

**Lichfield Maltings  
Birmingham Road  
Lichfield  
Staffordshire**

**Historic Building Record**

**January 2010**

**DRAFT REPORT  
Pending ongoing observations**

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**Project No. 2015**

January 2010

**Lichfield Maltings**  
**Birmingham Road, Lichfield, Staffordshire**

**HISTORIC BUILDING RECORD**

by

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for

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# **The Lichfield Maltings Birmingham Road, Lichfield, Staffordshire**

Historic Building Record

**[DRAFT REPORT PENDING ONGOING OBSERVATIONS]**

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## The Lichfield Maltings Birmingham Road, Lichfield, Staffordshire

Historic Building Record

**[DRAFT REPORT PENDING ONGOING OBSERVATIONS]**

### SUMMARY

*Birmingham Archaeology was commissioned in December 2009 by Mar City Developments Limited of Solihull, West Midlands to undertake an Historic Building Record at the site of the Lichfield Maltings, located off Birmingham Road, Lichfield, Staffordshire (NGR: SK 11418 08537). The record was required as a condition of planning consent (08/00589/FULM) in respect of redevelopment at the site, to include the conversion of the Grade II Listed maltings building to residential use.*

*The building, a traditional 'floor maltings', was constructed in 1891 to the designs of the architect George Scamell of Westminster, for the City Brewery Company (Lichfield) who had established a brewery to the south of the City centre in 1874. The City Brewery formed one of a number of brewing and malting concerns to establish themselves on the outskirts of the city in the later years of the 19<sup>th</sup> century close to the line of the LNWR South Staffordshire railway, opened in 1847. Following a devastating fire of 1916, however, in which much of the complex was destroyed, brewing ceased at the site. The maltings, the only building to survive intact, together with the brewery's portfolio of 200 public houses were purchased in 1917 by Wolverhampton and Dudley Breweries (latterly Marston's Plc.) who continued to operate the maltings until 2005.*

*The brick-built building occupies a rectangular plan, aligned parallel to the line of the disused railway, of four storeys with a five storey cross-wing to the west. It represents an essentially single-phase structure, with the construction date commemorated in a date plaque within the north gable of the western cross-wing. The building can be functionally broken down into four distinct elements, reflecting the stages of the malting process; grain intake and garners to the west, three superimposed working floors to the centre, two kilns with distinctive pyramidal, louvre-topped roofs and grain out-loading bays to the east. Internally, primary features including technologically innovative hopper-bottomed steeping vessels and the mechanised malt-turner in the kiln range show that the maltings was of an advanced specification when originally built, reflecting the status of the George Scamell as a brewery designer of some renown. Their survival adds to the historical significance and value of the building. Advances in the technology of malting during the course 20<sup>th</sup> century are represented by features such as secondary air ducting introduced to the three working floors, and the replacement of perforated ceramic tiles by wedge-wire in the kiln floors.*

*The Lichfield Maltings as recorded represent a well preserved and increasingly rare example of its building type, reflecting an industry once prevalent in and around the city of Lichfield. Though the form of the building, designed and built for a specific purpose, holds inherent challenges in adaption to alternative use, the proposed conversion for residential purposes offers a welcome opportunity to consolidate and restore the building and to bring it back into full and beneficial use. The current programme of historic building recording has allowed for an archival record to be made in advance of conversion works and, in particular, the opportunity was taken to make a detailed measured survey of the steeping vessels and mechanised malt turner mechanism.*

# The Lichfield Maltings

## Birmingham Road, Lichfield, Staffordshire

### Historic Building Record

## 1 INTRODUCTION

### 1.1 Background to the Project

1.1.1 Birmingham Archaeology was commissioned in December 2009 by Mar City Developments Limited of Solihull, West Midlands to undertake a programme of Historic Building Recording at the site of the Lichfield Maltings, located off Birmingham Road, Lichfield, Staffordshire (NGR: SK 11418 08537; see Figure 1) in advance of redevelopment at the site.

### 1.2 Reasons for Work

1.2.1 Planning Permission (ref. 08/00589/FULM) was granted by Lichfield District Council (LDC) on 13<sup>th</sup> July 2009 in respect of the proposed redevelopment of the Maltings site, Birmingham Road, Lichfield including the conversion of the former Lichfield Maltings building itself for residential use.<sup>1</sup>

1.2.2 In accordance with Policies D2, NC14 and NC18 of the Staffordshire Structure Plan,<sup>2</sup> and Policies DC1, DC15 and C1 of the Lichfield Local Plan,<sup>3</sup> Condition 6 of planning permission stipulated that:

*'No development or works...shall be commenced on the Maltings building until the implementation of an appropriate programme of building recording and analysis..... has been submitted to and agreed in writing with the Local Planning Authority. The programme shall be carried out by a specialist acceptable to the Local Planning Authority and shall be undertaken in accordance with a written brief and specification first agreed in writing by the Local Planning Authority'.*

### 1.3 Designations

1.3.1 The Maltings is included on the Statutory List of Buildings of Special Architectural or Historical interest as a Grade II Listed Building and, as such, is recognised as being of national importance. The statutory list entry describes the building as follows:

SK10NW,  
1094-1/3/244

BIRMINGHAM ROAD  
Sandfields  
(West side (off))

#### Former Malthouse to the rear of Magnet Joinery

GV II

**Malthouse.** 1874. By George Scamell of London; for City Brewery Co. Brick with buff brick and ashlar dressings; slate roofs. Rectangular plan. 3-storey, 12-window, range with 5-storey cross-wing. North elevation, facing railway, has coped gable to wing to right end; steep hipped roof

<sup>1</sup> [http://www.lichfielddc.gov.uk/downloads/Full\\_Committee\\_Report\\_B\\_-\\_13.07.09.pdf](http://www.lichfielddc.gov.uk/downloads/Full_Committee_Report_B_-_13.07.09.pdf)

<sup>2</sup> <http://www.staffordshire.gov.uk/NR/rdonlyres/43E17862-4CBA-48B8-AE95-FE1B8DB661FA/61655/StructurePlanExplanatoryMemorandum7802savedpolicie.pdf>

<sup>3</sup> [http://www.lichfielddc.gov.uk/site/scripts/documents\\_info.php?documentID=113&pageNumber=2](http://www.lichfielddc.gov.uk/site/scripts/documents_info.php?documentID=113&pageNumber=2)



running north-south, to left of centre, with louvre under pyramidal roof at each end. Windows have sills and buff brick segmental heads, but those to top floor have ashlar lintels; most windows in tall recesses with top cogged cornices; originally with small-paned glazing, now shuttered. Part under hip has central round-headed recess with 1st floor entrance. Gabled timber hoist canopies to right of centre and to wing. Right return, 4-window range has windows in tall recesses and small C20 addition to left end. Rear has similar details. Brewing was an important local industry from the late C19, of which little evidence survives.

- 1.3.2 The significance of the building at a regional level is recognised by its additional inclusion on the Staffordshire County Council Historic Environment Record (HER), PRN 14129.

## 1.4 Scope of Report

- 1.4.1 The project was undertaken in accordance with a Written Scheme of Investigation (WSI), prepared by Birmingham Archaeology (2009) and approved by the archaeological officer of Staffordshire County Council (SCC) in response to a brief issued by SCC in November 2009. Copies of the Project Brief and WSI are included below as **Appendices A** and **B** respectively.
- 1.4.2 This report outlines the results of the programme of building recording, which has been undertaken in accordance with English Heritage guidelines as published in *Understanding Historic Buildings: A Guide to Good Recording Practice* (EH, 2006), within the Institute for Archaeologists *Standard and Guidance for the Archaeological Recording of Standing Buildings or Structures* (IfA, 2008) and within the Association of Local Government Archaeological Officers *Analysis and Recording for the Conservation of Works to Historic Buildings* (ALGAO 1997).
- 1.4.3 This report has been prepared based upon information current and available as of January 2010.

## 2 AIMS AND OBJECTIVES

- 2.1 The aim of the Historic Building Record, as stated within the Project Brief, was to carry out a drawn, photographic and written survey of the malthouse building commensurate with a 'Level 3' record as specified by English Heritage within their guidance document *'Understanding Historic Buildings: A Guide to Good Recording Practice'* (EH 2006).
- 2.2 Specific objectives were to identify and record evidence for phased development within the structure, and to record any significant historic fixtures and fittings pertaining to both the original use and subsequent evolution of the building, including evidence for power transmission and industrial malting processes with a view to attempting to map the flow of product development through the structure.
- 2.3 The record has additionally been made to inform, if and where appropriate, upon the retention, removal and sympathetic reinstatement of historic fixtures, fitting, features and machinery either within the malthouse itself or at some other, pre-agreed suitable location.

### **3 METHODOLOGY**

#### **3.1 Historical Research**

- 3.1.1 A rapid evaluation of all relevant and readily available published and unpublished documentary source material was made, including historic maps, early photographs and drawings written descriptions, and primary and secondary sources related to the study area held by the Staffordshire County Record Office (SRO), the Lichfield Record Office (LRO), the William Salt Library, Stafford (WSL) and by the libraries of the University of Birmingham.
- 3.1.2 The archives of Marston's Plc. (formerly Wolverhampton and Dudley Breweries) was also contacted as part of the current programme of documentary research.

#### **3.2 Historic Building Recording**

- 3.2.1 The Historic Building Record comprised drawn, photographic and written elements as detailed below. Recording work was carried out over a period of three days between 12<sup>th</sup> and 14<sup>th</sup> January 2010. All work was undertaken to conform to current best practice and in accordance with guidance as set out at §.1.4.2 above.

##### *Drawn Record*

- 3.2.2 The drawn record comprised the generation of detailed plans illustrating the growth and layout of the building and together with its internal arrangements; elevations showing the principal features of the building, and sections through the building at suitable locations. The drawn survey was based for the most part upon existing survey drawings by Brownhill Haywood Brown, architects (supplied by Mar City Developments), which were checked on site for accuracy and were annotated to show significant architectural and archaeological detail.
- 3.2.3 A more detailed survey was made of the primary steeping vat and hoppers, and the handling mechanism on the main drying floor above the hot chamber.

##### *Photographic Record*

- 3.2.4 A full photographic survey was undertaken, comprising both 35mm monochrome print and high resolution digital photography. The survey extended to include both general and detail shots; contextual views, exterior elevations, interior spaces and relevant architectural details. Where possible, photographs included graded photographic scales. All photographs were recorded on *pro-forma* recording sheets detailing subject, orientation, scales included, photographer and date.
- 3.2.5 Photo locations were related to photo location plans. A selection of photographs are included below as plates.

##### *Written Record*

- 3.2.6 A written description was prepared to supplement the photographic and drawn records, summarising the history, character, date, techniques of construction, phasing and significance of the building. Written records were compiled on *pro-forma* building and room record sheets.

## 4 SITE LOCATION

### 4.1 Site Location

- 4.1.1 The Lichfield Maltings is located towards the rear of a site off the western side of the Birmingham Road, c.1km to the south of Lichfield city centre, Staffordshire and is centred on NGR SK 11418 08537 (Figure 1). The site is entered via a shared entranceway to the south of No. 110 Birmingham Road, believed to represent the original head brewer's house;<sup>4</sup> it is bounded to the north by the line of the former LNWR Brownhills branch railway line (closed to passengers in 1965; Upton 2001, 140) and to the south by the premises of Magnet Joinery (Figure 2).

## 5 GENERAL HISTORICAL AND TECHNICAL CONTEXT

### 5.1 The Brewing Industry in Lichfield

- 5.1.1 The 19<sup>th</sup> century saw the establishment of a number of new industries in Lichfield including metal-working and light engineering, iron and brass founding and bicycle manufacture; however, the most important industry to develop in the later years of the 19<sup>th</sup> century was that of brewing (VCH 1990, 127). Already with a local reputation stretching back to the early 1700s, with production essentially on a 'homebrew' basis, a trade where maltsters brewed ale for retail had developed by the end of the 18<sup>th</sup> century. By 1834 there were 3 brewers and 19 maltsters in and around the city concentrated mostly around Greenhill, Lombard Street and Tamworth Street (VCH 1990, 125). The Victoria County History (*ibid.*) lists a number of brewing concerns within the city in the later 1800s including those of John and Arthur Griffith (1848), John, Henry and William Gilbert (1866), A.W. and W.A. Smith (1877) and the Trent Valley Brewery Company (1875),<sup>5</sup> in addition to the City Brewery (1874), original builders of the Lichfield Maltings currently under consideration. Kelly's Directory of Staffordshire of 1884 (p.194) reported that '*brewing is extensively carried out here (Lichfield), the purity of the water and the abundance of the supply giving great advantages*'.  
  
5.1.2 John and Arthur Griffith established a brewery on Beacon Street in 1848 with a related malthouse at Upper John Street, east of the site currently under consideration; John, Henry and William Gilbert founded the Lichfield Malting Company in 1864 based in Tamworth Street, going on to build a malthouse in 1866 on the north side of the railway south of Birmingham Road. The Lichfield Malting Company merged with the Griffiths' Brewery in 1869 to form the Lichfield Brewery Company which appears to have been the largest player within the industry acquiring both Smiths' and the Trent Valley Breweries in the early years of the 20<sup>th</sup> century; they continued to operate in Lichfield until 1931, when they ceased production shortly after being purchased by Samuel Allsopp and Sons of Burton upon Trent (*ibid.*).

### 5.2 The City Brewery Company (Lichfield) Limited

- 5.2.1 The City Brewery was established and incorporated in 1874<sup>6</sup> with premises located on the south side of the South Staffordshire, Brownhills Branch Line of the LNWR railway, between the Birmingham and Chesterfield Roads (see Figure 3). The new brewery

<sup>4</sup> [http://www.breweryhistory.com/2005\\_W&Dmaltings/2005\\_Langley.htm](http://www.breweryhistory.com/2005_W&Dmaltings/2005_Langley.htm)

<sup>5</sup> The Trent Valley Brewery was located just beyond the city boundary at Streethay with premises designed by George Scamell (see below), demolished in 1970 (VCH 1990, 128).

<sup>6</sup> The London Gazette, October 23<sup>rd</sup> 1900.

buildings and related chimney stack were constructed to the designs of the renowned London brewery architect and designer George Scamell<sup>7,8</sup> of Westminster who had recently completed work at the Lichfield Brewery adjacent to the railway at Upper John Street to the east (Figure 8).<sup>9</sup> The maltings building currently under consideration, also by Scamell, was secondary to the main brewery buildings,<sup>10</sup> and is not indicated on the 1<sup>st</sup> Edition Ordnance Survey 1:2500 map of 1882 (Figure 6). A date plaque within the north gable of the barley intake range (Figure 14) indicates a construction date of 1891, and the building was clearly in place by the time of the Ordnance Survey 1<sup>st</sup> Revision map of 1902 (Figure 7).

- 5.2.2 Archival research into the City Brewery has proved to be disappointing and the detailed history of the company thus remains somewhat obscure. The company is first listed in Kelly's Directory of Staffordshire in 1876 (p.440), at which date it is listed at Bore Street, Lichfield under the managership of one Walter Birch; it is first listed at Birmingham Road in Kelly's Directory of 1884 (p.507) by which time it was under the managership of Thomas, later Alderman, Andrews, under who's leadership it remained until 1916. By 1896, the company is described as a '*Brewers (pale ale), maltsters and wine and spirit merchants*' (Kelly's Directory 1896, 235). However, the London Gazette of October 23<sup>rd</sup> 1900 reported that the company was to be wound up voluntarily for 'reconstruction under resolutions passed and confirmed the 23<sup>rd</sup> January 1900' while the brewery was closed following a devastating fire in 1916.<sup>11</sup> The fire resulted in widespread damage to the majority of the brewery buildings on the site, with only the maltings surviving intact. Following the fire, in 1917, the brewery (along with its 200 tied houses) was purchased by Wolverhampton and Dudley Breweries Ltd. (McKenna 2005, 113), who operated the maltings down to 2005. Interestingly, Kelly's Directory of 1924 continues to list the company under its original name, though it is described simply as a '*maltsters and wine and spirit merchants*' at that date (Kelly's 1924, 291). Neither the company nor the maltings is listed in later directories.

### 5.3 The Malting Process

- 5.3.1 Malting can be defined as the limited germination of cereal grains under controlled conditions, for the preparation of foods and drinks (Briggs 1998, 1). Tracing its origins back to ancient times, the application of the process in a post-medieval European context is based primarily within the realm of the brewing of traditional ales and beers, with the principal cereal grain used being barley.
- 5.3.2 The simplest and oldest form of malting is known as 'floor-malting' and could traditionally be undertaken on a small scale in many types of farm building. Though specialised buildings were to evolve over time, the malting process remained essentially unchanged, involving a combination of steeping, germination and kilning. The process has been described in some detail elsewhere (eg. Briggs, 1998), though an outline of the basic process is included here so as to inform a meaningful interpretation of the maltings building currently under consideration.<sup>12</sup>

<sup>7</sup> Brewers' Journal, October 1874.

<sup>8</sup> Scamell's treatise on brewery architecture and design of 1880 realised widespread success and rapidly achieved classic status among the architectural community (Pearson 2006, 4). It has unfortunately not been possible to consult a copy of this book during the timescale of the current project.

<sup>9</sup> Brewers' Journal, 1872, 11.

<sup>10</sup> The maltings is erroneously dated to 1874 in the Statutory List Entry (see §.1.3.1).

<sup>11</sup> SRO D3163/1/4/2.

<sup>12</sup> The following summary is based for the most part upon Briggs, 1998.

*Steeping*

- 5.3.3 Following reception, cleaning and screening, barley would be stored in garner, often in the upper levels of the building. The primary stage of the malting process involved the steeping or immersion of the barley grain in water, this being undertaken in measured loads known as 'batches' or 'pieces'. Steeping, lasting approximately 3 days, was traditionally undertaken in flat-bottomed cisterns or tanks of rectangular or circular form, constructed of wood, stone or lead or, latterly, of iron. Steeping vessels were commonly located immediately below the intake barley garner so as to make use of gravity in transferring the batch. The steep water was changed at least once, but up to three times, during the process to keep the grain fresh (Briggs 1998, 7) and, once the required moisture content was attained, the grain was drained. Steep vessels would originally have been emptied by hand, though the later-19<sup>th</sup> century saw the introduction of iron, self-emptying hopper bottomed cisterns.

*Germination*

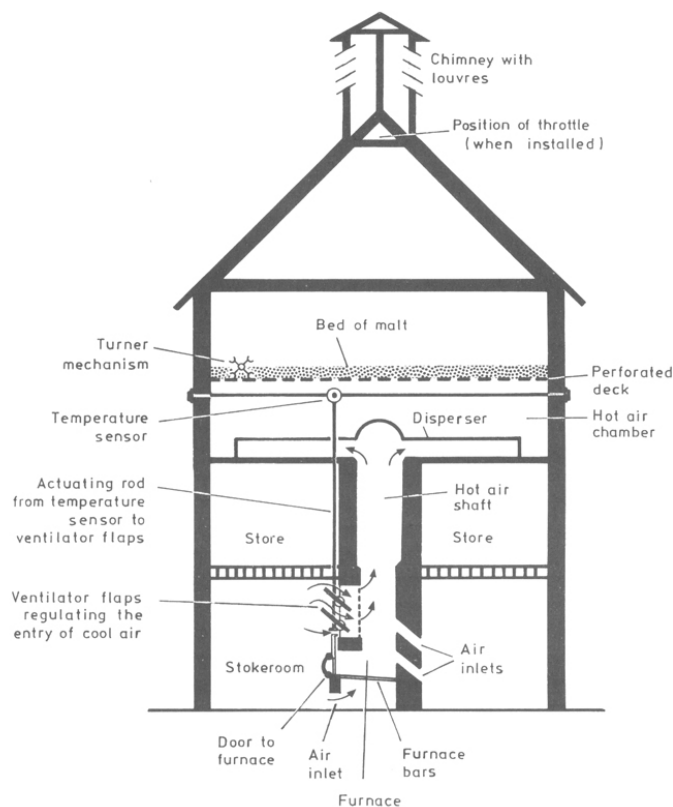
- 5.3.4 After draining, the piece would be shovelled onto working floors, initially into a frame known as a 'couch', so as to stimulate a rise in temperature and thus encourage the onset of germination. Once germination started, the couch would be broken down and the grain spread over the working floors where it would be regularly turned using forks, shovels or ploughs (to prevent the matting of rootlets) and the depth controlled to maintain the required temperature (approximately 60°F) within the grain bed.
- 5.3.5 Working floors were constructed in a variety of materials including stone, brick, tile and slate, each with their own particular properties though concrete was to become the material of choice in later years. Working floors were commonly set out one above another, supported by a regular grid of pillars and with headroom normally of c.2m between levels, though sometimes less. One and two-storey malting were initially common, though by the later 19<sup>th</sup> century four, five and even six-storey maltings were being constructed, facilitated by the introduction of mechanical conveyors, hoists and shovels (Briggs 1998, 346).
- 5.3.6 After a sufficient period of growth,<sup>13</sup> the grain was transferred to kilns to arrest the germination process, thereby maximising the retention of natural sugars within the grain for the fermentation process.

*Kilning*

- 5.3.7 Kilning is the process by which malt is dried by a stream of warm to hot air. It served to dry the malt, stopping germination and resulting in a brittle or 'friable' product suitable for storage and for use in the brewing process. In its simplest form, kilning comprised the setting of a fire beneath the malt which was laid out on a 'hair-cloth' supported by hurdles (Briggs 1998, 441).
- 5.3.8 Early types of direct-fired kiln employed an iron fire-basket or furnace within a stoke-hole or 'dunge', widening out to form a hot-air chamber, above which was set a perforated floor or deck to support the malt. A disperser, at simplest an iron sheet mounted above the furnace, served to spread the heat evenly and to prevent sparks rising directly into the malt. As dispersers developed, elaborate designs in metal or brick were introduced. The kiln floor or 'deck' itself could again be constructed of a

<sup>13</sup> Visible signs of germination include the appearance of a white 'chit' at the end of each grain and the growth of the 'acrosipire' or shoot.

range of materials, for example perforated sheet iron, cast-iron plates, woven wire mesh or perforated ceramic tiles. Wedge-wire proved to be the material of choice in later kilns, being easily cleanable and presenting a minimum resistance to air flow (Briggs 1998, 444). The malt would be turned while within the kiln, again a task originally undertaken by hand, though later by mechanical 'turners'. Above the level of the deck, the kiln was roofed over, normally displaying a distinctive tapered profile and capped by louvres or vents to allow the escape of hot air, sometimes furnished with a rotating cowl to prevent down-draughts (Briggs 1998, 442).



