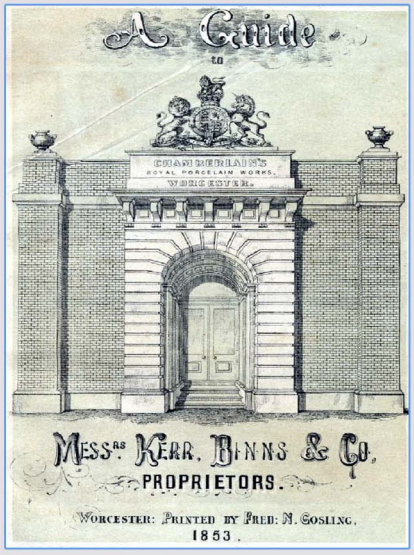
archenfield archaeology ltd

project ref AA_70_11



Archaeological Building Investigation and Recording, Royal Worcester Porcelain Works, Buildings A, B, C and H

Alvaro Mora-Ottomano, John van Laun and Wendy Cook

August 2008

Caplor Farm, Fownhope
Herefordshire, HR1 4PT
Tel: 01432 860003
www.archenfield.com

archenfield archaeology ltd

Principal Archaeologist: Huw Sherlock BA, Diparch, MIFA

Archenfield Archaeology ltd is a multidisciplinary archaeological consultancy, offering a complete range of archaeological advice and services to the public and private sector. We specialise in giving archaeological advice to developers, housing associations and private individuals. We also undertake archaeological intervention, from monitoring to full-scale excavation; building survey; landscape and geophysical surveys and community-based historical and archaeological projects.

Archaeological Building Investigation and Recording,
Royal Worcester Porcelain Works,
Buildings A, B, C and H
August 2008

Archenfield Archaeology Ltd would like to thank the following for their kind assistance in achieving the conclusion of this project: Berkeley Homes for supplying architect's drawings and general assistance on site; the Trustees of the Worcester Porcelain Museum, for allowing the reproduction of archival material; Wendy Cook, curator of the Worcester Porcelain Museum, for providing advice and making available archival material; and James Dinn, Archaeological Officer of Worcester City Council, for monitoring the fieldwork, giving advice and making corrections to the report.

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: The Portico to the Royal Worcester Porcelain Showroom
(reproduced with permission from the Worcester Porcelain Museum)

archenfield archaeology ltd, Caplor Farm, Fownhope, Herefordshire, HR1 4PT
tel: 01432 860003 www.archenfield.com

Contents

Figures

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 Slip House (Building A), the Slip House Extension/Moulders Shop (Building B), the Electricity Sub-station (Building C) and the Sagger House (Building H).

The building investigation and recording identified that most of the original construction of Building A took place in the early 1850s. Further arrangements were made in 1900 to link this building with the adjacent Showroom. Most of the original external fabric is extant but a high proportion of internal original fittings, including carpentry and masonry detailing, no longer survives. Building B was built as an extension of Building A in 1890. It was an elegant brick building with a coped gable end. However, some of its external fabric has been dismantled and disfigured with the insertion of later openings and additions of later buildings against it, although some of the internal original fittings are extant. Building C is the Electricity Sub-station built in the late 1920s. Most of its original fabric still survives in excellent condition. Building H was built in the early 1880s. Some later insertions have modified part of the external fabric of the ground floor but the majority of its masonry and carpentry fabrics are in good condition.

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 Worcester and Birmingham 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 11 of a series) deals with the Slip House (Building A), the Slip House Extension/Moulders Shop (Building B), the Electricity Sub-station (Building C) and the Sagger House (Building H). An initial assessment of the buildings recognised that they are of historical 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.

