



Archaeological Building Investigation and Recording,
Royal Worcester Porcelain Works, Building E: The
New Throwing House and Building G: The Finished
Goods Warehouse

Alvaro Mora-Ottomano, John van Laun and Wendy Cook

July 2008



archenfield archaeology ltd

Principal Archaeologist: Huw Sherlock BA, Diparch, MIFA

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Royal Worcester Porcelain Works,
Building E: The New Throwing House and Building G:
The Finished Goods Warehouse
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Client: Berkeley Homes (Oxford & Chiltern) Ltd

Text: A Mora-Ottomano (Gamba) BA MSc AIFA , John van Laun PhD FSA MIFA
and Wendy Cook BA

Project Manager: Huw Sherlock BA Diparch MIFA

Illustrations: Abby George BA PIFA

Cover Photograph: Building E in the background from Building K1



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Summary

Archaeological building investigation and recording was undertaken by Archenfield Archaeology Ltd at Royal Worcester Porcelain Works, Severn Street, Worcester, on behalf of Berkeley Homes (Oxford & Chiltern) Ltd prior to redevelopment of the site. This report deals with the New Throwing House (Building E) and the Finished Goods Warehouse (Building G).

The building investigation and recording identified that most of the original construction of Building E took place in 1878. Later redevelopment took place through time, including the construction of the west elevation in the 1940s. Most of the original external fabric is extant and a high proportion of internal original fittings, including carpentry and masonry detailing, still survives in excellent condition. Building E is an interesting example of 19th century factory construction and is of national historic and architectural importance. The present Building G was erected between the 1930s and the 1940s. Whilst the building is an interesting example of steel-framing of the early 20th century it no longer serves the specific function for which it was built and has been effectively gutted and rearranged internally as a result.

1 Introduction

Site name: Royal Worcester Porcelain Works
Location: Severn Street, Worcester, Worcestershire
NGR: SO 8515 5425
SMR/HER: WCM 96186
Type: Building Investigation and Recording
Date: November 2006 – September 2007
Location of archive: Worcester City Museum
Planning authority: Worcester City Council
Planning reference: P05D0432, L05D0074
Developer: Berkeley Homes (Oxford & Chiltern) Ltd
Site Code: AA_70

Archenfield Archaeology Ltd was commissioned by Berkeley Homes to undertake a programme of archaeological building investigation and recording prior to the redevelopment of the Royal Worcester Porcelain Works, Severn Street, Worcester. The development site constitutes approximately three-quarters of the whole Severn Street site and the remaining quarter is to be retained by Royal Worcester Porcelain Works. The development scheme involves the demolition of 26 large buildings and 6 small sheds, and the modification of 10 existing buildings in order to build 356 dwellings (comprising 317 apartments and 39 houses), a hotel, B1 space and A3 restaurants. The site is located on the south side of Worcester city centre and is bounded by Sidbury, St Peter's Street, King Street, Severn Street, Mill Street and the Birmingham and Worcester Canal (Figures 1 and 2). The majority of the buildings were built parallel or perpendicular to the central lane of the Works (Prince's Drive) which runs north-west to south-east. Thus a site north was established for the survey at approximately the same orientation (Figure 2).

This report (number 12 of a series) deals with the New Throwing House (Building E) and the Finished Goods Warehouse (Building G). An initial assessment of the buildings recognised that they are of historic and architectural importance. The archaeological work was conducted in accordance with the written scheme of investigation (WSI) issued by Archenfield Archaeology Ltd (2006), which was in response to a brief issued by Worcester City Museum Archaeology Section (2006). The WSI was issued to fulfil a condition in the planning approval which stated that a programme of archaeological work must be carried out before the redevelopment works commence. This document gives details of how the archaeological project was conducted and includes any conclusions drawn from the investigation.

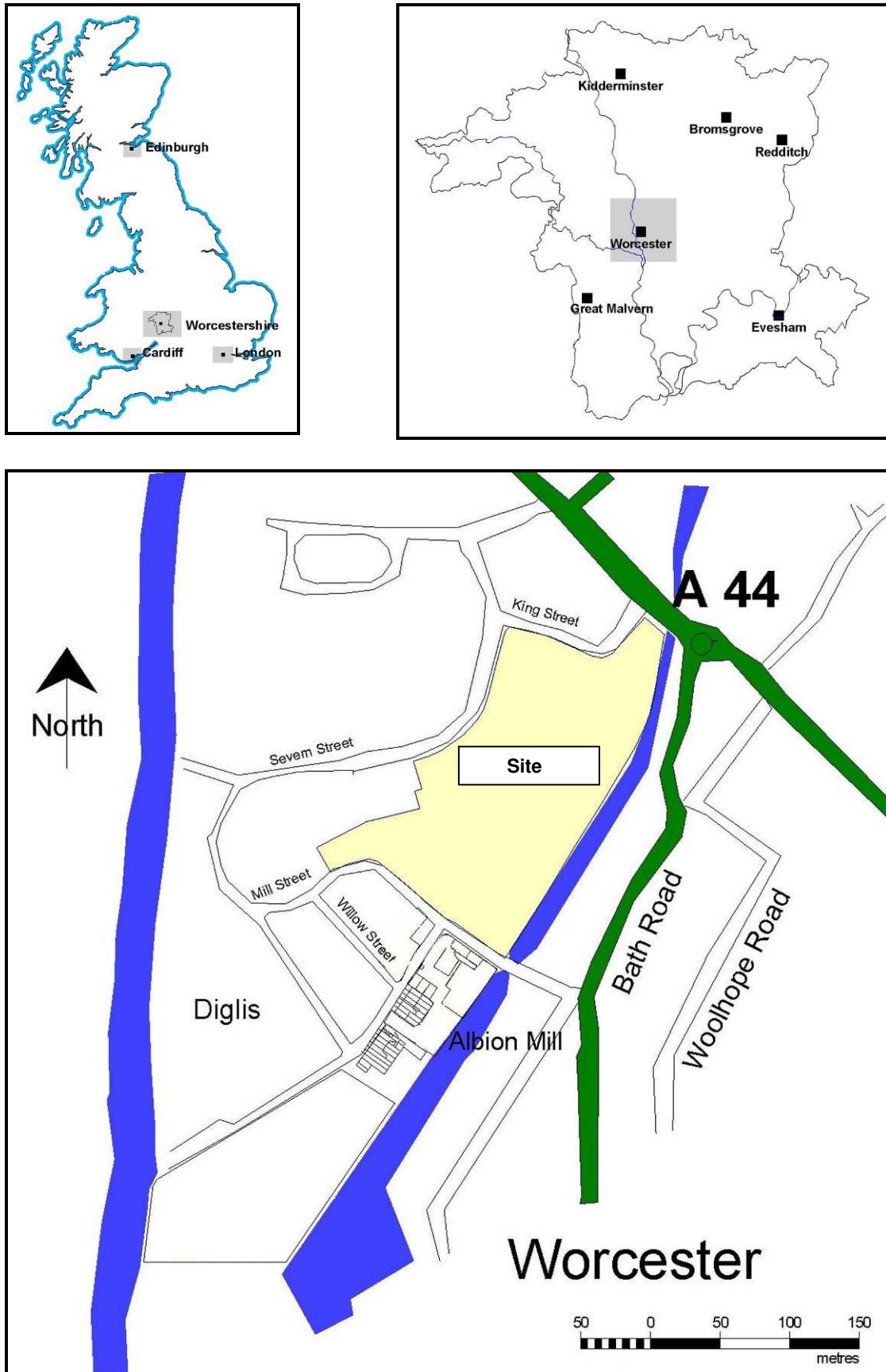


Figure 1: Site location

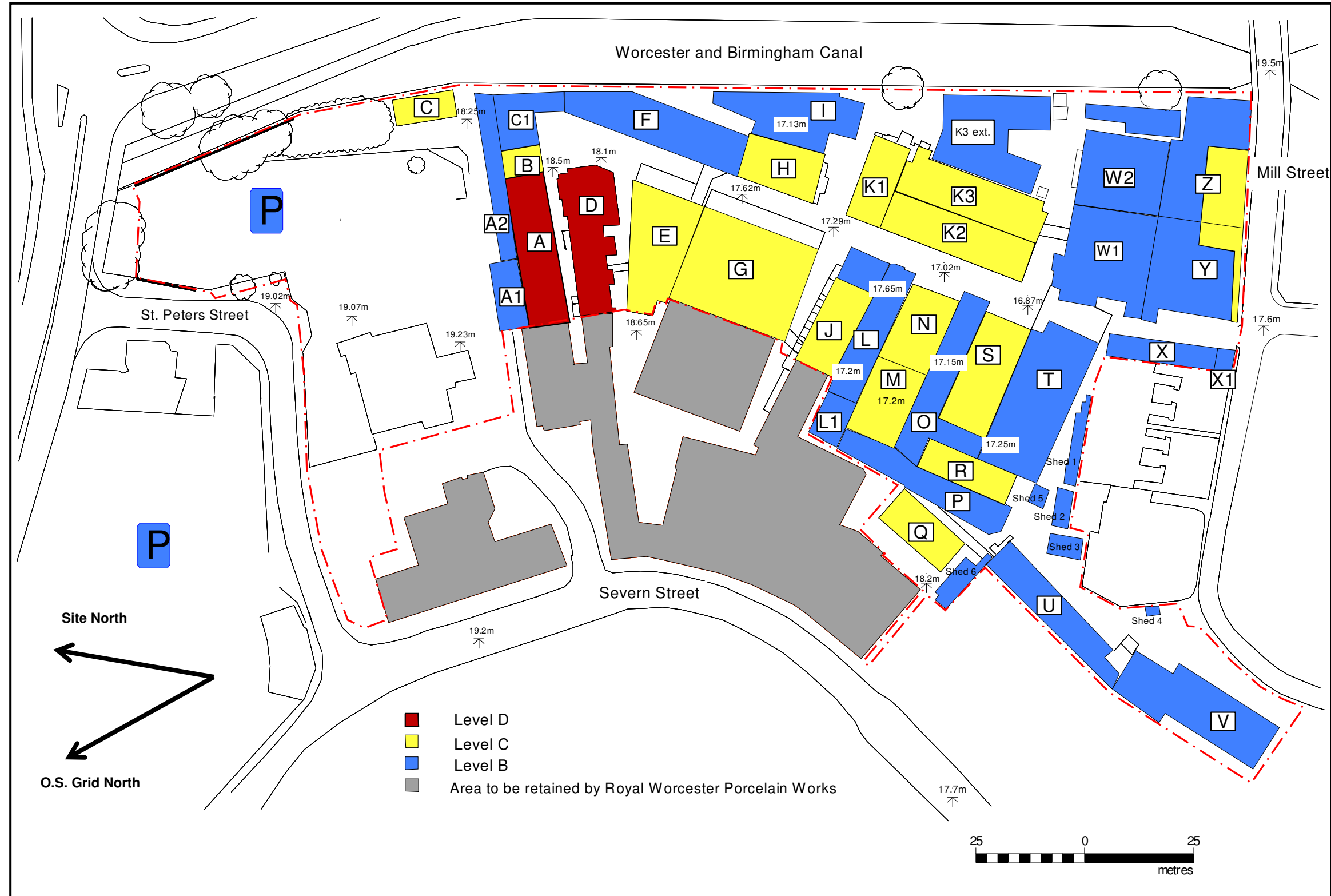


Figure 2: Detailed plan of site, building codes and levels of recording (scale 1:1,000 based on architect's drawing provided by Berkeley Homes)

2 Project aims

The aims of the programme of archaeological building investigation and recording, as defined by the project brief, consisted of the following:

- To make an appropriate record, as identified by the levels of building recording stipulated by the brief, of all the standing buildings at the Royal Worcester Porcelain site.
- To record different phases of all the buildings affected by the development and identify features for conservation.
- To annotate available architects' drawings to include archaeological features such as blocked windows and doors, etc.
- To produce original drawings of important elevations and features.
- To conduct a photographic survey of the major components of the buildings that are directly affected by the development. This should include general views of the exterior of the buildings, all exterior and internal elevations, selective internal views and any detailed coverage of the buildings deemed to be fitting with the character and setting of the buildings. Photographs of any machinery and fittings associated with the working life of the buildings should also be taken.
- To maintain close liaison with the curator of the Worcester Porcelain Museum (henceforth abbreviated as WPM), Wendy Cook, to enable access to the museum archives and give advice on specific aspects of the operation of the manufactory.
- To create a detailed project archive and deposit it with Worcester City Museum after completion of the project.
- To disseminate the results obtained.

3 Geological, historical and archaeological background

3.1 Geology and land use

Worcester lies in the valley of the River Severn, just to the north of its confluence with the River Teme. The eastern bank of the Severn is a sand and gravel terrace. The site lies in the valley of a former tributary of the Severn, the Frog Brook, whose former course was partially used in the creation of the Birmingham and Worcester Canal, which forms the eastern boundary of the site. The underlying geology of the site consists of beds of alluvial drift deposit over the Eldersfield mudstone formation (British Geological Survey).

3.2 Historical, archaeological and architectural background

Two archaeological desk-based assessments have been produced which examine the historical and archaeological background to the Royal Worcester Porcelain Works, Severn Street site (Feryok and Sherlock 2004; Lovell and Pikes 2004). These include cartographic regressions and reproduce the results of documentary studies of the historical evolution of the site. In addition two assessments of the nature, architectural merit and relative importance of the building have also been undertaken

(Morriss and Sherlock 2004; Robinson 2005). These four documents have previously been submitted to the local planning authority in support of the planning application for redevelopment, and thus they should be used in conjunction with this report. However, this report includes revised and updated facts, which have been revealed during the site work and where discrepancies appear, then this document supersedes previous statements.

4 Methodology

A detailed project design was prepared by Archenfield Archaeology Ltd (2006a). The recording of the Buildings E and G conformed to level C (specified in Worcester City Museum Archaeology Section brief 06/22) which corresponds to English Heritage level 3 (EH 2006).

The requirement for the archaeological building investigation and recording on the Royal Worcester Porcelain site is in line with government guidance and with the archaeological policies in the adopted City of Worcester Local Plan (1991 – 2001; saved policies BE21, BE24, BE26 and BE27). All work was undertaken to the standards specified in the *Recording Historic Buildings: A Descriptive Specification* (RCHME 1996); *Measured Survey and Building Recording for Historic Buildings and Structures* (Dallas 2003); *Understanding Historic Buildings: A guide to good recording practice* (English Heritage 2006) and in accordance with the standards set out by the Institute of Field Archaeologists' *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (IFA 2001). All stages of the project were carried out in accordance with the guidelines established in the *Management of Archaeological Projects (MAP 2)* (English Heritage 1991).

