Station Road Maltings, Barnby Dun, Doncaster, South Yorkshire

Archaeological Assessment & Building Appraisal

December 2005

Report No. 1469

Wright Investments

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Contents

Summary

In advance of development the maltings at Station Road, Barnby Dun were the subject of an archaeological assessment and building appraisal. Despite the fact that over half of the original building had been totally destroyed by fire in 1999 enough remained of the building to enable the processes to be reconstructed. An archive study revealed that the building was owned by a local man, Mr George Milnthorp.

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1. Introduction

1.1 Archaeological Services WYAS undertook initial survey work on Tuesday 15th November 2005 at Station Road Maltings at the request of Andrew Gilgunn, acting on behalf of Wright Investments.

1.2 The archaeological assessment and building recording was based upon a specification produced by Roy Sykes of the South Yorkshire Archaeology Service and was required as part of the pre-planning process.

1.3 The building is located at National Grid Reference SE 618 082 to the south-east of Station Road between Barnby Dun and Kirk Sandall (Fig. 1). The maltings lies adjacent to the north-west side of what was the London and North Eastern Railway (Fig. 2).

1.4 The building had been listed Grade II. Following a disastrous fire in 1999 which destroyed the entire north-eastern half of the building it was de-listed in 2004.

2. Methodology

2.1 Weather conditions on the survey days were generally bright and clear. Light levels were good and artificial light (other than fill-in flash) was not required.

2.2 A risk assessment had been prepared in advance. This highlighted few risks as the buildings were found to be in good repair. It was however noted that some floor boards on the upper levels had started to rot in places.

2.3 Drawn survey. Sketch plans were produced on site based upon original survey drawings undertaken for Wright Investments by H H Surveys Ltd of Barnsley. Check measurements were made using a combination of hand tapes and remote EDM measurement. Survey data were processed at Archaeological Services offices at Morley, where plans of the building were amended and annotation added. Two sections were placed across the building to give more detailed information and were produced using a similar methodology.

2.4 Photographic record. A medium format (Mamiya RB 6x7cm) camera was used to record, in general and in detail, the interior and exterior

of the standing structures and their environs. The record was black and white. In addition, a number of black and white photographs were taken in 35mm format. This record was supplemented by the production of a small number of 35mm colour transparencies.

2.5 Initial data were processed at Archaeological Services offices at Morley during November and the early part of December 2005. A final report and archive was produced in Mmd December 2005.

3. Historical Map Evidence

3.1 Fig. 3. Ordnance Survey Map, scale 6 inch to 1 mile, 1893 edition. Barnby Dun station, on the Manchester, Sheffield and Lincolnshire Railway, is shown close to the junction of Armthorpe Lane and Station Road. At this date the malting has yet to be built.

3.2 Fig. 4. Ordnance Survey Map, scale 6 inch to 1 mile, 1905 edition. The hatched and highlighted building is the earlier part of the malthouse which was to be destroyed by fire in 1999. The railway siding is a new feature, as is the small terrace of workers houses to the north of the malthouse. Note that Kirk Sandall Common is not developed at this time.

3.3 Fig. 5. Ordnance Survey Map, scale 6 inch to 1 mile, 1927 edition. The hatched and highlighted building is the extended malthouse, the south-western part of which survives today. The railway is now called the London and North Eastern. To the south-east of the malthouse and station is the recently developed Kirk Sandall Estate.

4. Malting. Introduction and Process

4.1 Introduction

Malting is the controlled germination of cereals (principally barley) and the termination of this process by the application of heat. Additional heat is deployed in order to impart the desired colour and flavour. It is the brewer who completes the modification cycle by boiling the ground malt (grist) to produce fermentable sugars and other nutrients (in the form of wort) capable of feeding the microscopic fungus known as yeast. The principal by-products of this subsequent liason are alcohol and carbon dioxide. Malt has often been described as “the soul of beer”.

A self-contained package, the barley kernel consists of an embryo (or germ) embodying the root and shoot of the nascent crop. The adjoining endosperm - a hard starch - provides a store of protein for the emergent embryo and accounts for 80% of the dry weight. The

outer husk comprises two overlapping halves protecting the embryo and endosperm. Older (though still popular) styles of barley include Maris Otter and Golden Promise. The crop is harvested during the summer months and placed into storage for the remainder of the year.

