perhaps more likely. The present roof is rebuilt to bridge the structures either side. It is a light queen post collar purlin roof constructed from reused timber that is out of character to the rest of the structure. The roof and gables are clad in modern fire-proof asbestos panels. Sealed roof apertures are likely to be workshop roof lights or later flues.

All kiln evidence, furnaces, floors, roofs, was removed to create a larger machine shop area. On the ground floor, much of the partition wall between the kiln and germinating floors was removed to allow the travelling crane movement, but little was removed on the maltstore side (fig. 4). Former doorways and hatches show the relationship between kiln and stores. The west kiln shovelling hatch remains on the south wall (plate 24). This facilitated the movement of grain from kiln floor to first floor maltstore. A second one for the east kiln is blocked (fig. 5). Access from kilns to maltstore is evident by an existing ramped doorway from the west kiln and a wall blocking to the east kiln.

5.5 Maltstore

Malted grain would be passed through from the kiln floor to the maltstore via shovelling hatches on the first floor level. Here it would be sacked and stored (usually for a month). Once ready, the malt was taken down from the stores and loaded on the London-bound trains. The original building was timber-built and clad in weatherboarding like the barley store at the opposite end, but as part of the conversion to an engineering works, the outer walls of the maltstore were rebuilt in brick to prevent fire from the new workshops. This removed evidence for windows, loading doors and other features, but the inner structure was left intact, including floors and roof trusses.

Steel-framed casement windows bring light into the structure, painted blue like those inserted in the germinating floors. Those on the south elevation, along the boundary, have been boarded-up to prevent vandalism (plate 5).

Interior

The interior of the maltstore was retained as the winding shop. The timber floors were boarded over, thus obscuring floor hatches formerly used to convey malt between floors.

The maltstore floor is raised by 1m, 0.5m higher than the kiln/germinating floors. A raised floor is advantageous in any grain store to prevent damp and vermin. A ramp leads down to the south kiln floor entrance (fig.4 & plate 26). Adjacent to the ramp is a very small trapdoor that leads under the floor. The floor is suspended above ground level by some 0.5m to promote air circulation and reduce damp and vermin. Beneath the floor is a cobbled yard surface (plate 27), which is presumed to pre-date the malting.

The malthouse is the only structure to properly retain its spatial configuration. The bays are defined by heavy, unchamfered 15 x 20cm posts (same as those in barley store) with wide (85cm) bolted loadbearing 'ears' support thick 15 x 28cm longitudinal-placed primary joists to carry the first floor ceiling (plate 26). There is no joinery involved, just the weight of the floor above. Spacing between the beams is fairly consistent at c.3.2m, while the distance between the bay posts varies between 1.3 and 2.3m, forming 15 bays, the main north bay being divided into smaller bays (fig.4). As a fire precaution, the ceiling has been lined with asbestos panels. In an area where these were absent, a grain hatch was observed (fig.4). It is likely that there are several more hidden in the ceiling, perhaps corresponding to the former positions of malt bins on the floor above. The floorboards are 12cm-wide, identical to those in the barley store loft.

A modern studwork partition divides the first floor into two workshops (plates 28 & 29). Modern tiles and boarding overlies the floorboards and a ceiling has been added, hiding roof trusses above the lateral 11 x 24cm tie beams (fig.5). Like in the barley store, the trusses alternate with the principle joists to produce a stronger structure. The ceiling has been inserted, but originally the trusses, which are the same as seen throughout the range, were open to the first floor. The weatherboarded north gabled wall to the maltstore remains in the attic space, providing proof that the store was at least partly-framed.

5.6 Maltster's house

The house was probably used by the manager of the malting and was since used as offices/enquiries for Fyfe Wilson. It adopts an important roadside position and the second edition OS map shows it had a garden and its own water pump. Although not a specific objective of the brief, a short description is given below as part of the malting group.

The house is two-storied and brick-built with gabled, slate-clad roof and twin chimney stacks (plates 1, 30 & 31). It is painted in the same blue and white colour scheme as the industrial structures, some of which obscure the east and south sides (plate 30). The windows have mainly been replaced, but there are some sliding sash windows remaining on first floor level. The gables are decorated with blind tripartite gothic-style lancet windows, pointed to the north and rounded to the south. The interior appears to be stripped-out and was not entered.

5.7 Engineering structures

Various structures associated with the engineering works are located on the west and north boundaries of the malting site around the concrete yard area. Their functions are identified on the block plan (fig.1) and plates provided where indicated.

The canteen and a half-hipped single storey brick structure (panel shop) have been added to the east and south sides the house (plate 30). The latter replaced two 19th-century buildings associated with the malting. The various other structures are single-storey flat-roofed workshops fabricated in a blend of brick, corrugated iron, asbestos and Perspex, fitted-out with wooden fixtures (plates 31 & 32).

6.0 PROCESS FLOW

The malting at Station Road worked using traditional methods of floor malting, whereby grain was moved and processed manually through wall and floor hatches. No evidence was

encountered during the survey to show the process was in any way mechanised at any time during the working life of the malting. The process flow is described below, based on surviving fixtures and fittings recorded in the survey and previous knowledge of the traditional floor malting technique. Some of the items mentioned were not recorded in the survey but are presumed to have been part of the working malting before its conversion by Fyfe Wilson.

Sacked raw grain was brought by cart and hoisted up to the barley attic through the roadside taking-in door. If necessary, grain could be taken across the barley loft to the kiln end, where it was winched or shovelled down to the floor below, then shovelled across onto the kiln floor for sweating. Otherwise, it could be stored in bins either side of the loft or the barley stores. Once screened, the grain was dropped through floor hatches in the barley store down to the steeping tank below. The barley was soaked before being transferred to a couching frame (usually adjacent to the steep) and then spread out on the ground floor and winched or shovelled up to the other floors above. A system of shovelling hatches and trapdoors were recorded on the kiln end and there was another set most likely at the opposite end, in front of the steeps. It was then spread out on the growing floors to germinate. Once germinated, the green malt was shovelled to the kiln end and passed onto the kiln floor through floor hatches on the first floor. Once ready, the malted grain was shovelled off the floor across into the maltstore first floor where it was dressed to remove the rootlets before storage. Sacking was carried out on the ground level sacking floor, for dispatch to the brewery via the railway.