The project archive will be compiled in accordance with the guidelines contained in *Guidelines for the Preparation of Excavation Archives for Long-Term Storage* (UKIC 1990) and the *Standards in the Museum Care of Archaeological Collections* (Museum and Galleries Commission 1992).

The project complied with all Health and Safety requirements stipulated by Berkeley Homes (Oxford & Chiltern) Ltd and those outlined in the *Health and Safety in Field Archaeology Manual* (SCAUM 2002) and in the project's *Risk Assessment* (Archenfield Archaeology Ltd 2006b).

The fieldwork was managed by Huw Sherlock BA DIPARCH MIFA and supervised by Alvaro Mora-Ottomano (Gamba). Brenainn Morley and Robert Williams assisted in the fieldwork. The report was written by Gamba. The historical and industrial research was conducted by Dr John van Laun and Wendy Cook, and it is included as an appendix. The survey photographs reproduced in the report were taken by Gamba.

The illustrations were digitised by Abby George. The report was edited by Julie Phillips. The subsequent result comprised the following elements:

4.1 The written record

A written record of the buildings was carried out by annotating plans and elevations and by completing *pro-forma* building recording sheets. The presence of any significant artefacts was recorded with a description of their type, quantity and original location. In order to identify obscured areas, soft-stripping of surfaces was carried out using hand tools.

4.2 The drawn record

A metric survey was initially based on architects' elevations and plans, which were annotated to include archaeological sequences and architectural features. Further survey drawings were carried out using tapes and a laser distance meter. Dumpy and laser levels were also employed. The drawn survey comprised measured floor plans, elevations and sections at 1:50 scale. Detailed features were drawn at appropriate scales ranging from 1:20, 1:10 and 1:5.

4.3 The photographic record

A detailed photographic survey comprised high resolution digital photographs (6 megapixels or above). A further 35mm colour print photographic survey of general exterior views was also conducted. Where possible, photographs included a graduated scale and cameras were mounted on tripods for extra stability. Details of the photographs were recorded on *pro-forma* index sheets, which included location, subject and orientation. The location and direction of the photographs were plotted on scaled plans.

4.4 Documentary research

A further programme of documentary research was undertaken by John van Laun Associates (Industrial Archaeologists) and is included in this report as an appendix. The research dealt with the buildings' forms, functions, dates and sequences of development. The names and dates of architects involved in the development of the site were included. Archival research included the consultation of relevant secondary sources pertinent to the study area located at the Worcester Porcelain Museum. This enabled further specific historic map regression analysis and relevant contemporary photographs were also reproduced.

5 Results

This section deals with the analysis and interpretation of the group of buildings composed of the New Throwing House (Building E) and the Finished Goods Warehouse (Building G). Building E is to be retained whereas Building G is to be demolished. Whilst Building G has already been demolished, the building analysis refers to the record made when it still existed. Buildings E and G were recorded at level C (English Heritage level 3). The photographic record consists of 236 digital images recorded on *pro-forma* index sheets and plotted on 4 plans. The on-site optical survey comprises 16 scaled drawings at 1:50, 1:20 and 1:10.

5.1 Building E

This building is the New Throwing House. It is a two-storey range with a rather asymmetric footprint, basically trapezoid in plan, widening towards the main east gable to the central lane (Prince's Drive) through the site. Originally there was an indent in the south-western angle of the building, though this has been in-filled by a slightly later extension. The building is situated between the Bone Mill (Building D) on the north and the Finished Goods Warehouse (Building G) on the south (Figure 3). It has an overall dimension of 28.7 metres long (east/west) x 17.6 metres wide on the eastern side and 9.7 metres wide on the western side, and is 10.9 metres high. It is built of mid reddish brown machine made bricks (9" x 4¼" x 3") bonded with flush

light yellowish brown lime mortar (up to 10mm thick, very coarse and gritty) and laid to English bond.

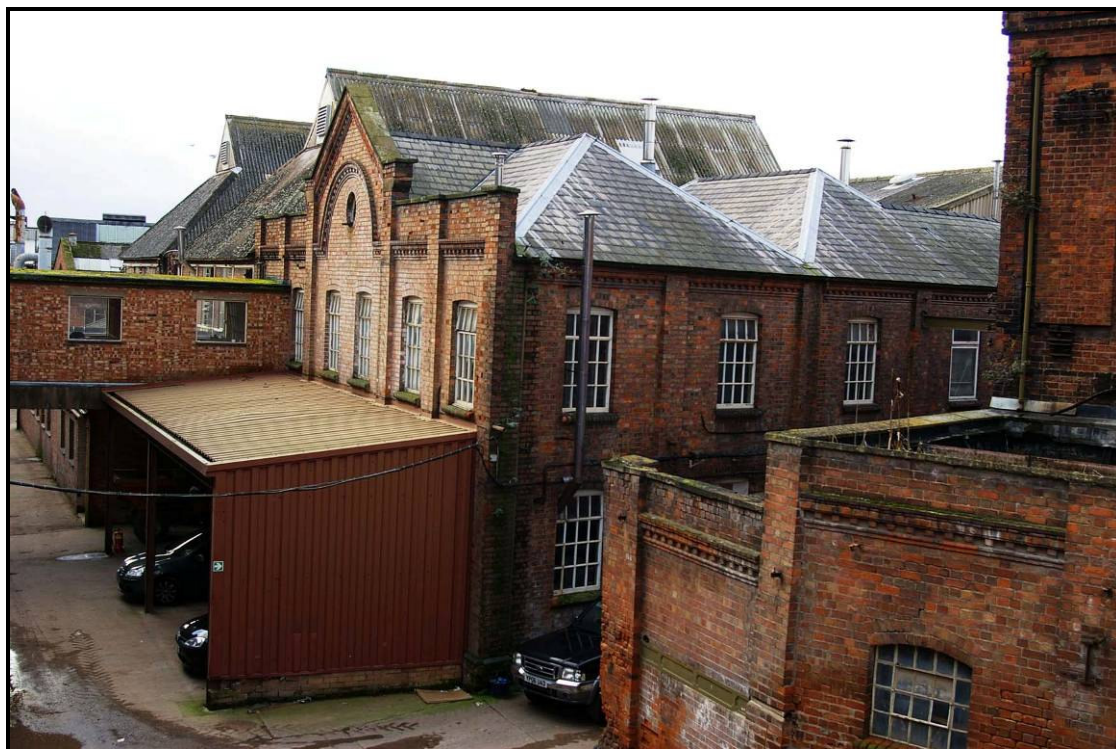


Figure 3: Building E, looking south

5.1.1 Exterior

East elevation (Figures 4 – 6)

The main eastern elevation is articulated by pilasters into five bays, the central bay of double width and topped by a raised coped gable reminiscent of churches of 13th century Lombardy. The plinths of the pilasters are decorated with chamfered blue engineering bricks. Each of the recessed brick panels between the pilasters is topped by dentilled moulded brick cornices. The dentilled brick cornice of the central bay is taken up to a semicircular lunette over a roundel which is currently blocked with a white translucent plastic sheet. The gable is also topped by similar cornice detailing at the base of its coping. There are two ovolo moulding kneeler red sandstones forming a termination at the eaves of the coping.

On this elevation there were originally six windows at each floor level, one in each of the side bays and two in the central bay. These have segmental brick heads and bold projecting moulded brick sills. The window openings of the ground floor have been blocked. One of them appears to have been converted into a doorway before it was blocked. The window openings on the first floor retained their original timber windows with slender glazing bars except for the southernmost which has a large opening leading to a bridge which was inserted to provide access to the opposite Building F. There are decorated cast-iron circular vents under the window sills. The ground floor is disfigured by an ugly modern steel-framed and steel-clad lean-to along its full width.



Figure 4: East elevation



Figure 5: Detail of lunette showing frog bricks on the uppermost string course



Figure 6: Survey drawing of the east elevation (scale 1:100)

North elevation (Figures 7 – 12)

The north elevation is of eight bays in all, including a narrow entrance bay just to the west of centre. The decorative details are identical to those on the eastern gable except for the lack of plinths on the pilasters. To the east of the narrow entrance bay a ground-floor window has been blocked and replaced by a doorway. Another window, in the second bay from the west, has been converted into a doorway but its upper section has been retained as a fanlight. On the first floor, some of the original windows have been replaced by modern simple types and a doorway has been inserted on the third bay from the west which leads to a concrete bridge which links it to the Bone Mill (Building D). The four bays on the east have circular cast-iron vents under the window sills.

The roof is visible on this elevation and is made of natural slates topped with tile ridges and lead flashing. It has close eaves with cast-iron guttering and both of the gables have tall parapets at their verges. The roof structure is in two separate parts corresponding to the different parts of the building. The wider eastern section is covered by a pair of parallel four-bay hipped roofs at right angles to the main coped gable of the eastern facade to Prince's Drive. The roof over the narrower western section is pitched and at right angles to the other section.



Figure 7: North elevation



Figure 8: Detail of window



Figure 9: Survey drawing of the north elevation (scale 1:100)



Figure 10: Eastern side of the north elevation



Figure 11: Western side of the north elevation

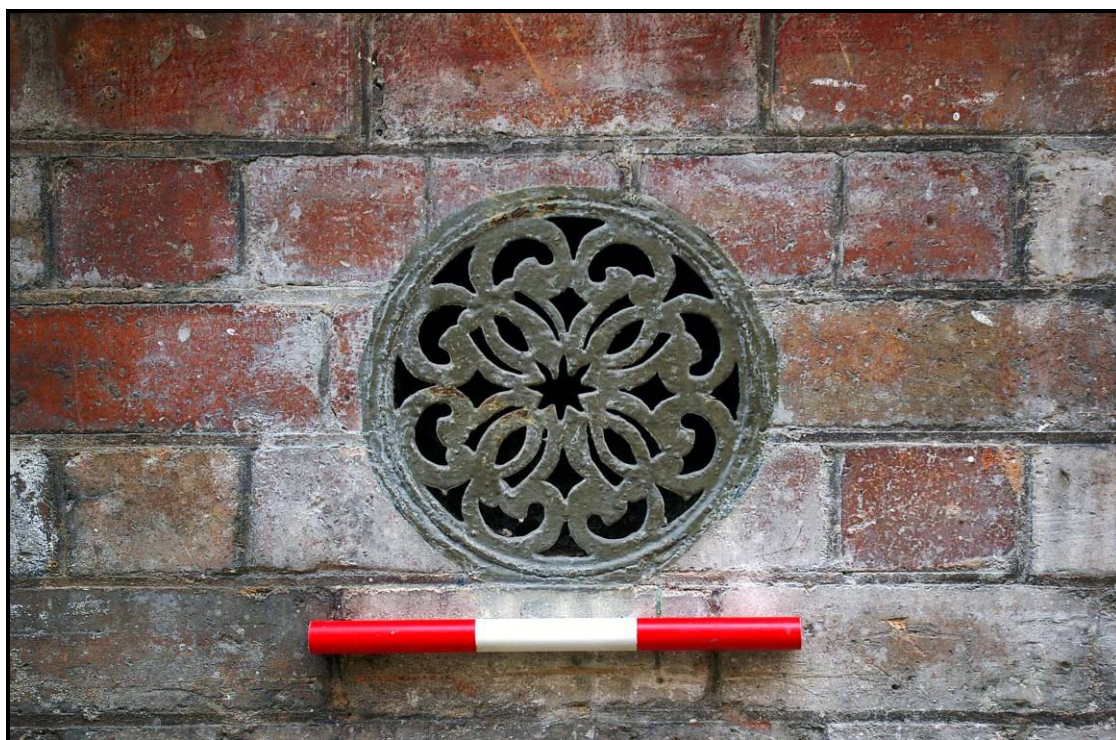


Figure 12: Cast-iron vent on the north elevation

South elevation (Figures 13 and 14)

The south elevation is now a party wall between this range and the adjacent Finished Goods Warehouse (Building G). Because of this, it has been considerably altered but survives better on the ground floor than it does at first-floor level, where original window openings have been removed and replaced by large open doorways with concrete lintels. The eastern half is original with four bays built in the same architectural style as the rest of the building. On the ground floor the windows have been blocked up with bricks and their sills have been removed, but some of the cast-iron vents survive. The first bay from the east has a small rectangular opening for a conveyor which took material from the adjacent Building G to the first floor, and the second bay has a large inserted doorway with an RSJ lintel. The remains of a cellar window are also visible here. The western half of the whole elevation is a simple painted brick wall of modern appearance. However, the westernmost end is an earlier wall of hand made bricks of variable size (mostly 9" x 4 1/4" x 2 1/2") bonded with flush orangey lime mortar (up to 22mm thick) and laid to fairly irregular Flemish bond. This wall has a blocked doorway on the ground floor and a blocked window with a timber lintel on the first floor. The wall exposed on this elevation is in fact an internal wall which has further windows inside. There are also two wall plates on each level and over them are scars of dismantled joists.



Figure 13: South elevation



Figure 14: The westernmost end wall of the south elevation

West elevation (Figures 15 – 18)

Because of the original shape of the building, its western gable is much narrower than its eastern gable. Architecturally, it is to all intents and purposes a deliberate repetition of the central bay of the main eastern facade. The windows of the first floor are modern replacements, whereas the ones on the ground floor are original. Underneath the sill of one of the upper windows there is a small area repaired with later brickwork. The roundel on the gable has its original fixed glazing with a cast-iron frame. The uppermost brick string course of the semicircular lunette is made of solid bricks whereas on the east elevation it is made of frog bricks. The later infilling of the 'cut-out' in the south-western part of the building has two large openings at each level with concrete lintels. The ground floor has a double timber door and the first floor has modern glazing. It has a flat roof covered with felt and two asbestos cowl.