Today the UK malting industry is the third largest in the world. Of the trade members affiliated to the Maltsters Association of Great Britain (97%), only three now boast premises in Yorkshire (viz. Bridlington, Castleford and Malton). The last traditional floor maltings was built at Grimsby in 1952.

4.2 Barley Storage

Accommodated within the two uppermost storeys.
Structural Evidence:

Hoists (sited over a now removed railway siding)
Access to a kiln (for moisture reduction)
Wooden flooring
Dormer ventilation holes
Access to a steep

The floor malting process began with the reception, inspection and sieving of freshly delivered barley grain.

The newly arrived load was gently dried in order to reduce the moisture content to approximately 14% - the level required for safe storage. The process was conducted in either the malt kiln itself, a separate barley kiln, or - from the dawn of the 20th century onwards - in a specialist drying drum. The dried barley was then stored in wooden bins sited close to the steeps.

After resting for six weeks or more so as to recover a degree of vitality, the grain was screened in order to remove foreign particles.

4.3 Steeping

Located at the north-eastern (now destroyed) and south-western extremities of the building.

Structural Evidence:

Cast-iron hopper-bottomed steep separated from the kiln by the length of the germination floor
Uppermost portion of the steep protruding through the lowest of the loft storage floors
Lowest portion of the steep piercing the uppermost germination storey ceiling

Internal chutes giving access to the lower floors

The grain was immersed in warm (54F) water, dried and rested - a process repeated several times over a period of two to three days. The moisture content was thereby raised to the optimum level of between 40% and 45%, enabling germination (root growth) to begin.

The practice of couching - the heaping of steeped grain so as to initiate self-perpetuating heat generation - ceased to be a legal requirement when Malt Tax - introduced in 1644 and calculated by this very means - was repealed in 1880.

4.4 Germination

Conducted at lower ground, ground and first floor levels.

Structural Evidence:

Low ceilings
Tiled floors set in a diagonal pattern
Long elevations liberally supplied with windows (shuttered for regulation of air-flow)
Access to steeps
Access to a kiln

Traditionally, the steeped grain was then transferred to the germination floor. There, over the course of ten to fourteen days, the so-called “green malt” was raked and turned at regular intervals in order to release the carbon dioxide, disentangle the fast-forming roots, and dissipate the internal heat (56F - 70F) - itself regulated by the depth of the grain (4” - 8”, depending upon the prevailing weather conditions). Under the piece method of germination, an individual parcel of grain was gradually edged from one end of the room to the other; under the strip method, however, the green malt was laid the length of the germination floor.

The embryo proceeds to generate enzymes, which break down the endosperm and transform the hard starch into simple sugars (eg maltose) - a process referred to as “modification”.

4.5 Kilning

Carried out within the three-bay gable-ended blocks (of which once there were two).

Structural Evidence:

Access to the germination floors
A kiln floor of perforated ceramic tiles formerly located at second floor level (the exterior ties alone now remain)

A ridge vent cowl that stimulated a natural draught through the malt

Before germination converted the now soluble starch entirely to sugar, the modified green malt was conveyed to the kiln and heated for three to four days in order to halt the process and lock in the remaining brewing potential. First gently dried and then cured (the latter at a higher temperature), the grain (spread to a depth of 8”-12” and turned by hand) was subjected to variable combinations of air-flow and heat, dependent upon the colour and flavour required by the customer (high heat - up to 220F - produced dark roasted malts suitable for milds, porters and stouts). Historically, it is held, the production of one ton of malt expended the same amount of energy as the production of one ton of steel; modern methods are up to 17 times more efficient. The resulting malt - for now it could be termed as such - boasted a moisture content of between 3% and 6% and could be stored for several months without loss of quality.

4.6 Malt Storage

Accommodated within the three uppermost storeys and the central three-bay block (the latter now destroyed).

Structural Evidence:

Access from a kiln
Access to the transport network
Wooden flooring
Dormer ventilation

Once the rootlets - or “culm” - had been removed, the malt (before eventual release to the customer) was placed in reserve for a minimum of one month - a procedure requiring extensive on-site storage space. Owing to the differing moisture contents, it was essential that “kilned” barley and “dressed” malt were stationed apart.

5. Historical Background

5.1 Barnby Dun (formerly Barnby-upon-Don)

Located 5½ miles north-east of Doncaster, Barnby Dun in 1901 boasted 577 inhabitants. The sandy soil and sub-soil proved ideal for the cultivation of turnips, barley, and wheat.