A direct-fired, shallow-loaded kiln of c.1910 (from Briggs 1998, 445; fig. 9.64)

- 5.3.9 Following kilning, the dried malt would be de-culmed and then stored in garners ready for dispatch to the brewery, either on-site or at an independent location.
- 5.3.10 Traditional floor-malting was highly labour intensive, with many of the processes including the loading and emptying of steeps, building and breaking of couches, turning on the working floor and the loading and stripping of the kilns being undertaken by hand. Throughout the course of the 19<sup>th</sup> century, however, technical innovation and mechanisation saw the introduction of self-emptying hopper bottomed cisterns, mechanised elevators and turning shovels, thus streamlining the process.

## 6 THE HISTORICAL DEVELOPMENT OF THE STUDY AREA

*This section of the assessment describes the known archaeological and historical development of the study area. It is based upon information current and available as of January 2010.*

### 6.1 Overview

- 6.1.1 The area of land developed by the City Brewery Company in the late 19<sup>th</sup> century originated as part of a medieval open-field system to the south of the City. It is recorded as 'Merstal Field' in the later 13<sup>th</sup> century and was known as 'Redlake Field' by the 15<sup>th</sup> century (VCH1990, 110),<sup>14</sup> inclosure occurring on a piecemeal basis, chiefly during the 17<sup>th</sup> and early 18<sup>th</sup> centuries.

### 6.2 Map Regression

#### *Early Maps*

- 6.2.1 Early county maps (Saxton, 1557; Speed, 1610; Blaeu, 1648; Stent, 1665; and Morden, 1695) are of too large a scale to be of any tangible use in tracing the development of Lichfield as a settlement or of the current site in particular.
- 6.2.2 Yates's 'Map of the County of Stafford' of 1775 (Figure 3) is of only limited use; development to the south of the city can be seen to have been concentrated along St. John's Street though the road network of Birmingham and Chesterfield Roads had been established to the south-west by that date (Chesterfield Road being shown in dashed line). A water mill is indicated adjacent to a pond on the Lichfield Brook to the west of the current site, otherwise little detail is furnished as to the land use in the surrounding area.
- 6.2.3 The first map to show the area of the City Brewery site in any detail is a 'Map of the City and Borough of Lichfield' of 1838 (Figure 4).<sup>15</sup> The road network of Birmingham and Chesterfield Roads was established by this date as was the Wyrley and Essington Extension canal, opened in 1797. The general area between the two roads is annotated 'Redlock', a name by which the former open-field had been known since the later 15<sup>th</sup> century (see §.5.1.1 above). Two basins are indicated to the northern bank of the canal, to either side of the Birmingham Road; a number of buildings clustered around the western basin would appear to correspond to the 'lime and coal wharf, stables, warehouses, smithy and sheds' illustrated on the later Tithe map (see §.6.1.3; Figure 5) and listed in the accompanying apportionment (see Table 1, ref. 472). The site of the future brewery was divided into a total of 17 narrow strips defined to north and south by linear field boundaries running parallel to the Chesterfield Road.
- 6.2.4 The tithe map of Lichfield St Michael parish 1850 (Figure 5)<sup>16</sup> illustrates a similar arrangement to the map of 1838, previously described, adding considerable detail to the form and layout of the individual buildings. The 'lime and coal wharf, stables, warehouses, smithy and sheds' of Richard and James Brawn are clearly delineated around the western canal basin (ref.472) together with their timber yard with associated sheds and sawpits to the north (ref.468). The site of the future brewery can again be seen to have comprised a series of narrow, parallel plots (ref.448 – 466)

<sup>14</sup> The area continues to be annotated as 'Redlock' on a map of 1838 (SRO D593/H/1/126; Figure 4).

<sup>15</sup> SRO D593/H/3/126.

<sup>16</sup> William Salt Library S.M.S 417/100.

while reference to the apportionment reveals that these were all listed as 'Gardens in Soldier's Field' in the ownership of the Lord of Lichfield though under individual occupation. A search of both SRO and LRO has revealed no reference to 'Soldier's Field', the derivation of which thus remains unclear. It is possible that they represented garden plots assigned, possibly on a charitable basis, to war veterans. The popularity of small-scale market gardening around the city is attested (VCH 1990, 113-4) and is evidenced by the number of allotment gardens indicated on early Ordnance Survey mapping (see Figure 8).

No.	Owner	Occupier	Description
446	Not listed	Not listed	Not listed
447	Not listed	Not listed	Not listed
448	Earl of Lichfield	Hannah Genders	Garden in Soldier's Field
449	Earl of Lichfield	John Storer	Garden in Soldier's Field
450	Earl of Lichfield	John Clifford	Garden in Soldier's Field
451	Earl of Lichfield	John Wiggin	Garden in Soldier's Field
452	Earl of Lichfield	John Rushton	Garden in Soldier's Field
453	Earl of Lichfield	Henry Smith	Garden in Soldier's Field
454	Earl of Lichfield	Barnaby Wilcox	Garden in Soldier's Field
455	Earl of Lichfield	Henry Mather	Garden in Soldier's Field
456	Earl of Lichfield	John Walton	Garden in Soldier's Field
457	Earl of Lichfield	Charles Sandland	Garden in Soldier's Field
458	Earl of Lichfield	John Atkins	Garden in Soldier's Field
459	Earl of Lichfield	Charles Trigg	Garden in Soldier's Field
460	Earl of Lichfield	Charles Smith	Garden in Soldier's Field
461	Earl of Lichfield		Garden in Soldier's Field
462	Earl of Lichfield	Henry Robinson	Garden in Soldier's Field
463	Earl of Lichfield	William Walker	Garden in Soldier's Field
464	Earl of Lichfield	Thomas Clements	Garden in Soldier's Field
465	Earl of Lichfield	John Thacker	Garden in Soldier's Field
466	Earl of Lichfield	James Sedgwick	Garden in Soldier's Field
467	Richard Brawn	Mary Bradbourne	House, stable, yard and garden
468	Richard Brawn	Richard and James Brawn	Timber yard, sheds, sawpits etc.
469	Richard Brawn (lessee)	George Johnson	House, yard and garden
470	Richard Brawn (lessee)	Isaac Duell	Cottage and garden
471	Richard Brawn (lessee)	Samuel Hobday	Cottage, yard and garden
472	Richard Brawn (lessee)	Richard and James Brawn	Lime and coal wharf, Basin Rd., stables, warehouses, smithy, sheds etc.
473	Richard Brawn	Edward Watson	House
474	Richard Brawn	Samuel Hobday	Garden
475	Richard Brawn	Samuel Hobday	Garden
476	Richard Brawn	Edward Watson	Garden
477	Richard Brawn	Richard and James Brawn	Garden
478	Richard Brawn	James Swan	House
479	Richard Brawn	Edward Watson	Part of garden
480	Richard Brawn	Samuel Wilcox	Part of garden
481	Richard Brawn	Samuel Wilcox	House and part of garden
482	Richard Brawn	Isaac Duell	Part of garden
483	Richard Brawn	Samuel Hobday	Part of garden
484	Richard Brawn	John Vigrass	Garden
485	Richard Brawn	Richard and James Brawn	Stable, sandhole, garden etc.
486	Richard Brawn	John Hobday	House
487	Richard Brawn	James Swan	House and garden
488	Richard Brawn	Enoch Corbett	House and garden
489	Richard Brawn	Thomas Dickens	Garden

**TABLE 1:**

Extracts from schedule accompanying Lichfield St Michael Tithe map of 1850 (WSL S.M.S 430/17-18).



- 6.2.5 The larger field units to the immediately south of Chesterfield Road (refs. 446/7), subsequently developed for housing and the construction of the LNWR Brownhills branch railway line railway in 1847, are unlisted in the accompanying tithe apportionment.

*Ordnance Survey Maps*

- 6.2.6 The 1<sup>st</sup> Edition Ordnance Survey map of 1882 (Figure 6) shows the City Brewery, established eight years previously, clearly annotated and occupying its site adjacent to the southern embankment of the Brownhills branch railway line of 1849, on the west side of the Birmingham Road. To the east of Birmingham Road, the Lichfield extension of the LNWR Birmingham-Sutton Coldfield line had yet to be constructed at this date, though its future course is clearly definable, aligned north-south running parallel to the Birmingham Road. To the south of the brewery was located a series of industrial ranges around a wharf. This was served by a basin on the northern bank of the Wyrley and Essington extension canal (built under Acts of 1792 and 1794 and opened in 1797; Hadfield 1966, 94) between the Sandfields and Birmingham Road bridges; the eastern side of the wharf included a battery of five limekilns.<sup>17</sup>
- 6.2.7 The brewery was evidently accessed from the Birmingham Road via an entranceway to the south of No.110 (possibly representing the head brewer's house), corresponding to the surviving entrance route to the site. The principal brewery building comprised a long, rectangular range aligned NE-SW with a shorter perpendicular range extending southwards from the western end forming an 'L'-shape plan. Interestingly, at this date, the maltings building currently under consideration had not been erected and it must be assumed that the brewery was supplied by a third party maltster in its early years of operation at least, possibly from the Lichfield Malting Company (1866) located nearby at Upper John Street to the east (Figure 8). The South Staffordshire Water Works pumping station was located on the southern side of the Brownhills Branch Line, immediately west of Chesterfield Road.
- 6.2.8 The Ordnance Survey 1<sup>st</sup> Revision map of 1902 (Figure 7) clearly shows the Lichfield Maltings building to have been constructed immediately south-west of the main brewery range, which had itself been extended to form a regular rectangular block. Within the wider area, the Lichfield extension of the LNWR Birmingham-Sutton Coldfield line, completed in 1884, is indicated to the east of the Birmingham Road while limited residential expansion is evident on both the Birmingham and Chesterfield Roads to the east and north of the brewery site respectively.
- 6.2.9 The layout of the site as depicted in the Ordnance Survey 2<sup>nd</sup> Revision map of 1922 (Figure 9), although dating to after the fire of 1916, shows little fundamental change at the brewery site. A small projection is evident on the north-eastern corner of the maltings building; historic photographs of c.1965 indicate a simple, single-storey brick-built lean-to structure with entrance doorways to north and south.<sup>18</sup> By the time of the National Grid Series edition map of 1966-8, (Figure 10) it is clear that all of the former brewery buildings save for the malthouse had been demolished, presumably soon after the fire of 1916 (although see above). Further afield, residential development had occurred to the south of the canal and to the east side of Birmingham Road (Shortbutts Lane / Dovehouse Fields) which had also seen the development of a major concrete works over the former eastern arm of the Wyrley

<sup>17</sup> John and Richard Brawn had a limeworks on the north side of the canal in 1818 (VCH 1990, 127) while a bonehouse is recorded west of Chesterfield Road in 1806 (*ibid.*).

<sup>18</sup> SRO C/P/65/3/1/46/18 and 19.

and Essington canal (abandoned in 1954; Upton 2001, 137); the latter had been infilled east of the Birmingham Road while the basins and wharfs to the northern bank had also been lost.

- 6.2.10 The 1975 edition map (Figure 10) illustrates continuing suburban development around the Birmingham Road area, while at the maltings site itself a small projection is evident on the western end of the south elevation, corresponding to the western surviving single-storey block, while a discrete structure had been erected to the north-east end of the range.
- 6.2.11 Comparison of a recent aerial photograph of the site with earlier maps shows the extent of continuing suburban development.

## **7 PREVIOUS ARCHAEOLOGICAL WORK**

- 7.1 An Historic Building Assessment was undertaken for Mar City Developments in 2007 by Mr. Bob Meeson, Historic Buildings Consultant, and has been previously reported (Meeson, 2007).

## **8 BUILDING DESCRIPTION**

### **8.1 General Arrangements**

- 8.1.1 The maltings building (Plates 1-2) occupies a rectangular plan, aligned approximately ENE-WSW, of four storeys with a five storey cross-wing to the west. For the purposes of the current description and discussion, the range will be assumed to be aligned east-west such that the elevation facing onto the disused railway will be regarded as facing north.
- 8.1.2 The fabric of the malting range, though having been subjected to phases of internal modernisation, represents an essentially single-phase structure dating to 1891 commemorated in a date plaque within the north-eastern gable. The building can be functionally broken down into four distinct elements, reflecting the stages of the malting process outlined above; viz. (a) grain intake/steeping, (b) germination, (c) kilning and (d) storage/out-loading. The functional division of the building follows an essentially horizontal axis, progressing from west to east; this quadri-partite division will be reflected in the following description which will approach the building from a functional perspective as opposed to on a simple floor-by-floor basis. Each functional element of the range will be described in turn, working from west to east.

### **8.2 The Exterior** (Figures 14–16; Plates 1-14)

- 8.2.1 The malting building is brick-built throughout, in lightly-fired orange/red brick (9¼ x 4¼ x 3in.) laid to English bond within a gritty grey mortar. Detailing is in buff brick, ashlar stone and Staffordshire blue engineering brick; roofs are slate-clad with iron guttering and rainwater goods.

#### *Barley Screen, Garners and Steeps*

- 8.2.2 The western end of the malting represents a cross-range, aligned north-south, of five storeys with slate-clad pitched roof, gabled to north and south; the range is four bays long (N/S; Bays 00-00) by three bays wide (E/W; Bays 1-3). The three bays of the **north elevation** (Figure 14, Plate 3) are defined by projecting piers of brickwork such

that window openings are set within slightly recessed panels extending to eaves level and closed at ground floor level by a double-course of chamfered blue-grey engineering brick. The heads of the recesses are enhanced by a decorative band of alternating buff and chamfered blue-grey engineering brick. Regular fenestration comprises one central window per bay per floor; all have projecting stone cills, those to lower levels (GF-3F) being furnished with segmental-headed arches of buff brick with projecting stone keys, those at fourth floor level have plain, flat ashlar lintels. Primary windows would appear to comprise superimposed, centrally-hinged and horizontally opening 8-pane lights (Plate 15) though survival of original fabric is here limited; only three examples survive intact (4F[W], 3F[W] and 3F[E]), of these only that at 3F[E] remains open, the remaining two having had the opening lights boarded over. The lower levels (GF-2F) display secondary, bottom-hinged shutters of vertical tongue and groove boarding with small, square central hatches (Plates 17-18); reference to historic photographs (Figure 13) indicates that these shutters post-date 1965, at which the date primary fenestration pattern survived, apparently throughout.

- 8.2.3 The central bays of the third and fourth floors retain double loading-doors formerly serving grain hoists. A timber-clad, projecting canopy survives at fourth floor level (Plate 6), the soffit supported by two decorative cast-iron brackets rising from ogee-moulded ashlar corbels. Lower corbels and scars of former brackets indicate a similar original arrangement for the lower stage of the canopy which survived as late as photographs of 1965 (Figure 13a).
- 8.2.4 The elevation is capped by a shallow-pitched gable furnished with low parapets resting on ogee-moulded stone kneelers and enhanced by a dentilated band of alternating buff and chamfered blue-grey brick; it includes a stone date plaque recording the construction date of 1891.
- 8.2.5 The **south elevation** (Figure 15, Plate 4) reflects the northern elevation previously described but presents a plainer facade, lacking the keystones to window openings and the date plaque to the gable; the elevation also lacks the former grain hoists of the northern side, the third and fourth floors here being furnished with standard window openings. The ground floor of the elevation is partially obscured by a series of single-storey, brick-built ancillary plant rooms. A number of the upper windows have been blocked in brick, a single primary window (boarded) surviving at 3F(W); again all windows to GF-2F levels have been replaced with vertical planking shutters.
- 8.2.6 The **west elevation** (Figure 16a, Plate 5) is of five storeys and four bays defined by projecting piers of brick. Fenestration is again of one opening per bay per floor, set within recessed panels, with segmental heads (no keystones) to lower levels and plain flat lintels to the fourth floor. The eaves level of the recessed panels is enhanced by a dentil band of alternating buff and chamfered blue-grey engineering brick, continued onto the brick piers as a simple  $\frac{1}{4}$  brick oversail. Third and fourth floors retain a number of primary windows (boarded) while levels GF-2F have again been replaced with vertical planking shutters.
- 8.2.7 A small single-storey, brick-built entrance lobby has been appended at the northern end of the west elevation with a doorway opening to the north elevation. To the west of the grain intake range are located a series of timber filtration tanks for the processing of steep effluent water (Plate 7).

*Working Floors*

- 8.2.8 Externally the working floors, which occupy a double-range aligned east-west, are expressed as a four storey block of five bays (Bays 4-8, Figure 14) set between the transverse barley intake range to the west and the furnace/kiln block to the east.<sup>19</sup>
- 8.2.9 The **north elevation** (Figure 14, Plate 8) is of five regular bays defined by projecting piers of brick. Fenestration matches the barley intake range with segmental headed openings (enhanced with keystones) to lower floors and flat headed openings to third floor level, all set within recessed panels. The heads of the panels are again enhanced by a decorative dentil band, as described above. As elsewhere, the windows of the lower levels (GF-2F) have been renewed with vertical planking shutters, though a number of original windows survive at third floor level. Bay 6 of the third floor retains a further projecting, timber-clad canopy protecting an original barley hoist (Plate 9); the canopy is gabled and open to the north with a timber safety rail and balusters and is again supported on decorative cast-iron brackets.
- 8.2.10 The **south elevation** (Figure 15, Plate 10) matches the northern facade in most respects though, as with the barley intake range, it lacks the keystone enhancement of the segmental window arches and does not include a barley hoist at third floor level. Windows have been variously blocked or renewed with no surviving primary features, while the ground floor is obscured by a post-1965, single-storey brick-built plant room. A double access door is located at Bay 8.

*Furnace and Kilns*

- 8.2.11 The paired furnace and drying kilns are housed within a three bay block to the east of the working floors, capped by distinctive pyramidal roofs with top vents (Figures 13 and 14).
- 8.2.12 The **north elevation** (Figure 14, Plate 11) is of three wide bays (Bays 9-11) and four storeys. Each bay comprises a recessed panel, the central recess (Bay 10) closing in a semi-circular arched head above the second floor blind window opening, flanked by recesses rising to eaves level; all are closed above ground floor level by a double course of chamfered blue-grey engineering brick. At ground floor level, a pedestrian door at Bay 9, with segmental head and bull-nose blue brick jambs, gives access to the range; a further primary door at Bay 10 has been adapted to form a window lighting a washroom/WC (GF07) internally. To the east again (Bay 11) are a single segmental-headed window (with louvred insert) and a small square, flat headed opening lighting the stoke room (GF11) internally. At first floor level, double loading doors occupy the central recess, breaking the chamfered 1F plinth, with stretcher bond brick-blocked window openings (with segmental heads and keystones) within the flanking recesses. At first floor level all openings are blind, this being the level of the hot air chamber beneath the kilns, while the third floor kilns are lit by three simple, flat-headed openings (no surviving windows). The range is capped by the distinctive profile of the tapering kiln roof, slate-clad with upper vent (or louvre) for the evacuation of hot air / smoke.
- 8.2.13 The **south elevation** (Figure 15, Plate 12) closely reflects the north facade though, as elsewhere, doorway and window openings are not enhanced by projecting keystones.

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<sup>19</sup> Internally, the lower working floors form continuous open spaces with the lower levels of the barley intake/steeping range (see §.8.3 below).

First floor windows are again blocked and second floor windows blind while, at ground floor, the original double door access at Bay 10 survives beneath a segmental head of three header courses of buff brick. At third floor level a regular series of paired, circular iron end-plates represent fixing points for the interior malt turner machinery (see §.8.3.17).

*Malt Garners and Out-Loading Bays*

- 8.2.14 The eastern end of the range comprise the malt garners, storage and out-loading bays (Plates 13-14), a double-range structure of three storeys over semi-basement and of two bays (Bays 12 and 13). Fenestration is here at variance to the remainder of the range, reflecting the different storey heights internally.
- 8.2.15 The **north elevation** (Figure 14, Plate 13) includes a primary, pedestrian entrance doorway opening at ground level onto a mezzanine stair landing set midway between the raised ground floor and semi-basement; the door has bull-nose blue brick jambs, segmental buff brick head (obscured by roller box) and is flanked by a stone setting for a boot-scraper, let into the brickwork to the right of the western jamb. Within Bay 13, a low window opening (blocked) with ashlar lintel formerly lit the semi-basement level. The raised ground floor displays a central, double loading door and a single, tall window opening (blocked) to the east. First floor level is symmetrically arranged, again with a central, double loading door, here flanked to both east and west by tall, segmental-headed windows (both blocked) while the upper storey is furnished with simple square openings (housing original 3/3 horizontally split windows).
- 8.2.16 The **south elevation** (Figure 15, Plate 14) is plainer than the north facade, with simple opposed windows to semi-basement, ground, first and second floor (blocked save the upper storey), and lacks the loading doors and pedestrian entrance doorway of the main elevation. The south-eastern corner of the range is chamfered at ground floor level, closed by stepped brickwork over (Plate 14).
- 8.2.17 The **east elevation** (Figure 16b, Plates 1 and 2) is to a larger extent obscured above first floor level by a modern, steel clad block dating to c.1970. It comprises two shallow gables, with low parapet supported on stone kneelers to north and south. Each gable includes paired, high recesses closed at third floor level by semi-circular brick arches of buff brick and at ground floor level by a double course of blue-grey engineering brick. Four blocked windows (blocked) formerly lit the semi-basement (flat headed save for that to the north which displays a segmental arch of blue-grey brick) while a double loading door has been inserted within the northern side of the southern range, serving the raised ground floor level. The southern corner of the range is chamfered back at ground floor level, with stepped brickwork over (Plates 2 and 14).

**8.3 The Interior** (Figures 17-25; Plates 15-83)

*Barley Screen, Garners and Steeps* (Plates 19-31, 38-41, 44 and 48)

- 8.3.1 The western section of the range is occupied by the barley screen, garners and steeps. It comprises a cross wing aligned north-south arranged over five storeys, three bays wide (Bays 1-3, E/W) by four structural bays long (N/S). The range is entered at ground floor at the northern end of the west elevation by a pedestrian doorway with segmental head of buff brick, latterly enclosed by a small entrance lobby structure which must post-date historic photographs of 1965 (Figure 13), on which it is not

shown. Primary access between floor levels is provided by a series of superimposed, timber straight-flight stairs rising west-east against the northern wall of the range within Bay 1 (Figure 22; Plates 21 and 48), with additional emergency access provided by a vertical metal ladder rising at the south-west corner. The lower levels of the range (GF-2F) form continuous spaces with the adjacent working floors and will be described together below at §.8.3.9.