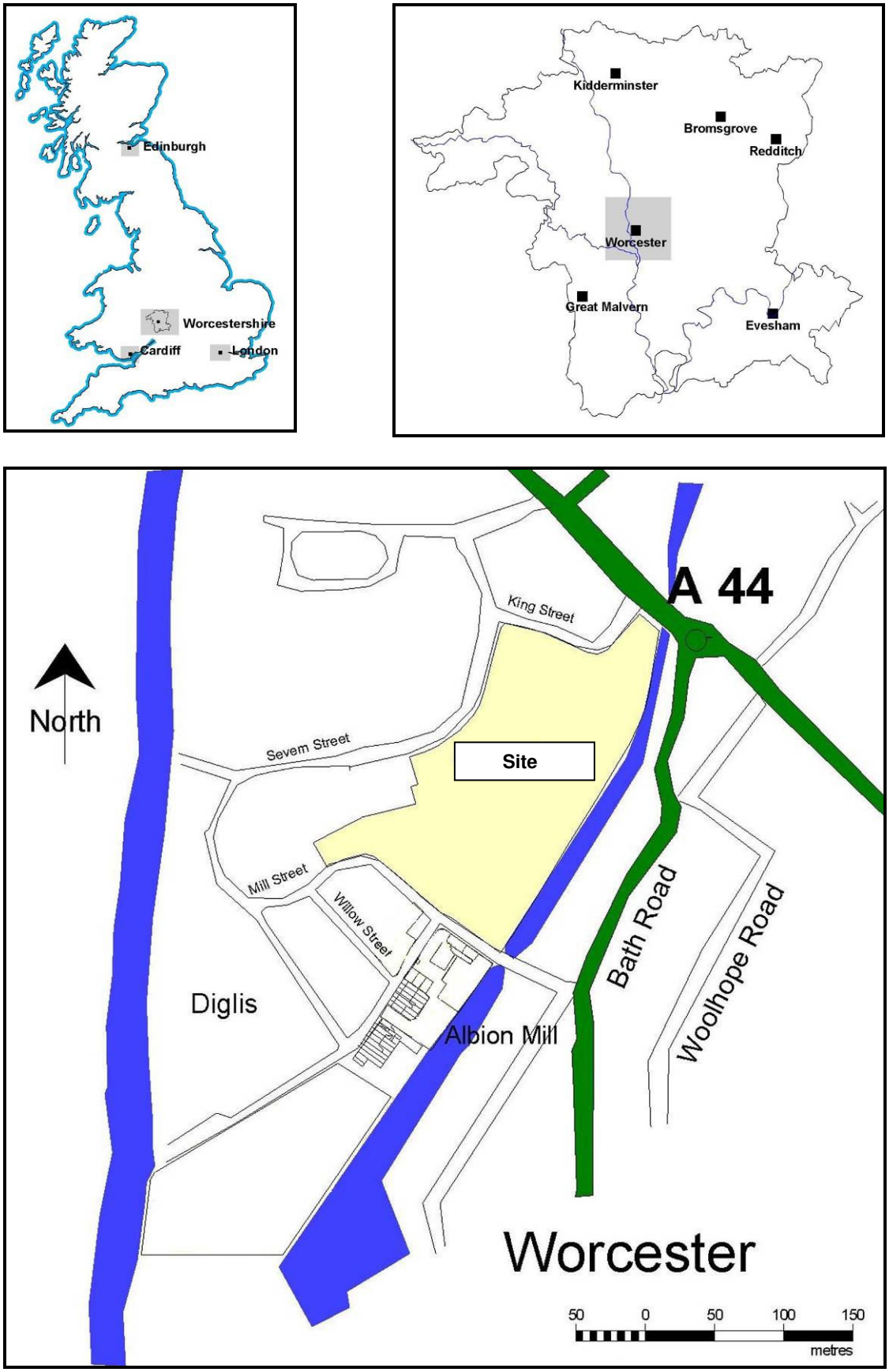


Figure 1: Site location

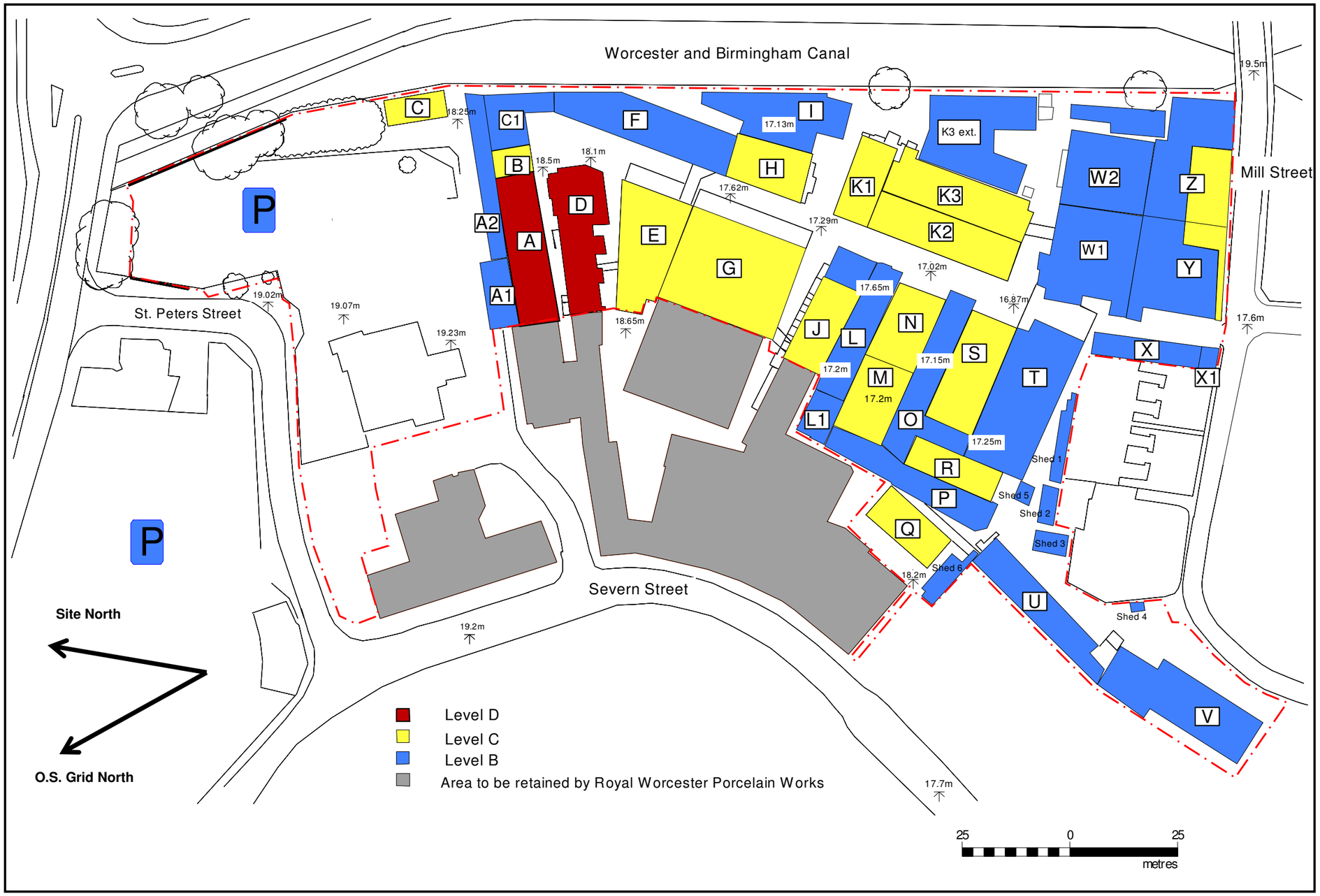


Figure 2: Detailed plan of site, building codes and levels of recording (scale 1:1,000 based on architect's drawing provided by Berkeley Homes)

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 Worcester and Birmingham 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 Building A conformed to level D (specified in Worcester City Museum Archaeology Section brief 06/22) which corresponds to English Heritage level 4 (EH 2006). Buildings B, C and H were recorded at level C which conforms to English Heritage level 3 (*ibid*).