The parish church of St. Peter and St. Paul, part of which dates from the early 14th century, is now a Grade II* listed building. It contains an organ donated in 1910 by Scottish philanthropist Andrew Carnegie and local maltster (and Lord of the Manor) George Milnthorp.

Access to the transport network appears to have been a determining factor in the decision by George Milnthorp to site his new (1900) maltings as he did. The South Yorkshire Railway linked Barnby Dun with Doncaster from 1855 to 1866, when The Manchester, Sheffield & Lincolnshire Railway (renamed The Great Central Railway in 1897) arrived by a more direct route. Within weeks The West Riding & Grimsby Railway had established a goods facility at Bramwith – only a short distance to the north. The Great Central Railway tracks were quadrupled in 1913, when the station underwent reconstruction. Passenger services were withdrawn from Barnby Dun on 4 September 1967. Bramwith lost its goods facilities in 1980.

In the years immediately following World War One, Pilkington Brothers established a glass factory at nearby Kirk Sandall - on land formerly owned by George Milnthorp.

Part of Barnby Dun was lost to Thorpe Marsh power station (opened 2 June 1967 and closed 31 March 1994).

5.2 George Milnthorp

Born at Streethouse, near Featherstone, on 1 September 1841, George Frederick Milnthorp was the third son of Hannah (nee Denison) and John Milnthorp, the latter descended from an established Altofts farming family (grandfather Joseph Milnthorp appears in the 1807 Altofts poll book). By the time of the 1851 census, father John (aged 42) was farming 180 acres of Streethouse land (the second largest holding thereabouts).

Following a private education at Pontefract and Wakefield, George was placed in charge of a malt kiln owned by his father and situated at Royston. In 1873, aged 32, he acquired the Manor House Farm and 56 acres of land at Barnby Dun and embarked upon the rearing of sheep, pigs, horses and cattle. At around the same time, he established a maltings nearby.

By 1881, the family malting empire was widespread: older brother Joseph Milnthorp was active in South Lincolnshire - and in later years endowed the Milnthorp Homes at Buxton, Derbyshire; younger brother James Milnthorp owned premises at Canal Side, Goole, with associated production sites at Hensall, Pontefract, Calder Grove, Shepley Bridge and Doncaster; uncle Joseph Milnthorp was based at Tollerton; cousins Thomas and Joseph Milnthorp operated out of Honley; cousin John Henry Milnthorp remained at the family seat of Altofts.

In due course George Milnthorp obtained land at Fenwick, Kirkhouse Green, Kirk Sandall, and a 4,300 acre estate at Tathwell, near Louth, Lincolnshire. His Barnby Dun holdings alone eventually amounted

to 500 acres of land and seven maltings, “all arranged and fitted up on the most up-to-date principles”.

G. F. Milnthorp Ltd. was incorporated c.1906, the majority of shares being acquired by existing customers. A subsidiary operation in Leeds was listed at around the same time. George Milnthorp himself retained an active managerial role until 1921 - two years before his death. The company bearing his name ceased to feature in GPO directories in 1967.

The Doncaster Chronicle noted: “In his malting business Mr Milnthorp was his own buyer, and his success may be largely attributable to the fact that he always bought the best barley to be found on the market. In his time he was the oldest buyer in the Doncaster market. It was a proud boast of his that he never lost a customer through any complaint about the quality of the malt he supplied, and he dealt with some for fifty-eight years. His business connection with the Thorne brewery went back over forty years”.

Recovering from an operation, George Frederick Milnthorp suffered a fatal heart attack at St Hilda’s nursing home, Thorne Road, Doncaster, on 5 May 1923, aged 81; first wife Sarah Eliza had passed away in December 1915. Among the floral tributes at his Barnby Dun funeral was a bouquet from Earl and Countess Fitzwilliam and another from the Hatfield Waterworks Company, of which the deceased was Chairman. He was survived by his second wife and by a daughter from his first marriage.

5.3 Station Road Maltings

The original Station Road maltings (subsequently a Grade II listed structure) was erected c.1900 - as was the terrace of workers’ houses situated close at hand.

The Doncaster Chronicle records: “It was characteristic of Mr Milnthorp that he was his own architect for most of his buildings, with the assistance of his joiner, Mr Thomas Scholes, who was his handy man in all his business enterprises. An architect was employed for the first malting at Barnby Dun, but Mr Milnthorp preferred his own ideas in practical adaptation to his requirements”.