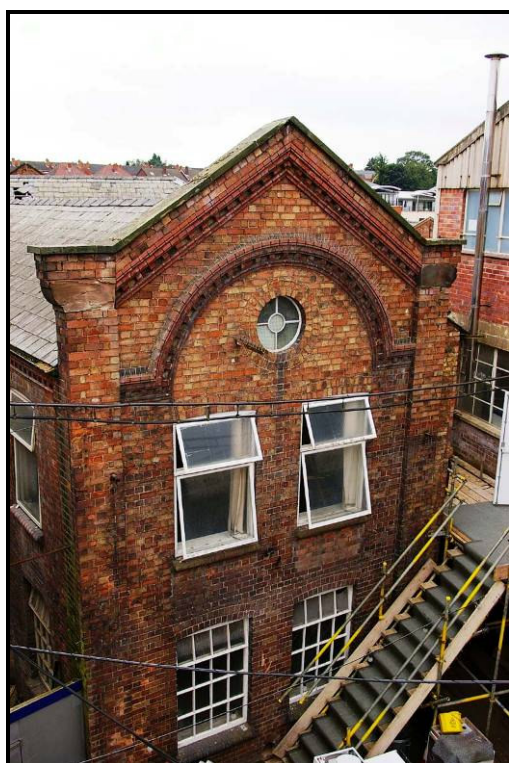


Figure 15: Aerial view of the west elevation



Figure 16: West elevation, from the ground



Figure 17: Detail of lunette brickwork of the west elevation

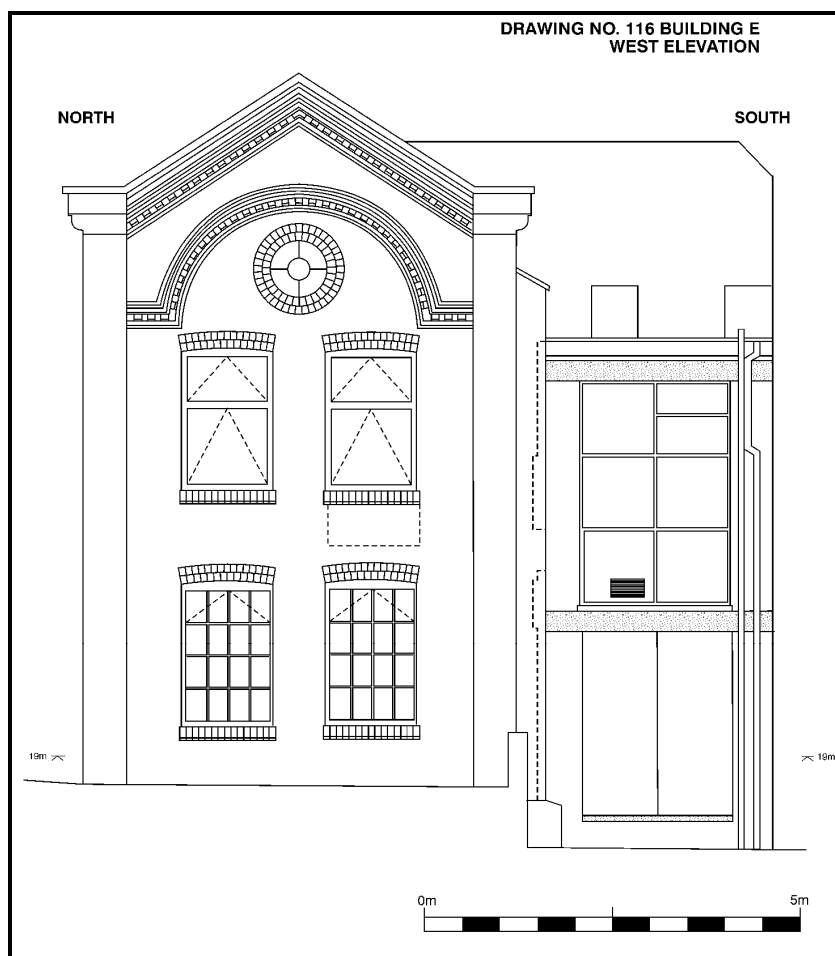


Figure 18: Survey drawing of the west elevation (scale 1:100)

5.1.2 Interior

Cellar (Figures 19 – 23)

A small cellar was revealed during the current groundwork. The existence of this cellar was known as it is shown on the proposed plan of the 1877 architect's drawings, and the remnants of a window are visible on the south elevation. However, because its access was concealed its current condition was unknown. The cellar was found practically empty with some shelves and the staircase was concealed with breeze blocks and backfilled with ceramic material. The cellar is situated at the southern part of the building and has an overall dimension of 6.2 metres long (east/west), 6.05 metres wide (north/south) and 2.46 metres high. On the south-east corner there is a blocked window which is partially visible on the south elevation next to a doorway. The wall is made of bricks, the floor is also made of bricks laid on bed to stretcher bond (north/south) and the ceiling is composed of concrete and RSJ beams. There are two long brick piers supporting a large flitched riveted bridging RSJ beam (north/south). There is a tall concrete base for one of the cast-iron columns of the ground floor which is situated next to the bottom of the staircase. The staircase is straight (north/south) and consists of twelve steps made of bricks and two parallel brick walls.



Figure 19: Inside the cellar, looking north



Figure 20: Staircase backfill



Figure 21: Former blocked-up window



Figure 22: The staircase of the cellar

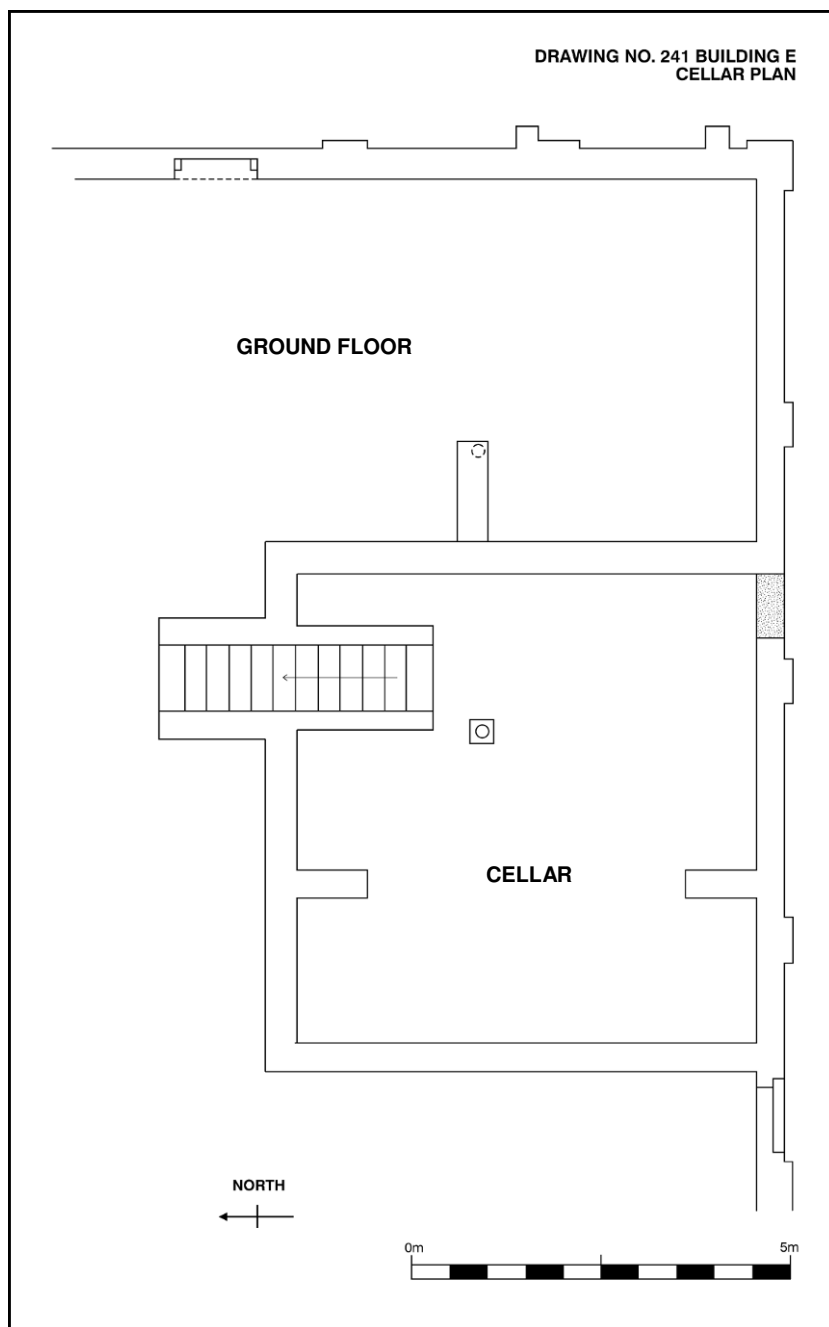


Figure 23: Plan of cellar (scale 1:100)

Ground floor (Figures 24 – 29)

Internally, the wider eastern section on ground floor level is a large store or workshop interrupted only by the slender cast-iron columns that support the timber bridging beams of the floor above. This large workshop measures approximately 17 metres long (north wall), 13.5 metres long (south wall), 16.5 metres wide (east wall), 11.5 metres wide (west wall), and is 3.15 metres high. Most of the window openings are blocked except for three original windows on the north wall. These are made of wood with twelve rectangular lights set vertically (4 columns x 3 rows). The upper section has an opening with central pivotal hinges. The inner jambs and arched heads are made of single bullnose bricks, and the sills are flat wooden boards. On the second bay (from the east) of the south wall, there is a large doorway with a long but shallow ramp. There are two further doorways situated on the north wall. One is situated on the fourth bay from the east which is a roller shutter inserted on a former window opening; the other is an original timber door situated on the fifth bay from the east. It has painted brickwork, a concrete floor and a lath-and-plaster ceiling. There are eight cast-iron columns with Tuscan capitals and two brick pillars supporting six bridging timber ceiling beams (north/south) with flat chamfered edges and plain chamfer stops. The workshop is empty apart from a large weighing scale.

The narrower western portion consists of a pair of full width spaces. The north-western room is fairly rectangular and measures c. 11.5 metres long (east/west), 5.5 metres wide (north/south) and 3.38 metres high. The north and west wall retains the original windows but the window on the central bay of the north wall has been converted into a door and only the upper section survives. The east wall has a central doorway set on an earlier doorway which is partially blocked. The former doorway has a segmental arched head made of two brick courses of which the lower is laid to header bond and the upper to rowlock bond. On the south wall there are four blocked-up openings and several areas of brickwork repairs. There are two timber bridging ceiling beams (north/south) with flat chamfered edges and plain chamfer stops set on the walls. The room has painted brickwork, a concrete floor and a lath-and-plaster ceiling. On the south-west corner of the ceiling the remains of a timber staircase can be seen.

The south-western room is slightly trapezoidal and is divided into two spaces by a brick partition wall (north/south). Its overall dimensions are c. 4.5 metres long, 1.5 metres wide (west wall) and 2.7 metres wide (east wall), and 3.3 metres high. It also has painted brickwork, a concrete floor and a lath-and-plaster ceiling. There is a double door on the west elevation with a step (450mm high) and a large inserted doorway on the east wall. On the north and east wall there is a timber wall plate with dismantled joists of a former floor structure.