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 Co*llections (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 the results are included in this report as an appendix. The Appendix also includes Buildings A1, A2, C1, F and I, recorded at level B which corresponds to English Heritage level 2 (EH 2006); and submitted in the report of Buildings Recorded at Level B (AA_70 _19). 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 Buildings A, B, C and H. Only Buildings A and H are to be retained. Buildings B and C have already been demolished, however the building analysis refers to the record made when they still existed. The photographic record consists of 324 digital images recorded on *pro-forma* index sheets and plotted on 11 plans. The on-site optical survey comprises 31 scaled drawings at 1:50, 1:20 and 1:10.

5.1 Building A

This building is the Slip House which forms the northern boundary of the main factory, fronting the visitor car park to the north. It was built in line with, but as a separate structure to, the present Cafeteria to its west (the elegant former main Showroom of the 1850s which is outside the present study area). Building B (the Slip House Extension) was built against its eastern gable and two separate extensions (Buildings A1 and A2) were later added onto its north elevation. Building A is a long range with ten bays and two storeys. It has an overall dimension of 34.6 metres long (east/west), 9.3 metres wide (north/south) and stands 9.9 metres to the apex of the roof. It is built of russet brown machine made bricks (9" x 4¼" x 3") bonded with flush

medium coarse light brown lime mortar (up to 10mm thick) and laid to a mainly Flemish bond. The topmost courses are of a redder brick laid to English Garden Wall bond. This change in brickwork suggests that the side walls may have been raised and the earlier roof slopes altered accordingly.

5.1.1 Exterior

North elevation (Figures 3 – 8)

This elevation has ten bays articulated by brick pilasters. The recessed panels have plinths topped with flat chamfered stretcher bricks. The majority of the window and doorway openings are blocked with bricks. The ground floor is mostly rendered and painted white as it became an interior wall when later lean-to structures (Buildings A1 and A2) were added on. Despite the rendering, scars of windows can be seen on the panels and two of them have the remains of projecting sills. The scars of a former tower on Building A1 can also be seen on the sixth bay from the east. The third bay from the west is not rendered and thus shows the window opening which has a segmental arched head made of a single course of bricks laid to soldier bond. The two westernmost bays have been removed and the lower section of the pilaster between them has been replaced by an RSJ stanchion which supports a long RSJ lintel. A similar arrangement can be seen on the easternmost bay. There is an original doorway on the fourth bay from the west which has a segmental arched head that extends over the whole width of the bay. Immediately above the doorway there are two string courses made of bricks laid to header bond extending over the adjacent pilasters, although the one on the east end has been mostly removed. These are topped with later bricks within the recessed panel which are laid at an angle to soldier bond, forming a flat chamfered edge.

The first floor has former window openings which have been blocked in all of the bays. There is however an inserted modern window on the easternmost bay. This is made of wood and has a concrete lintel. There are two inserted doorways over blocked window openings. One of them is situated on the westernmost bay and consists of a fixed double door made of lightweight wooden boards with upper glazing panes and has an RSJ lintel and a concrete threshold. The other doorway is on the third bay from the west and has a concrete lintel and is accessed from an external straight steel staircase. There are rectangular louvre cast-iron vents underneath some of the blocked window openings. The upper seventeen brick courses (*c.* 1.5 metres high) are a later rebuild and some of the pilasters have concrete blocks supporting internal beams of the roof structure.

The roof is essentially flat, with a central glazed lantern roof which lights the upper floor. It has close eaves with cast-iron guttering and both of the gables have parapets at their verges. Towards the western end of the range, and over the roof, is a superimposed steel-framed and steel-sheeted cross-tower; and towards the east there is a cowl set on the ridge of the lantern glazing. The roof and upper section of the building are later additions which raised the original height.