Constructed from red brick and Welsh slate, the premises consisted of three storeys, a partial basement and two attic floors. Ten mirror image bays, situated to the south-west and incorporating a second louvred gable and boarded hoist house, were added in 1924.

With regard to the overall structure, the two seven-bay end sections embodied tiled floors and low ceilings mounted on cast-iron columns. Each of the three-bay gables contained a brick-vaulted semi-basement boiler house and, at a higher level, a pierced-tile

kilning floor. The central three bays featured cast-iron columns equipped with bin partition slots.

Doncaster Star contributor David Attey recalled: “You never forgot the smell of malt, after you’ve been round a malt kiln. Yet the pungent odour didn’t smother the whole village, it just shrouded the immediate vicinity. I knew a workman whose job it was to return to the kilns every four hours during the night to turn the barley”.

The Station Road premises - one of the largest in Yorkshire - turned out its last lorry load of malt in the mid-1980s.

Disused for two years, the property was acquired by building contractor Jack Butterfield. There he established Maltings Demolition Sales, purveyors of reclaimed building materials. Towards the end of the 1990s the business was renamed Maltings Timber and DIY Company - one of the region’s largest independent builders’ merchants and bankrupt DIY stock clearance centres. Surplus accommodation was let to small firms engaged in allied industries.

At 4.00pm on 1 July 1999, in the worst Doncaster blaze since the gutting of the Corn Exchange five years earlier, more than 70 fireman tackled a wood-fuelled “inferno” that consumed the northern (and original) portion of the structure. Sparked by welding equipment, the fire was attended by appliances from Doncaster, Thorne, Adwick, Edlington, Brampton, Mexborough, Maltby and South Elmsall. Damping down operations continued until 6.00pm the following evening. Services along the adjacent Doncaster to Scunthorpe rail route were suspended at the height of the blaze. A shower of white asbestos cement from the roof lining caused local concern for several days afterwards. Doncaster Advertiser Citizens Guide.

Former brewery customers included:

W. M. Darley Ltd., King Street, Thorne, near Doncaster
Founded by William Marsdin Darley, who passed away on 7 April 1892, aged 65. Control of the firm rested with his son, Charles William Darley, until his death (at the age of 73) on 22 June 1926. Francis Darley of Ranby Hall, Nottinghamshire, son of Charles William Darley, died on 19 November 1933 (aged 53), having latterly occupied the post of manager and buyer at G. F. Milnthorp Ltd. Both he and his father were present at the funeral of George Milnthorp. Incorporated in November 1927, W. M. Darley Ltd. remained a family business until October 1978, when the company was acquired by Vaux Breweries of Sunderland. Suspended in 1986, production was afterwards transferred to Wards Brewery in Sheffield.

Mappin’s Masbro’ Old Brewery Ltd., Greasboro’ Road, Rotherham

Founded by John Newton Mappin, maltster (Low Fishergate, Doncaster) and cutlery manufacturer (Mappin, Webb & Co., Royal Cutlery Works, Sheffield). At his death (aged 82) on 22 October 1883, his extensive collection of paintings (valued at £60,000) was bequeathed to the city of Sheffield - together with a gift of £15,000 towards the cost of constructing the gallery which, to this day, bears his name. Frederick Cowlishaw, 60 year old son of John Yeomans Cowlishaw - the nephew and co-beneficiary of John Newton Mappin, was present at the funeral of George Milnthorp, a major shareholder and one time Chairman of the brewery. Incorporated in October 1885, the company was acquired by William Stones Ltd. in 1954, only to be mothballed the following year.

Thomas Rawson & Co. Ltd., Pond Street Brewery, Sheffield
Founded in 1758, and thus for many years the oldest Sheffield brewery, the firm pioneered the tied-house system of distribution and was the first outside London to produce the porter style of ale. The brewery itself was destroyed by enemy action on the night of 12 December 1940 (Barber,1980).

6. Context List

6.1 Malthouse, Lower Ground Floor

001. Wooden framed stairs with mesh steel treads leading to the first floor. Probably a secondary feature.

002. Breeze block blocked doorway leading to the ground floor of the kiln room. Similar feature to 004.

003. Steel chute, encased in wood.

004. Breeze block blocked doorway leading to the ground floor of the kiln room. Similar feature to 002.

005. Cast-iron columns supporting large soft-wood beams for the floor above. 4 to each of 12 beams. The more substantial beam at the south-west end is supported on 5 columns.