7.0 DISCUSSION AND CONCLUSION

Flint walling and a cobbled yard surface observed in the survey appear to relate to occupation of the site before the malting was established. Without specific records, however, the nature and date of this land use is difficult to determine. It is possible that the cobbled surface is nothing more than consolidation carried out during the malting construction phase on damp clayey ground, re-using available materials. However, in view of the area's pre-industrial agrarian past, the walls seen at the base of the west wall of the malting and southern boundary wall are more solid and could mark out former yard divisions. The southern boundary wall represents an earlier boundary that continued as part of the modern landscape. It is hoped that future monitoring works will provide more information on the development of the site.

It is difficult to establish when the malting at Station Road was constructed, although its location shows it was clearly after the Cambridge to London railway line was established in

1842. Tony Crosby, who carried out a survey of Stortford maltings, notes its similarities with the Millers maltings no. 1 and 2 on Southmill Road that date to 1843. A late 1840s date is suggested (T. Crosby pers. comm.). By the end of the 19th-century, the trend was for much larger multi-storey maltings being built in the town, such as Millers no. 3, and any small malting would have found difficulties in competing.

The extent to which the original malting structures were altered during the tenure of Fyfe Wilson aptly demonstrates how industrial structures are designed with function as the driving force. The characteristics of a traditional malting, the kilns, low floors and small windows, were inappropriate for the requirements of Fyfe Wilson, a fully mechanised engineering company, who demanded large well-lit open spaces for their workshops and heavy equipment.

The basic external form and fabric remains intact apart from some very important exceptions; removed characteristics that would make the building easier to identify as a 19th-century malting. The main missing characteristic is the distinctive kiln roofs. Modern windows have replaced many of the gridded ventilation windows on the prominent elevation, the only side to receive adequate sunlight. The outer walls of the maltstore have been completely rebuilt. The steeping tank and couching frame have been removed from the germinating floors.

Inside, the spatial configuration of the germinating floors has been destroyed and evidence covered-up with a brick skin to stabilise a structure bereft of its inner support. The kiln furnaces, heat chamber and roasting floor are absent, again leaving next to no evidence for their construction and type. The kiln structure and conical roof have been removed from the kiln building. Originally the kiln floor was probably the wire mesh type, kept in tension by iron bars that terminated in external tie plates. Any evidence has been removed. However, less substantial damage has occurred to the barley and maltstores at each end. These remain in reasonable condition, especially the maltstore. Indeed, the best-preserved areas beyond the needs of the modern engineering works, namely the barley store attic and barley loft of the germinating floors. Shovelling hatches on the top floor survive, showing manual rather than industrial methods of grain transference were employed.

Although not certain, it seems likely from its location and form of construction that the malting along Station Road was built soon after the railway was constructed, to supply the London brewing trade. It may have been tied to a particular brewery, which would explain partly why so little documentary evidence was found. In form it adopts the typical Ware-pattern layout of germinating floors/barley loft, kiln and maltstore, following the process of grain to malt. The

ability to identify the typology and the arrangement of buildings was fortuitous when one considers the extent of damage to the original malting structure. Further interest to the group is provided by the survival of the maltster's or manager's house.

Malting was the major industry in Bishop's Stortford, whose position near to the major barley growing areas of Hertfordshire, Essex and East Anglia and proximity to the London markets (only 35 miles away) assured its importance, bringing wealth and employment into the town. The Stort Navigation was built in the 18th-century after pressure from the industry and at the time Stortford was the main provider of malt to the London brewers. Although the railways made transport easier and quicker, by the time the railways came to Stortford, Ware had become the largest producer. By the beginning of the 20th-century, the Hertfordshire malting industry was in decline after the major London brewers acquired their own maltings in Norfolk (<http://www.stortfordhistory.co.uk>).

The study of maltings from the post-1750 period has been identified as an important research priority (Glazebrook 1997, Brown & Glazebrook 2000) due to their continuing disappearance from both urban and rural landscapes either through conversion or demolition. Although much of the historic fabric has been lost, this survey provides an important record of the malting, and to some degree the engineering works, prior to demolition. Relatively small maltings such as this were significant to the development of the 19th-century malting industry and the local economy.