Figure 24: Ground floor, looking east



Figure 25: Window example



Figure 26: Cast-iron column



Figure 27: North-west room on the ground floor

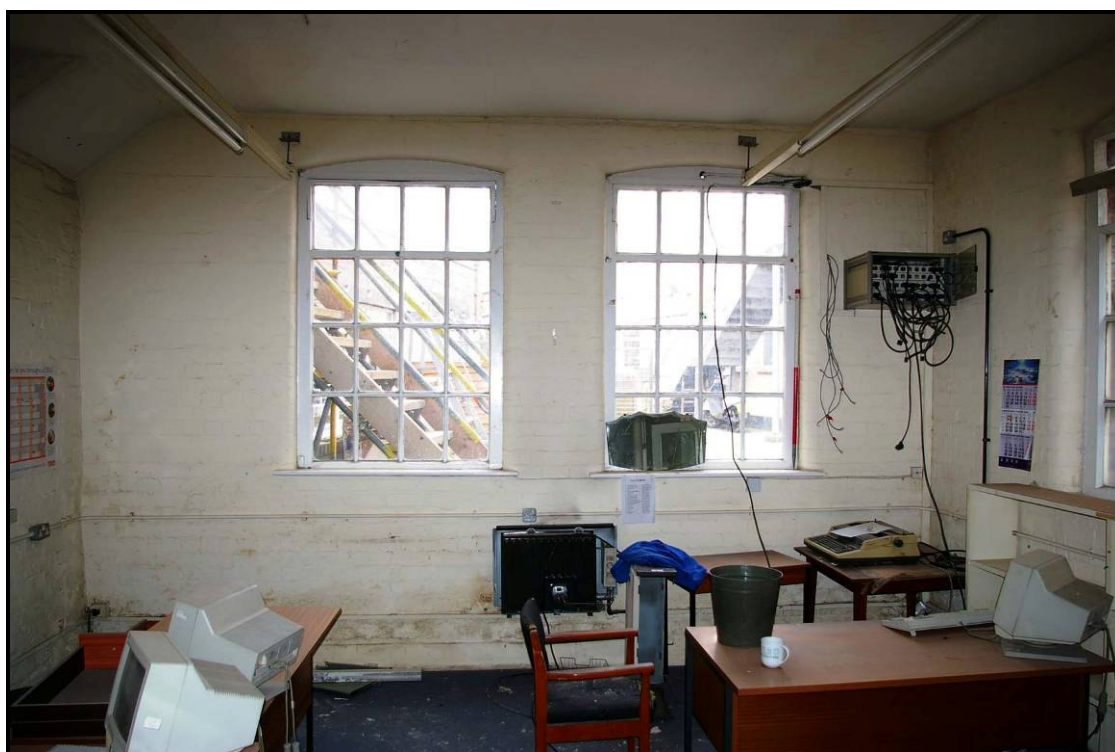


Figure 28: Inside the north-west room, looking west

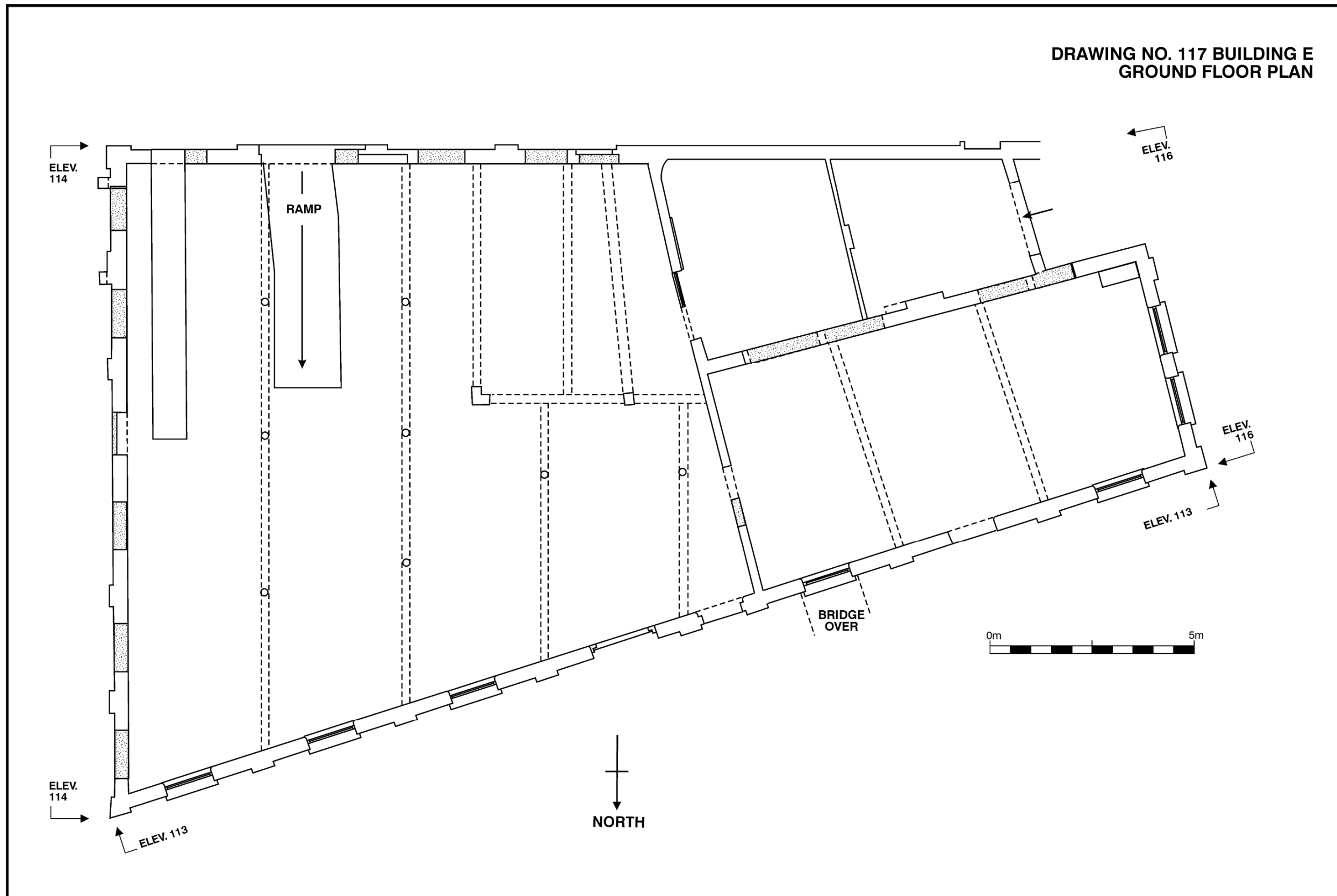


Figure 29: Ground floor plan (scale 1:100)

First floor (Figures 30 – 38)

The first floor is accessed by way of a bridge over the alleyway on the north side and has a similar layout to the ground floor. In the wider eastern section, the space is interrupted only by four cast-iron columns under the valley between the two roof piles. The roof structure comprises six (three on each hipped roof) composite trusses set at c. 3.5 metre intervals (east/west). The principal rafters are made of sawn timber whose ends are housed in cast-iron shoes. From the upper shoe, a vertical wrought-iron suspension bolt drops to an interlocking and bolted junction that connects two further sections of wrought-iron that makes up the tie-beam and two wrought-iron raking struts. The principal rafters carry a single tier of trenched timber side purlins which are reinforced with wooden cleats. The principal rafters have bird's mouth joints at the ridge to carry a ridge piece over the upper cast-iron shoe. The common rafters are notched over the wall plate and the upper ends are set on the ridge piece. Both purlins and principal rafters have flat chamfered edges with plain chamfer stops.

There are original windows on the east walls, although the southernmost window has been converted into a bridge that leads to Building F. The north wall also has original windows but some of them have been replaced by modern types with awning openings. There is a metal conveyor set against the northern and eastern windows, some office desks and filing cabinets, and trolleys with wooden shelves. The floor is made of timber with boards set over joists aligned east/west and reinforced with Herringbone struttings. It has painted brickwork walls and a lath-and-plaster ceiling.



Figure 30: First floor, looking north-east



Figure 31: First floor, looking north

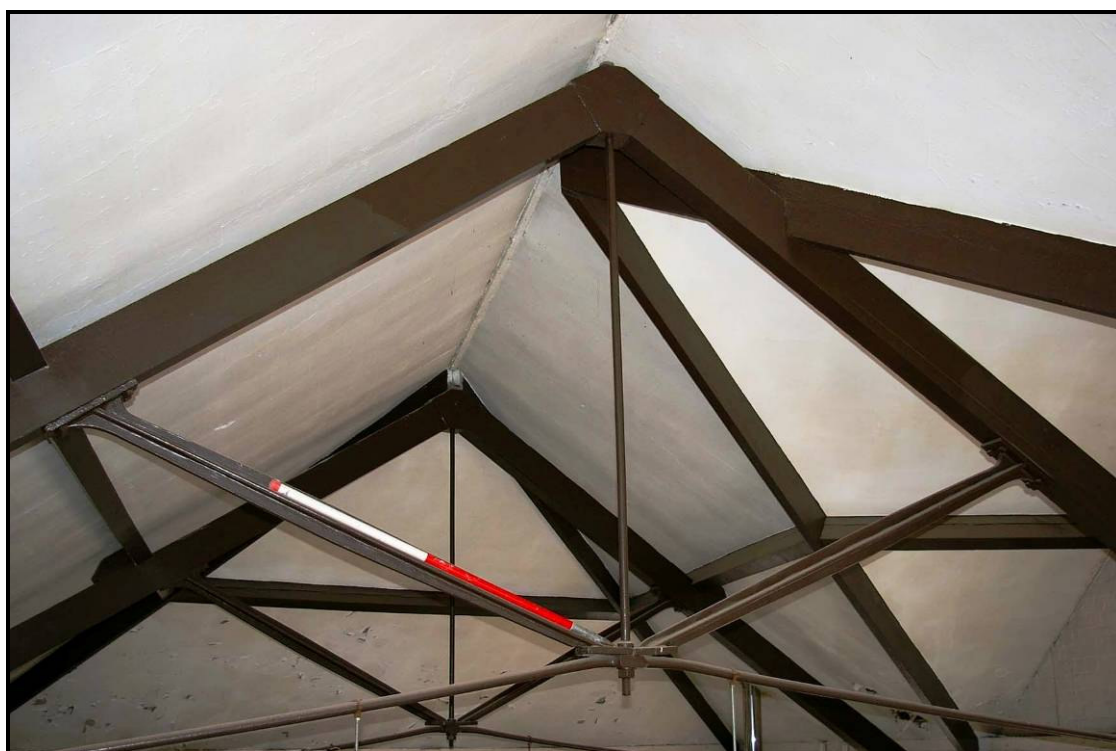


Figure 32: Detail of composite truss



Figure 33: Detail of cast-iron column supporting a principal rafter



Figure 34: Hipped roof structure, looking west

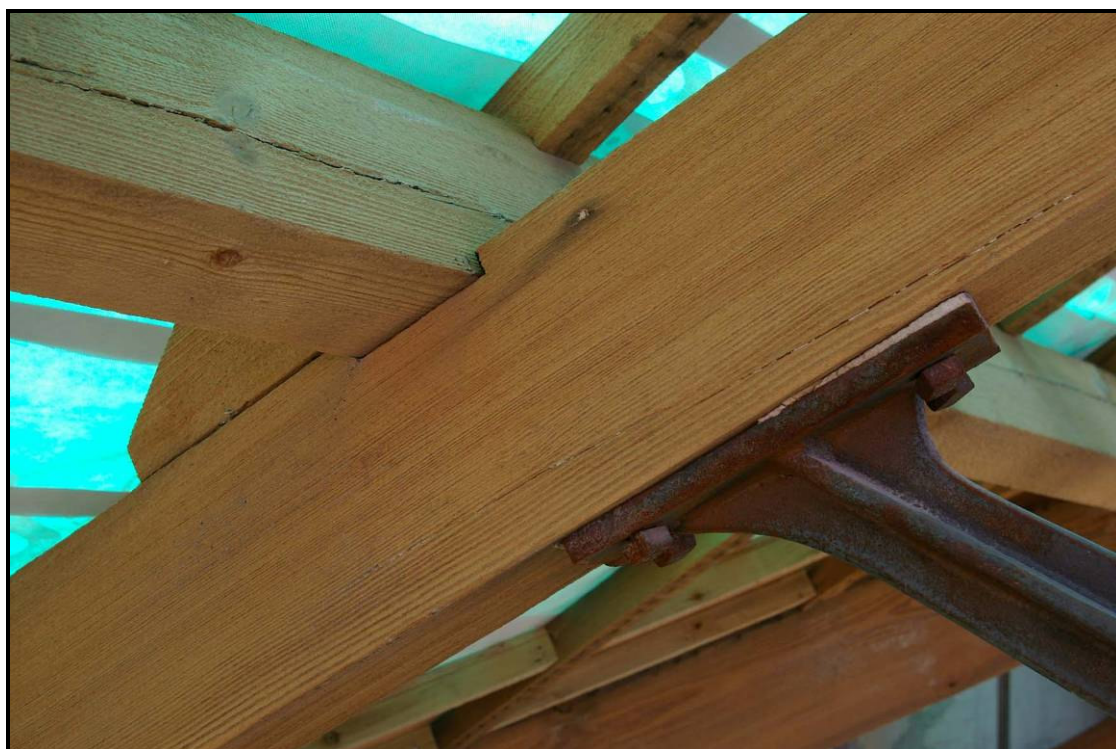


Figure 35: Detail of raking strut fixed on a principal rafter and trenched purlin supported by cleat

The narrower western portion consists of a pair of full width spaces. The north-western room is fairly rectangular and measures c. 11.5 metres long (east/west), 5.5 metres wide (north/south) and stands 4.95 metres to the apex of the principal rafters. The side walls measure 3.3 metres high. The roof structure is similar to the one in the main eastern room and consists of two trusses (north/south). There is one small skylight on the southern half-pitch. All the windows are later replacements which have wooden frames and two lights with awning openings. The room is currently accessed from the bridge on the north wall and from an inserted modern doorway on the west wall of the main room. On the south wall there are three window openings and a blocked-up doorway. The window openings have segmental arched heads made of a single course of bricks laid to header bond, and the doorway has a wooden lintel. There is also an inserted doorway on the eastern side of this wall which leads to the smaller south-western room. The floor, walls and ceiling are made of the same fabric as the main eastern room.

The south-western room is slightly trapezoidal and is divided into two spaces by a brick partition wall (north/south). Its overall dimensions are c. 4.5 metres long, 1.5 metres wide (west wall), 2.7 metres wide (east wall) and 2.4 metres high. It has painted brickwork, a timber floor and a plasterboard ceiling with two skylights. There are two inserted modern doorways on the east wall and an earlier window opening which is blocked with bricks. This window opening has a segmental arched head made of two brick courses of which the lower is laid to header bond and the upper to rowlock bond. The blocked window openings identified on the adjacent north-western room can be seen on the north wall of this small room. The blocked window openings have wooden lintels. There is also a small blocked-up fireplace in the centre of the wall which suggests that this side was once the interior of an earlier building. The fireplace opening has a segmental arched head made of bricks laid to soldier bond. The north and east walls are built with hand made bricks of variable size (mostly 9" x 4 1/4" x 2 1/2") bonded with flush orangey lime mortar (up to 22mm thick) and laid to

Flemish bond, although fairly irregular. These walls have a timber wall plate with dismantled joists of a former floor structure which confirms that this wall was the interior of an earlier building which would have been at least three storeys high.



Figure 36: North-west room of the first floor



Figure 37: South elevation of partition wall

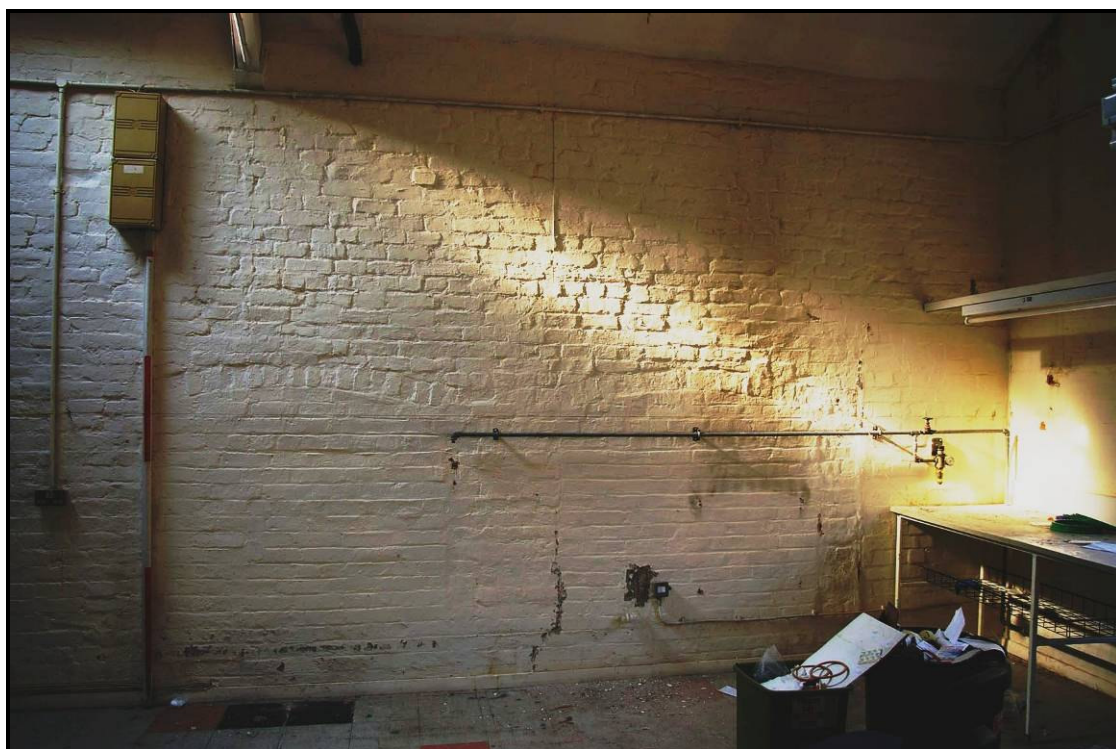


Figure 38: North elevation of partition wall with blocked windows

5.2 Building G

This building is the Finished Goods Warehouse which was evidently not designed for that purpose but, instead, contained four kilns – their positions reflected by the design of the framing of the first floor structure. It is a large square building attached to the south wall of Building E. It runs along the west side of the central lane just opposite Building H on the east and to the south is Building J, separated by an alleyway. To the west is a later, mid 20th century, flat-roofed range now used as a retail shop. The Finished Goods Warehouse is a riveted steel-framed building with red brick panel infills and a double gablet roof. Its overall dimensions are 28 metres long (north/south), 26.5 metres wide (east/west) and 13.5 metres high.