006. Softwood beam supporting the floor above.

007. Double inner-opening doors. Opening has a steel beam lintel over. A secondary feature.

008. Non-diagnostic steel brackets set into the north-east wall.

009. Segmental arched window opening with a softwood frame having 3 lower adjustable louvers with a fixed light over. A total of 6 examples on this floor.

010. Wall is constructed of hard early 20th century brick in English Garden Wall Bond. Mortar has powdered cinder inclusions.

011. Former window? Converted to a fire door. The frame is earlier than the door which is modern

012. Segmental arched window opening with a softwood frame divided horizontally into 3 lights. A total of 7 of the type, all towards the south-west end.

013. Segmental arched window opening with a softwood frame which has been divided into 3 lights, I over 2. The lower two are boarded up and have original vertical iron bars. Total of 5 examples on the south-east side.

032. A series of 4 rectangular holes in the floor above. All have trap-doors over and 3 have steel coils attached to either end of the recess.

6.2 Kiln Room, Ground Floor

014. Two point arched door opening. The original door has been removed and replaced with plywood.

015. Wide segmental arched window with a flush stone sill

016. Later wide door opening with a double RSJ lintel and recent sliding wood door.

017. Two point arched door opening with a later inserted wooden door. Gives access to the electric switch house.

018. Recent wide opening with a double RSJ lintel. Stairs lead up from the kiln room to the first floor of the malthouse.

019. Brick blocked cast-iron wall box. This has few associations with the existing building and may have part of a power system to the north-east.

048. Brick blocked cast-iron wall box in the south-east wall.

6.3 Malthouse, First Floor

020. Two point arched window opening with top fixed light and three lower adjustable wooden louvers. 10 examples of the same type.

021. Two point arched window opening with softwood frame with one upper horizontal light and two lower vertical lights. The lower part of the window is barred. 7 examples of the same type.

022. Circular cast-iron tie-rod plates. One to each external end of the 13 internal beams.

023. Steel framed fire-escape at the southern corner of the building A later addition.

024. Trapdoor in the first bay from the north-east. Probably secondary.

025. Steel chute at the centre of the first bay.

026. Cast-iron columns supporting the floor beams. The 0.13m shaft widens out at the top to hold the thickness of the beams. Four columns to each of 12 beams, with 5 columns supporting the 13th beam at the south-west end.

027. Softwood floor beams

028. Diamond set square floor tiles. Similar to the surface on the lower ground floor.

029. A series of 5 rectangular holes in the floor above. All have trap-doors over and 3 have steel coils attached to either end of the recess. Similar to 032 on the lower ground floor.

030. Later wooden stairs in the 12th bay.

031. Later wooden stairs in the 13th bay.

Malthouse, Second Floor

033. Wood framed stair with steel mesh treads.

034. Window opening with flat lintel looking into the kiln room.

035. Steel brackets attached ton the face of the north-east wall. Similar to 008.

036. Black fill lines around the lower ground, first and second floors of the malthouse at a height slightly above the start of the inclined window sill

037. Black-boards attached to the wall to show fill and turning times.

038. Door leading into the kiln room. Small trapdoor at its base.

039. Black-boards attached ton the wall to show fill and turning time. Similar to 036.

040. Steel chute with steel bracket (similar to 035) attached to the front.

041. Later sawdust skip.

042. Cast-iron column. Arrangement similar to those on the lower floors. The column head differs in that it does not cup the beam but merely supports it.

043. Softwood beam. One of 13 on the floor.

044. Softwood floor boards.

045. Series of 4 rectangular trapdoors across the centre width of several bays. Similar to 029 and 032.

051. Two point arched window opening with single top light and 3 part adjustable louvers. Ten examples of the type.

052. Circular cast-iron tie-rod plates. One to each external end of the 13 internal beams.

053. Later steel fire escape

054. Door to fire escape, converted window.

055. Two point arched window opening with single top light, two lower vertical lights, and iron bars. Six examples.

056. Covered taking-in hoist with hipped tiled roof over. Heavy soft-wood frame with tongue and groove board walls. Braced to the lower wall.

Kiln Room, First (Upper) Floor

046. Brick blocked window opening with flat lintel, two examples.

047. Two point arched window openings partly brick blocked. The upper half of the window fitted with glass bricks. Three examples.