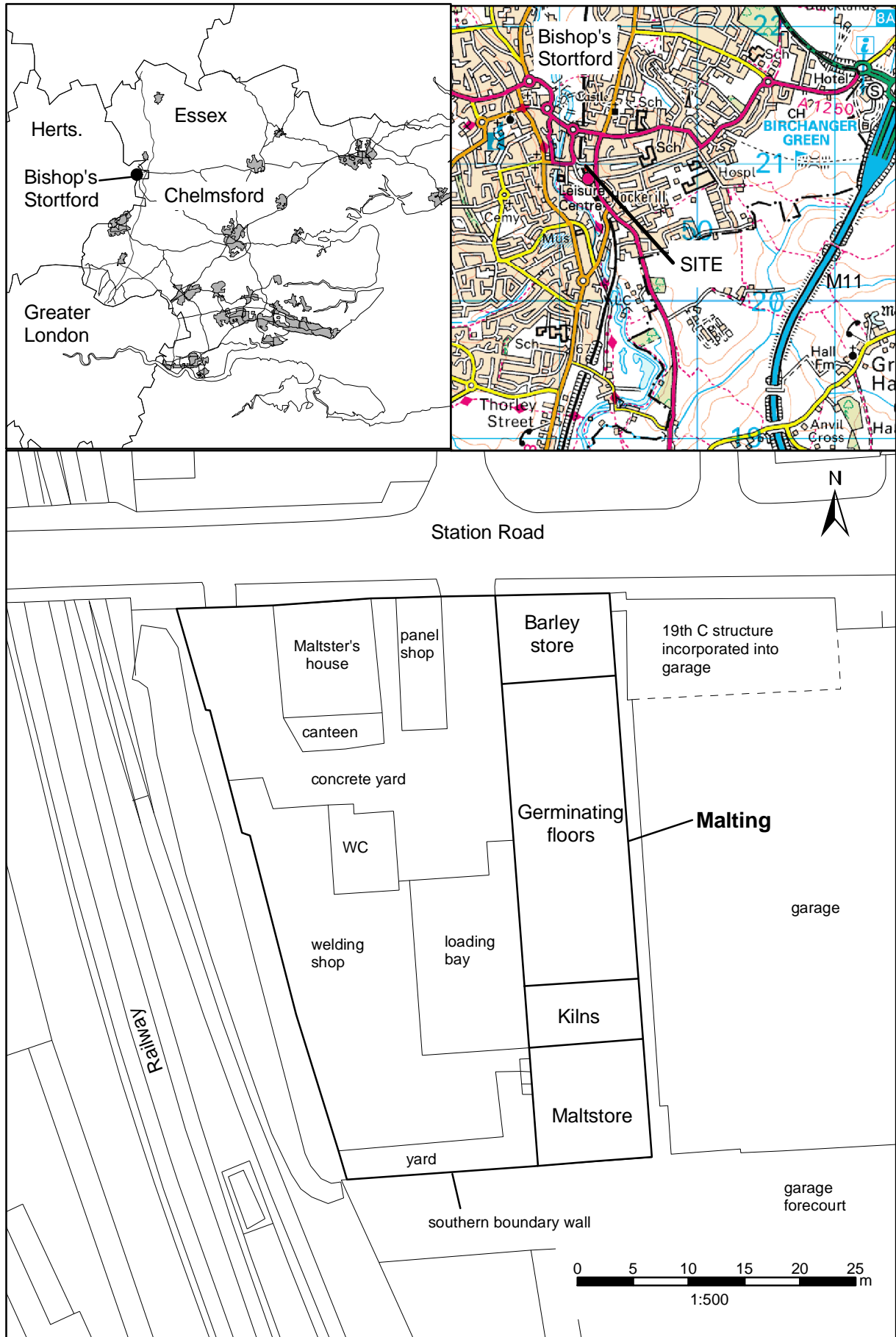
The archaeological monitoring phase will occur after the buildings are demolished and re-development begins. This may take the form of clearance and a general site strip down to the ground level. Observations carried out during the building survey prove there are earlier structural remains below the malting and this would be a good opportunity to fully assess their date and character.

ACKNOWLEDGEMENTS

The survey was commissioned by Mantle Projects Ltd. Fieldwork, recording and photography were undertaken by the author with the assistance of Adrian Turner. The report figures were produced by Andy Lewsey. Thanks to Tony Crosby. The site was monitored on behalf of HCC HEU and East Herts DC by Alison Tinniswood. Thanks are due to staff at the Herts Records Office.

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1996 |



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Fig.1. Location and block plan of site

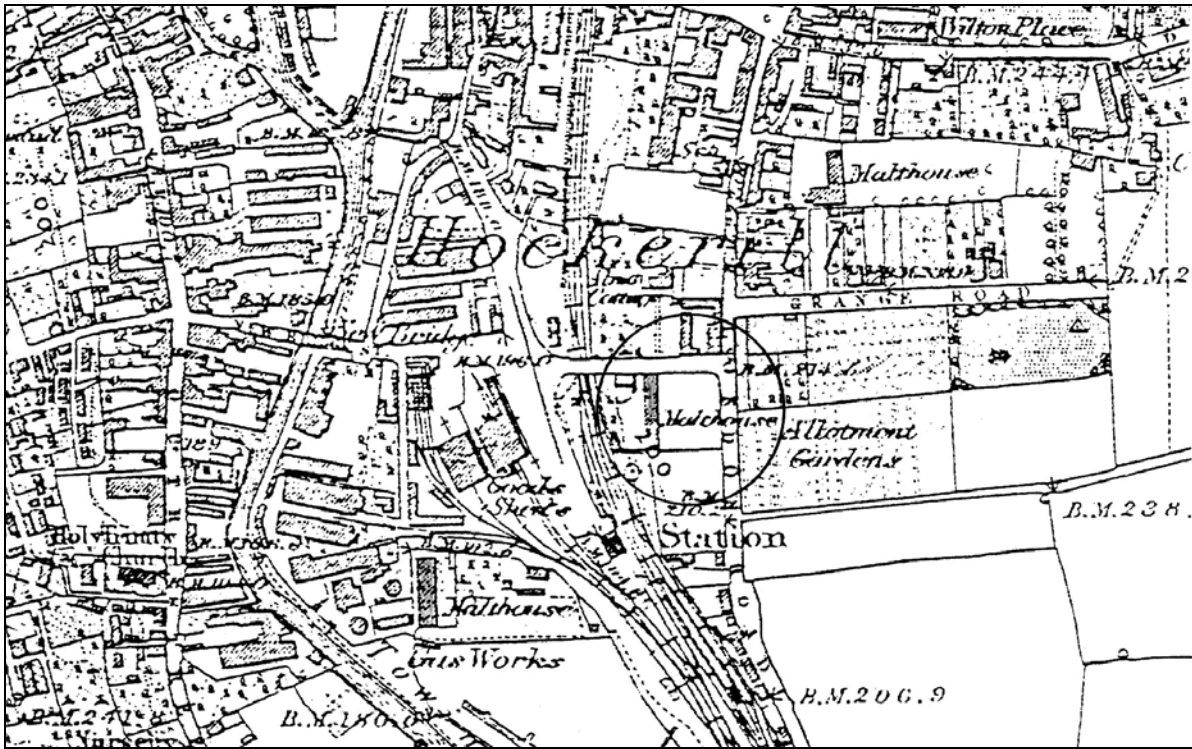


Fig. 2 First Edition 6" OS map of 1874, sheet 23.10 (enlarged)