5.2.1 Exterior

East elevation (Figures 39 – 42)

The first floor of this elevation has nine bays divided into a pair of four bays under a double gablet roof and one bay in between them under a flat broad valley (east/west). The bays are demarcated by thin vertical steel stanchions with brick panels. The panels consist of a veneer of reddish brown bricks (9" x 4" x 3") laid to stretcher bond. Each bay has plain flat-headed window openings containing steel-framed windows except for the northernmost bay which is devoid of any window. The central bay has an inserted opening with a concrete lintel which is blocked with bricks. This opening once had a bridge leading to the opposite Building H. Immediately on the north side of this aperture there is the remnants of a pilaster made of mid brown bricks (8½" x 4¼" x 3") laid to English bond and topped with two flat chamfered courses of blue engineering bricks. The roof structure has two square galvanised metal louvre vents on each gablet and the hipped slopes are made of corrugated asbestos sheeting.

The ground floor has a later long and low brick lean-to extension with a series of plain flat-headed window openings containing steel-framed 'Crittall-type' windows and covered by a corrugated sheeted roof. It is of ten bays with windows in all apart from the northernmost which has a large doorway and the fourth (from the north) has a smaller doorway blocked with bricks. The wall is made of light reddish brown burnt bricks (8¾" x 4" x 2¾") laid to stretcher bond.



Figure 39: Survey drawing of the east elevation (scale 1:100)



Figure 40: East elevation of Building G



Figure 41: First floor windows on the east elevation



Figure 42: Detail of former pilaster and blocked opening of the earlier bridge on the east elevation

South elevation (Figures 43 and 44)

The southern elevation is of eight bays. The width of the steel stanchions in the side frame varies and this seems to be associated with the manner of the floor framing within. The wider stanchions take the main ceiling bridging beams and the diagonal beams that presumably respected the positions of the former kilns within. In each bays there are square-headed window openings with steel-framed windows except for the second bay (from the east) which has a wide metal double door on the ground floor and a recent large opening on the first floor. There is also a bridge on the upper level of the westernmost bay. The bricks of the ground floor panels vary from red burnt (9" x 2½" x 3") to red (9" x 4" x 3") to light reddish brown burnt (8¾" x 4" x 2¾").

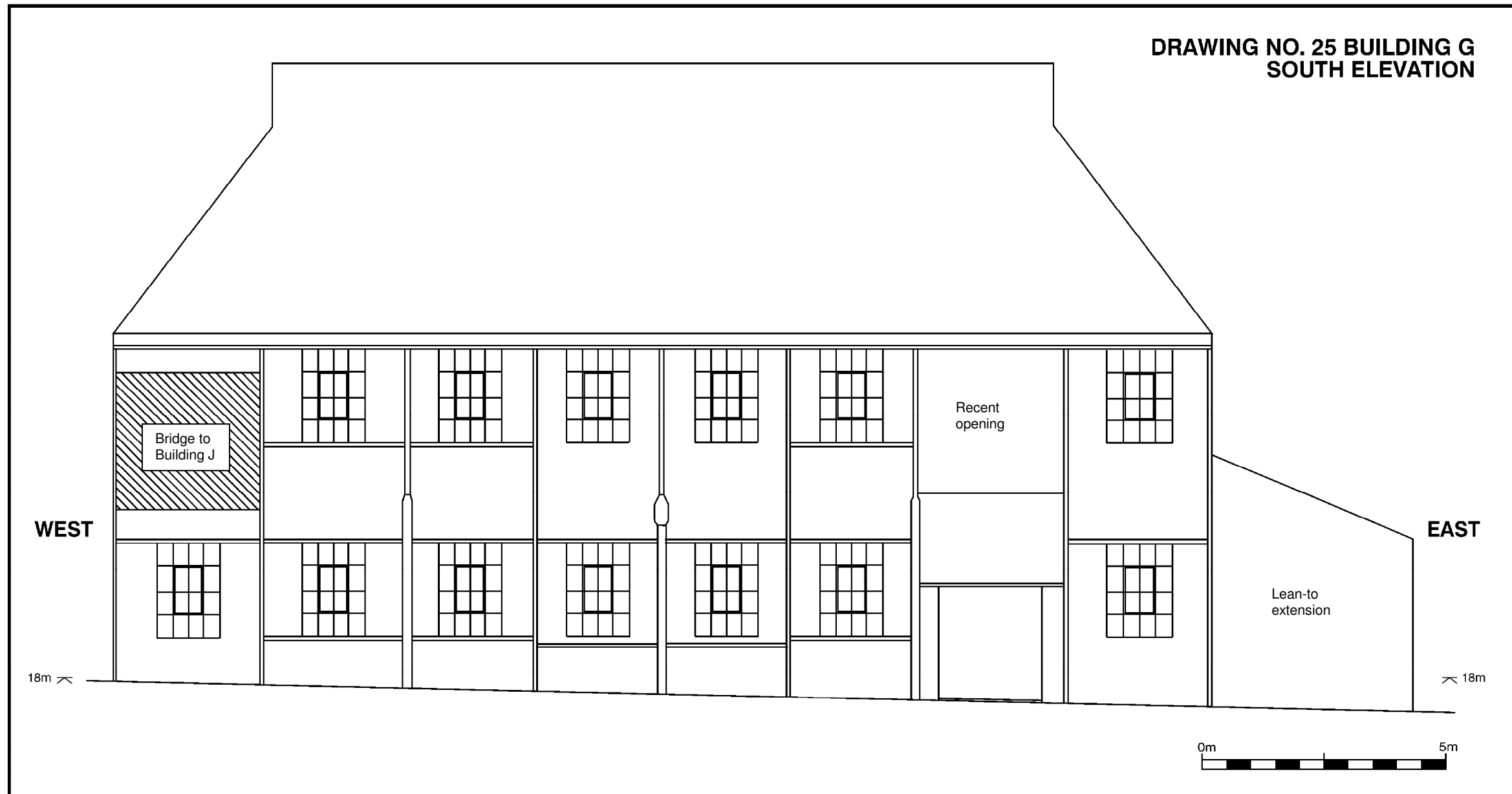


Figure 43: Survey drawing of south elevation (scale 1:100)



Figure 44: South elevation

North and west elevations (Figure 45)

The north elevation is in fact the south wall of Building E which is connected through four inserted doorways (one on the ground floor and three on the first floor), and the west elevation is made of plain bricks but is obscured by the adjacent building on the west.



Figure 45: Detail of double-gabled roof on the west elevation

5.2.2 Interior

Ground floor (Figures 46 and 47)

Internally there are large open spaces on this floor, interrupted only by the steel stanchions of the structural framing. The stanchions of the southern section have concrete casing around them. These are 1.8 metres high and are illustrated on the plan with black dots (Figure 47). There is an east/west conveyor along the northern wall which turns at a right angle to Building E. It has painted brickwork, a concrete floor and a concrete ceiling supported by the steel structure. It measures *c.* 27.5 metres long (north/south), 26 metres wide (east/west) and 3.3 metres high. The workshop is lit by seven steel-framed windows on the south wall which have twelve rectangular lights set vertically (4 columns x 4 rows) with a central pivotal opening, eight 'Crittall-type' windows on the east wall and three skylights on the flat roof of the central valley.



Figure 46: Ground floor, looking north

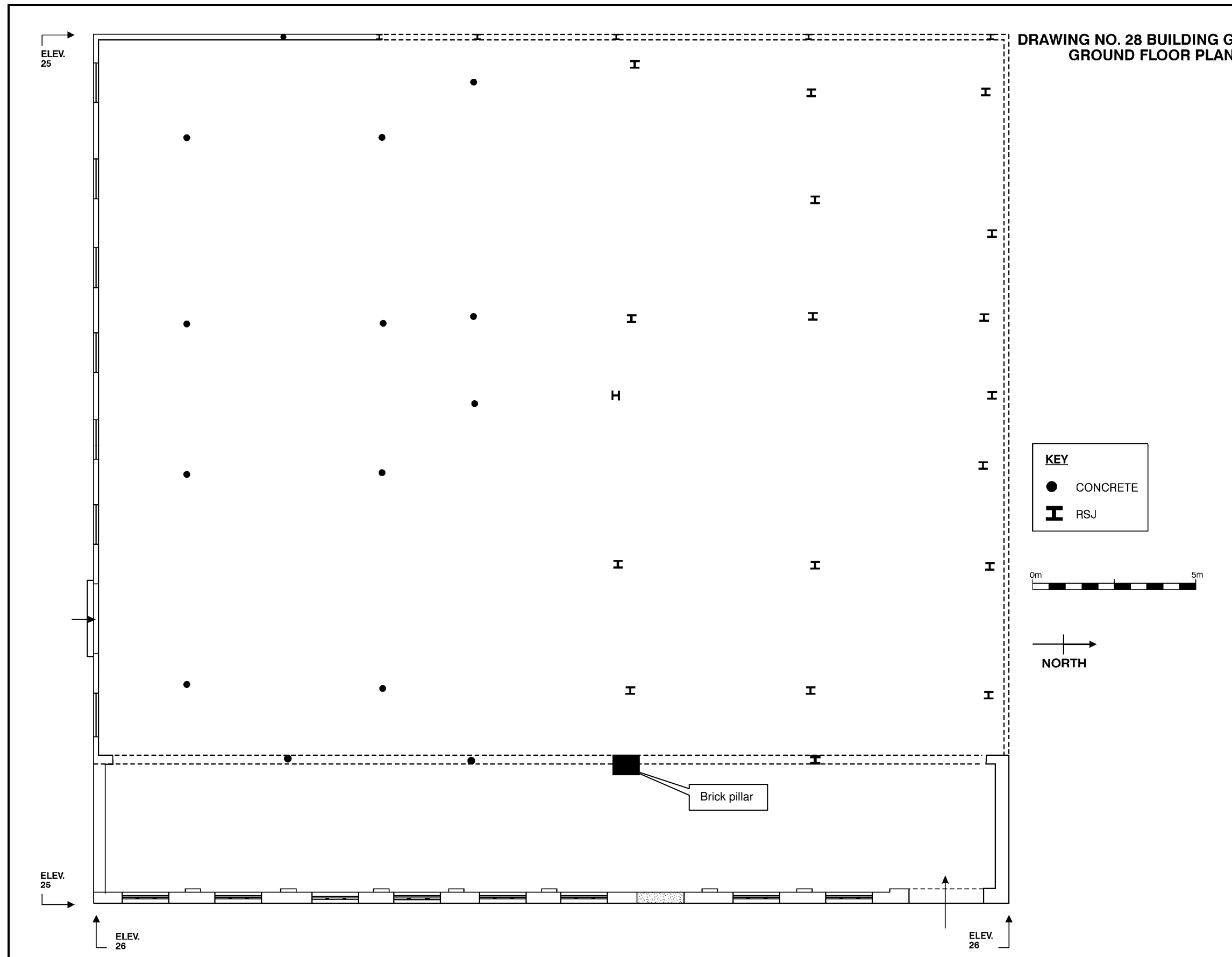


Figure 47: Ground floor plan of Building G (scale 1:125)

First floor (Figures 48 – 50)

The first floor has a similar plan to the ground floor but without the eastern lean-to extension. It is a large workshop which is currently practically empty apart from some office desks and a long worktop table set against the eastern windows. Its overall dimensions are 27.5 metres long (north/south), 22 metres wide (east/west) and it stands 9 metres to the top of the apex of the roof. The side walls measure 3 metres high. The workshop is lit by six steel-framed windows on the south wall and seven on the east wall. These windows have twelve rectangular lights set vertically (4 columns x 4 rows) with a central pivotal opening. The southern roof structure has twelve skylights aligned east to west (6 on each side) and five tall cylindrical metal cowls on the southern half-pitch. The two roofs are supported on lightweight steel-framed trusses and the northern section has a suspended hipped ceiling.



Figure 48: First floor of the southern block, looking towards Building W1



Figure 49: Roof structure on the southern block, looking west



Figure 50: Suspended ceiling on the northern block, looking west

6 Discussion

An outline of the historical development of the factory can be found in *The Severn Street Factory 1788 – 1900* (Cook 2007) and also in the *Porcelain in Worcester 1751 – 1951: An Illustrated Social History* (Jones 1993). In order to further our knowledge of the factory, Archenfield Archaeology Ltd commissioned John van Laun Associates (Industrial Archaeologists) to carry out an historical and industrial research of the site. The research is included with this report as an appendix. The result of the research, together with previous archaeological desk-based assessments (prepared by Archenfield Archaeology Ltd), available cartographic material, historic photographs and illustrations and the archaeological building survey, successfully identified clear evidence of different phases of construction. This is represented mainly by changes in the building plan, with additional extensions, and construction breaks of building materials. The sequential development of Buildings E and G is summarised below.

6.1 Phase 1 (1850s)

The historic research identified that the land where Building E currently lies was purchased in 1851 (see Appendix). A building consisting of two parallel blocks (east/west), containing kilns, were built south of the Bone Mill (Building D) shortly after the purchase. The building can be seen on an illustration of the Works around 1852 (Figure 51).