048. Large cast-iron frameset in the wall. Could have been a converted transmission block.

049. Small blocked opening between the kiln room and the malthouse.

050. Two point arched window openings with projecting stone sills. Lower half is brick blocked, the upper half fitted with glass blocks. Three examples. Similar to 047.

Malthouse, Third Floor

062. Flat glazed roof lights. Two rows of five.

063. Roof over the building, re-clad in tile.

067. Two point arched window openings. Two examples

068. Two softwood posts giving additional support to a machine on a loft floor above.

069. Light-weight steep wooden stairs leading to the upper loft.

070. Large machine on the loft floor, probably for cleaning, grading and steeping barley.

071. Trap door in the floor with a belt driven hoist mechanism above in the loft area. Electric motor powered.

Kiln Room, Roof Area

057. Series of six non-diagnostic blocked openings in the north-east wall.

058. Slate cladding over the roof of the kiln area.

059. Two point arched window opening with missing frame in the apex of the gable wall.

060. Two point arched window opening with missing frame in the apex of the gable wall.

061. Venting roof over the kiln area with corrugated asbestos sheet cladding.

064. Softwood king post truss with raked braces and additional horizontal rails. Four examples.

065. Horizontal mild-steel frame supporting two large electric extractor fans.

7. Building Description

7.1 External appearance. Only the south-western part of a building originally more than twice the length survives following a major fire that destroyed the north-east malthouse and kiln. The north-west elevation from the northern corner commences with the three storey gable of the kiln house. On the ground floor is a large later flat headed opening with an original two point arched door to the right (Photographs 3 and 4). At first floor level are three identical two point

arched windows with projecting sills, low brick blocking and glass bricks above. In the tall apex of the gable is a single second floor window with no infill or framing. Separating the three floors are bands of lighter coloured brick. The steep roof of the kiln house is surmounted by a venting roof clad in corrugated asbestos sheet (Photographs 5 and 6). The malthouse forms a continuation to the south-west. The building has fourteen narrow bays with a window opening at each second bay. The elevation comprises lower ground floor, first floor, second floor and third (Attic) floor. Not visible from the outside is a loft division. The decorative light brick string courses run between the floors (Photographs 1 and 5). Window openings on the lower ground floor are segmental arched, whilst those on the first and second floors have two point arches. At each floor, aligned with the ends of the floor beams on the inside of the building, are round cast-iron tie rod plates. The third floor is illuminated by five flat roof lights set in the side of the roof. The roof is tile clad. The south-west elevation, like all elevations, is constructed in English Garden Wall bond brickwork set in a hard mortar with ash-like inclusions. Windows to five floors can be seen (Photograph 16). The three on the lower ground floor have segmental arched openings and fully glazed three light frames. The three above on the first and second floors (Photograph 17) all have two point arched openings with single top lights and triple adjustable opening louvers. On the third floor are two similar windows. One has no frame, the other has a horizontal top light with two lower vertical lights. There is a similar window in the central apex at fourth floor level. Between the second and third floors is an angled steel gantry with a metal chute above. This may have been an earlier hoist system. The north-west facing elevation looks onto the London and North Eastern Railway line and would have been the side where the bulk of the raw materials were received and the finished products dispatched. The general arrangement is the same as the yard side; windows at every second bay, with lower ground, first, second and third (attic) floors (Photograph15). The arrangement of window types is similar. At the southern end a secondary steel fire escape has been installed and some windows in the area converted to fire doors. Part way along the side of the elevation, spanning this side of the roof and projecting beyond the elevation is a large timber clad and roofed taking-in hoist (Photograph 12). Tie rod plates are visible at all floors in this elevation. At the north-east end the kiln house ties into the building (Photograph 11). On the ground floor is a two point arch with a plywood blocking with a segmental arched window to its right. Windows above reflect the arrangement of those in the north-west elevation. The north-east elevation is the inside face of a central area beyond which to the further north-east would have been a reflected wing. The exposed face shows a number of interesting features (Photographs 7 and 10). Most apparent are two lines of mortices for former floor joists at first and second floor heights. Between the two former floors is a line of square blocked features

which look similar to wall boxes (Photograph 9). To one side is a large, probably later, breeze block blocked opening (Photograph 8).