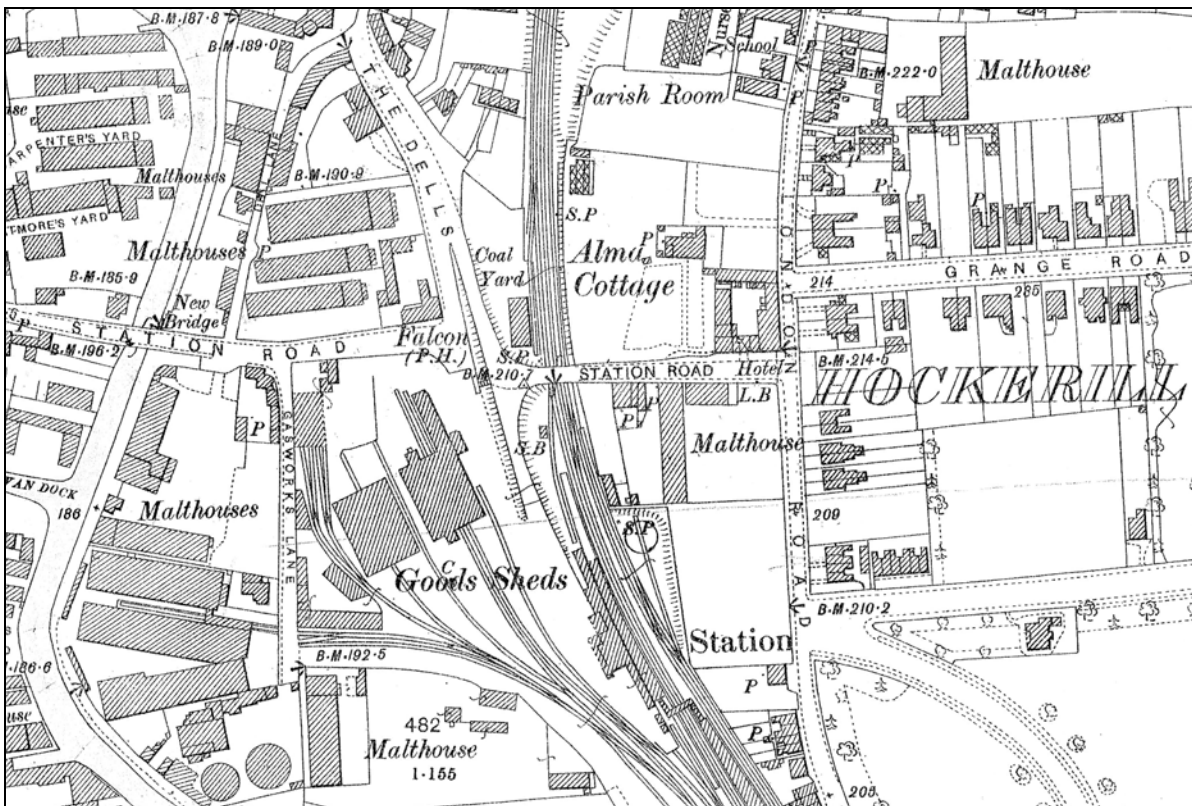


Fig. 3 Second Edition 25" OS map of 1898, sheet 23.10

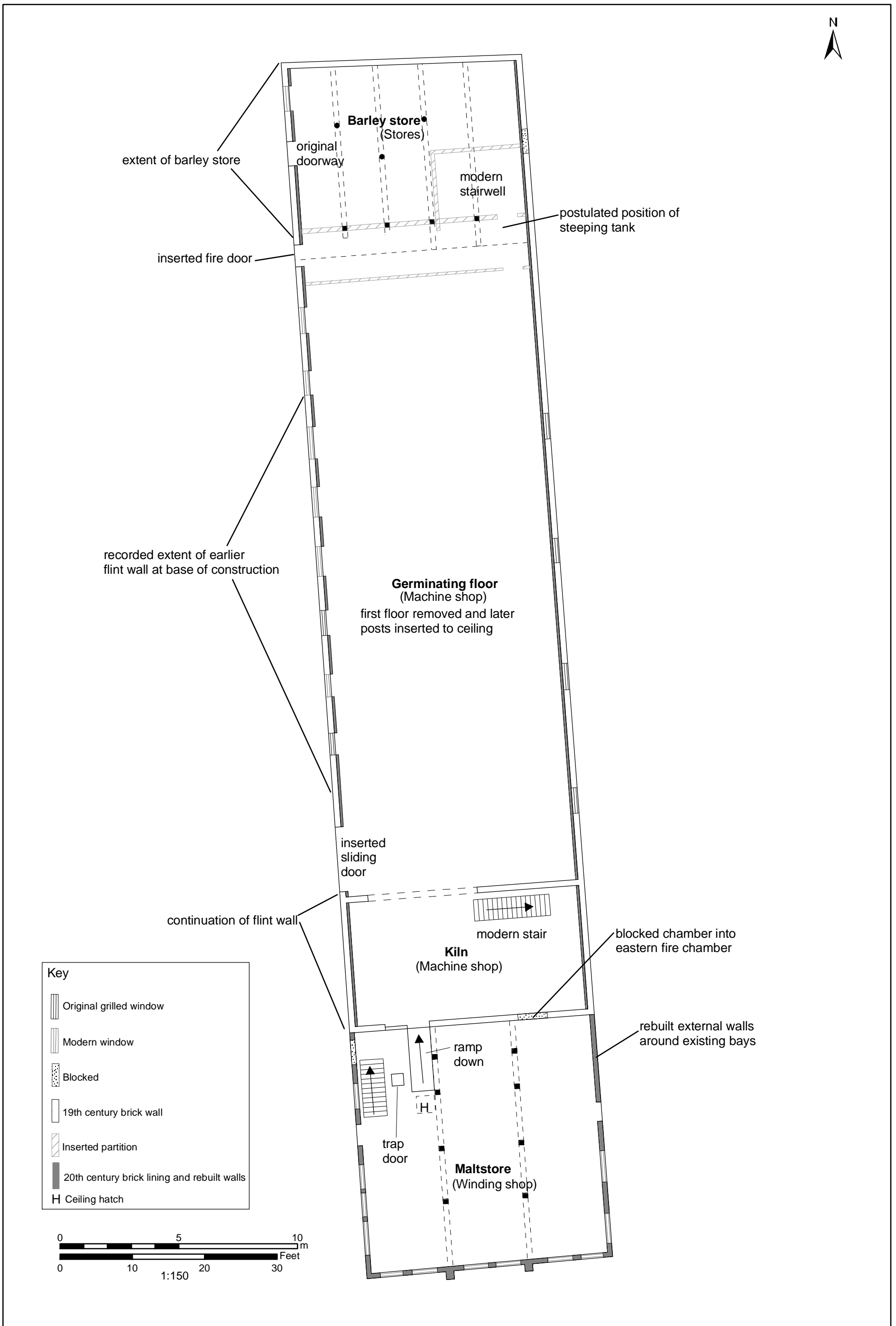


Fig.4. Ground floor plan

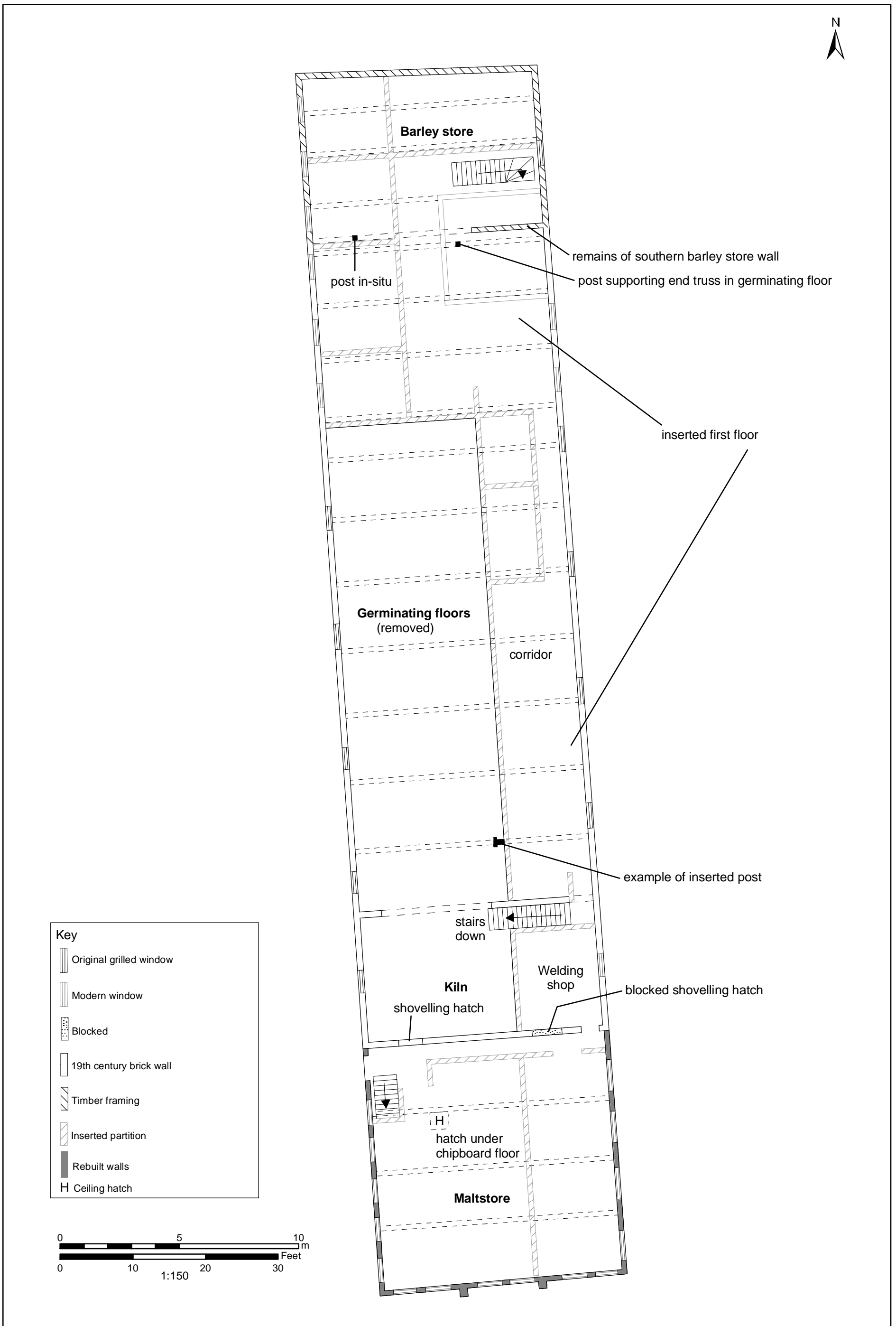


Fig.5. First floor plan

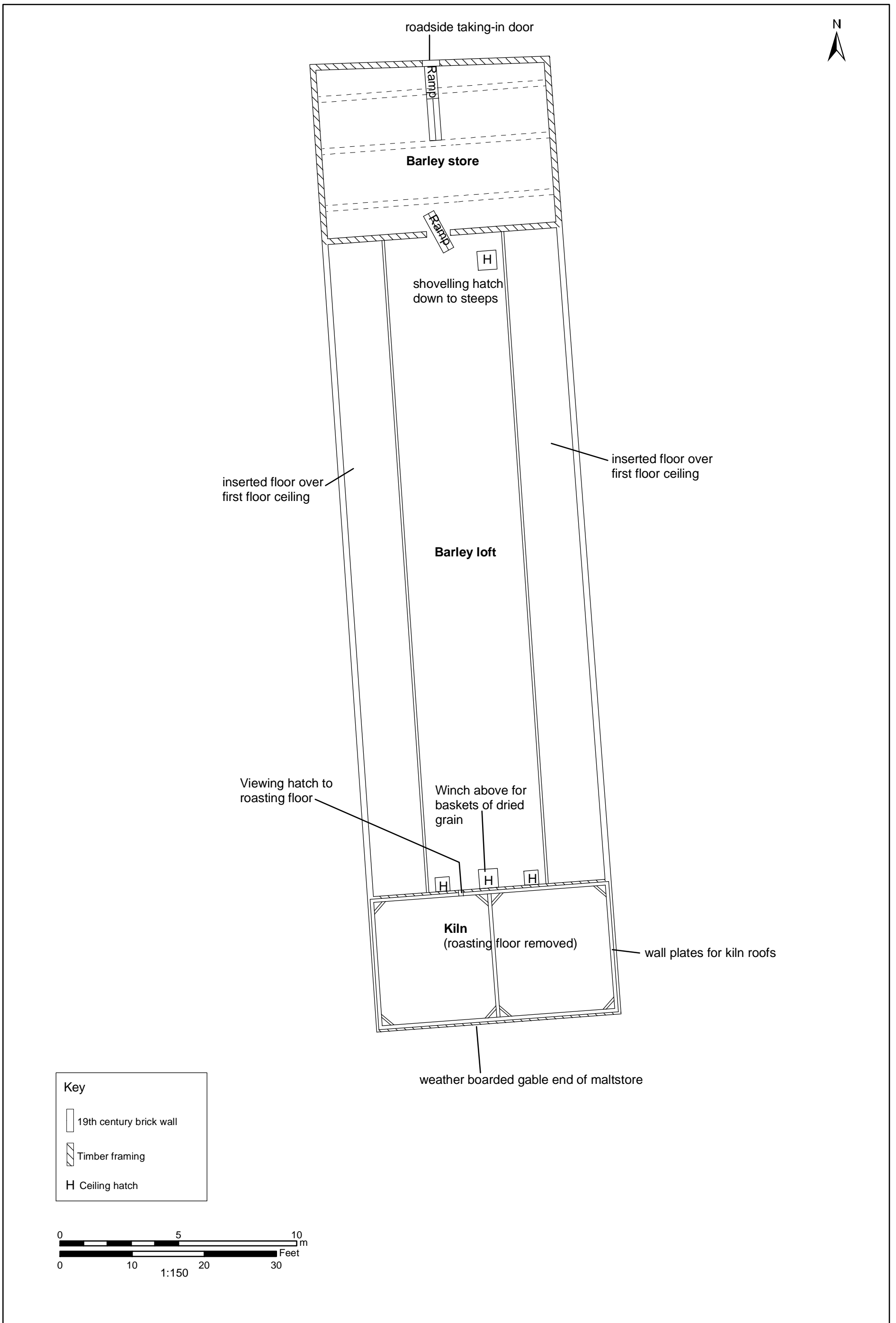


Fig.6. Loft plan

Fig.7. Representative section through germinating floors

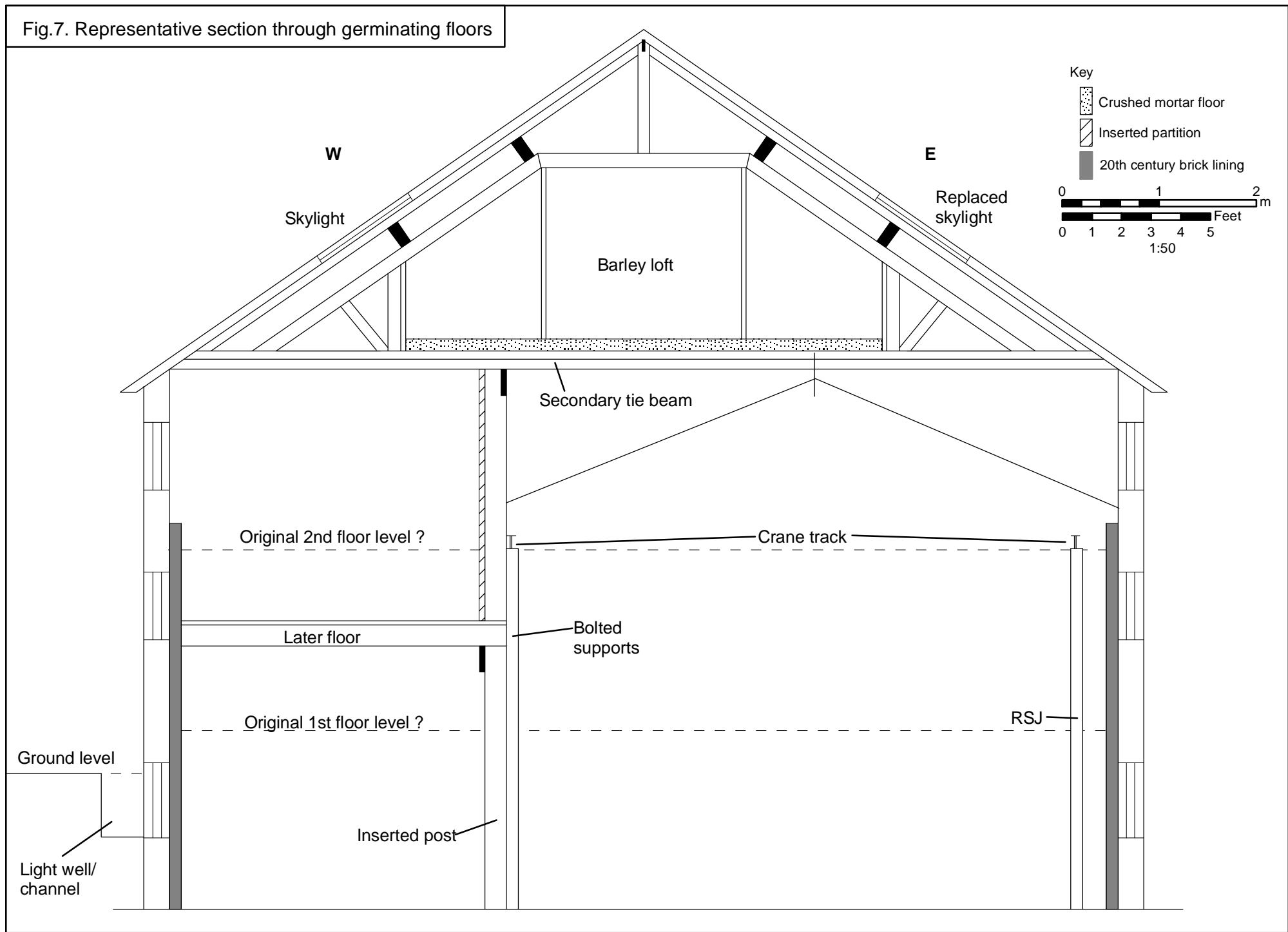




Plate 1 Malting viewed from Station Road to north-west



Plate 2 North end of barley store and germinating floors viewed from north-west



Plate 3 South end of barley store and germinating floors viewed from south-west

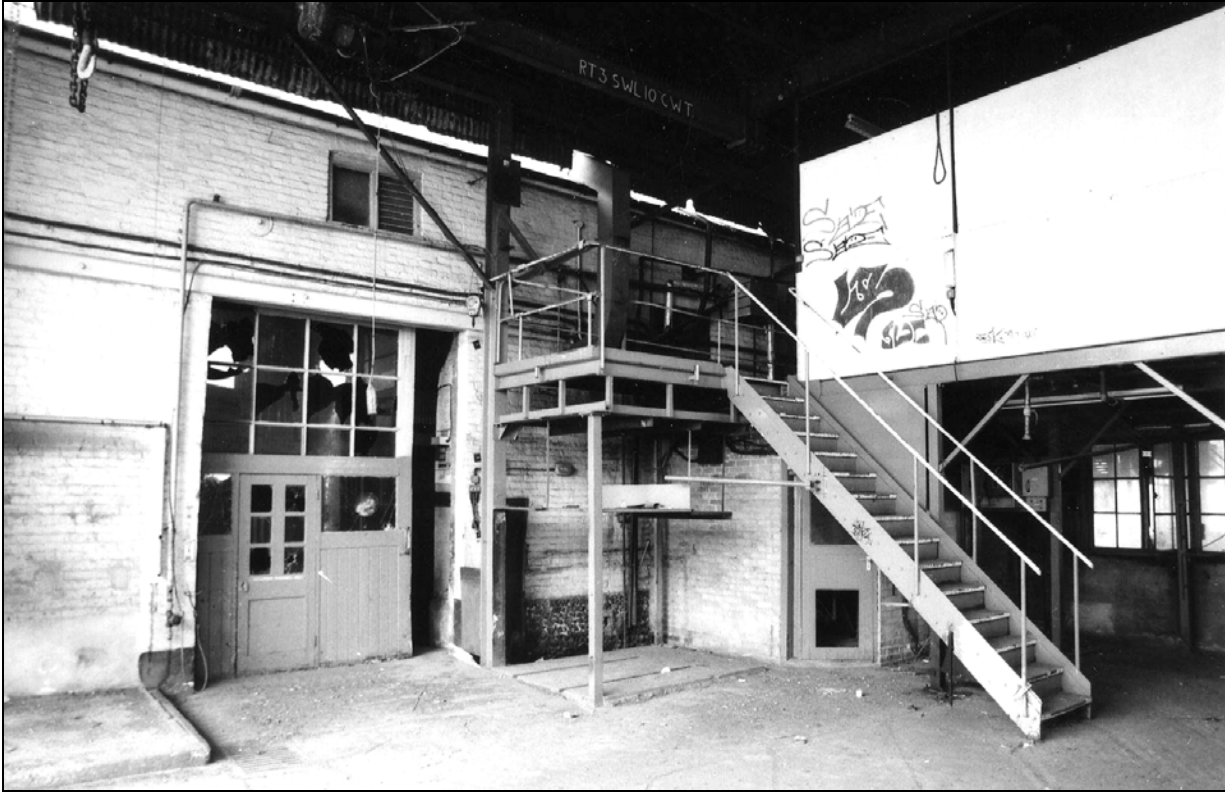


Plate 4 South end of germinating floors and kiln viewed from west



Plate 5 Rebuilt maltstore from south-west

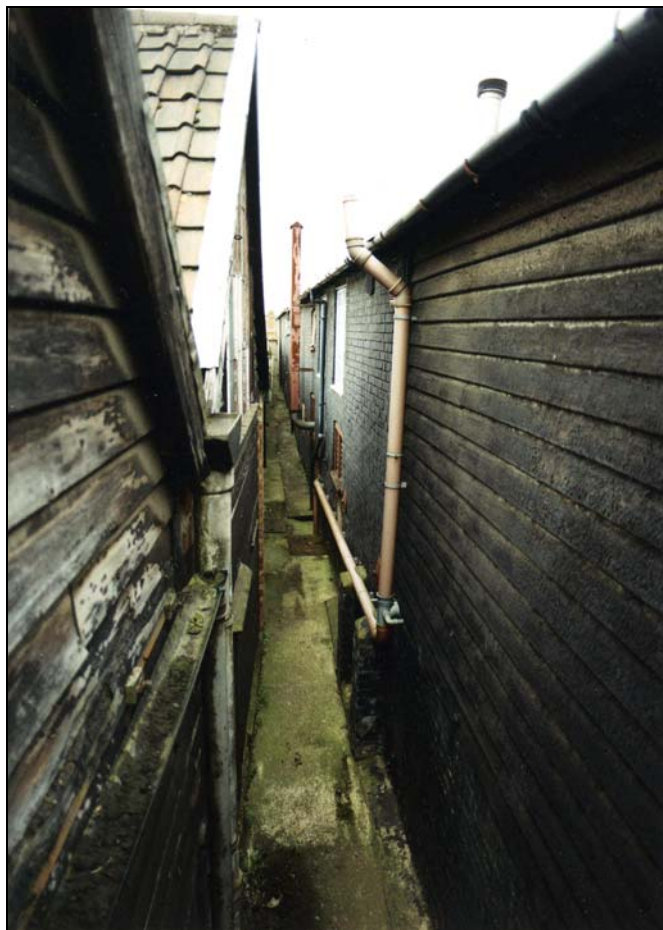


Plate 6 East elevation of barley store and germinating floors



Plate 7 Original window to germinating floors



Plate 8 Interior of first floor in barley store including inserted stair well



Plate 9 Timber framing and inserted partitions on first floor of barley store



Plate 10 Small taking-in door at north end of barley store loft



Plate 11 Southern wall of barley store from barley loft