- 8.3.2 The fourth floor (Figure 21; Plate 19) forms a single enclosed space [**4F01**], 14.9m (N/S) x 9.6m (E/W), standing 2.3m from floor to eaves and 5.4m to ridge. The structural bays are defined by a series of three queen-strut trusses (with angle braces and additional upper king-struts) supporting the pitched roof on two tiers of through purlins carried on timber cleats (Plate 20); the ties of the trusses to the wall head. The floor is formed of 5½in. softwood boards, aligned north-south, and displays numerous voids (variously covered over or blocked) for the downward transfer of grain. The level was originally lit by segmental headed windows within the north, south and west walls, many of which have subsequently been blocked in brick; original windows survive to the north wall and the north end of the west wall only. A central door within Bay 2 of the north wall (Figure 22) opens onto a projecting, covered hoist platform; the platform is lit by louvred openings in the boarded side walls (these would appear to post-date photographs of 1965, Figure 13) and a larger window opening within the north wall; details of the supporting cast-iron brackets are visible at this level (Plate 22).
- 8.3.3 At third floor (Figure 20; Plate 23) level forms a semi-enclosed space [**3F01**], 14.7m (N/S) x 9.6m (E/W), standing 2.35m from the floor to the underside of the 4F floor. The brickwork of the walls is painted white, the floor again formed of 5½in. softwood boards, aligned north-south with a simple angle fillet skirting. The upper (4F) floor is supported on closely spaced, E/W aligned timber joists (9in. x 3in. @ 16in. centres)<sup>20</sup> carried by 12in. deep longitudinal I-section steel joists supported on a regular grid of six (two rows of three) 5½in. diameter cast-iron columns.<sup>21</sup> Each transverse bay is additionally furnished with a mid-bay (E/W aligned) 6¼in. I-section steel beam, while the floor joists are braced by mid-bay, N/S aligned herring-bone strutting (Plate 29). The ceiling includes a number of wooden box chutes (Plate 31; x8 total, in addition to those feeding the steeping vessels; see below). The northern, southern and western walls are pierced by primary, segmental headed window openings; apart from the south elevation, where two windows have been blocked, survival of original windows at this level is good, though those to the western elevation have been modified (post-1965) by the boarding over of the glazed lights. The brick-built eastern wall includes four wide, flat-headed apertures (Plate 23) opening onto the third floor level of the working floors range ([**3F02**]).
- 8.3.4 The principal feature of interest at this level is the upper section of a pair of matching cast-iron, hopper-bottomed steeping vessels by Buxton and Thornley of Burton-upon-Trent (Figure 24; Plates 24-28) located within the western bay (Bay 1). Each tank is rectangular in plan, measuring 3.51m/11½ft. (N/S) x 2.89m/9½ ft. (E/W) and standing 0.92m/3ft tall measured from floor level, formed of iron plates, bolted together through their flanges (Plate 25). Each tank was loaded with grain from the floor above by a series of four timber box-chutes (those to the northern tank have been replaced in plastic), while steeping water was introduced via a pair of perforated sprinklers aligned E/W across each tank (Figure 24b; Plate 26). Mounted on the

<sup>20</sup> Joist spacing is reduced to 8in. within Bay 1 above the steeping vessels.

<sup>21</sup> Column heads at this level from a simple, flat flange-plate bolted to the underside of the steel beams (Plate 30); this detail varies at lower levels.

eastern rim of each tank is a control wheel (Plate 26) for the opening of a 'plug' at the base of the tapered vessel; this mechanism operated by means of a vertical threaded shaft, via a gearing system supported centrally above the vessel on paired RSJs spanning the width of the tank (Plate 27). A short overflow outlet pipe is located on the north side of each tank (Plate 28). The basal arrangements of the steeping vessels, located at second floor level, are described below.

- 8.3.5 At second floor level, the grain intake range forms a continuous space with the adjacent working floor range ([**2F01**]) and the general layout will be described below. The basal arrangements of the steeping vessels will, however, be included here for reasons of continuity.
- 8.3.6 Located within Bay 1 at the western end of [**2F01**] are the hopper-bottoms of the steeping tanks described above (Plate 38). They are again of cast-iron construction, bolted together through their flanges and are of tapering profile reducing to a 0.4m/16in. square basal outlet aperture (Plate 39). This aperture is stopped by a 'plug', operated from third floor level via a threaded vertical shaft, the upper section of which comprises a perforated, pyramidal chamber for the evacuation of spent steep effluent water. Steep water could thus be removed via an outlet pipe descending to first floor level with the plug still *in-situ*, after which the plug could be lowered allowing the grain to be discharged onto the working floors. Beneath the hopper outlets, hatched floor voids open to the lower levels, allowing grain to be distributed directly to a number of different working floors for couching and germination.

#### *Working Floors*

- 8.3.7 Located to the east of the steeping range and to the west of the kiln area, this comprises a double-range of five bays aligned east-west with working floors arranged over three levels (GF-2F), essentially of similar layout, while the upper third floor ([**3F02**]) represents a supplementary grain intake floor, divided from the steeping bays at Bay 3/4 by a brick wall pierced by four wide openings. The lower storeys (GF-2F) form continuous spaces with the corresponding levels of the cross-range to the west.
- 8.3.8 The third floor (Figure 20; Plates 32-33) comprises a single open space [**3F02**], 14.65m (N/S) x 15m (E/W), standing 2.3m to eaves and 4.65m from floor to ridge. The roof of each range, open to the apex, is formed of four joggled king-post trusses, with additional iron-tie rods between tie and angle-strut, carrying two tiers of through purlin on timber cleats and a ridge piece (Plate 34). The trusses are staggered at the central valley where the principal longitudinal beam (9 x 7in.) is supported on a series of four 4½in. diameter cast-iron columns (Plate 33). The floor is of 5½in. softwood boards, aligned north-south, with a simple angle fillet skirting to the exterior walls. The room was lit by regular window openings within the north and south walls, one per bay, those to the south having been blocked in brick. The central bay (Bay 6) of the north elevation includes a double loading door opening onto a projecting, covered hoist platform (not accessed). The western side of the room is formed by a brickwork wall which includes four wide doorway apertures opening onto the third floor of the grain intake / steeping range ([**3F01**]); openings have segmental heads and bull-nose jambs to this side (Plate 32). The eastern wall includes two heavy, metal-lined, double doors (Plate 35), one central to each range, serving the kiln floors (3F03 & 3F04) beyond while, before each door, heavy wooden hatches and circular chute covers are set into the timber floor (Plate 36), positioned to facilitate upward

movement of grain from the lower working floors to the kiln floors. A vertical ladder at the south-east corner of the room allows access to the lower levels.

- 8.3.9 The lower three levels of working floors (**2F01**, Plate 37; **1F01**, Plate 43; **GF01**; Plate 46) are essentially similar, forming continuous spaces with the lower levels of the western cross-range, thus being of 8 bays (E/W) by 4 bays (N/S), measuring 14.67m (N/S) x 25m (E/W) and standing 2.28m (7½ft.) tall. At each level, the floor above is supported on a regular grid of 21 (3 x 7) cast-iron columns (6½ in. diameter at 2F, 7in. at 1F and 7 ½ in. at GF); the head detail varies from that recorded at third floor level such that the flanking sides of the head plate extend to clasp the transverse beam (Plate 41). The system of floor joists (9in. x 3in. @ 16in. centres with herring-bone strutting) is exposed at 2F only (Plates 37/8), floors being of concrete plank construction flush with the top of the transverse RSJs to the lower levels. Flooring at each level is in 6in. red quarry tiles throughout; Bays 1 and 8 at each level include opposed, hatched voids, located central to each range, allowing the vertical movement of grain between working floors (eg. Plates 40 and 44). Where open, window openings display secondary (post-1965) bottom hung shutters of vertical boards with additional, internal removable shutter plates; many windows of the southern elevation have been blocked in brick (see Figure 15). At each level, a secondary system of warm air vents has been introduced to the long elevations (Plate 45), blocking or partially obscuring the primary window openings, with a cross vent at Bay 5.
- 8.3.10 Located centrally within the east wall of [**2F01**], a low opening with segmental head and heavy, lined iron door (Plate 42) gives onto the hot air chamber [**2F02**] within the kiln range. Likewise, a blocked doorway within the east wall of [**1F01**] formerly communicated with the first floor of the kiln range, opening on to [**1F03**]. Doorways at ground floor level (Figure 17) give to the exterior at the north-west corner at Bay 1 and the south wall of Bay 8 (Plate 47), and to the ground floor level of the kiln range.

#### *Furnace and Kilns*

- 8.3.11 The furnace range is entered at ground floor level (Figure 17) by doorways within the western bay (Bay 9) of the north wall and the central bay (Bay 10) of the south wall. A further primary doorway within Bay 10 of the north elevation has been partially blocked to form a window (Figure 14), presumably at the time of the introduction of washroom/WC facilities within Room [**GF07**]. The north door gives onto a small enclosed store [**GF03**] and, to the west, a transverse access corridor [**GF04**] extending N/S across the width of the range (Plate 49). Opening off the western side of [**GF04**] are a mess room [**GF05**] and office [**GF06**], both inserted, while to the east, paired steel doors (Plate 52) give access to two small chambers, [**GF08**] and [**GF09**], to north and south of the main flue respectively. The base of the main flue itself is accessed via double steel doors in the south wall of [**GF08**] (Plate 50), and can be seen to rise vertically (Plate 51) to the feed the disperser within the hot-air chamber at second floor level. The brickwork of the main flue, exposed within [**GF08**] (Plate 50) was noted to be in stretcher bond and is evidently of no great age. **Each of the flanking chambers house blocks of brickwork masonry which, at least in plan, would appear to represent the base of additional flues though neither currently extends to the level of the hot air chamber above; the primary arrangements of both furnace and related flues remain to be investigated as work at the site progresses.**
- 8.3.12 To the south side of the range, the access corridor returns eastwards as [**GF10**] to flank the southern side of the central flue chamber and to give access to the stoke



room **[GF11]** to the east. A doorway in the west wall of **[GF10]** gives access to the ground floor working floor **[GF01]** while double doors within Bay 10 of the south wall (Plate 54) open to the exterior; directly opposite the latter doors, a tall blocked opening with segmental head was noted within the brickwork of the flue chamber (Figure 17; Plate 55). **Again, the precise arrangements of this feature remains to be investigated as work at the site progresses.**

- 8.3.13 The stoke room **[GF11]** (Plate 56) occupies the full width of the range to the east of the flue chamber (Bay 11). It is lit by small rectangular lights within the north and south walls while a large extractor has been introduced into a primary window opening to the western side of the north wall. Most recently, a single Suxé anthracite furnace was located within **[GF11]** feeding the central flue previously described via a void in the west wall;<sup>22</sup> the setting for this furnace survives (Plate 56).
- 8.3.14 At first floor level, the kiln range is accessed from the east by a doorway (with iron door) opening off the main stair at the north-west corner of the out-loading bays while a further door (now blocked) formerly communicated with the first floor working floor **[1F01]** to the west. The eastern door opens onto a longitudinal corridor across the northern side of the range (**[1F02]**; Plate 57) which includes a double loading door at Bay 10 (Plate 58) flanked by blocked windows located centrally to Bays 9 and 11. Within the south wall of **[1F02]**, narrow doorways give access to store chambers to the east (**[1F04]**; Plate 59) and west (**1F60**; Plate 60) of the central flue chamber **[1F05]** rising from ground floor level. A plate iron door in the east wall of **[1F03]** gives access to flue chamber **[1F05]** containing three flues rising to 2F level.
- 8.3.15 Accessed through a single, low door in the east wall of **[2F01]** (Plate 42), the second floor of the kiln range (Figure 19) forms the hot air chamber **[2F02]**, a single, open space measuring 11.62m (E/W) x 14.7m (N/S) and standing 2.5m tall from the solid floor to the soffit of the wedge-wire kiln floor above. All windows visible at this level externally are blind (Plates 11/12). The upper kiln floor, of wedge-wire construction (see below), is carried by five E/W aligned, 10in. deep RSJs supported on two rows of 5in. diameter cast-iron columns, which stand on stone pads and are partly embedded within the brickwork superstructure of the central disperser. The disperser itself (Plate 61) measures 10.14m (N/S) x 3.88m (E/W) standing 1.5m tall; it is of five bays with five vents per bay within the long elevations and four vents to each of the short elevations. Internally the structure was observed to form a brick barrel vault (Plate 62) fed by a single flue against the east side rising from ground floor level (Plate 51).
- 8.3.16 Above the hot air chamber are located the two, symmetrically arranged kiln floors (**[3F03]**(N) and **[3F04]**(S); Plates 67/8), accessed from the third floor of the working floor range **[3F01]** and out-loading bays **[3F05]** to west and east respectively. Each kiln floor measures 7.35m (N/S) x 11.65m (E/W) standing 1.98m tall to eaves and 5.5m tall to the base of the upper louvre aperture (Figures 22/23). Three square window openings, one per bay, occupy the northern and southern elevations, all now lacking windows. Paired shutters at the base of the louvre aperture (Plate 72), operated by a simple rope and pulley system, formerly controlled the outlet of air from the kilns. The floor of the kilns is formed of wedge-wire, supported on closely spaced 3in. deep I-section steel joists at 1ft centres and is most readily observed from within the hot air chamber below (Plate 63). This floor structure can be demonstrated to be a secondary modification, however, and observations within the hot air chamber revealed sections of the original, perforated tile floor still *in-situ* (Plate 64).

<sup>22</sup> [http://www.breweryhistory.com/2005\\_W&Dmaltings/2005\\_LichfieldPhotos1.htm](http://www.breweryhistory.com/2005_W&Dmaltings/2005_LichfieldPhotos1.htm).

Elsewhere, perforated tiles were observed stacked in the basement of the building and re-used as external paving adjacent to the north facade; tiles are 1ft square x 2in. thick and were manufactured by Stanley Brothers Limited of Nuneaton (Plates 65/6).

- 8.3.17 Each of the kiln floors is furnished with a mechanised malt turner (Plate 69) comprising a circular section metal arm (in two sections bolted at a central flange) formerly supporting a series of turning paddles or forks, the threaded sockets for which survive. The mechanism for each turner (Figure 25; Plate 70) is located to the southern side of the respective kiln. The turner was driven by a longitudinal drive-shaft, powered by an engine housed within the eastern out-loading bay and supported at regular points along its length (Plate 71). The longitudinal rotation of the drive-shaft was converted through a system of gear wheels to rotate the turner arm and, simultaneously, to progress the arm along the length of the kiln floor by means of a toothed rail (Figure 25a). The mechanism carriage was carried by two wheels above the level of the toothed rail and by a further pair resting on a secondary rail at floor level. A small spur mounted on the southern side of the mechanism carriage served to depress the damped and counter balanced drive-shaft supports (Plate 71), thus allowing the mechanism to pass along the length of the kiln. When the turner reached the end of a run, a counter weight mounted above the carriage would engage with a wall mounted buffer plate, thereby engaging the drive shaft on the opposite side of the carriage mechanism, reversing the direction of motion of the main power transfer gear-wheel and allowing the turner arm to return across the kiln floor in the opposite direction.

#### *Malt Garners and Out-Loading Bays*

- 8.3.18 At the far east end of the malting range are located the malt garners and out-loading bays (Bays 12-13), again a double-range aligned east-west similar to the working floors to the west. The storey heights are here in the region of 3-3.5m, taller than those within the remainder of the range, resulting in disparate floor levels. The bays are entered through a door at ground level in the north wall at Bay 12, opening directly onto a primary dog-leg timber stair rising to first floor level [**1F06**], with an additional short flight (Plate 82) descending to the semi-basement [**B01**].
- 8.3.19 The upper storey of the range [**3F05**] (Figure 20; Plate 73) represents a single open space 14.75m (N/S) x 6.15m (E/W), standing 2.5m to eaves level and 4.78m to ridge. The roof of each range, open to the apex, comprises a single, joggled king-post truss, with additional iron-tie rods between tie and angle-strut, carrying two tiers of through purlin on timber cleats and a ridge piece (Plates 74/5). The trusses are staggered at the central valley where the principal longitudinal beam is supported on a single 5in. diameter cast-iron column. The space is lit by paired, segmental headed window openings within the north and south walls, one per bay, three of which retain primary 3/3 bi-partite, horizontally-opening glazed lights. Symmetrically arranged, heavy timber double-doors within the west wall, located centrally to each range, open onto the eastern side of the kiln floors and would have functioned for off loading the malt following the completion of the kilning process; floor voids immediately before the doors (Plate 73) allow downward movement of the malt through the range. Also located against the west wall are the motors (renewed) driving the mechanised malt turners. A primary timber stair descends south-north against the north end of the west wall. At the time of survey, the northern range was occupied by secondary plant (Plate 75) while the southern range housed switchgear for secondary conveyors (Plate 74). An inserted door within the east wall opens onto the modern extension range.

- 8.3.20 At second floor level (Figure 19; Plates 76-8), the southern  $\frac{3}{4}$  of the range is partitioned off by an E/W aligned, heavy timber stud wall (Plate 78) to form two symmetrical storage bays or garners [2F04] (Plate 76) and [2F05] (Plate 77), divided by a single skin brick wall on the line of Bays 12/13. Storage garners are furnished with cement screed floors and are unlit by exterior windows. The northern part of this level ([2F03]) includes a double out-loading door to the centre of the north wall, flanked by blocked windows, and a continuation of the primary timber stair descending to first floor level.
- 8.3.21 Both first floor ([1F06]; Plate 81) and basement ([B01]; Plate 83) levels represent single open spaces measuring 14.7m (N/S) x 6.15m (E/W) and are of four bays (N/S) by two (E/W), though the first floor was evidently originally furnished with a timber stud partition as at second floor level (here truncated; Plate 79). Floors and ceilings are of cement screed, the latter supported on longitudinal I-section steel joists, here with a supporting, 12in. deep transverse beam (by Dorman Long of Middlesborough), carried on three 6in. diameter cast-iron columns. [1F06] includes a double out-loading door (Plate 80) and single blocked window to the north elevation with an inserted out-loading door towards the southern end of the east wall; [B01] (Plate 83) was formerly lit short, flat-headed windows set high in the north, east and south walls, though these have all but one been blocked in brick.

## 9 DISCUSSION AND CONCLUSION

### 9.1 Discussion

- 9.1.1 The Lichfield Maltings as recorded represent a well preserved and increasingly rare example of its building type, reflecting an industry once prevalent in and around the city of Lichfield. Primary features including the, at the time, technologically innovative hopper-bottomed steeping vessels and the mechanised malt-turner in the kiln range show that the malting was of an advanced specification when originally built, reflecting the status of the architect George Scamell as a brewery designer of some renown, and their survival add to the historical significance and value of the building. The progression of malting technology during the course 20<sup>th</sup> century is represented by features such as the secondary air ducting to the working floors, and the replacement of perforated tiles by wedge-wire in the kiln floors.
- 9.1.2 The functionality of the building is clearly expressed within its built form and it has proved possible to map the flow of product development through the structure, a stated aim of the project brief (para. 3.3), with some degree of certainty (see Figure 26). Raw grain would have been introduced at the northern side of the building, being raised by exterior hoist to the third and fourth floors of the western cross-range and to the third floor of the working floor range. From here, grain would be fed into the hopper-bottomed vessels at the far west end and steeped for perhaps 2 days. After steeping, effluent water would be drawn off and the grain discharged to the three quarry tile working floors at ground, first and second floor levels where it would be manually turned over a period of c.6 days.<sup>23</sup> Temperature would have originally been controlled simply by careful attention to the depth of the grain bed and by the opening and shutting of the exterior windows as required (the system of ducting recorded in the lower storeys of the range is assumed secondary, blocking as it does many of the primary window openings). Once germination had progressed to the required stage, the grain would be transferred by boby barrow to the drying floor of the kiln at third

<sup>23</sup> A number of handling shovels, forks and ploughs survive at the maltings and, at the time of survey, were stored in a garage adjacent to No. 110 Birmingham Road.

floor level; entailing the raising of grain by hoist from the lower working floors to the upper storey via a series of hatches in the floors at the eastern end of the range (no original hoist mechanism survives, though the northern void retains a steel support system for a secondary hoist). Following drying, the malt would be discharged to the eastern end of the building for storage and out-loading, again at the northern side of the range, to the main brewery site to the east.

- 9.1.3 As previously highlighted, traditional floor malting was highly labour intensive, with many of the processes being undertaken by hand. Advances in technology, and in particular the advent of the pneumatic malting, first developed in the late 19<sup>th</sup> century, heralded the decline of the traditional floor malting; the last was built in Grimsby, Lincolnshire in 1952 and only a handful remain in use today (Putman 2004, 11). As such, the operation of the Lichfield floor maltings by Marston's as late as 2005, albeit utilising modern plant evidenced by surviving switch gear and *ex-situ* auger conveyors, is of itself worthy of note.

## 9.2 Conclusion

- 9.2.1 Though the form of the building, designed and built for a specific purpose, holds inherent challenges in adaption to alternative use, the proposed conversion for residential purposes offers a welcome opportunity to consolidate and restore the building and bring it back into full and beneficial use.
- 9.2.2 The current programme of historic building recording has allowed for an archival record to be made in advance of conversion works. In particular, the opportunity was taken to make a detailed measured survey of the steeping vessels and mechanised malt turner mechanism. **It is anticipated that enabling works for the conversion work may expose additional evidence for the primary arrangements and subsequent development of the furnace and related flues; such works remain the subject of ongoing archaeological monitoring.**

## 10 ACKNOWLEDGEMENTS

- 10.1 The project was commissioned by Mar City Developments Ltd of Solihull, West Midlands; thanks are due to Mr Martin Davies for help and co-operation throughout the course of the project, in particular for arranging safe access to the premises for the purposes of recording, and for valuable discussions on site.
- 10.2 The help and co-operation of the staff at the Staffordshire County Record Office, Lichfield Record Office, William Salt Library and Marston's Plc. is gratefully acknowledged.
- 10.3 The project was managed for Birmingham Archaeology by Ric Tyler AIfA (Assistant Project Manager, Built Heritage and Conservation). Documentary research and site recording were undertaken by Ric Tyler who also prepared and illustrated the present report. The report was reviewed and edited by Dr. Malcolm Hislop, MIfA (Research Fellow) of Birmingham Archaeology.

## 11 SOURCES

### (a) Cartographic Sources (in chronological order)

- 1775 Yates' Map of the County of Stafford.
- 1838 Map of the City and Borough of Lichfield (SRO D593/H/3/126).
- 1850 Tithe map of Lichfield St Michael (WSL S.M.S 417/100) plus accompanying schedule (WSL 430/17-18).
- 1882 Ordnance Survey County Series 1:2500 map, 1<sup>st</sup> Edition.
- 1902 Ordnance Survey County Series 1:2500 map, 1<sup>st</sup> Revision.
- 1922 Ordnance Survey County Series 1:2500 map, 2<sup>nd</sup> Revision.
- 1966-8 Ordnance Survey National Grid Series 1:2500 map, Edition.
- 1975-8 Ordnance Survey National Grid Series 1:2500 map, Edition.
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### (b) Other Graphic Sources

Historic photographs of exterior of maltings building, 1965. SRO C/P/65/3/1/46/17-19.

### (c) Primary Sources

File re. Lichfield Brewery Co. and City Brewery Co. (Lichfield). SRO D3163/1/4/2.

### (d) Secondary Sources

ALGAO, 1997. *Analysis and Recording for the Conservation of Works to Historic Buildings*.