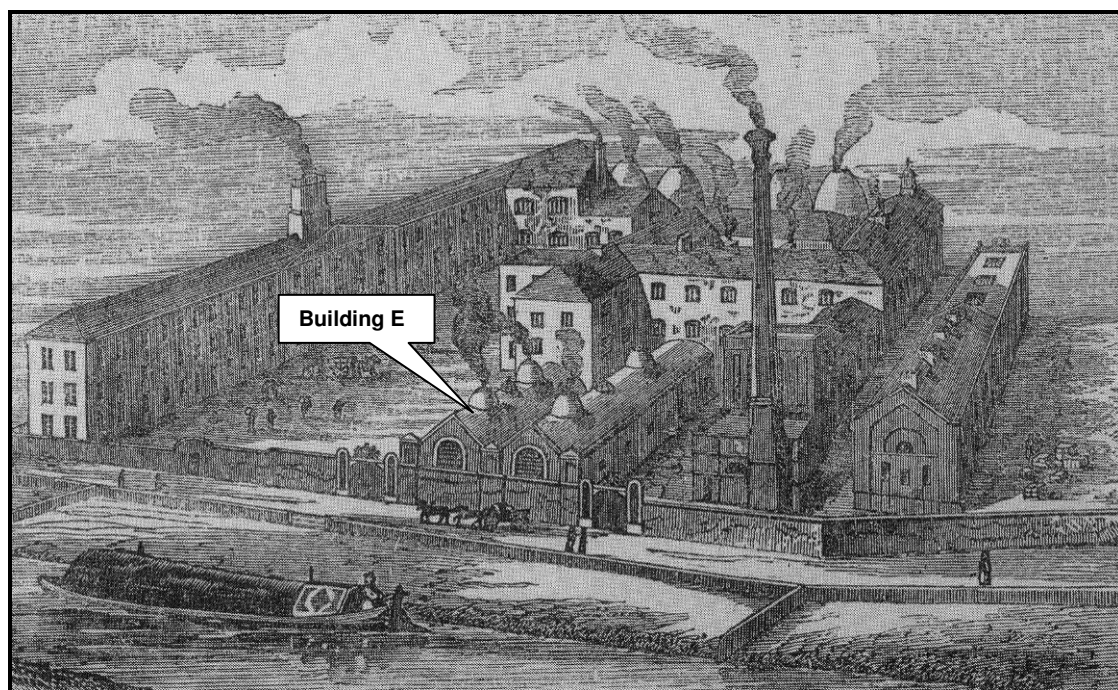


Figure 51: Illustration of the Works at around 1852 (WPM)

6.2 Phase 2 (1860s)

The land where Building G lies was acquired in 1854 (see Appendix) and its earliest construction consisted of two China and Biscuit Rooms, two Enamelling Kilns, one Parian Room, one Placing Room, one Back Lodge and a little room called Potting Shops which are depicted on the 1863 plan of the Works (Figure 52). The plan also shows Building E with further additions and modification from its previous phase, which is composed of several Glaze Kilns, two Press Rooms, one Placing Room and one Potting Shop. The north and east walls of the latter room (plot number 29) are extant with original window openings blocked-up. The morphology of Building G appears to have changed considerably shortly after as can be seen in the 1867 Board of Health plan of the Works (Figure 53). The building then is almost rectangular and is practically butting the south wall of Building E.

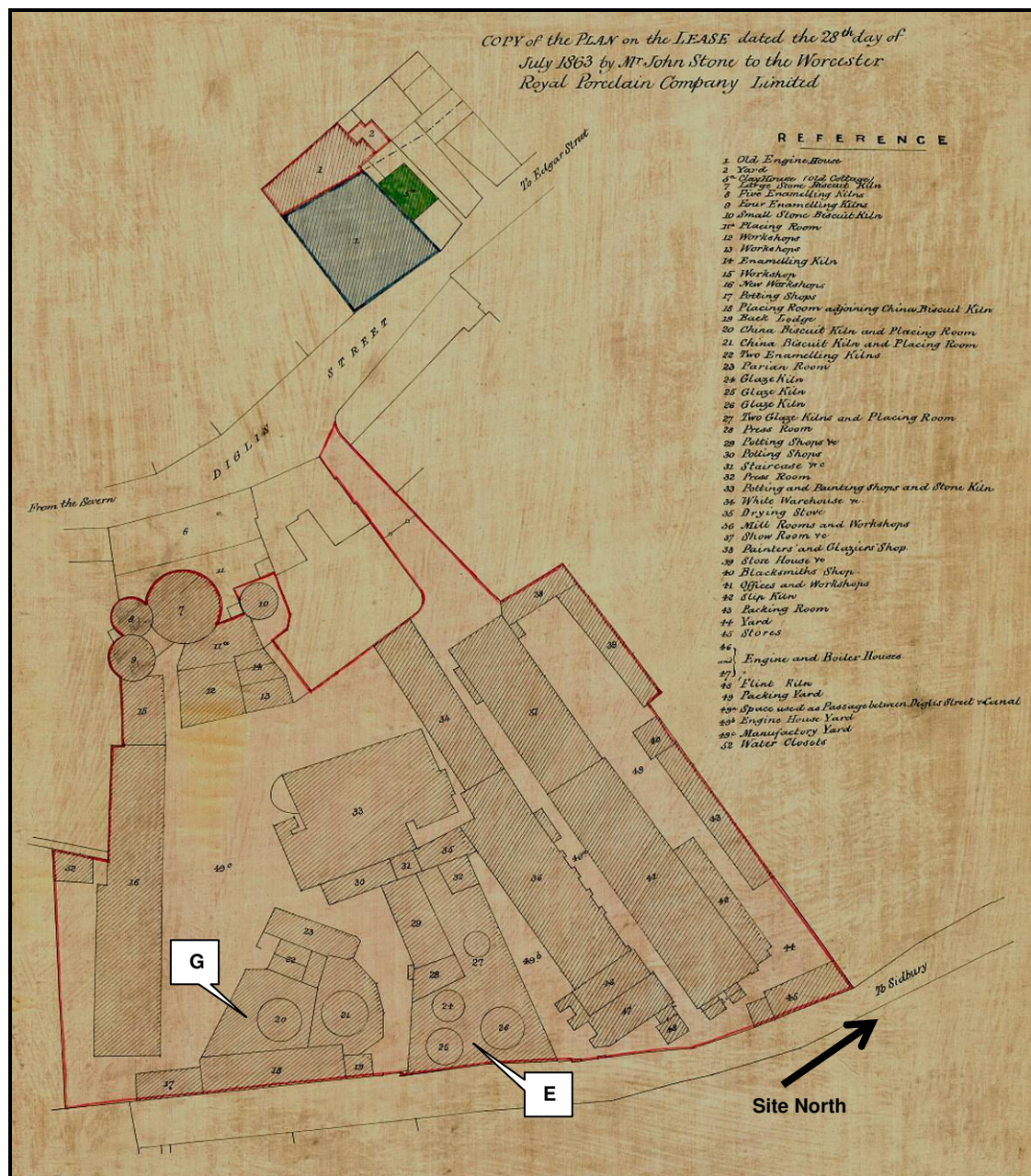


Figure 52: Plan of the Works in 1863 (WPM)



Figure 53: Board of Health plan of the Works in 1867 (WPM)

6.3 Phase 3 (1870s)

The 1875 plan of the Works (Figure 54) shows Buildings E and G with the same footprint as the 1867 plan, except that the west wall of Building E is no longer fully attached to the adjacent building. There are a series of rooms within each building. Building G has two east/west blocks with Biscuit Ovens and a large Placing House and a Green House in between them; and Building E has four rooms which are Biscuit Ovens, a Mould Chamber, a Slip Room and a Parian Stock Room. The latter room was the former Potting Shops (plot number 29) of the 1863 plan of the Works (Figure 52). A new building was erected within the footprint of the Slip Room and Mould Chamber in 1878 (see Appendix). This was the New Throwing House which equates the eastern main workshop of the present Building E.

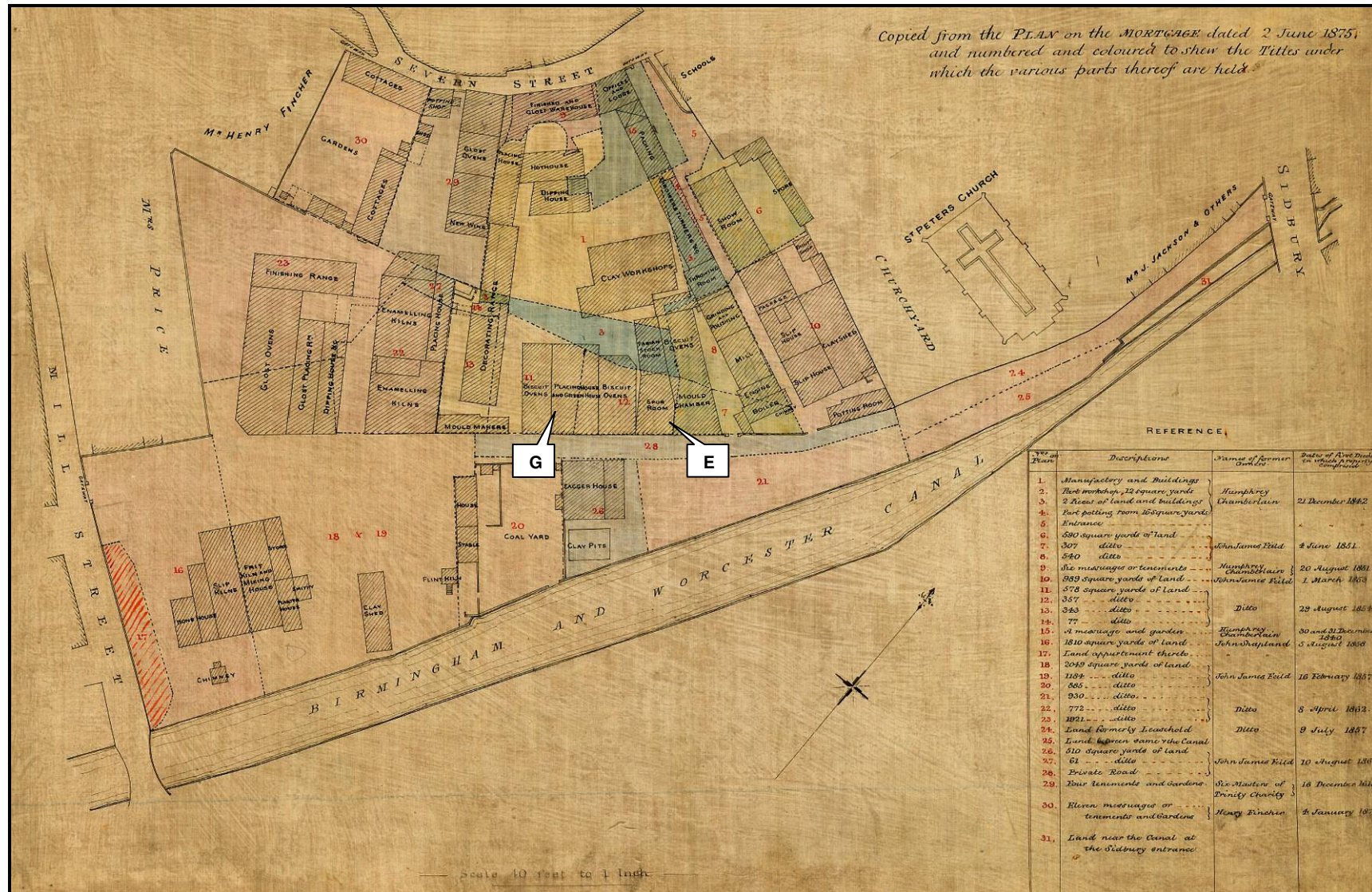


Figure 54: Plan of the Works in 1875 (WPM)

6.4 Phase 4 (1880 – 1920s)

The 1884 Ordnance Survey map shows the location of the kilns in Building G. The only clear development shown on this map is a straight (north/south) external staircase set against the west wall of the north-western kiln. This staircase can also be seen in an early depiction of the Works (see Figure 25 of the Appendix). The kilns of Building G were rebuilt and repaired several times between 1863 and 1953 (see Appendix). A photograph taken around 1890 shows the bottle kilns and the block between them which is a two-storey brick building with gables on the east and west facades (Figure 56). The 1902 Ordnance Survey map shows no further alterations to the buildings (Figure 57).

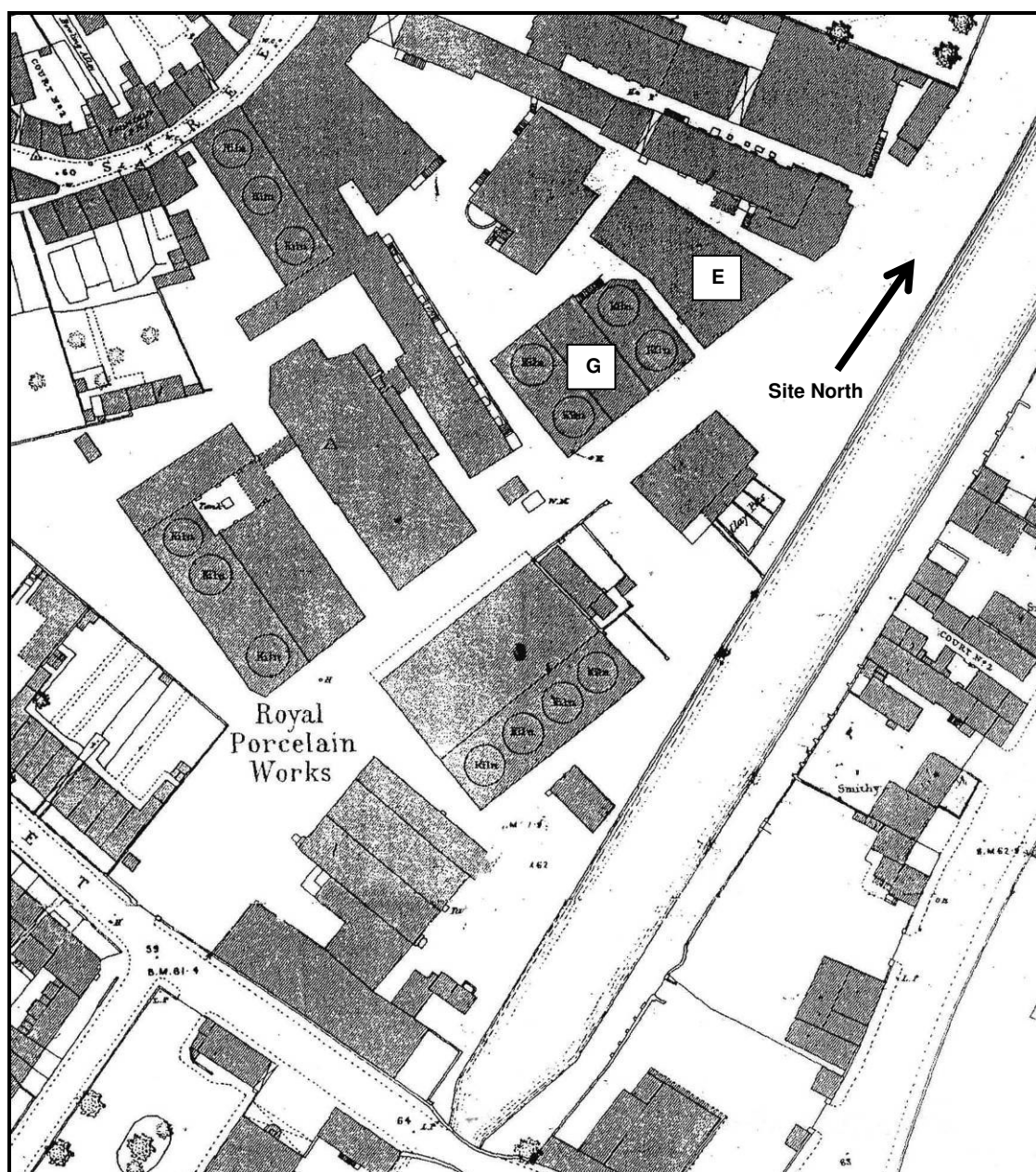


Figure 55: Plan of the Works in 1884 (OS map)