Plate 12 Remaining southern wall of barley store inside office partition (right)



Plate 13 Sequence of gridded germinating floor windows including one in covered-up light well



Plate 14 Cast tie rod plate with maker's name



Plate 15 Flint wall to earlier construction, part of west wall of germinating floors



Plate 16 Interior of germinating floors viewed to south



Plate 17 Interior of germinating floors viewed to north through kiln walls



Plate 18 Barley loft viewed to north



Plate 19 Barley loft viewed to kiln at south



Plate 20 Rebuilt kiln wall and inspection hatch



Plate 21 *In situ* hoist at kiln end of germinating floors



Plate 22 Trapdoor for hoist with shovelling hatch in background (1m scale)



Plate 23 Stripped-out kiln interior



Plate 24 Shovelling hatch from kiln to maltstore



Plate 25 Maltstore viewed from south-east



Plate 26 Ground floor of maltstore



Plate 27 Cobbled yard surface below maltstore floor



Plate 28 East side of partitioned first floor of maltstore



Plate 29 West side of partitioned first floor of maltstore



Plate 30 Maltster's house, (latterly offices), panel shop and canteen



Plate 31 View toward 20th-century welding shop and loading bay



Plate 32 View inside loading bay

Appendix 1: Contents of Archive

**Site name: The Former Malting, (Fyfe Wilson Works) Station Road, Bishop's Stortford,
Hertfordshire**

Project no. 1669

Index to the Archive

Document wallet containing:

1. Introduction

- 1.1 HCC HEU design brief
- 1.2 FAU written scheme of investigation
- 1.3 Client/archive report
- 1.4 CD rom containing copy of report, pdf-formatted

2. Site Archive

- 2.1 Photographic register & record (digital images & prints, colour 120mm & monochrome 35mm prints)
- 2.2 Site notes & annotated survey drawings

Appendix 2: Hertfordshire Historic Environment Record sheet

Site name and address: Former Malting (Fyfe Wilson works), Station Road, Bishop's Stortford.		
County: Hertfordshire	District: East Herts	
Village/Town: Bishop's Stortford	Parish: Hockerill	
Planning application reference: 3/04/1360		
Client name, address, and tel. no.: Mantle Projects Ltd, The Hall, Great Hallingbury, Bishop's Stortford, Hertfordshire. Tel: 01279 712108		
Nature of application: Demolition of 19th-century malting & residential redevelopment of site		
Present land use: Industrial		
Size of application area: N/A	Size of area investigated: N/A	
NGR (to 8 figures): TL 4918 2097		
Site code: N/A		
Site director/organization: Andrew Letch / Essex County Council Field Archaeology Unit		