Briggs DE, 1998. *Malts and Malting*. London, Blackie Academic and Professional.

English Heritage, 2006. *Understanding Historic Buildings: A Guide to Good Recording Practice*.

IfA, 2008. *Standard and Guidance for the Archaeological Recording of Standing Buildings or Structures*.

McKenna J, 2005. *Black Country Breweries*. Stroud, Tempus Publishing.

Meeson B, 2007. 'The Lichfield Malthouse; Historic Building Assessment'. Unpublished grey literature report No. 07/17.

Pearson L, 2006. *Towers of Strength: Brewery Architecture at Home and Abroad*. Paper given at the Victorian Society / Brewery History Society Study Day: 'From Hops to Hostelry: the brewing and licensing trades 1837-1914', Wandsworth, London, 25<sup>th</sup> February 2006.

Putman R, 2004. *Beers and Breweries of Britain*. Princes Risborough, Shire Books.

Scamell, G, 1880. *Breweries and Maltings: their arrangement, construction, machinery and plant*. London, E and F.N. Spon.

Staffordshire County Council, 2009. *Specification for Archaeological Building Recording: The Maltings, Birmingham Road, Lichfield*

Upton C, 2001. *A History of Lichfield*. Chichester, Phillimore.

VCH, 1990. *The Victoria County History of Staffordshire, Volume XIV*.

(e) *Trade Directories* (in chronological order)

- Post Office Directory of Staffordshire: 1868, 1876.
- Kelly's Directory of Staffordshire: 1876, 1880, 1884, 1888, 1892, 1896, 1900, 1904, 1908, 1912, 1916.
- Cope's Directory of Staffordshire: 1921.
- Kelly's Directory of Staffordshire: 1924, 1928.

(f) *On-line Resources*

[www.breweryhistory.com](http://www.breweryhistory.com)

[www.imagesofengland.org.uk](http://www.imagesofengland.org.uk)

[www.staffordshirepasttrack.org.uk](http://www.staffordshirepasttrack.org.uk)

**APPENDIX A: Project Brief (Staffordshire County Council)****SPECIFICATION FOR AN ARCHAEOLOGICAL BUILDING RECORDING****THE MALTINGS, BIRMINGHAM ROAD, LICHFIELD****November 2009****1.0 INTRODUCTION**

- 1.1 A planning application (Lichfield District Council reference 08/00589/FUL) has been submitted for the repair, restoration and reuse of the Maltings building at Birmingham Road, Lichfield. The Historic Environment Team of the Environment and Countryside Unit commented upon the proposals and advised that an archaeological building recording exercise be carried out in advance of restoration works to the buildings of the complex. The results of this work would act as a record of the building prior to works and to inform the conservation, restoration and management of the site. As a consequence a condition was attached to planning permission for this work. The objective of this Specification is to establish a framework which is acceptable to the Local Planning Authority (LPA), acting on the advice of the Principal Archaeologist for the County Council, within which a building recording may be carried out.
- 1.2 The building recording will be conducted in accordance with this specification and will be carried out by a suitably experienced archaeologist in accordance with the Institute for Archaeologists Standard and Guidance for *Archaeological investigation and recording of standing buildings or structures* (revised 2008). The work should also be carried out a Level 3 Standard as specified within the English Heritage entitled 'Understanding Historic Buildings; A Guide to Good Recording Practice' (2006). All stages of the project will be carried out in accordance with the requirements established in the English Heritage volume entitled the 'Management of Archaeological Projects' (MAP2). Any variation in the WSI will be agreed in advance by the developer and the LPA.
- 1.3 The appointed archaeological contractor may choose to use this specification or may wish to prepare a separate Project Design for the works. If different working methods are proposed any variation will be agreed in advance by the developer and the LPA.

**2.0 HISTORICAL/ARCHAEOLOGICAL BACKGROUND**

- 2.1 The Maltings building lies outside the traditional historic medieval core of Lichfield and its defensive circuit within what was until the late eighteenth and early nineteenth century largely a rural (and agricultural) hinterland. The malthouse is classified as being nationally important and is designated a Grade II listed structure (PRN 14129). The malthouse was designed by George Scamell of London for the City Brewery Company and was erected in 1874.
- 2.2 The standing building is of brick construction with ashlar stone dressing and a grey slate roof. Brewing was of considerable importance to the area although Burton was the centre for the brewing industry. Many of the maltings brewerries for this period have been removed and the Maltings on Birmingham Road, Lichfield represent a rare survivor of the type. Discussions with the Lichfield District Conservation officer also indicate that substantial elements of the original fixtures and fittings for the building survive. These,

combined with the extant building represent important evidence in charting the development and functioning of the late nineteenth century malthouse and potentially how this building changed through time.

### 2.3 The listed building description for the malthouse is as follows:

Malthouse. 1874. By George Scamell of London; for City Brewery Co. Brick with buff brick and ashlar dressings; slate roofs. Rectangular plan. 3-storey, 12-window, range with 5-storey cross-wing. North elevation, facing railway, has coped gable to wing to right end; steep hipped roof running north-south, to left of centre, with louvre under pyramidal roof at each end. Windows have sills and buff brick segmental heads, but those to top floor have ashlar lintels; most windows in tall recesses with top coggled cornices; originally with small-paned glazing, now shuttered. Part under hip has central round-headed recess with 1st floor entrance. Gabled timber hoist canopies to right of centre and to wing. Right return, 4-window range has windows in tall recesses and small C20 addition to left end. Rear has similar details. Brewing was an important local industry from the late C19, of which little evidence survives (Victoria History of the County of Stafford: Greenslade M W: Lichfield: Oxford: 1990-: P.127-8).

## 3.0 PROJECT OBJECTIVES

- 3.1 To carry out a Level 3 photographic, written and drawn survey of the malthouse building to be converted. This work should be carried out to the standards as specified in the English Heritage volume entitled '*Understanding Historic Buildings. A Guide to Good Recording Practice*' (2006).
- 3.2 To identify and record any evidence of phase changes, fixtures and fittings within the building and evidence for the function of the barn and the presence of architectural pretensions within the building.
- 3.3 To identify evidence for power transmission and industrial brewing processes within the building and attempt.
- 3.4 To inform where appropriate the retention, removal and sympathetic reinstatement of historic fixtures, fitting, features and machinery either within the existing malthouse or at some pre-agreed suitable other location.

## 4.0 ARCHAEOLOGICAL REQUIREMENTS

- 4.1 The archaeological contractor is asked to design a programme of monitoring and recording to be carried out during those stages of development involving substantial ground disturbance. The project should include the following as appropriate:
  1. Level 3 building recording of the historic malthouse including annotated elevation drawings, plans and cross-sections at relevant points through the building. This should include recording of the general structure and surviving fixtures, fittings or floor surfaces within the structure. This should be carried out prior to any stripping out or other conversion works. Where existing architects drawings are available this may be used and annotated but their veracity should be checked prior to use.



2. A programme of post-fieldwork analysis, archiving and publication.
- 4.2 A written record of the progress of the building recording shall be maintained and supported by the production of plans and sections drawings (at appropriate scales). A Photographic record (monochrome prints and polychrome slides) will also be maintained and supported by an index and site plan of shot locations. General shots of the building and the farm [*sic*] environment should be taken along with detailed shots of fixtures and fittings and any evidence of phase changes.
- 4.3 If finds are located of a significance beyond that which might have been anticipated before the development began, development shall cease where they might be disturbed in order that provision for their adequate recording or preservation may be made in consultation with the LPA or personnel nominated by them. Contingency provisions should be made within the programme of work for this.
- 4.4 The developer shall afford access to the development site for the purposes of archaeological monitoring to officers of the LPA or personnel nominated by them at all reasonable times upon compliance with the requirements of health and safety.
- 4.5 The developer shall give the LPA or personnel nominated by them at least ten days' notice in writing of the commencement of the development, and shall keep them informed of the progress of the watching brief during the period in which it is carried out.
- 4.6 The project archive shall be compiled in accordance with the guidelines contained in *Guidelines for the Preparation of Excavation Archives for Long-term Storage* (UKIC, 1990), and *Standards in the Museum Care of Archaeological Collections* (Museum and Galleries Commission, 1992)
- 4.7 The archaeological contractor should agree all on-site working practices with the developer at the earliest opportunity and identify those elements of the construction programme requiring time for recording.
- 4.8 The archaeological contractors should comply with all Health and Safety requirements stipulated by the Main Contractor, ensure that their staff wear the correct PPE (Personal Protective Equipment) at all times and that a Risk Assessment for the work is prepared in advance and reviewed at regular intervals.
- 4.9 The project should also attempt to place the project findings into their historical and geographical context through cartographic and documentary research.
- 4.10 The project should be conducted by an archaeological organisation working in accordance with the By-laws of the Institute of Field Archaeologists. Archaeologists working on the project should not attempt tasks outside of their areas of competence.
- 4.11 The project should be conducted by an archaeological organisation working in accordance with the By-laws of the Institute for Archaeologists. Archaeologists working on the project should not attempt tasks outside of their areas of competence.

## **5. PRESENTATION OF RESULTS AND DEPOSITION OF ARCHIVE**

- 5.1 A report on the results obtained should be submitted to the Local Planning Authority and personnel nominated by them within 8 weeks of the completion of site work. This should include consideration of:
1. non-technical summary
  2. the aims and methods adopted in the course of the recording
  3. the nature, location, extent, date, significance and quality of any archaeological and environmental material uncovered
  4. the anticipated degree of survival of archaeological deposits and structures on the site not disturbed by development - surviving areas of archaeological potential should be indicated on the site plan
  5. appropriate illustrative material including maps, plans, sections, and drawings at an appropriate scale and photographs
  6. summary of results
  7. description of the archive and the location for its long-term deposition
- 5.2 If significant remains are recorded during the project, then it may be necessary to undertake a full programme of analysis and publication in accordance with the guidelines contained in English Heritage's Management of Archaeological Projects 2. If this is the case, then a timetable and programme of work for this aspect of the project will need to be submitted to the Local Planning Authority for agreement.
- 5.3 The post excavation work shall be carried out immediately on completion of site investigations. The site archive shall be prepared in accordance with established professional guidelines.
- 5.4 The written and illustrated report of the watching brief shall be copied to:
- i) the client
  - ii) the County Council
  - iii) the National Monuments Record
- 5.5 A copy of the final report must be submitted to the County Council along with a CD Rom containing a pdf copy of the report. The report must also be accompanied by a completed copy of the Activity and Source Submission Form (see appendix 1).
- 5.6 The archive and finds, including a copy of the watching brief report, shall be deposited at an appropriate museum, such as the Potteries Museum and Art Gallery at Hanley, Stoke-on-Trent. The museum guidelines regarding the acceptance of such material should be taken into account. The recipient museum shall be informed in advance of the date when the watching brief is to commence.
- 5.7 The written report will become publicly accessible, as part of the Staffordshire Historic Environment Record, within six months of completion. The AFC shall also submit a short

summary report for inclusion in the next edition of the journal *West Midlands Archaeology* within 6 months of the completion of the fieldwork.

*If you wish to comment on the contents of this brief or require additional information, then please contact Stephen Dean at the address below:*

Environmental Planning Unit  
Staffordshire County Council  
Development Services Dept,  
Riverway, Stafford ST16 3TJ

Tel. (01785) 277290 - Fax (01785) 277364

**APPENDIX B: Written Scheme of Investigation (Birmingham Archaeology)****The Maltings, Birmingham Road, Lichfield,  
Staffordshire**

## Archaeological Building Recording

## Written Scheme of Investigation

**1 INTRODUCTION**

- 1.1 The following document represents a Written Scheme of Investigation (WSI) for archaeological building recording to be undertaken in respect of the Maltings, Birmingham Road, Lichfield. The WSI has been produced in response to a specification prepared by Staffordshire County Council's Principal Archaeologist dated November 2009 (Staffordshire County Council 2009). The work is to be carried out as a condition of planning consent for the repair, restoration and reuse of the building. Further guidance has been sought from a subsequent document prepared by Historic Building Consultant, Bob Meeson, entitled 'Additional Recording Criteria', which was produced as a result of a consultation of 1 December 2009 between Bob Meeson and Staffordshire County Council's Principal Archaeologist.

**2 SITE LOCATION AND DESCRIPTION**

- 2.1 The Maltings, which is a grade II listed building, is located on the south the west of Birmingham Road, Lichfield, Staffordshire at NGR SK 1142 0853.

**3 AIMS AND OBJECTIVES****3.1 General**

- 3.1 To carry out a photographic, written and drawn survey of the building equivalent to level 3 as defined by English Heritage in *Understanding Historic Buildings: a Guide to Good Recording Practice* (English Heritage 2006).
- 3.2 To identify and record any evidence of phase changes, internal fixtures and fittings, evidence for the function of the building, and architectural embellishment.
- 3.3 To identify evidence for power transmission and industrial brewing processes and to map the flow of product development through the structure, where possible.
- 3.4 To inform, where appropriate, the retention, removal and sympathetic reinstatement of historic fixtures, fittings, features and machinery either within the existing malthouse or at some pre-agreed suitable other location.

## **4 METHODOLOGY**

### **4.1 Monitoring of the Project**

4.1.1 Once the fieldwork has been scheduled Staffordshire County Council's Principal Archaeologist will be contacted and a monitoring visit arranged in order to discuss the results of the work.

### **4.2 Documentary Research**

4.2.1 A search will be made of readily available primary and secondary historical sources held principally at the Staffordshire Record Office, Lichfield Record Office and William Salt Library and the libraries of the University of Birmingham as appropriate.

### **4.3 Building Recording**

4.3.1 A full photographic survey will be undertaken comprising both 35mm monochrome print and high resolution digital photography. The survey will extend to include both general and detail shots; contextual views, exterior elevations, interior spaces and relevant architectural details. Where possible, photographs will include graded photographic scales. All photographs will be recorded on *pro-forma* recording sheets detailing subject, orientation, scales included, photographer and date.

4.3.2 Existing survey drawings will be checked for accuracy and annotated to show significant architectural and archaeological detail, and to mark photo locations. The drawn record will comprise phase plans showing the growth and layout of the building and its internal arrangements, elevations showing the principal features of the building, and sections through the building. A more detailed survey will be made of the steeping vat and hoppers, and a scale drawing of the handling mechanism on the main drying floor above the hot chamber.

4.3.3 A written description will be prepared to supplement the photographic and drawn records, summarising the history, character, date, techniques of construction, phasing and significance of the building. Written records on site will be compiled on *pro-forma* building and room record sheets.

4.3.4 The above programme will be carried out prior to any works taking place. Subject to health and safety considerations (prior removal of any asbestos), the furnace area and hot air chamber will be further surveyed and a section drawing produced.

## **5 REPORTING**

5.1 Upon completion of the research and fieldwork the results will be presented as a bound report containing the following information:

### **Text**

- Non-technical summary
- Introduction
- Site location
- Aims and objectives
- Methodology
- Historical context and development

- Analytical description of the building
- Interpretation of function including process flow
- Significance of the building
- Conclusion
- Acknowledgments
- Full Bibliography
- A copy of the brief

**Illustrations**

- Location plan and site layout
- Selection of historic maps and views
- Plans, sections and elevations based upon site survey, as appropriate
- Phased plans of the building

**Plates**

- Selection of colour plates to supplement the drawn record

5.2 Within three months of completion of fieldwork, copies of the report will be issued to the client, English Heritage regional office, Lichfield District Council, the National Monuments Record, Staffordshire Historic Environment Record, and Staffordshire Record Office. A digital copy will also be deposited with Oasis, English Heritage’s Online Access to the Index of Archaeological Investigations website.

5.3 The County Council will also be issued with a completed copy of the Activity and Source Submission Form.

5.4 In addition, a summary report will be prepared for publication in *West Midlands Archaeology*, and any other appropriate local or national journal.

**6 STAFFING**

6.1 The project will be managed for Birmingham Archaeology by Malcolm Hislop MiFA of Birmingham Archaeology’s Built Heritage and Conservation team. The archaeological building recording will be undertaken by Ric Tyler AiFA or by an historic buildings specialist of equivalent standing.

**7 PROFESSIONAL STANDARDS**

7.1 All stages of the project will be carried out in accordance with English Heritage advice encapsulated in Management of Archaeological Projects (1991). In general, the recording work will be carried out with due regard to the advice offered by the Institute for Archaeologists (IfA 2008), and will also adhere to the guidelines laid down by the Association of Local Government Archaeological Officers (ALGAO 1997) and by English Heritage (English Heritage 2006).

7.2 Birmingham Archaeology is a Registered Archaeological Organisation (RAO) with the Institute of Archaeologists (IfA); all project staff will adhere to the *Code of Conduct of the Institute for Archaeologists* (IfA, 2009) at all times.

## **8 ARCHIVING**

- 8.1 The archive will be deposited with the Potteries Museum and Art Gallery, Hanley, Stoke-on-Trent subject to permission from the landowner.
- 8.2 Preparation and deposition of the site archive, from both evaluation and excavation will be undertaken with reference to Potteries Museum guidelines and to *Guidelines for the Preparation of Excavation Archives for Long-Term Storage* (Walker 1990) and *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (Brown 2007).

## **9 HEALTH AND SAFETY**

- 9.1 A detailed risk assessment (and method statement when appropriate) will be prepared prior to the commencement of fieldwork.
- 9.2 All current health and safety legislation, regulations and guidance will be complied with. The excavation will conform to the *Workplace (Health, Safety and Welfare) Regulations 1992*, *Management of Health and Safety at Work Regulations 1999*, and *Construction (Design and Management) Regulations 2007* and any other health and safety legislation were appropriate. Work will be carried out in accordance with guidelines laid out in the *Birmingham Archaeology Health and Safety Manual (revised 2008)* and *Health & Safety in Field Archaeology Manual (SCAUM 2007)*.

## **10 REFERENCES**

ALGAO 1997 *Analysis and Recording for the Conservation of Works to Historic Buildings*.

Brown, D. 2007. *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation*.

English Heritage 1991. *The Management of Archaeological Projects*.

English Heritage 2006. *Understanding Historic Buildings: A Guide to Good Recording Practice*.

Institute for Archaeologists 2008. *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures*.

Institute for Archaeologists 2009. *Code of Conduct*.

Staffordshire County Council 2009. *Specification for Archaeological Building Recording: The Maltings, Birmingham Road, Lichfield*

Walker, K. 1990. *Guidelines for the Preparation of Excavation Archives for Long-Term Storage*.

**Birmingham Archaeology**

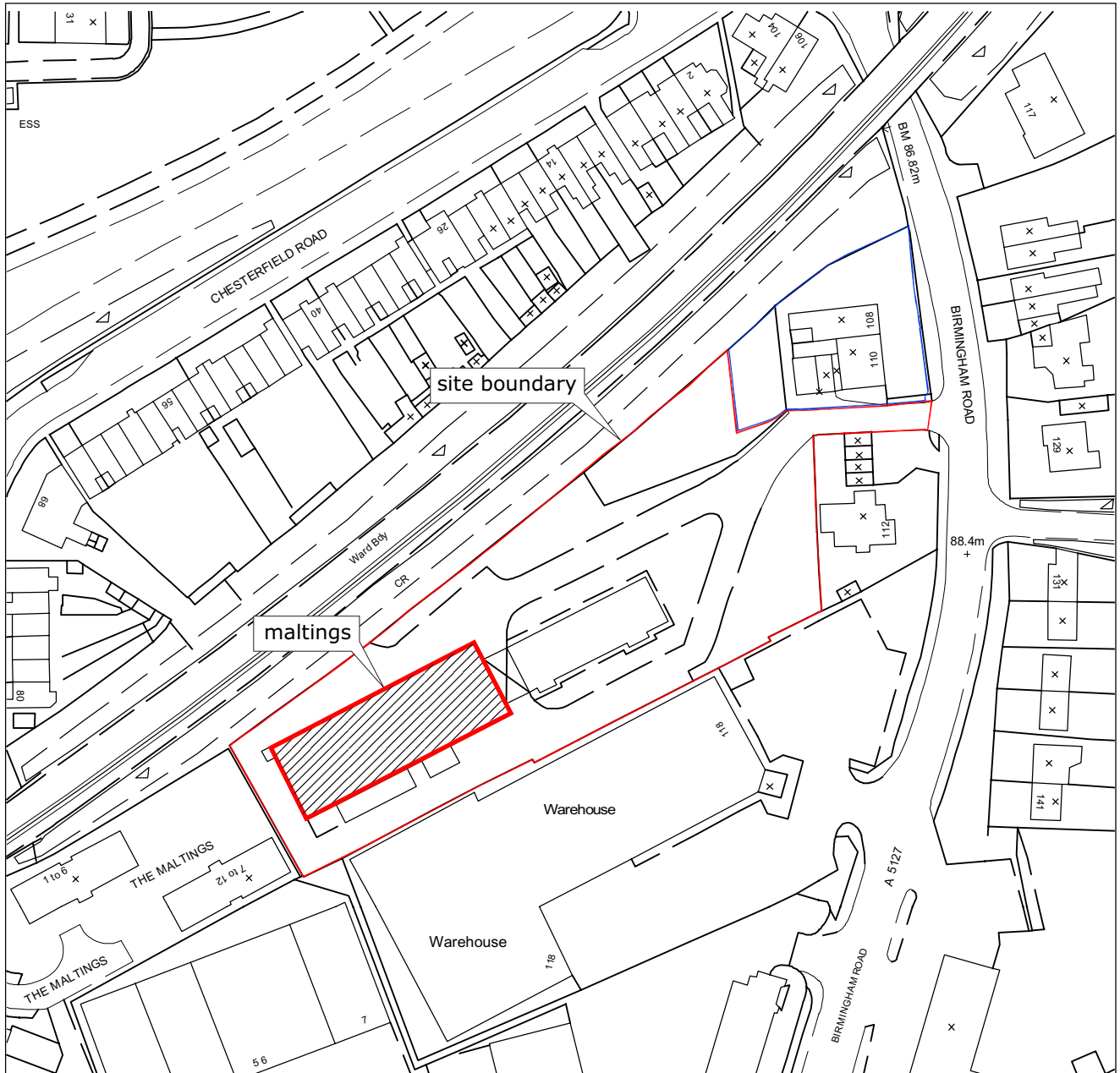
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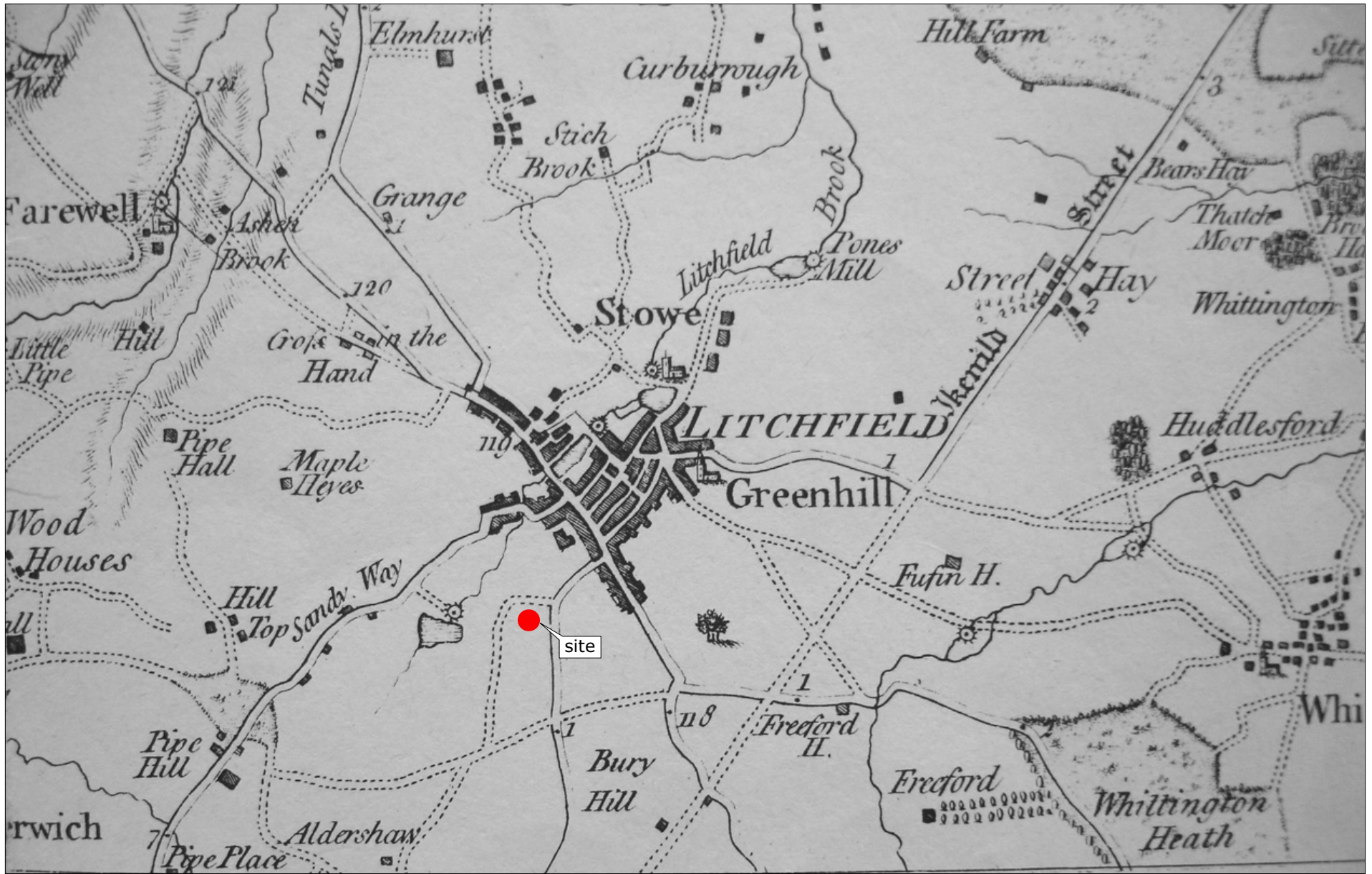