7.2 Malthouse, lower ground floor. The floor is *c*.18m wide and *c*.42m long. It is divided by 13 heavy soft-wood beams [006] into 14 bays (Photograph 24). Each beam is supported along its length on 4 cast-iron columns [005], with the exception of the wider beam at the south-west end, which is supported on 5 cast-iron columns. In the north-east wall are two breeze block blocked door openings (Photograph 25) [002] and [004]. At the centre of the first bay from the north-east is a steel chute [003] that rises vertically through all floors. In the north-east wall, beyond blocked door [002], is a steel bracket [008], of uncertain purpose. At the centre of bays 2 to 5 are the undersides of trapdoors cut into the floor above [032]; 3 have steel spirals attached along their length. The floor is surfaced with diamond-set square ceramic tiles. Within each second bay, on each long side are a series of 7 opposed windows, with a further 3 in the south-west wall. Due to the level of later dry-lining within the area most windows are best viewed from the outside. A wood and steel tread stair [001] in the northern corner leads to the floor above (Photograph 26).

7.3 Malthouse, first floor. The floor is of similar layout and dimensions as that below. The number of bays, windows and columns is the same (Photograph 27). The floor surface [028] is tiled (Photograph 30). At the centre of the building, in the first bay the steel chute [025] carries on vertically (photograph 29). In bays 2 to 6 are a further series of small trap doors [029], some of which retain the steel spiral fittings seen in other examples (Photograph 31). A square trapdoor adjacent to the north-east wall [024] aligns with one in the floor above. Towards the centre of the same wall is a secondary wide opening [018] with an RSJ lintel over. At the south-west end of the building the beam in the end bay is wider and is supported on 5 cast-iron columns (Photograph 32). The joists at this point are wider and may indicate steeping tanks on the floors above in this part of the building. Again, due to a number of obstructions, many of the windows are best seen from the outside. A short flight of wooden stairs [031] lead up to the second floor (Photograph 33). In the third bay from the south-west a door (converted from an original window) leads to an external fire escape [023].

7.4 Malthouse, second floor. The layout of the floor is almost the same as those below with a number of common features repeated (Photograph 34). In the southern corner a former window has been converted to a fire door [054] (Photograph 35) which leads out to the fire escape. As with other floors, large soft-wood beams are supported on cast-iron columns [042] (Photograph 38). At the north-east end are several additional features. In the eastern corner is a later partitioned area with an electrical extractor fan close-by (Photograph 39). It functioned as a sawdust skip for the later joiners

factory [041]. Features [034] and [038] are window openings to the kiln room. Context 038 has been converted from a door and has a wooden trapdoor at its base (Photograph 40). Attached to the north-east wall, and similar to examples on other floors, are two steel brackets [035]. At mid-point on the walls are fill level and turning boards [037] and [039] (Photograph 41). At the centre of the first bay is the steel chute [040] and four narrow trapdoors in bays two to five. The key difference on the floor compared to those below is that the floor surface is not tiled. Wooden stairs [042] lead to the floor above.

7.5 Malthouse, third floor (attic). See Fig. 9. Section B – B1. The lower roof space has a plan of 14 bays with a softwood truss at each bay division. A loft has been inserted in the higher part of the space. All trusses are similar. The floor beam acts as a tie beam in addition to supporting the floor joists. Two queen posts rise from the beam at *c*.3.6m in from the outer walls to support a straining beam set into cast-iron mortice blocks (Photograph 45). Both posts are heavily braced against the outer walls (Photograph 46). Principal rafters pass through the mortice blocks and rise out of horizontal ties at each wall face. They terminate at two upper queen posts where they meet with a collar beam. Iron straps reinforce the joints (Photograph 49). Common rafters supported on four purlins to either side rise to form the ridge. The roof is tile clad. At the north-east end of the floor the steel chute is still evident (Photograph 43). In the fourth bay along is the access to the covered hoist, with a trapdoor in the floor and hoist mechanism in the loft above (Photograph 44). The surface of the floor is wood and is free of obstructions (Photograph 46). A steep wooden ladder at the south-west end of the floor gives access to the loft. A wooden floor extending over a central width of 6m is supported on softwood joists. The floor extends over the length of the floor, and along the hoist bay (Photograph 50). The remains of an electrically powered hoist with a belt drive exist above the bay. At the south-west end is a wooden machine with metal fittings, probably related to the preparation of grain for steeping (Photographs 47-49).