Type of work: Building recording & archaeological monitoring		
Date of work:	Start: July 2006	Finish: July 2006
Location of finds/curating museum: Bishop's Stortford		
Related SMR Nos.: None	Periods represented: 19th-century & modern	
Relevant previous summaries/reports: None		
<p>Summary of fieldwork results:</p> <p>A 19th-century malting was recorded prior to demolition of the Fyfe Wilson engineering works, in Station Road. The malting is believed to have been built in the late 1840s, after the railway (c.1842) was established, though there is little or no historical information about it. Bishop's Stortford was a major malting centre, providing malt for the London breweries in the 19th-century.</p> <p>The malting range is built to the Ware principle of barley store, growing floors, kiln and maltstore laid out following the industrial process of converting barley grain to malt. The process was undertaken manually using a series of hatches, winches and shovelling hatches. Unfortunately the conversion of the premises to the engineering works placed entirely different requirements on the building and much of the original fabric, fittings and fixtures were removed, altered or destroyed. The kilns, germinating floors, kiln floors, roof and steps were removed when the main part of the building was opened up as a machine shop, including the insertion of a travelling crane in the eaves and larger windows to bring in extra light to the working area. The two stores were altered less extensively, retaining their floors but losing their internal layout (barley stores) and wall fabric (maltstore).</p> <p>Regardless of these changes, the barley loft above the germinating floors survived intact as well as the attic above the barley stores, where the grain was initially brought into the building. The maltstore retained much of its spatial layout. The former maltster's house remains on the site close to the road. Various later engineering structures, panel shop, welding shop, canteen, etc., remain. All are to be demolished.</p> <p>From observations carried out during the survey, the western wall of the malting is built onto an earlier flint wall that also marks the southern side of the existing boundary and contains a cobbled yard beneath the maltstore. It is hoped that further remains will be recorded during groundworks monitoring during redevelopment, which is yet to begin.</p>		
Author of summary: Andrew Letch (ECC FAU)		Date of summary: 4th May 2007