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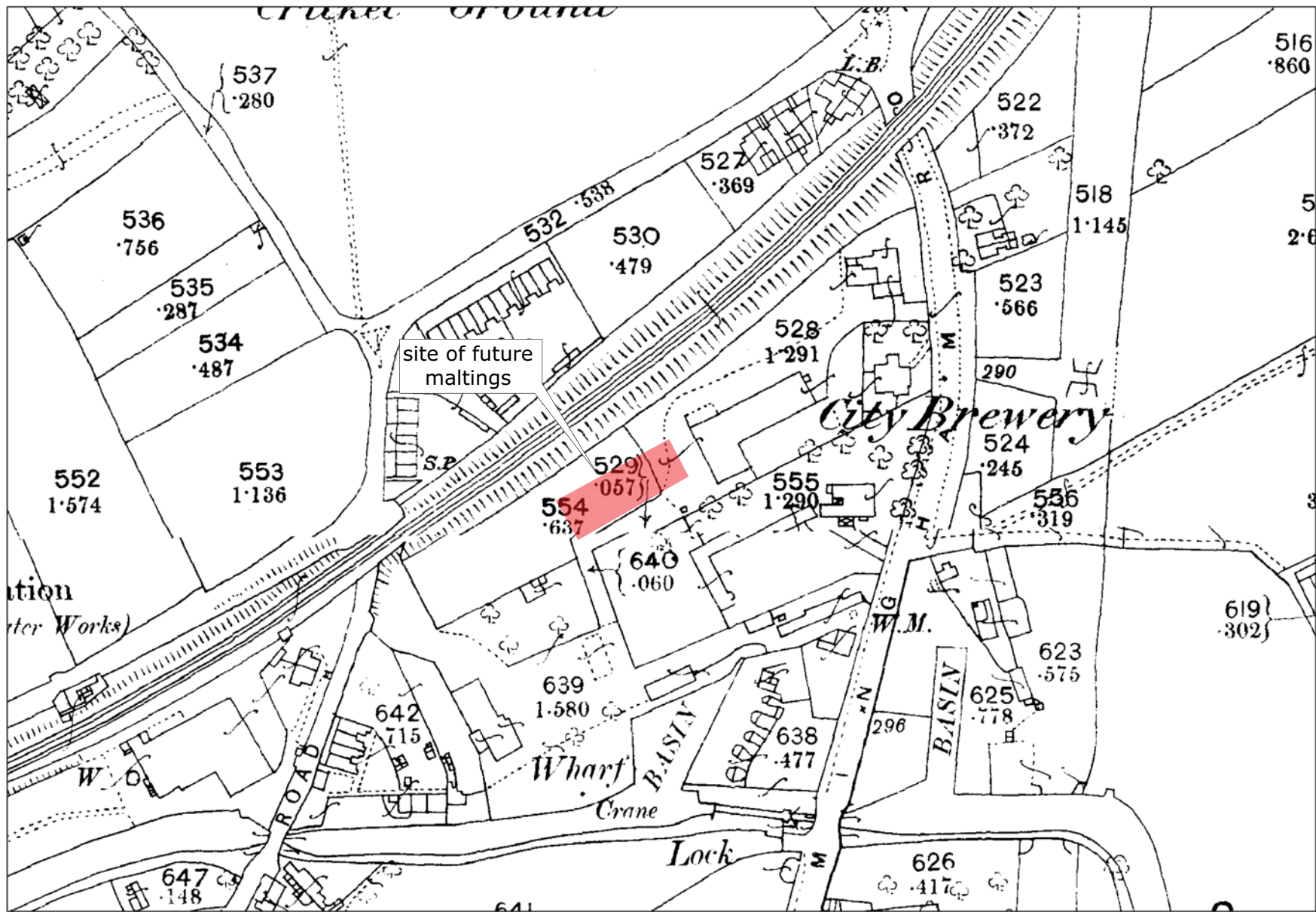


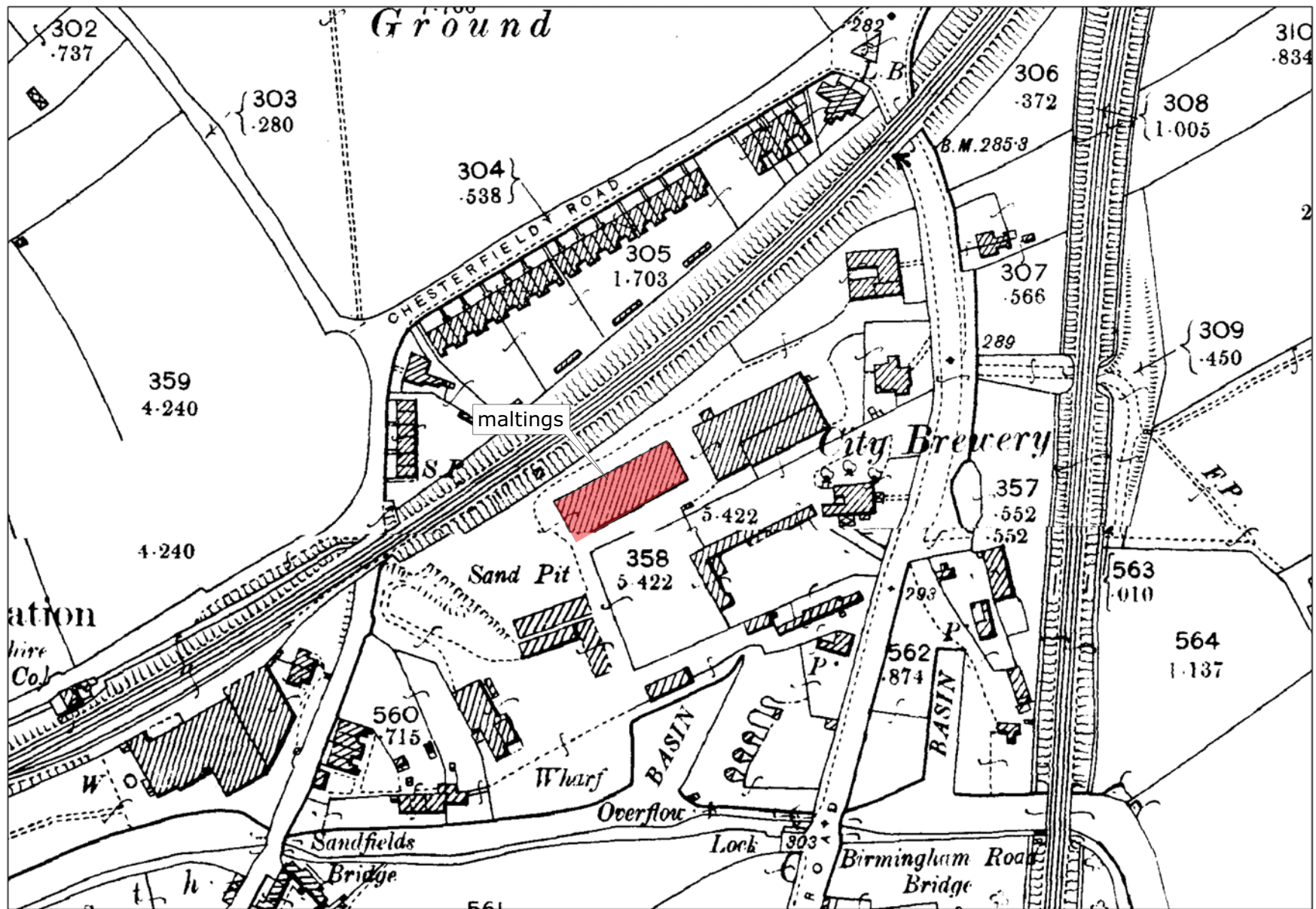


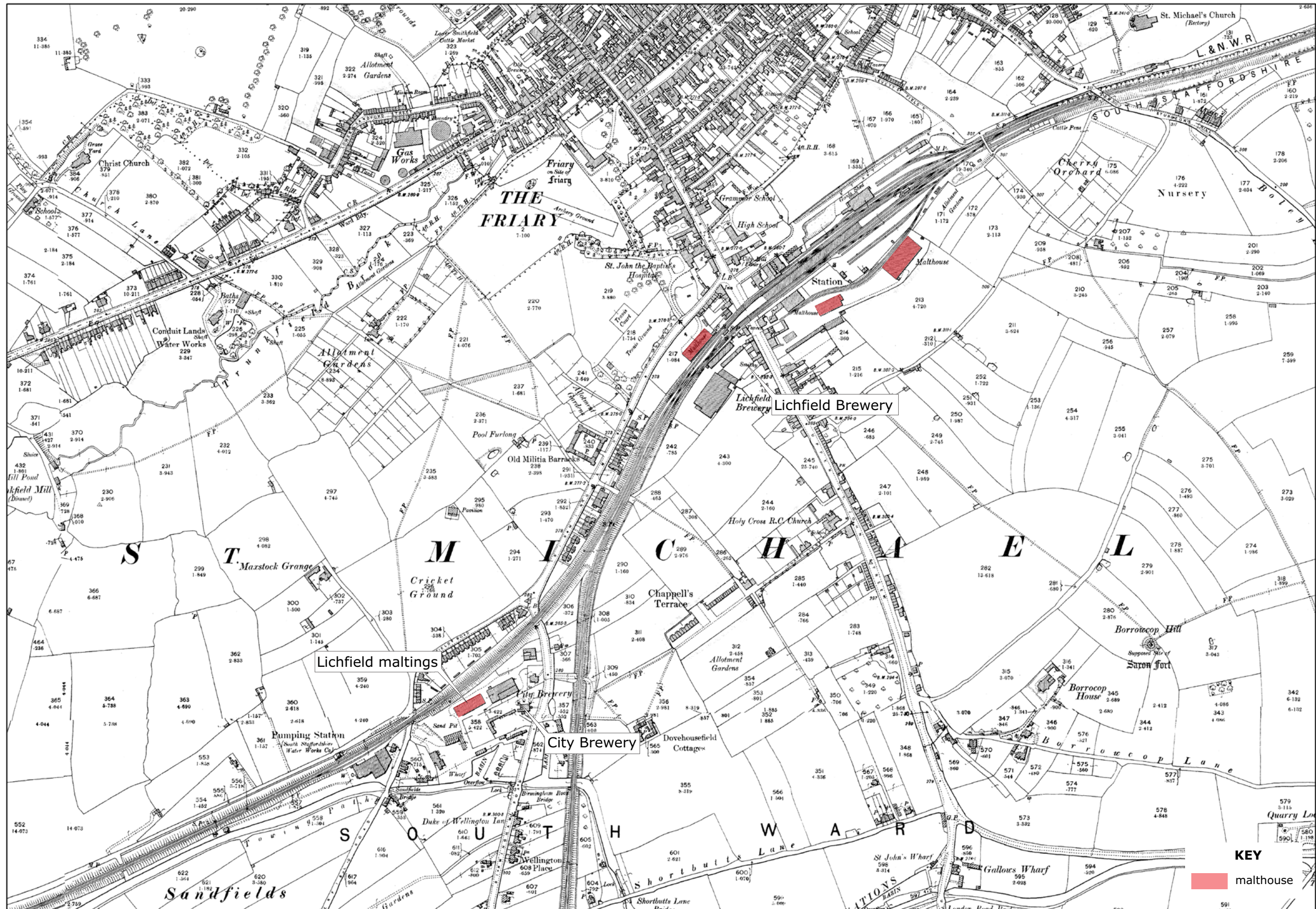
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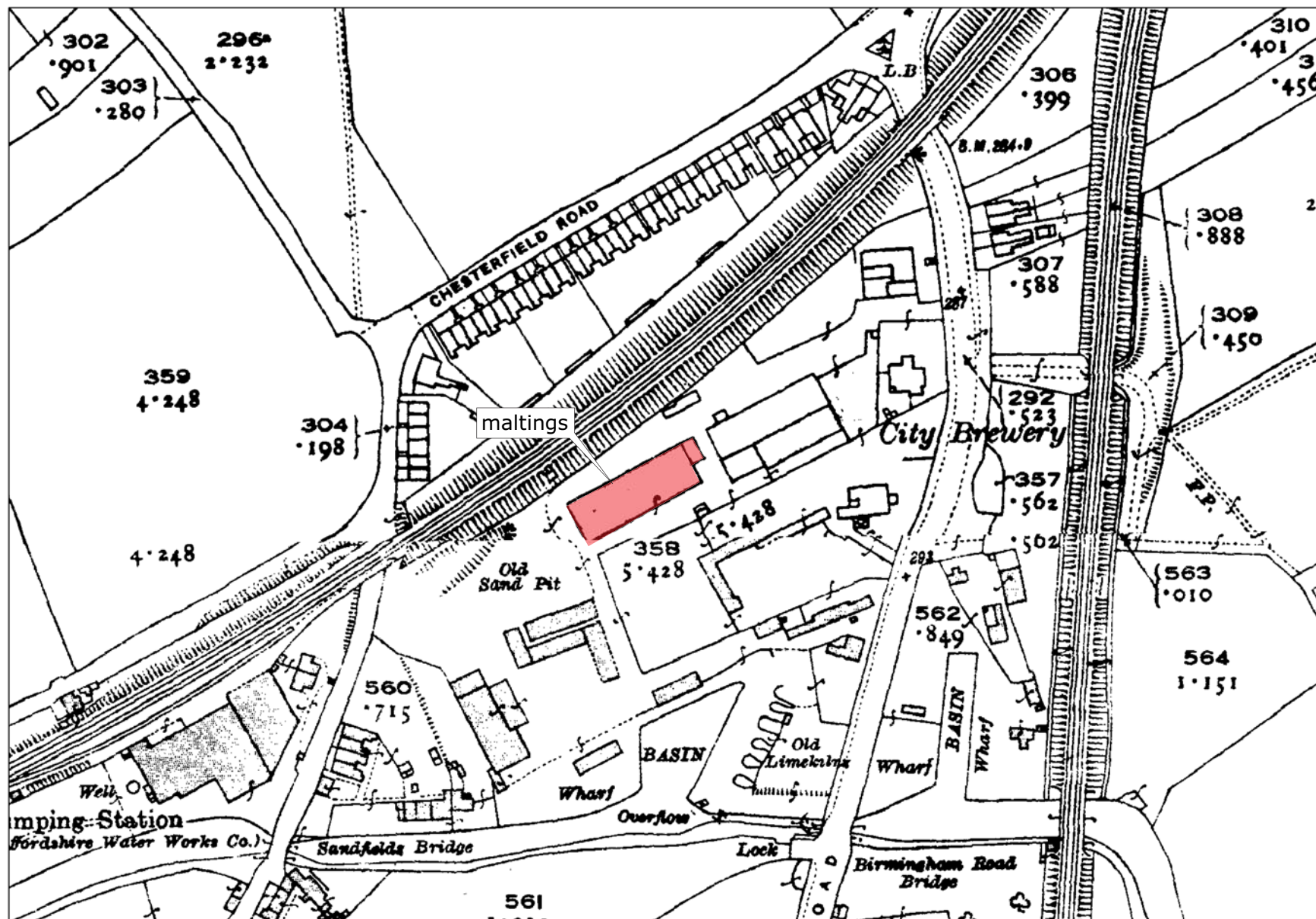


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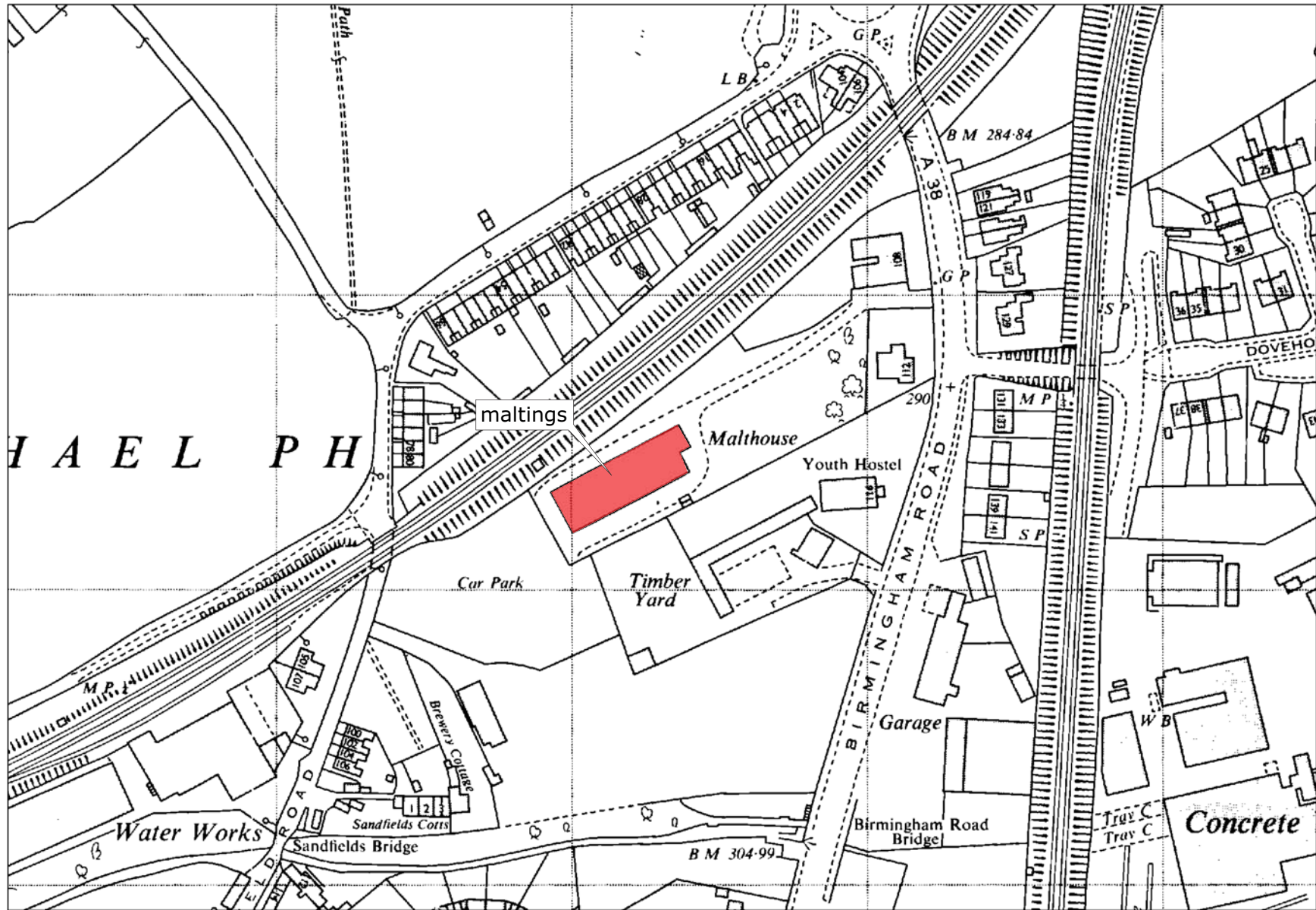