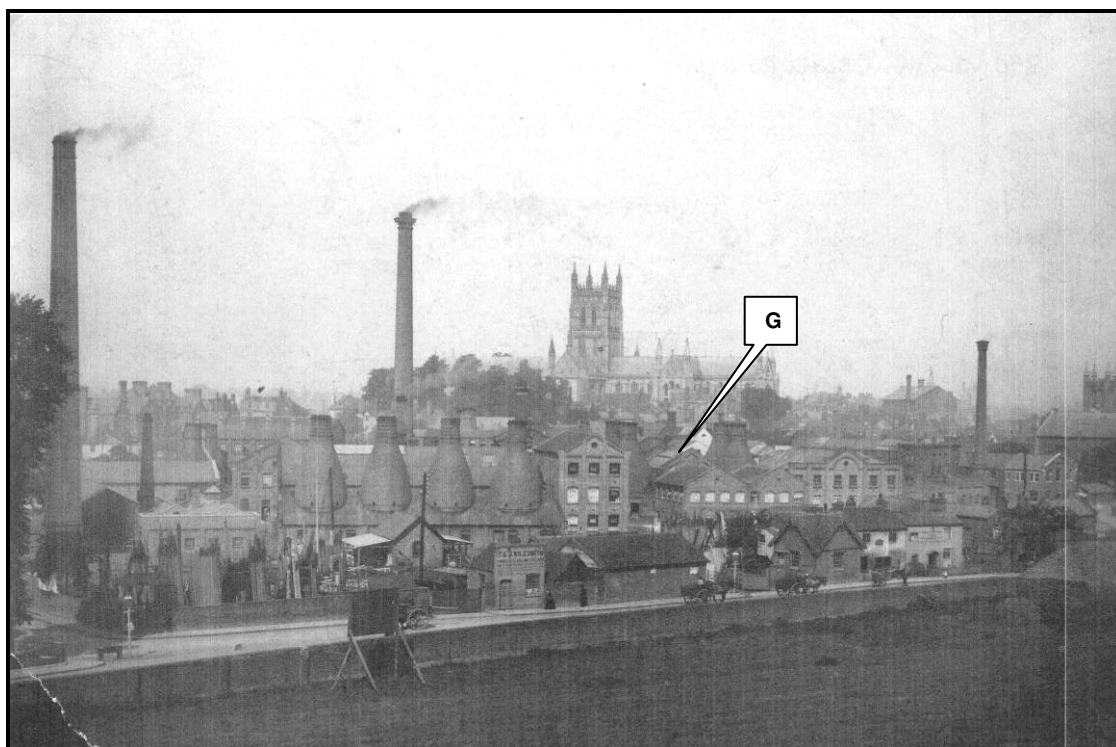


Figure 56: A view of the Works in around 1890 (WPM)

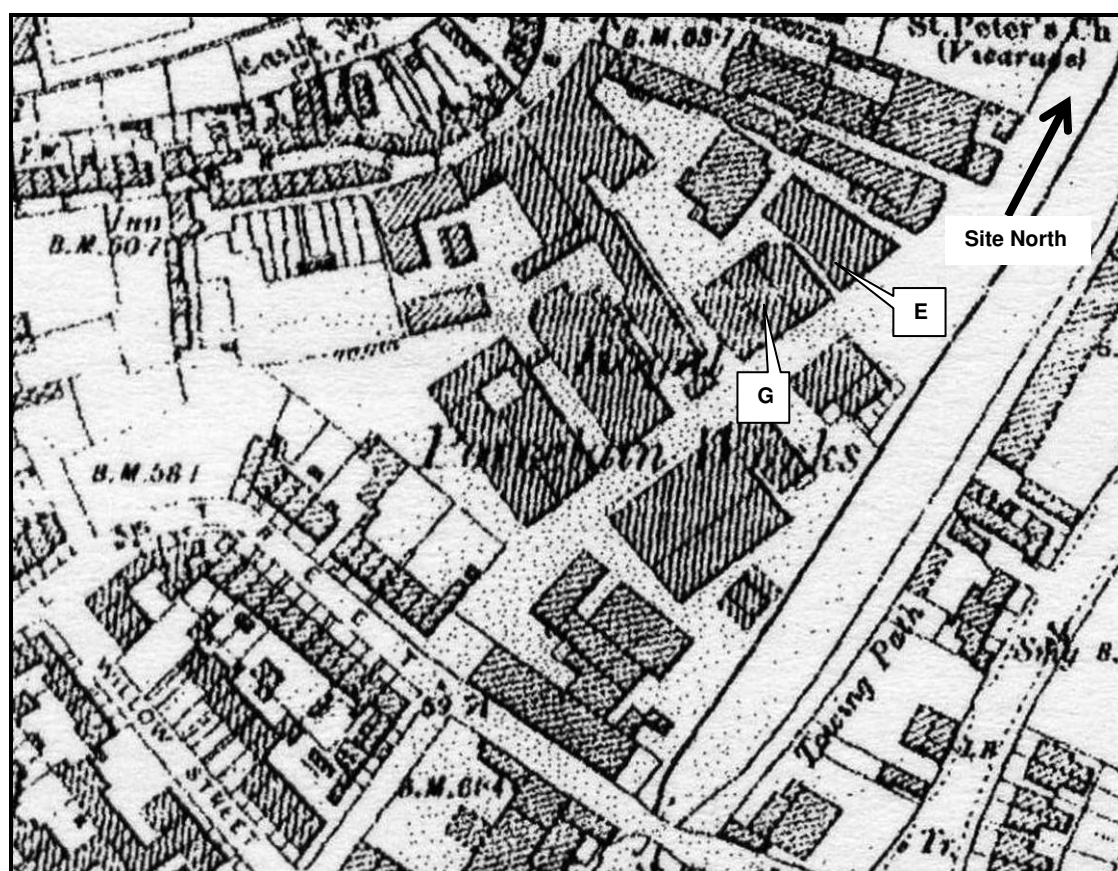


Figure 57: Plan of the Works in 1902 (OS map)

6.5 Phase 5 (1920 – 1940s)

The 1928 Ordnance Survey map illustrates some developments on Building G (Figure 58). Indeed, the map shows that the northern block projects into the central lane of the Works. The projection is the result of a new and larger rectangular gas kiln. A 1934 architect's drawing shows the plan of Building G with the gas kiln on the north-west corner and the east elevation with the rectangular kiln structure on the north, a bottle kiln on the south and a gabled two-storey block in the middle (Figure 59). The gabled central building has three bays demarcated by brick pilasters of which one partially survives and is shown on the survey drawing of the east elevation (Figure 39). A photograph taken in the 1930s exhibits the south-west bottle kiln (Figure 60).

The 1934 architect's drawing (Figure 59) also illustrates some changes to Building E. There are two doorways on the south elevation. The eastern doorway seems to be original as it is depicted on the proposed 1877 architect's plan of the New Throwing House (see Figure 9 of the Appendix), and the western doorway may be a later insertion. The eastern main workshop area appears labelled as the Housing Shop which suggests that the workshop might have changed function.

Around 1935 the current steel-framed structure of Building G was erected on the southern block (see Figures 34 and 35 of the Appendix) which contained new bottle kilns with tall chimney stacks.

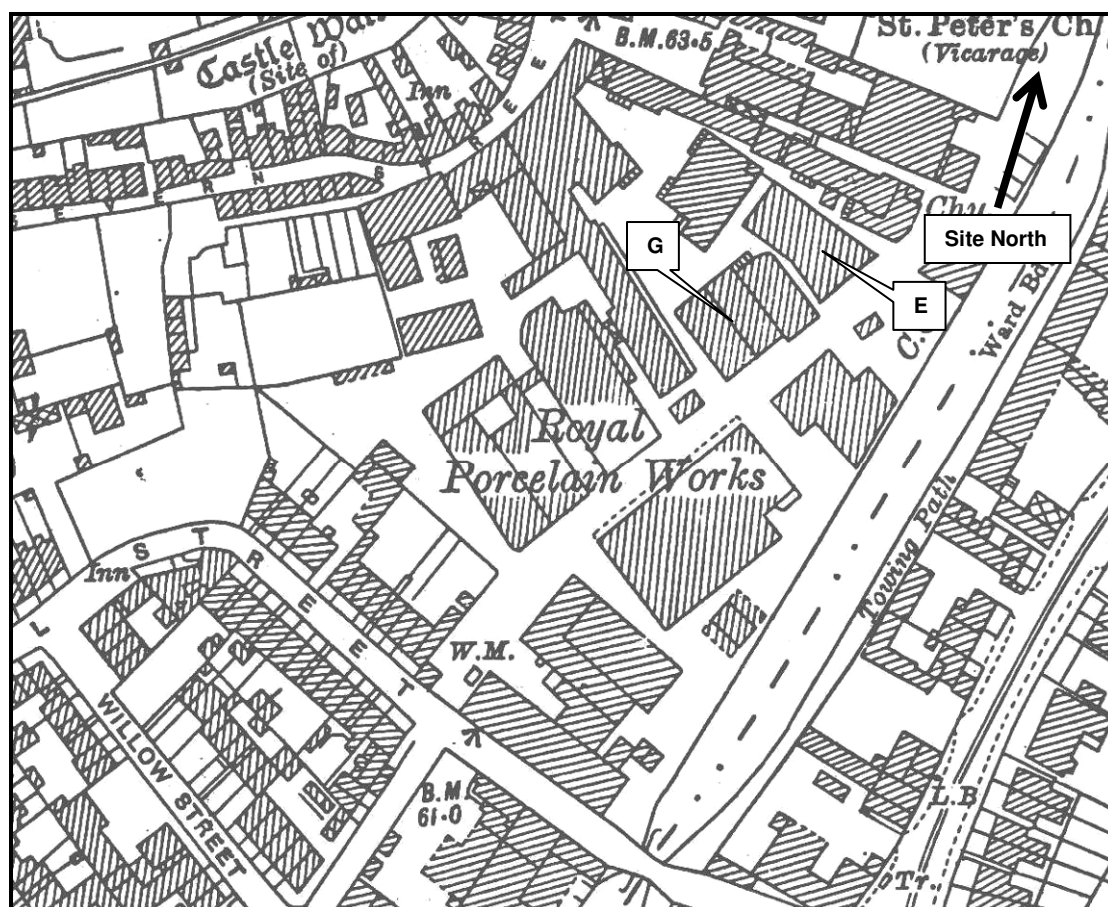


Figure 58: Plan of the Works in 1928 (OS map)

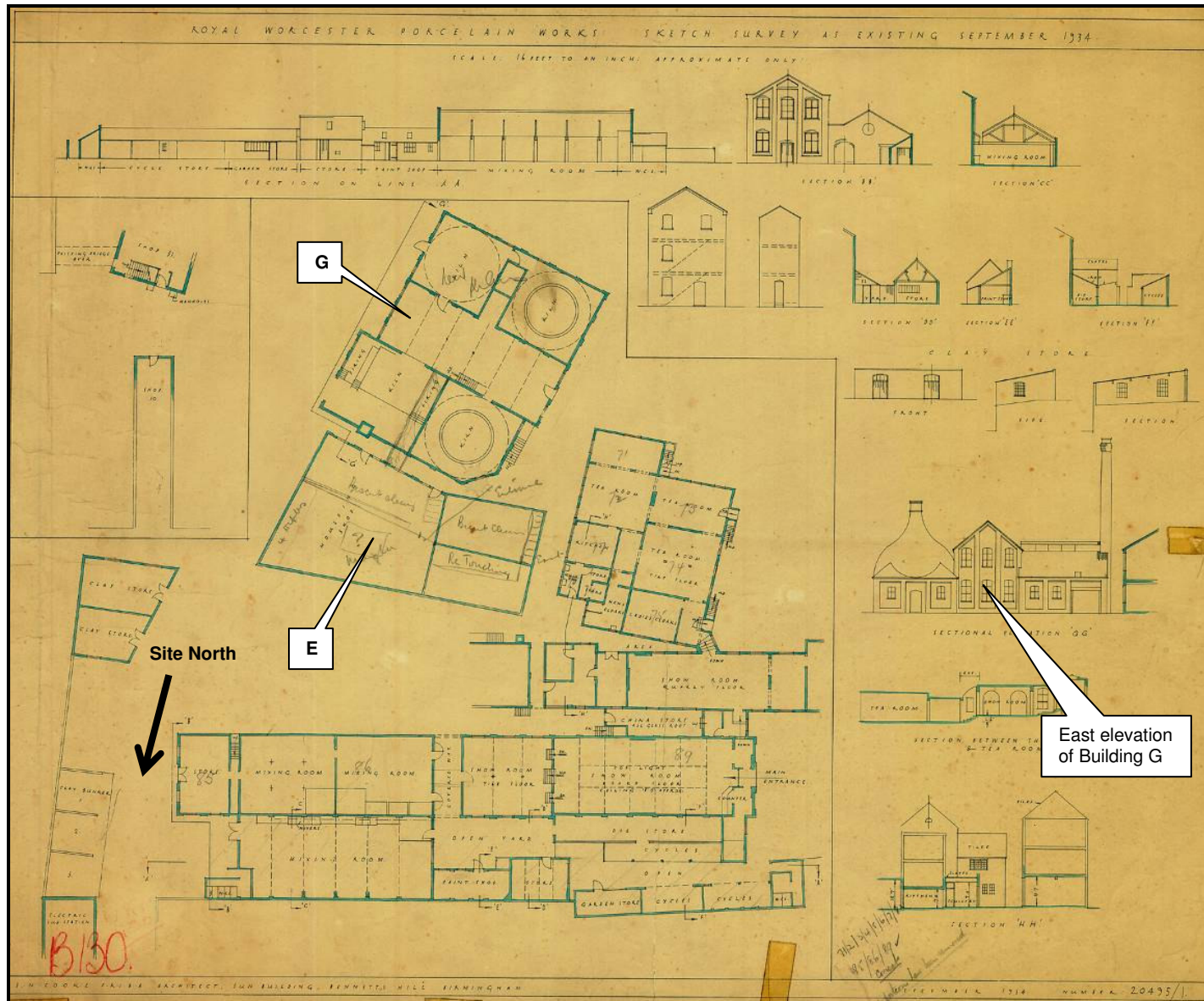


Figure 59: Architect's drawings of the Works in 1934 (WPM)



Figure 60: 1930s photograph showing a bottle kiln of Building G (WPM)

6.6 Phase 6 (1940 – 1960s)

The 1940 Ordnance Survey map indicates that some modifications took place in Building G (Figure 61). The building has still three parallel blocks running from east to west but the southern one is longer on the west. There is also an additional structure at the north-west corner and a bridge between the east elevation of the central block and opposite Building H. The 1941 plan of the Works shows more clearly the supplementary features (Figure 62). The north-west structure is practically an extension of the west elevation of Building E which encloses the external staircase of Building G. This structure is labelled as plot number 66a. The 1941 plan of the Works also shows that the southern block is much bigger and extends over the central block which might have been the result of rebuilding new but wider bottle kilns.