7.6 Kiln, ground floor. As a result of the recent 1999 fire the inner floors of the kiln have been lost. It is thought that three floors had originally existed. The surface of the ground floor is concrete, probably a later addition. The space is open to the rafters (Photograph 18). Few original features relate to this lower area. The wide opening in the south-west wall [018] is later, as is the partitioned switch house in the western corner. At the centre of the north-east wall is a cast-iron wall box [019] (Photograph 19), although to what it relates is not known. In the western corner is a second, slightly larger, cast-iron wall box [048] (Photograph 20). There is a doorway [014] and window [015] in the south-east wall, and a large later doorway in the [016] north-west wall.

7.7 Kiln, first floor. In the north-west wall are three two pint arches windows with projecting sills with the lower half brick filled and the

upper half containing glass blocks [050]. In the opposite south-east wall are three similar windows [047]. In the north-east wall are two brick blocked window openings with flat lintels [046]. In similar positions in the opposite south-west wall are two further windows, [049] is blocked whilst [038] has a side opening steel door. It is possible that this opening was originally a door (Photograph 21).

7.8 Kiln, second floor. On the north-east side, below the start of the roof structure are a number of non-diagnostic semi-blocked openings [057]. In the gable walls are single high two point arched windows, [059] to the south-east and [060] to the north-west. The softwood roof structure (see Fig. 8. Section A – A1) comprises a tie beam with a central tall king post extending beyond the apex of the principal rafters [064]. Two horizontal straining beams have been attached to the front of the post and to two diagonal struts that run between the post and the principal rafters. From the tie beam two secondary posts extend to the first straining beam. Three purlins are supported to either side on the principal rafters (Photograph 22). Sitting over the apex of the roof is a ventilation cowl [061]. Within the open roof space is a mild steel frame that supports two large extractor fans [065] (Photograph 23).

8. Archaeological Assessment

8.1 It is unlikely that archaeological remains of any value are to be found either below the standing building, below the building destroyed in 1999, or in the area of the buildings wider curtilage.

8.2 The 1893 edition of the Ordnance survey 6 inch to 1 mile mapping (Fig. 3) shows the area to the south-west of Doncaster station (the site of the future maltings) as cultivated fields. There is little evidence to suggest the presence of earlier buildings on the site

8.3 Foundations will survive underground for buildings known to have been on the site from *c*.1900. Much of the details of those buildings will mirror the remaining structure. Little evidence remained to indicate the method of heating and roasting the malted barley. At the centre of the developed maltings may have been a boiler house and furnace room (the area to the immediate north-east of the standing building). It is unlikely that large engines would have been employed as a power source. Neither the boiler nor the (probably) electrical power source would have necessarily left any below ground evidence. The floor of the existing kiln building and (presumably) that of the kiln building destroyed in 1999 has a secondary concrete surface. Features below this may be encased or may have been removed.

8.4 On the south-east side of the building would have been a single track railway siding. At this date it is likely that the track would have been attached to wooden sleepers laid on loose ballast. This would

leave little evidence of its former position in the ground. Such a track is indicated in Fig. 4.

8.5 The existence of relevant hidden evidence in the structure of the standing building likely to be revealed upon demolition is slim.

8.6 On balance, the potential for the meaningful survival of archaeological remains that would add to our knowledge of the building and its function is slim.

9. Summary

9.1 Less than 50% survives of the original structure. Of what is left, much of the malting process can be demonstrated to have taken place within it. The barley, either lifted in sacks or with a grab-hoist from open rail wagons, would have been hoisted up to the loft. Here the grain would be cleaned and checked prior to steeping. A machine thought to be part of that process survives at the south-west end. The third (attic) floor was probably used for storing malted grain. The lower ground and first floors (and possibly the second) were used to germinate the steeped grain, which had to be turned without fail every four to six hours. The lower two floors with their tiled surfaces were typical malting floors.

9.2 The kiln house is far less diagnostic as so few of the original features survive. Clearly the operation took place on ground, first and second floors. The heat source was not apparent. There must have been a flow between the two buildings at higher levels with the likely-hood of finished malted grain being passed for storage into the third floor of the malthouse.

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The Doncaster Gazette
The Doncaster Star
Streetlife
The Times
The Yorkshire Post

11.3 Directories

General Post Office
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William White

11.4 Maps and Plans

Ordnance Survey 1893, 1905 and 1929

11.5 Websites

The Maltsters Association of Great Britain
www.ukmalt.com

11.6 Sundry Resources

Census returns 1851 and 1881

IGI Index
Parish registers

Appendix 1

Specification

Appendix 2

Photographic Register