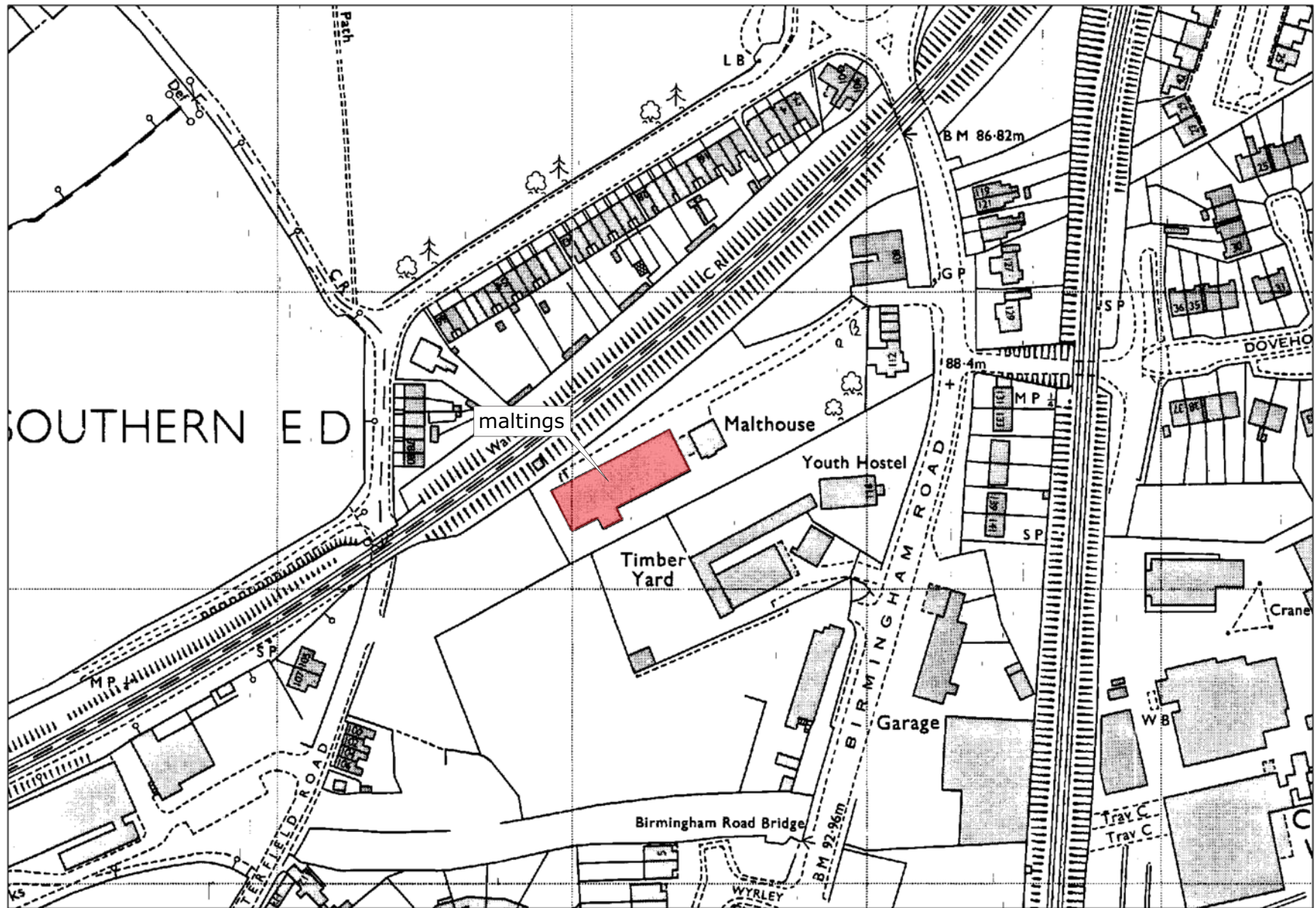




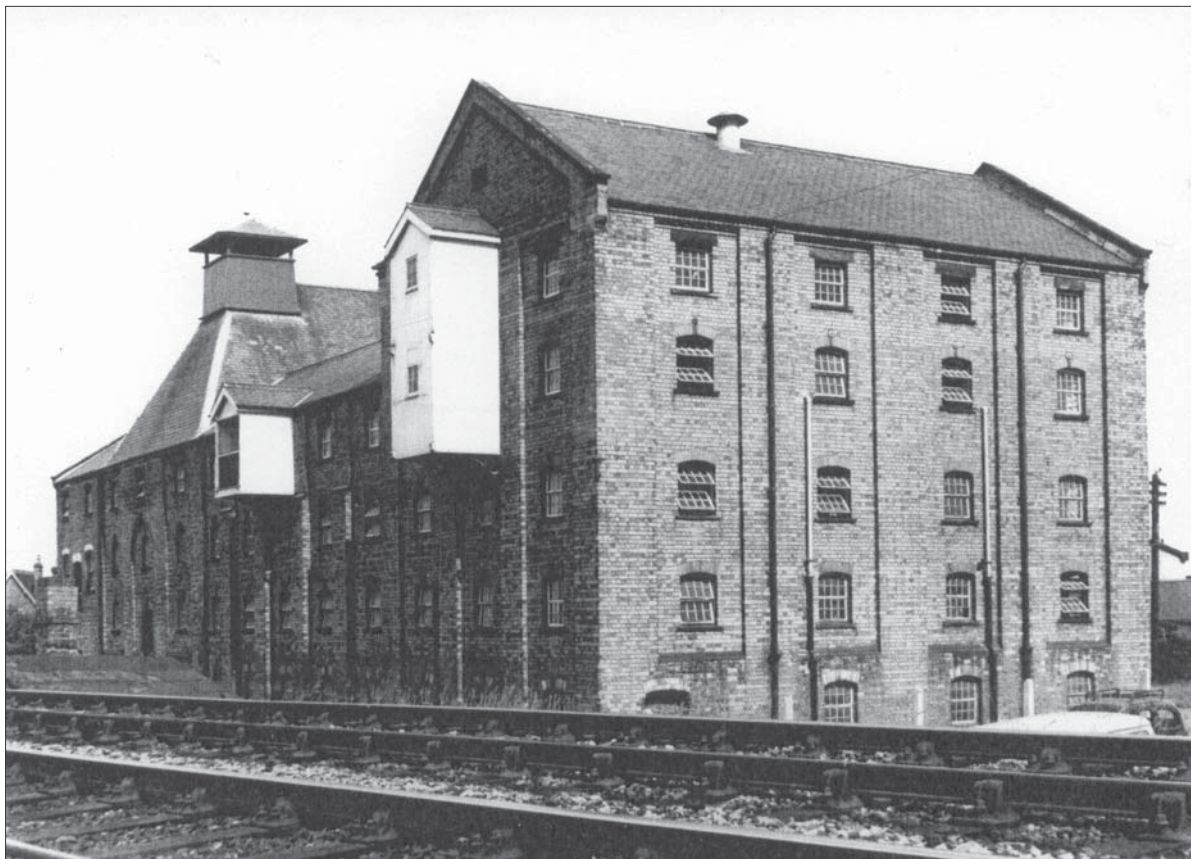












(a) View from north-west, 1965 (SRO C/P/65/3/1/46/19.1)

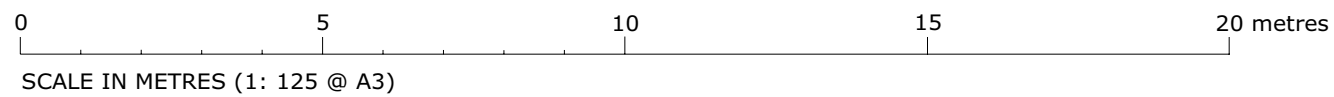


(b) View from south-west, 1965 (SRO C/P/65/3/1/46/19.2)








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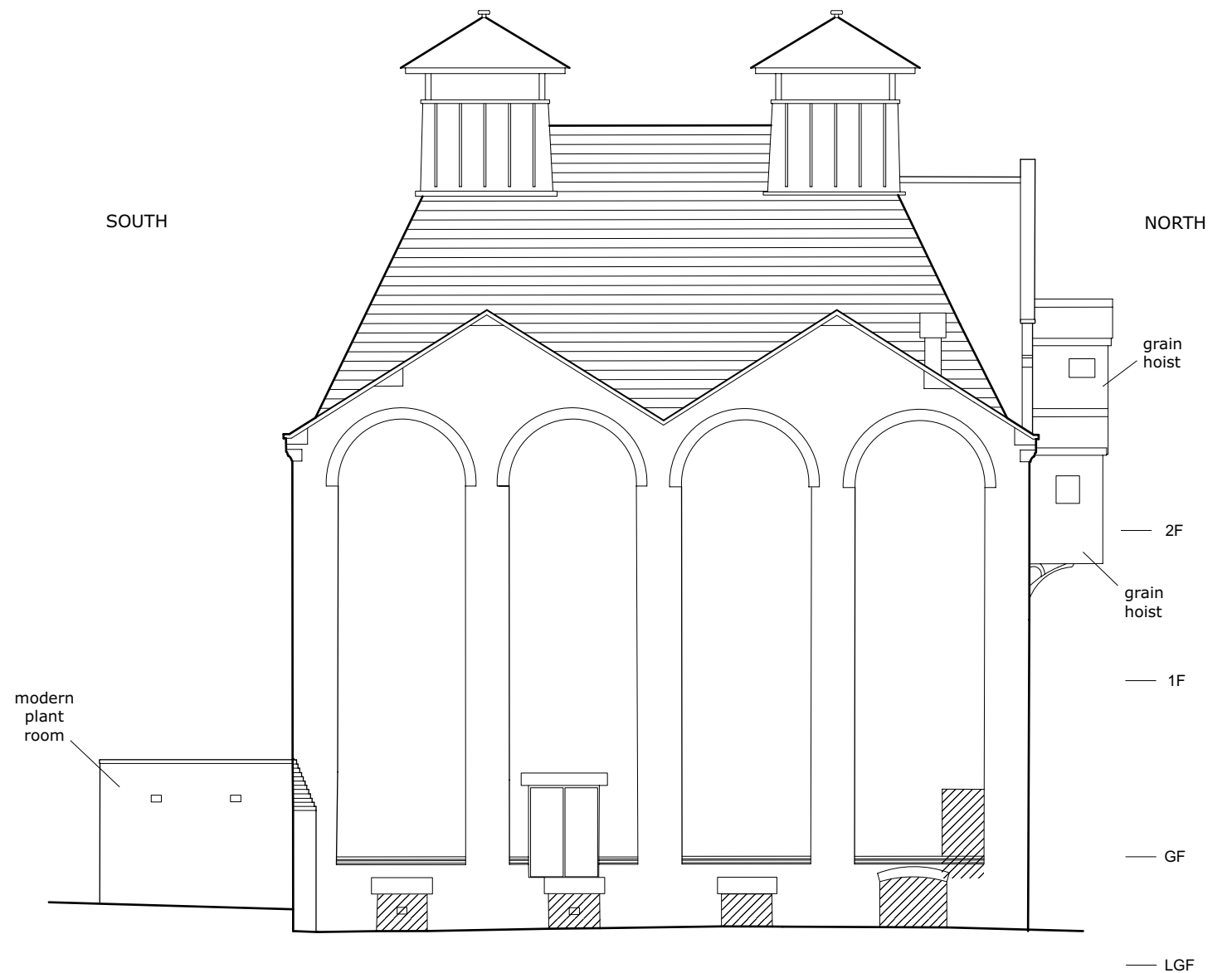


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|  | primary window (boarded lights)  |  | modern casement                       |   |                |








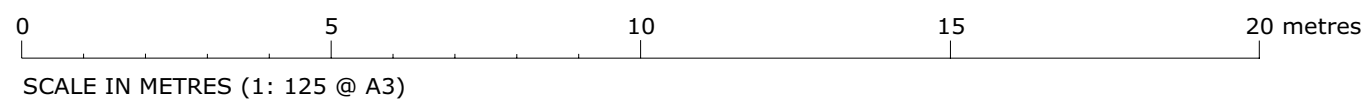
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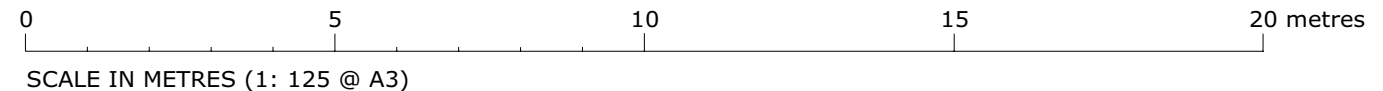
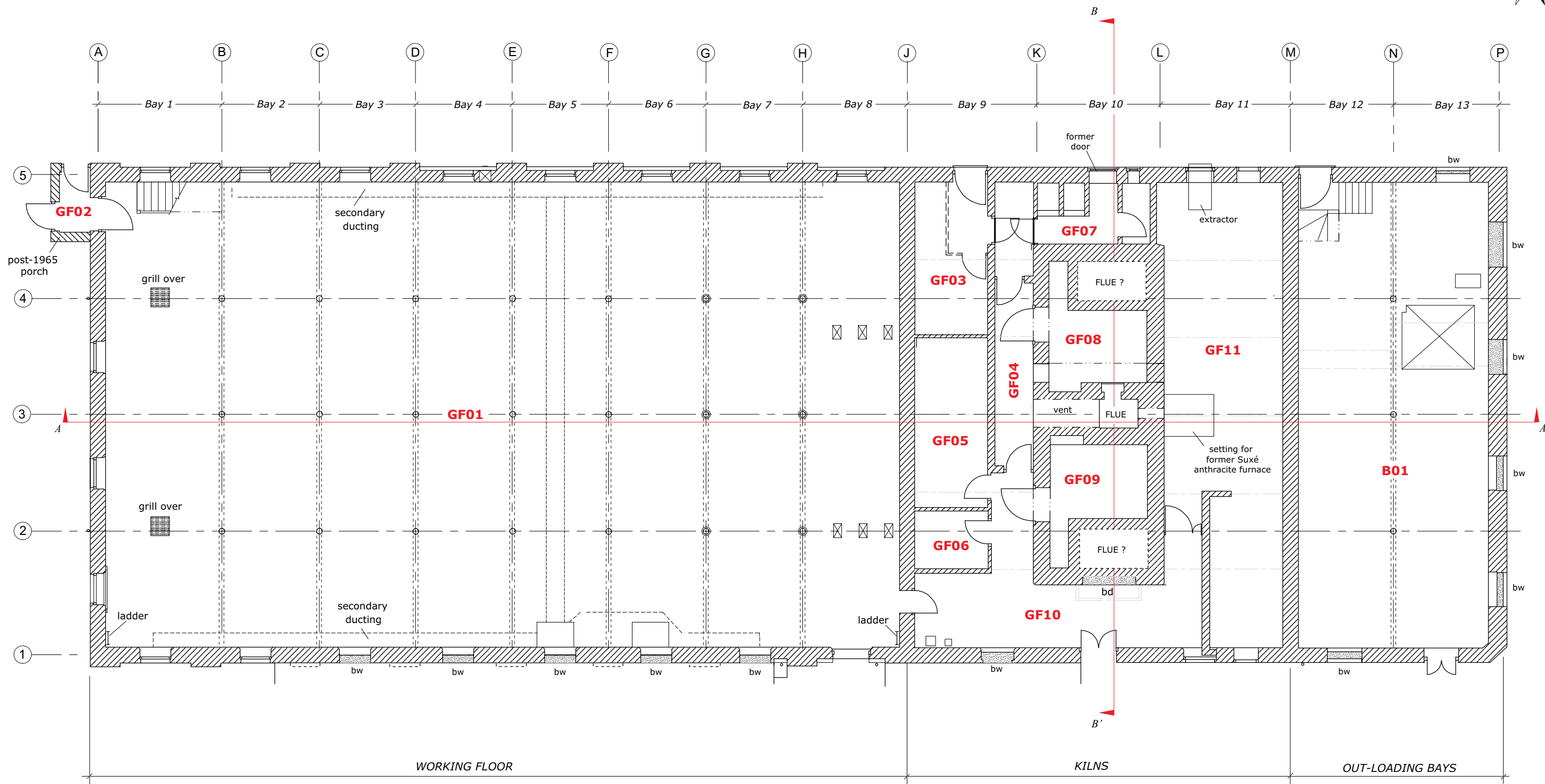


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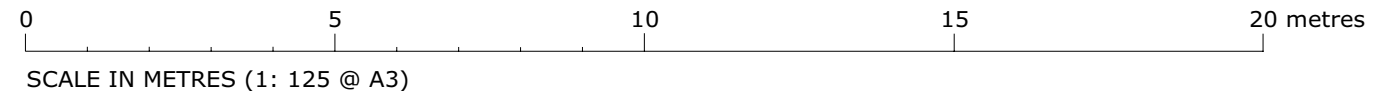
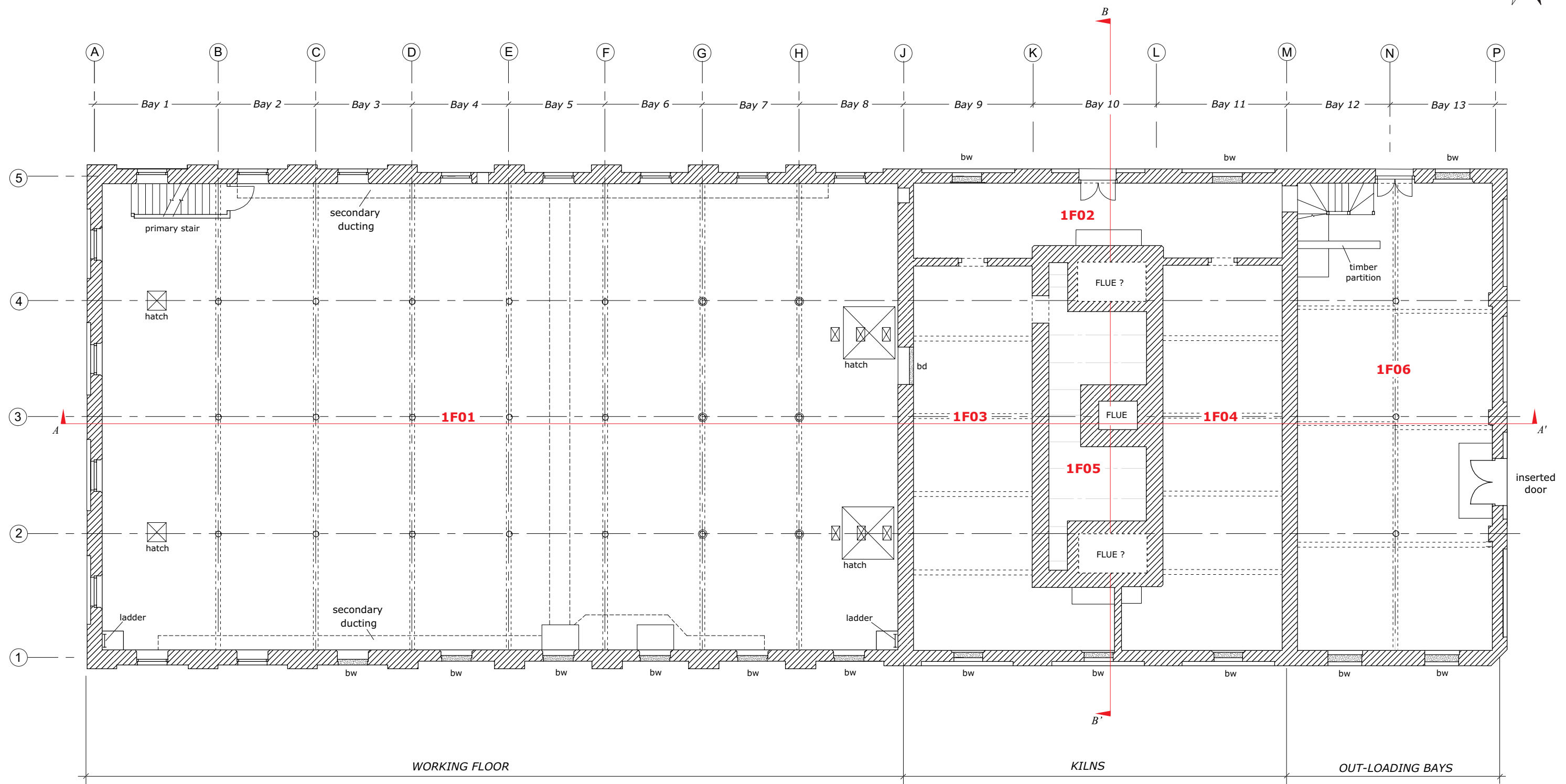
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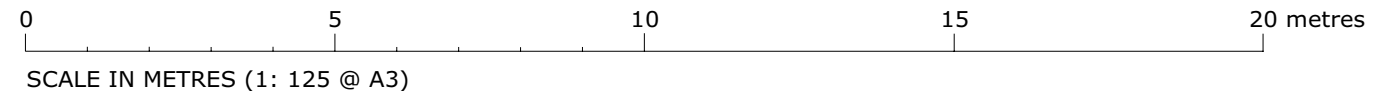
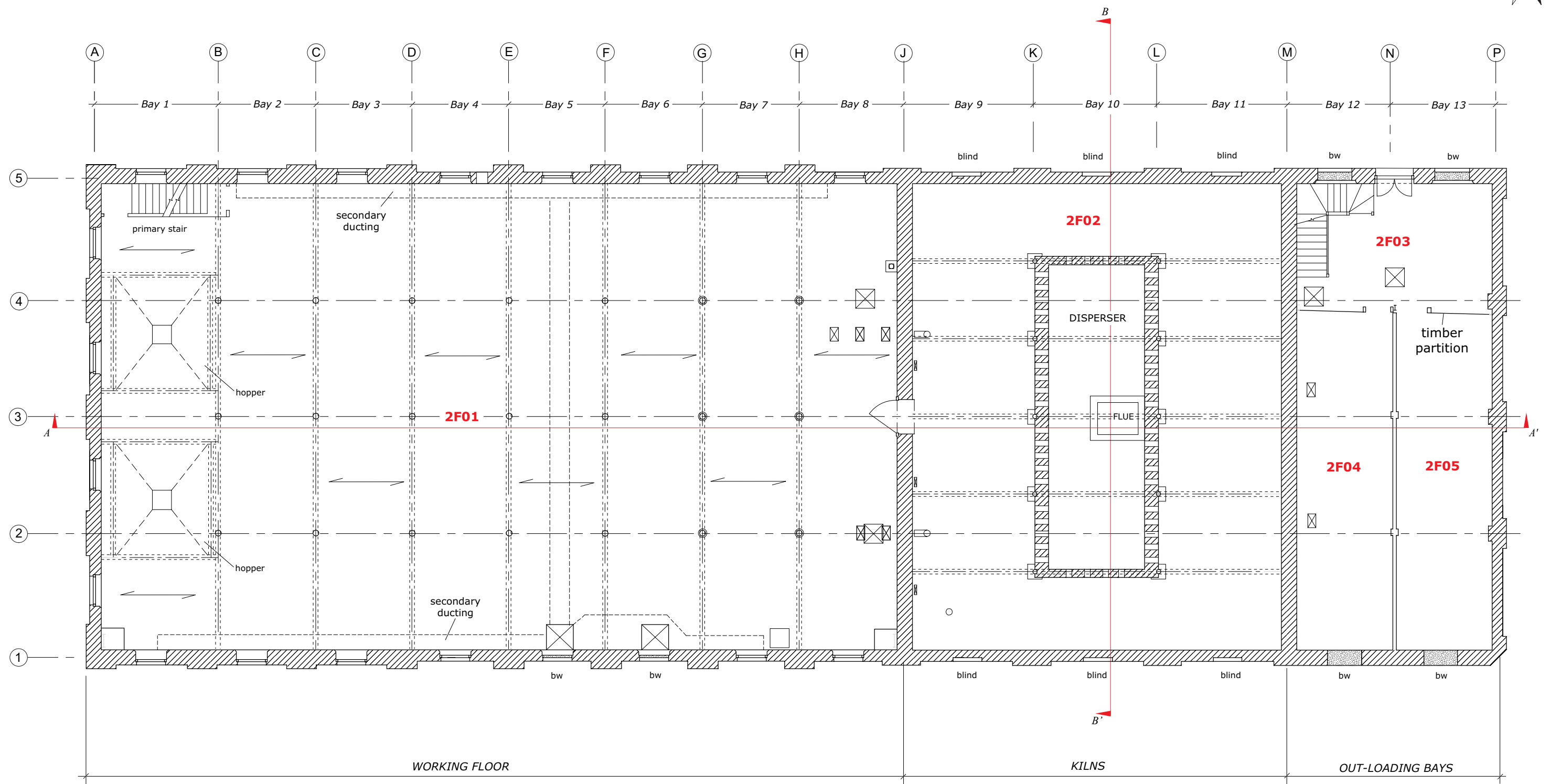
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|---|----------------------------------|---|---------------------------------------|---|----------------|
|  | primary bi-partite glazed window |  | secondary (post-1965) boarded shutter |  | blocked window |
|  | primary window (boarded lights)  |  | modern casement                       |   |                |