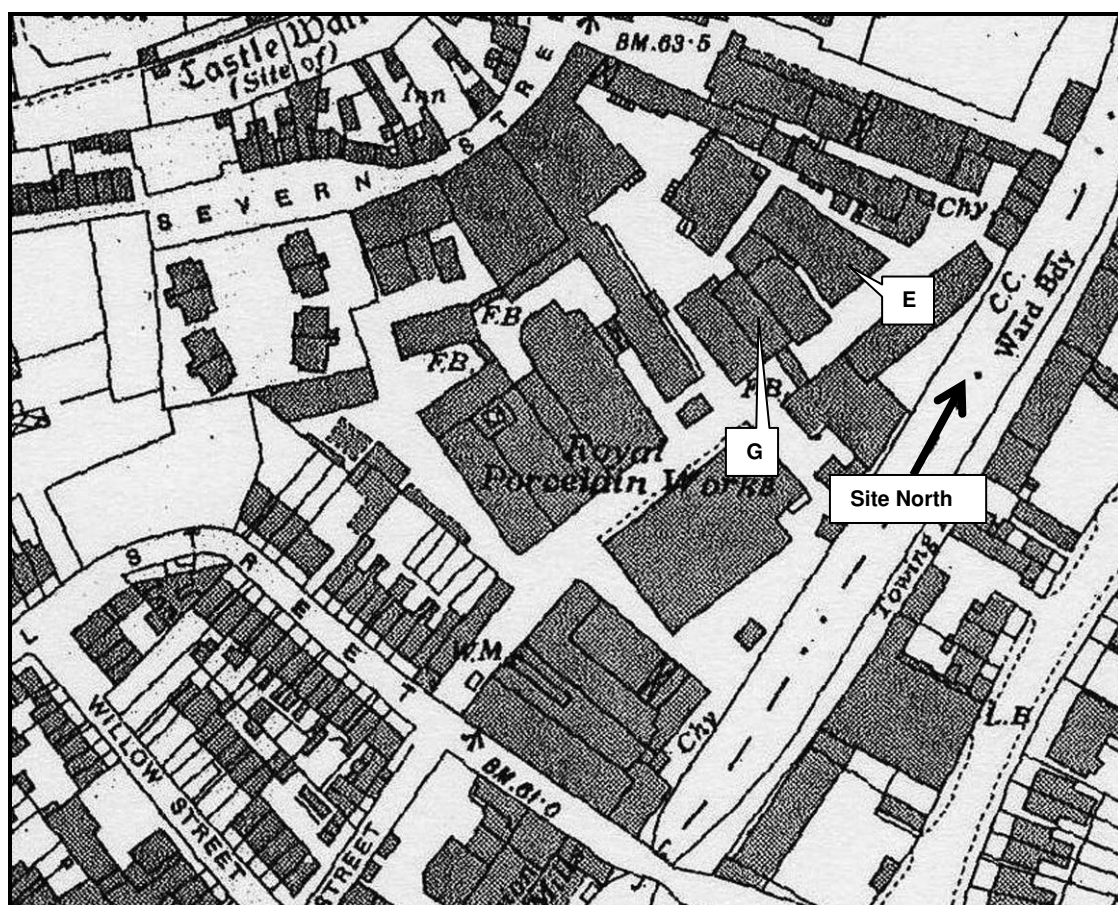


Figure 61: Plan of the Works in 1940 (OS map)



Figure 62: Plan of the Works in 1941 (WPM)

Further reorganisation of the buildings appear to have occurred in the following years and are drawn over the 1941 architect's plan (Figure 63). The most noticeable change is the rebuilding of two bottle kilns on the northern block of Building G. The development involved building over the south-west room of Building E (plot number 70) and the east wall was flush with the lane without the former projection. A later plan of the Works exhibits the finished development of the new kilns on the northern block which would have been similar to the southern block with a steel frame over the bottle kilns (see Figure 11 of the Appendix).



Figure 63: Later amendments drawn on the same plan (WPM)

The new kilns of the northern block were replaced in the mid 1940s by a long tunnel kiln (see Figures 37 – 39 of the Appendix). The new building once again projected into the central lane with a lean-to structure. A large building was added to the eastern side of the entire Building G enclosing the new tunnel kiln which can be seen on the 1963 Ordnance Survey map (Figure 63). These series of developments would have entailed rebuilding the facade of the western side of Building E which employed the same architectural style as the main eastern New Throwing House.

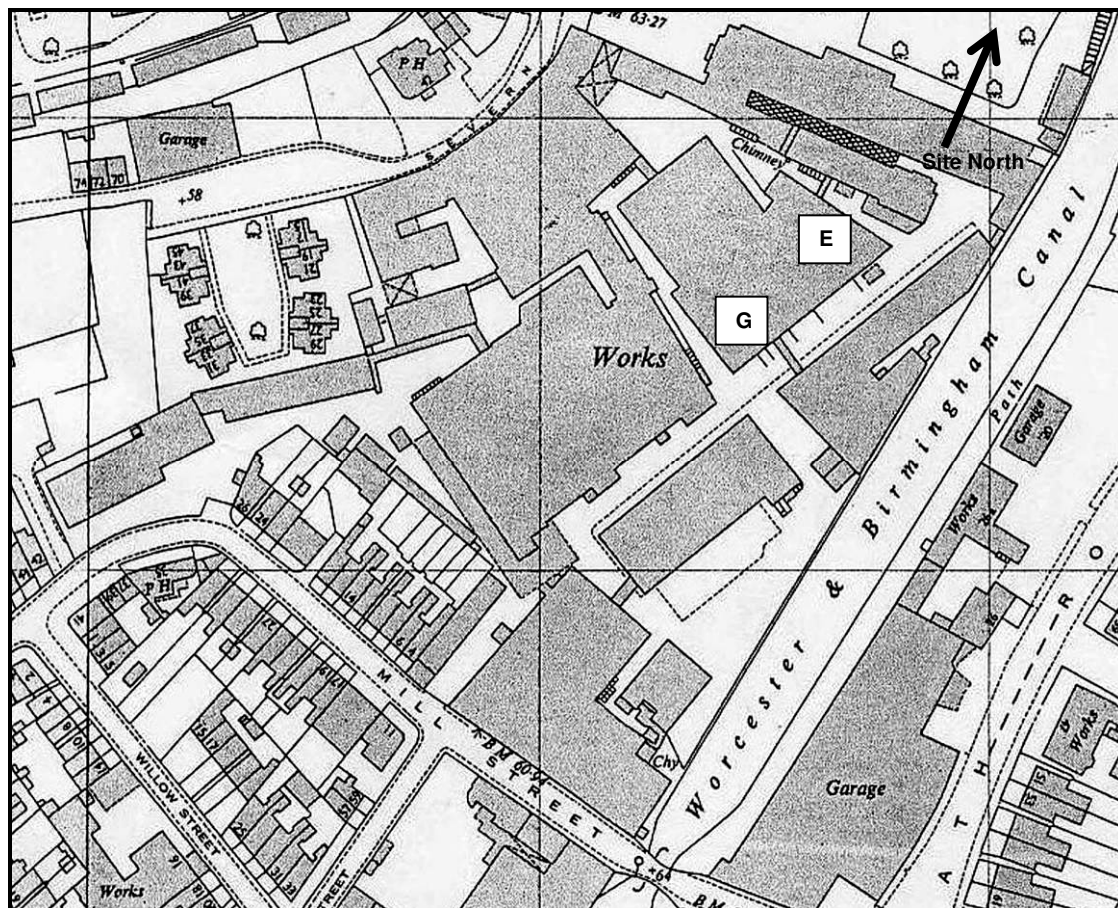


Figure 64: Plan of the Works in 1963 (OS map)

7 Conclusion

This report deals with an archaeological investigation and recording of Buildings E and G. The buildings were recorded in detail with scale drawings, photographs and written descriptions. An historical and industrial research was also undertaken in great detail and is included as an appendix. The results indicate that Building E was established in 1851. Further additions are shown on the 1863 plan of the Works, which was composed of several Glaze Kilns, two Press Room, one Placing Room and one Potting Shop. The footprint of that building corresponds to the majority of the current Building E but only part of the Potting Shop (plot 29 of the 1863 plan) is extant. The 1875 plan of the Works shows Building E divided into four rooms (Biscuit Ovens, Mould Chamber, Slip Room and Parian Stock Room). A new building was erected within the footprint of the Slip Room and Mould Chamber in 1878 (see Appendix). This was the New Throwing House, which equates the eastern main workshop of the present Building E. Further development took place in the 1940s which involved shortening the south-western room of Building E and the rebuilding of the current external fabric matching the New Throwing House on the main eastern workshop. Despite unsympathetic modern accretions it is still a visually attractive building, though one that has been considerably altered internally. However, it retains the majority of its original fabric, including principal roof structures, exterior and interior brickwork. Building E represents an interesting example of 19th century factory construction which adds knowledge to the history and development of the Royal Worcester Porcelain Works.

The southern side of the current Building G was built around 1935 and the northern section in the mid 1940s. However, the land where Building G currently lies was acquired in 1854 and the 1863 plan of the Works shows a building which consisted of two China and Biscuit Rooms, two Enamelling Kilns, one Parian Room, one Placing Room, one Back Lodge and a little room called Potting Shops. Major rebuilding took place around the 1860s with the erection of four bottle kilns and a gabled brick structure between them, of which part of a pilaster still survives on the eastern elevation of the present Building G. The kilns were rebuilt and repaired several times between 1863 and 1953. The present fabric is an interesting example of steel-framing of the early 20th century. However, it was clearly built to contain large kilns and these have been removed, so that the building no longer serves the specific function for which it was built and has been effectively gutted and rearranged internally as a result. Building G was demolished during the current development work .

8 Archive deposition

The project archive, consisting of scaled drawings, digital photographs, photographic records, building recording sheets and computer discs will be prepared and stored in accordance with the guidelines laid down in the Institute of Field Archaeologists' guidelines for the preparation and storage of archives. The archive will be placed at Worcester City Museum.

The archive of the entire project consists of:

- 41 Building record sheets
- 7 Context register sheets
- 212 Photographic record sheets
- 3495 Digital photographs
- 30 35mm colour prints
- 14 Computer discs
- 11 Drawing register sheets
- 262 Scaled drawings

The photographic record consists of 392 digital images recorded on *pro-forma* index sheets and plotted on 10 plans. The drawing survey comprises 20 scaled drawings of which 8 are included in the report. The drawings are listed below:

No	SCALE	BUILDING	DESCRIPTION	STATE IN REPORT
25	1:50	G	South elevation	Included
26	1:50	G	East elevation	Included
27	1:20	G	Detail of earlier pilaster on the east elevation	
28	1:50	G	Ground floor plan	Included
29	1:50	G	First floor plan	
30	1:20	G	Profile of earlier pilaster on the east elevation	
110	1:50	E	North facing internal elevation of the south wall	
111	1:50	E	West facing elevation of N-S partition wall	
113	1:50	E	North elevation	Included
114	1:50	E	East elevation	Included
115	1:50	E	South elevation	
116	1:50	E	West elevation	Included
117	1:50	E	Ground floor plan	Included
118	1:50	E	First floor plan	
133	1:50	E	South facing elevation E-W partition wall	
137	1:20	E	East facing elevation of cast-iron column	
241	1:50	E	Basement plan	Included
252	1:100	E	Roof plan	
253	1:100	E	Cross section	
254	1:100	E	Long section	

9 Publication and dissemination proposals

Paper copies of this report will be lodged with the Archaeological Adviser to Worcester City Council, Worcester Sites and Monuments Record and Worcester City Library. A short note on the project will be prepared for publication.

CDs of this report, together with the supporting archival material will be available from Archenfield Archaeology Ltd. Information will also be available on OASIS, after completion of the report and an OASIS form (<http://.ads.ahds.ac.uk>)

The complete photographic record and database will be retained by Archenfield Archaeology Ltd and a digital copy will be included in the archive.

10 Bibliography

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11 Cartographic material

Ordnance Survey 1884	1st edition 1:500 plan. County Series, Worcestershire Sheet XXXIII.8.11
Ordnance Survey 1902	County Series, Worcestershire Sheet XXXIII NE
Ordnance Survey 1928	County Series, Worcestershire Sheet XXXIII NE
Ordnance Survey 1940	County Series, Worcestershire Sheet XXXIII NE
Ordnance Survey 1963	County Series, Worcestershire Sheet XXXIII NE
Ordnance Survey Superplan Data 2007	Licence Ref. number HEMC 00495300

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APPENDIX

ROYAL WORCESTER PORCELAIN WORKS, HISTORICAL AND INDUSTRIAL RESEARCH

John van Laun Associates

Text by John van Laun and Wendy Cook

Edited by Julie Phillips and Jerry Newby-Vincent