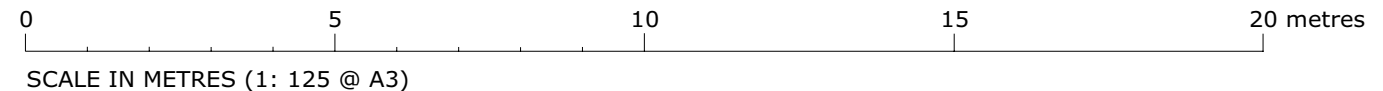
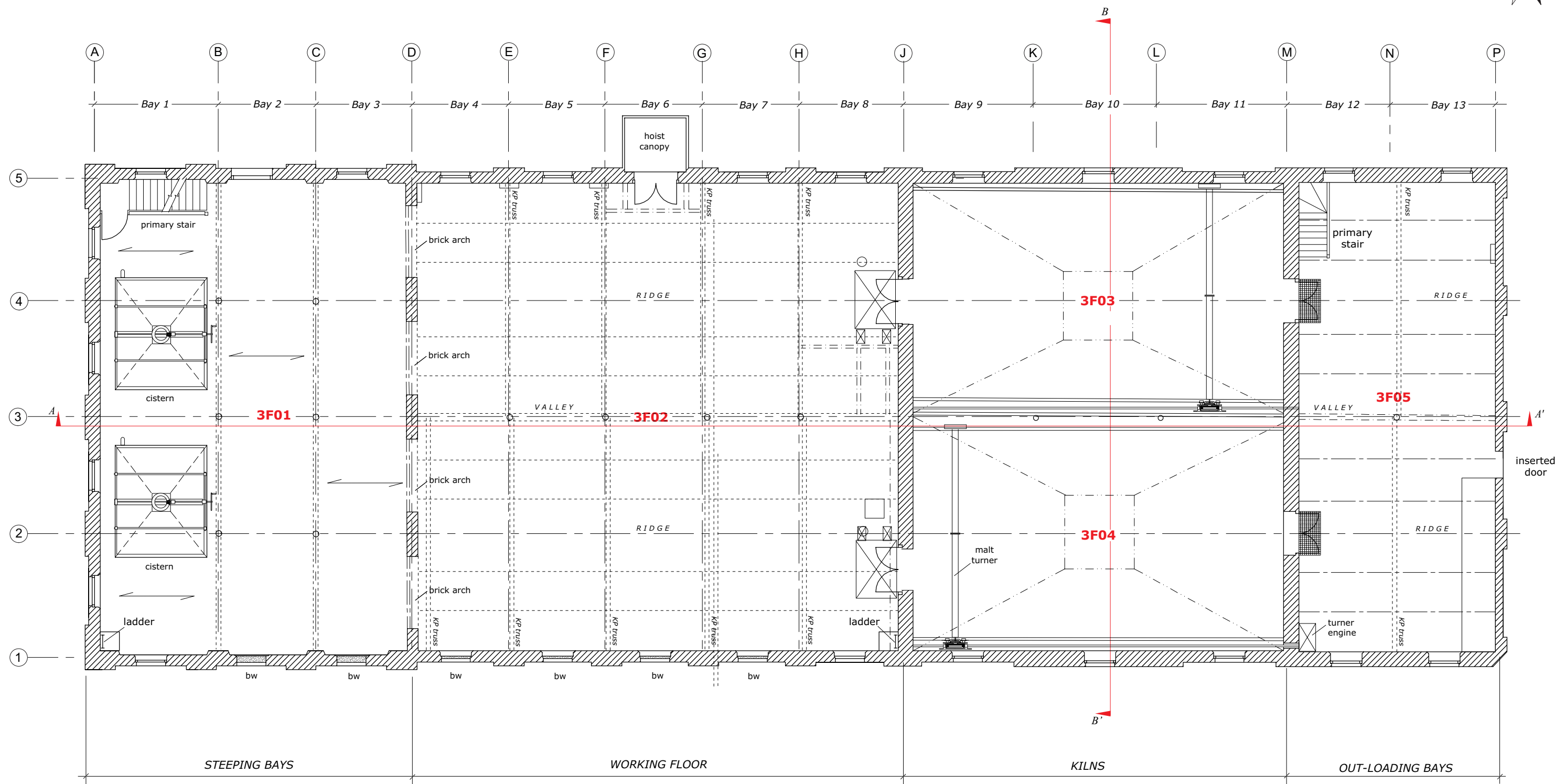


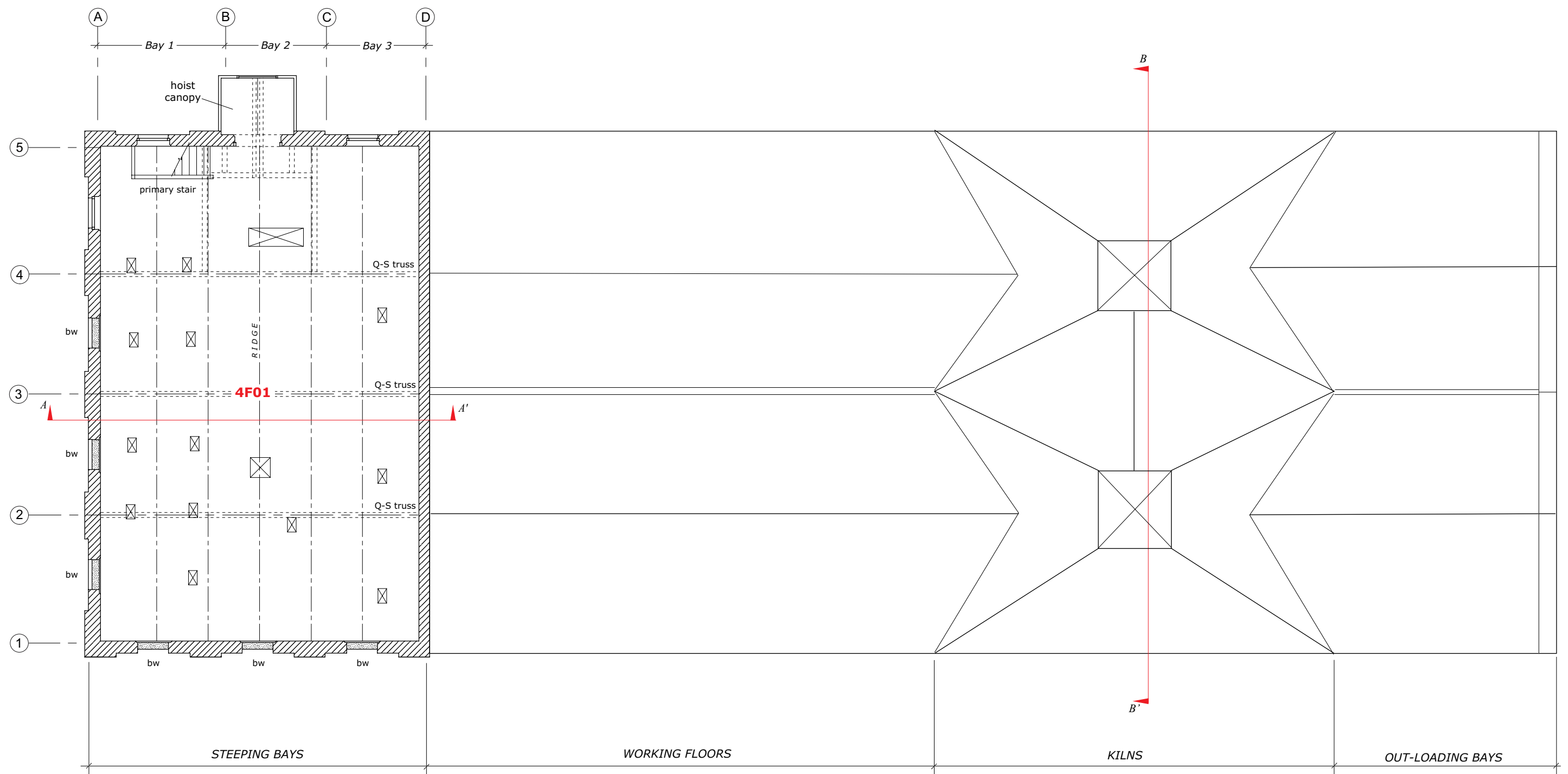






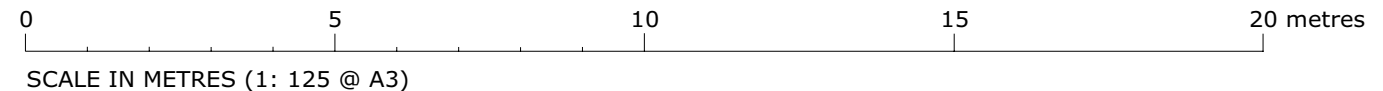


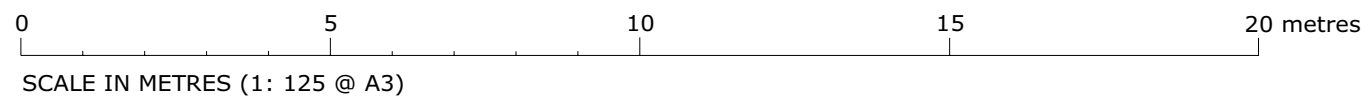


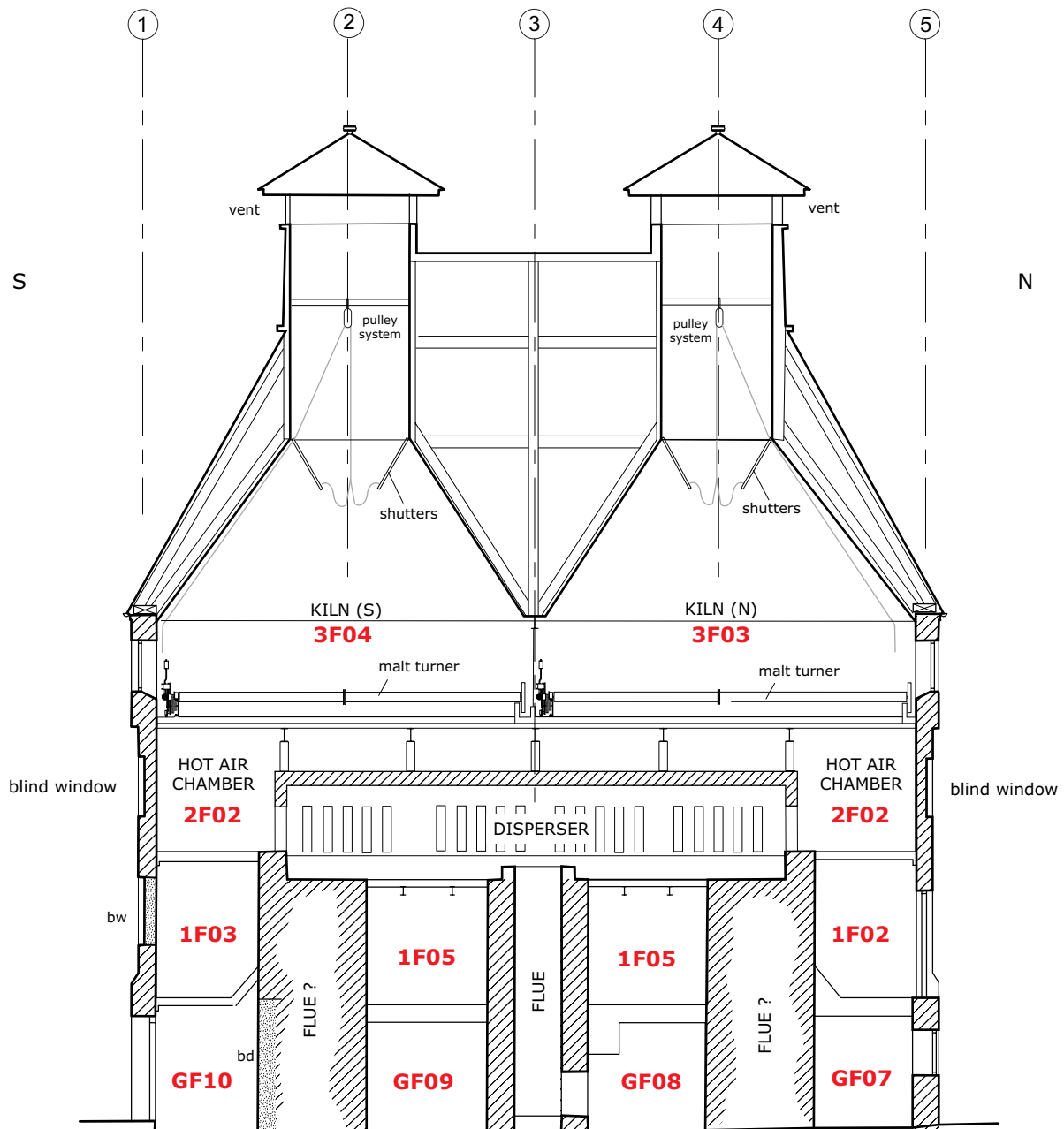


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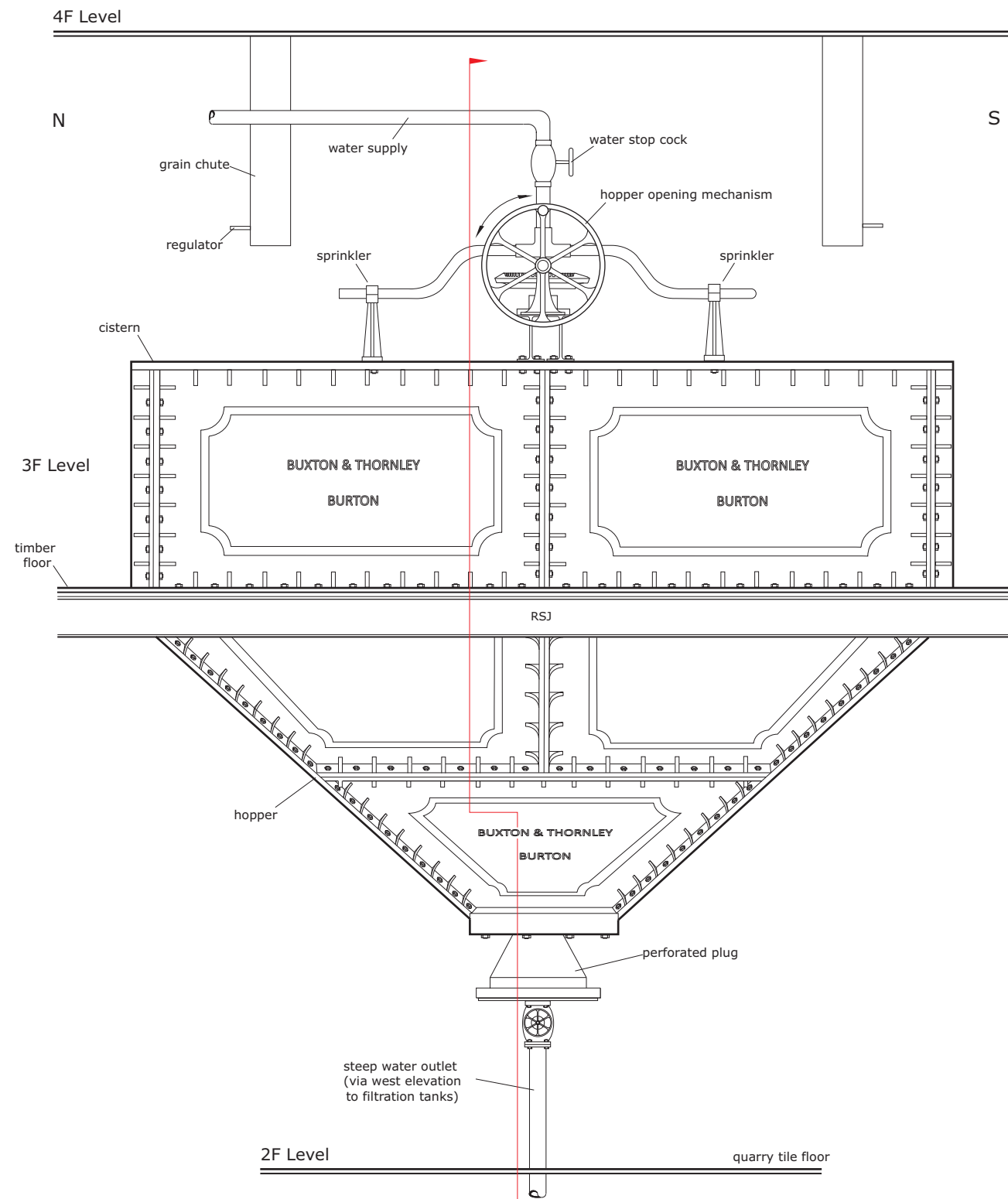
- bw** blocked window
- grain chute (covered over)



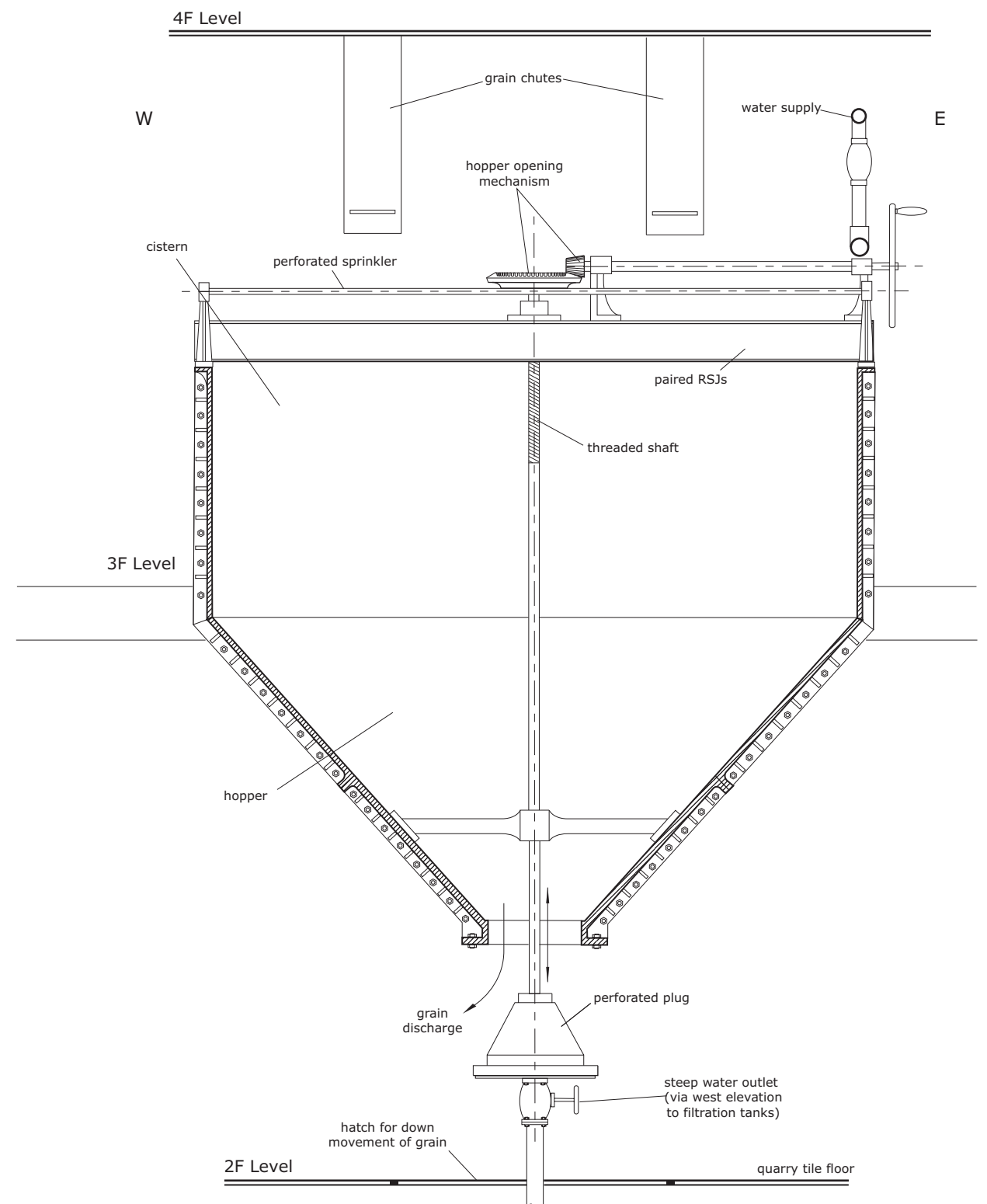




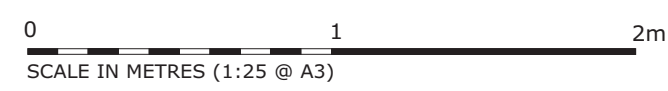
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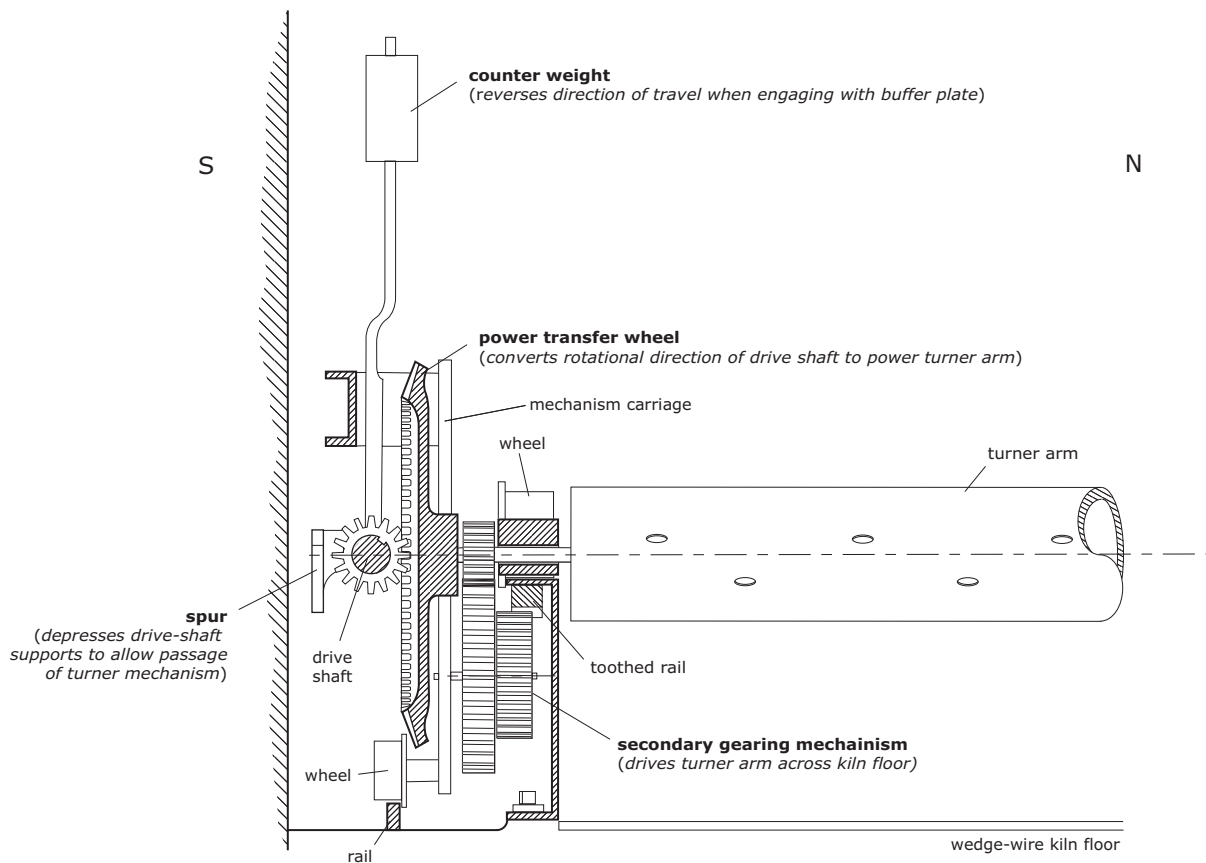


(a) Elevation

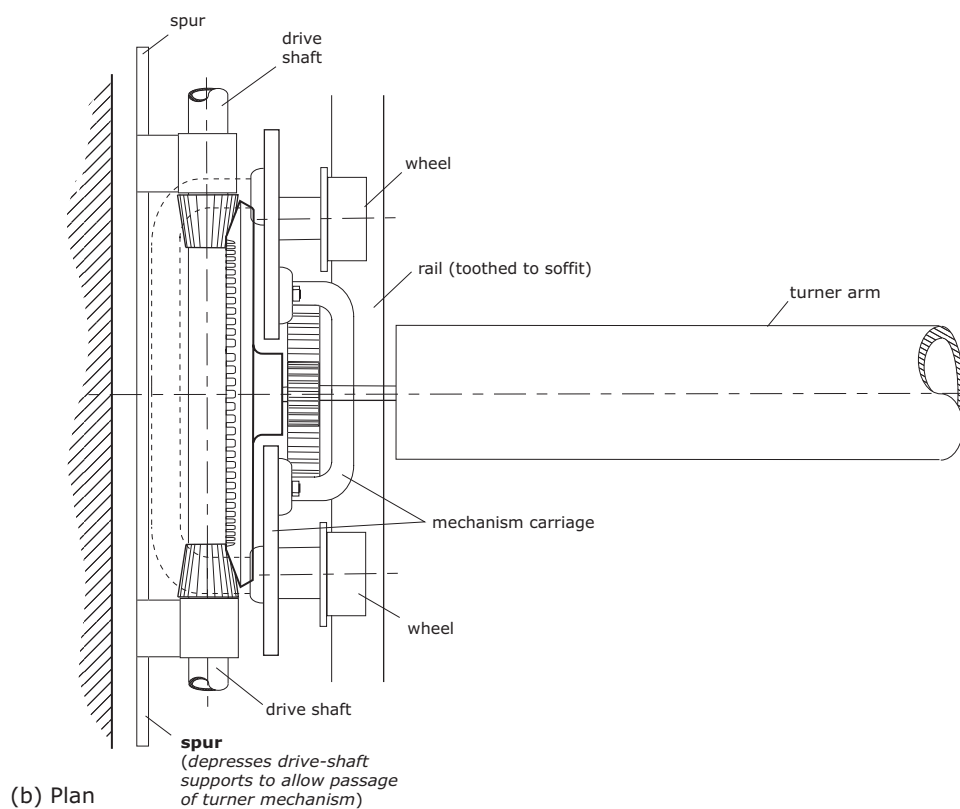


(b) Cross-section

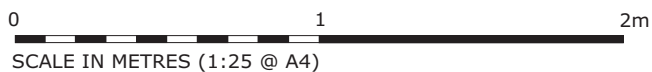




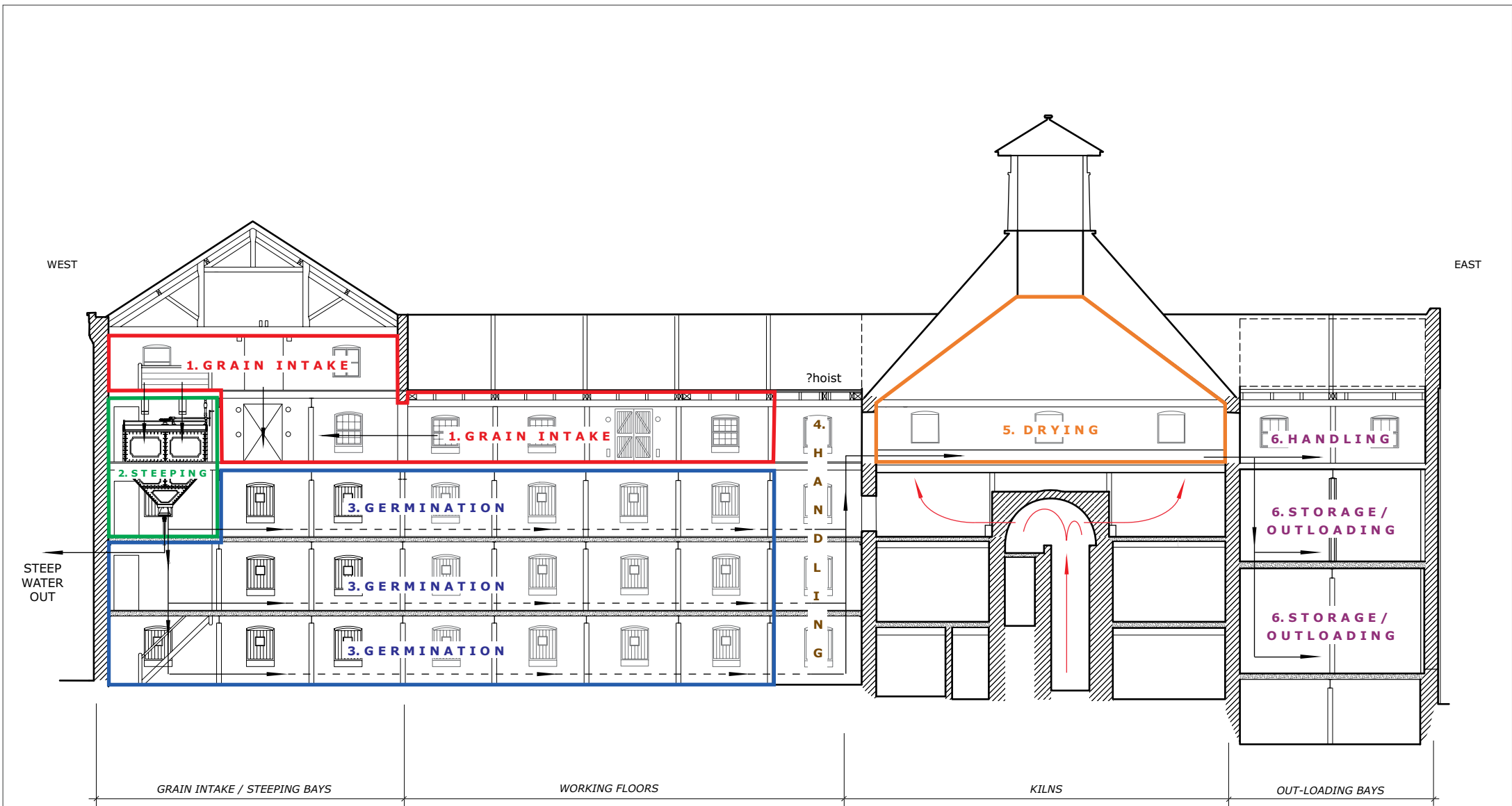
(a) Elevation



(b) Plan









**Plate 1:** North elevation; general oblique view looking south-west.



**Plate 2:** South elevation; general oblique view looking north west.



**Plate 3:** Barley intake range; N elevation.



**Plate 4:** Barley intake range; S elevation.



**Plate 5:** Barley intake range; west elevation.



**Plate 6:** Barley intake range, N elevation;  
detail of 4F projecting hoist canopy



**Plate 7:** Steep water filtration tanks at west end of maltings.



**Plate 8:** Working floors; N elevation.



**Plate 9:** Working floors; 3F hoist canopy.



**Plate 10:** Working floors (centre); south elevation.



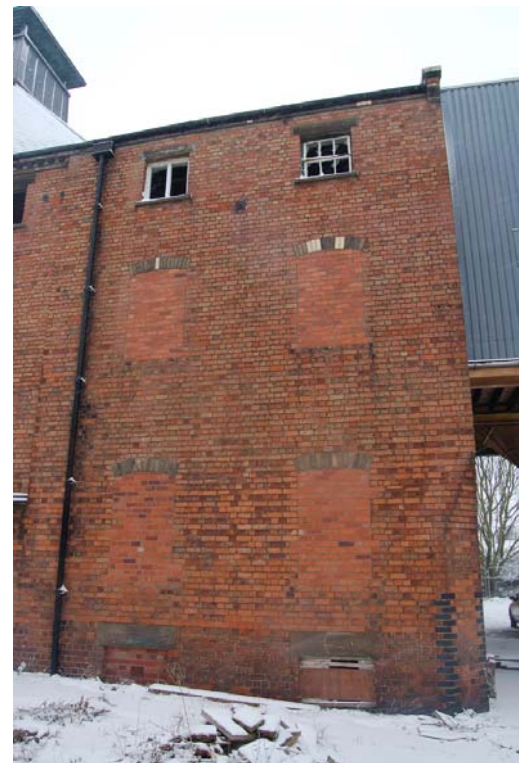
**Plate 11:** Kilns; north elevation.



**Plate 12:** Kilns; south elevation.



**Plate 13:** Out-loading range; N elevation.



**Plate 14:** Out-loading range; S elevation.



Plate 15: Primary bi-partite glazed window.



Plate 16: Primary window with boarded lights.



Plate 17: Secondary shutter (exterior).



Plate 18: Secondary shutter (interior).



**Plate 19:** Barley intake range, [4F01]; general view looking north-east.



**Plate 20:** Barley intake range, [4F01]; detail of queen strut roof truss.





**Plate 21:** Barley intake range, [4F01]; primary stair at north-west corner.



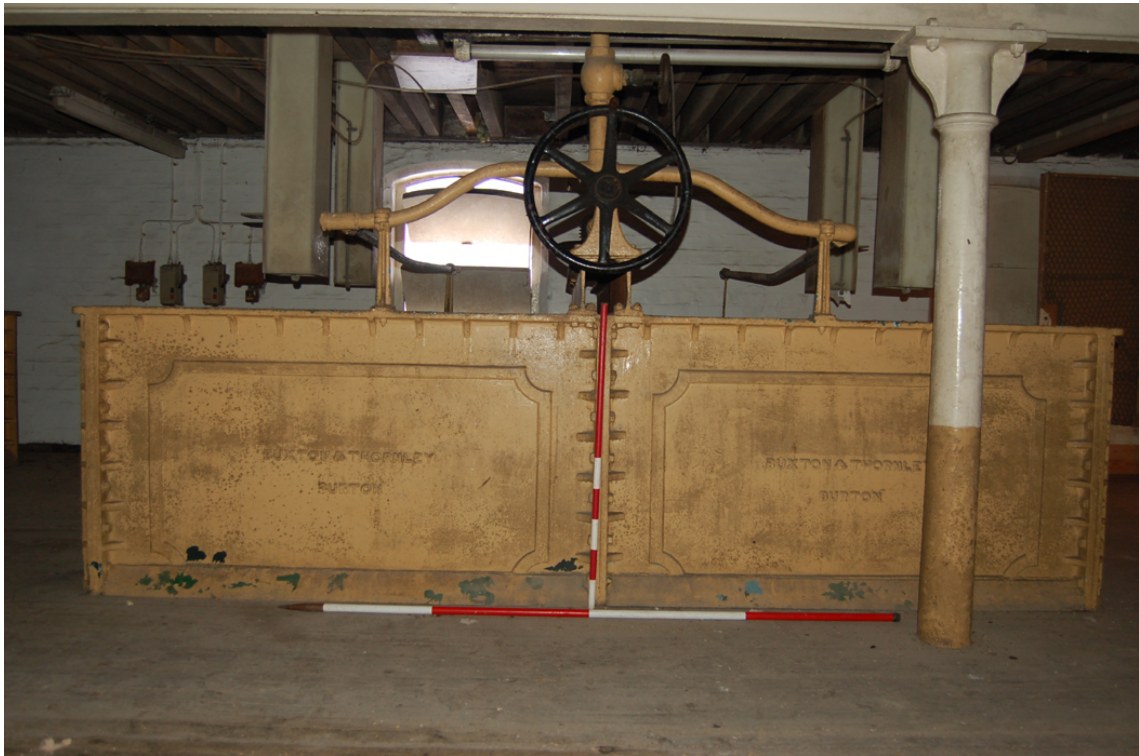
**Plate 22:** Barley intake range, 4F; detail of iron bracket supporting hoist canopy.



**Plate 23:** Barley intake range, [3F01]; general view looking south-east.



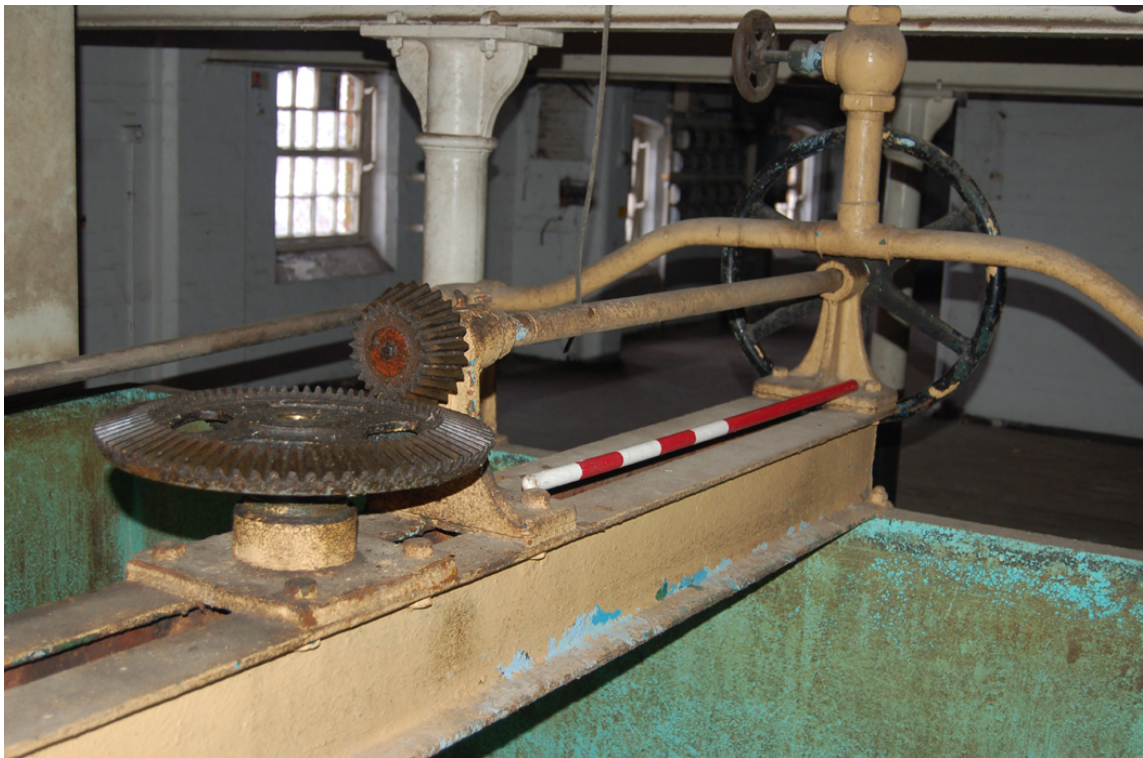
**Plate 24:** Barley intake range, [3F01]; steeping vessels at Bay 1.



**Plate 25:** Barley intake range, [3F01]; detail of Buxton and Thornley steeping vessel.



**Plate 26:** Barley intake range, [3F01]; detail of steeping vessel – water supply and opening mechanism.



**Plate 27:** Barley intake range, [3F01]; detail of steeping vessel – opening mechanism.



**Plate 28:** Barley intake range, [3F01]; detail of steeping vessel - overflow pipe.



**Plate 29:** Barley intake range, [3F01]; ceiling structure with herring-bone strutting.



**Plate 30:** [3F01]; detail of column head.



**Plate 31:** [3F01]; detail of timber grain chute.



**Plate 32:** [3F02] / [3F01]; dividing wall with arched openings.



**Plate 33:** Room [3F02]; general view looking north-east.



**Plate 34:** Room [3F02]; detail of king-post roof.



**Plate 35:** Working floor [3F02]; door to - kiln floor [3F04].



**Plate 36:** Working floor [3F02]: timber hatches and chute cover before kiln floor doors.



**Plate 37:** Working floor [2F01]; general view looking south-east.



**Plate 38:** Barley intake range, [2F01]; hopper bottoms of steeping vessels at Bay 1.





**Plate 39:** Detail of hopper bottom.



**Plate 40:** Hopper bottom; detail of grain outlet mechanism.



**Plate 41:** Barley intake range, [2F01]; detail of column head.



**Plate 42:** 2F working floor [2F01], east wall; detail of door to heating chamber.



**Plate 43:** Working floor [1F01]; general view looking south-west.



**Plate 44:** Grain intake range, [1F01]; detail of floor voids below steeping vessels at Bay 1.



**Plate 45:** Working floor [1F01]; secondary ducting looking west.



**Plate 46:** Working floor [GF01]; general view looking north-east.



**Plate 47:** Working floor [GF01], south-east corner: door to kiln range (left), fire escape ladder (centre) and door to exterior (right).



**Plate 48:** Barley intake range [GF01]; detail of stair.



**Plate 49:** Kiln range; [GF04] access corridor.



**Plate 50:** Kiln range [GF08]; flue doors.



**Plate 51:** View up flue to disperser.



**Plate 52:** Kiln range, [GF04]; plate metal door



**Plate 53:** Kiln range [GF09].



**Plate 54:** Kiln range, [GF10] (S); door to exterior.



**Plate 55:** Kiln Range [GF10]; blocked door to flue chamber.



**Plate 56:** Kiln range, [GF11]: stoke room looking north, note setting for anthracite furnace.



**Plate 57:** Kiln range, corridor [1F02].



**Plate 58:** Kiln range, [1F02]; loading doors.



**Plate 59:** Kiln range, east store [1F04].



**Plate 60:** Kiln range, west store [1F03].



**Plate 61:** Heat chamber [2F02]; detail of disperser looking north-east.





Plate 62: Heat chamber [2F02]; detail of interior of disperser with central flue opening.



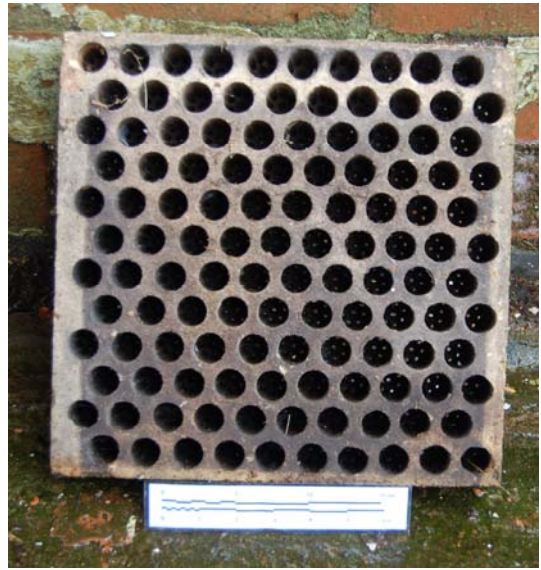
Plate 63: [2F02]; detail of u/s of wedge-wire kiln floor.



Plate 64: [2F02]; detail of *in-situ* primary perforated tiles.



**Plate 65:** Ex-situ perforated floor tile (top).



**Plate 66:** Ex-situ perforated floor tile (btm.).



**Plate 67:** South kiln [3F04] looking NW.



**Plate 68:** North kiln [3F03] looking SW.



**Plate 69:** Kiln turner arm ([3F04]).



**Plate 70:** Kiln turner mechanism.



**Plate 71:** Drive shaft support.



**Plate 72:** Smoke evacuation shutters.



**Plate 73:** Eastern out-loading [3F05]; west wall with doors to kiln floors and engine / drive wheel for north kiln turner mechanism (centre).



**Plate 74:** Out-loading bays, [3F05] roof and switchgear.



**Plate 75:** Out-loading bays, [3F05] roof and secondary plant.



**Plate 76:** Out-loading bays, [2F04].



**Plate 77:** Out-loading bays, [2F05].



**Plate 78:** Out-loading bays, [2F03] timber partition.



**Plate 79:** Out-loading bays, [1F06] timber partition (truncated).



**Plate 80:** Out-loading bays, [1F06]; loading doors to north (right) and stair to entrance level (left).



**Plate 81:** Out-loading bays; [B01].



**Plate 82:** Access to out-loading bays semi basement [B01].



**Plate 83:** Out-loading bays, [B01]; general view looking north.