Figure 3: North elevation of Building A

Figure 4: North elevation with lean-to extensions and cross-tower over the roof

Figure 5: North elevation after demolition of the lean-to extensions

Figure 6: Main doorway of the north elevation

Figure 7: North and east elevations of Building A

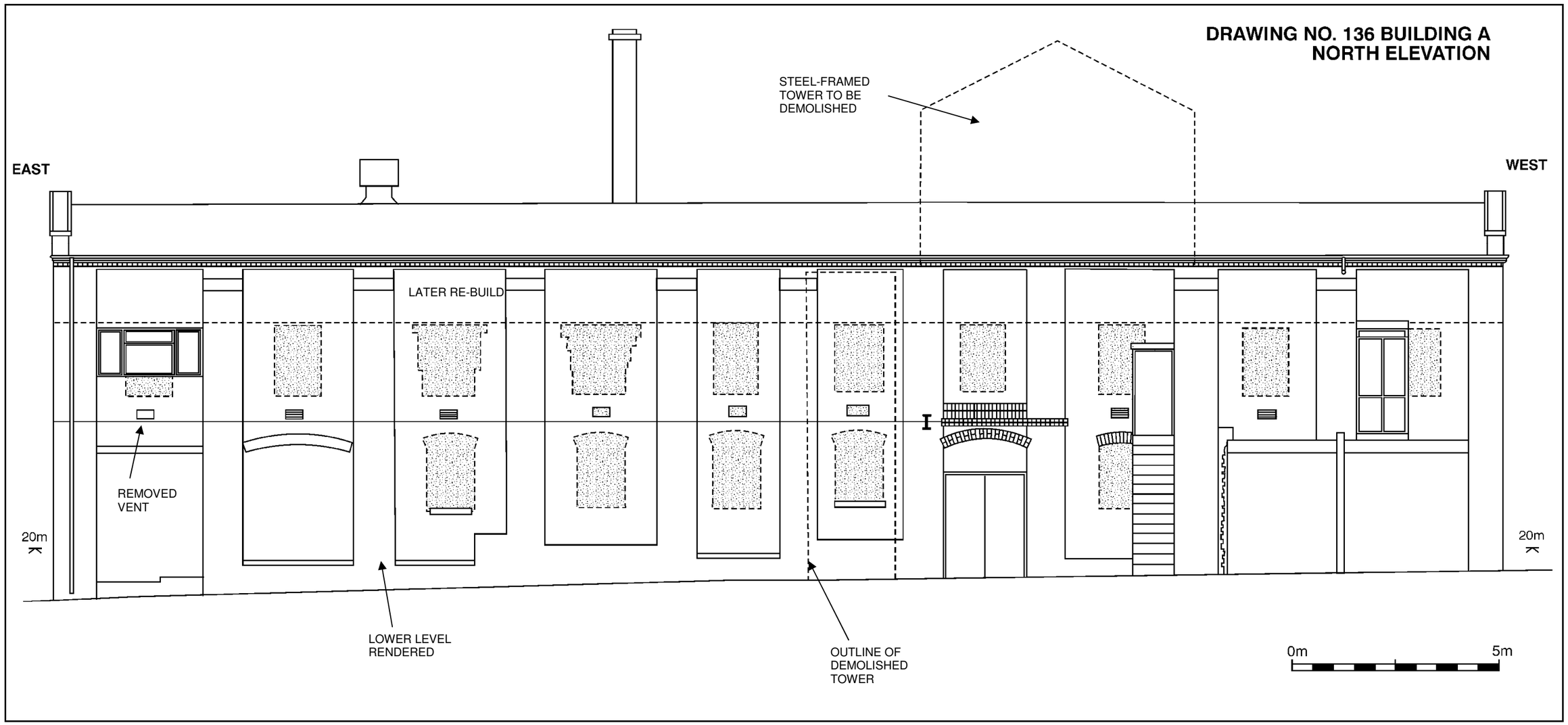


Figure 8: Survey drawing of the north elevation of Building A (scale 1:100)

South elevation (Figures 9 – 18)

The south elevation is similar to the north but is in a better condition. The majority of the ground floor is painted white, except for the three easternmost bays. The painted area was under a glazed canopy which covered the alleyway between this elevation and the north wall of the Bone Mill (Building D). The canopy was dismantled during the building survey as part of the overall demolition programme. On the western end there are three inserted steel-framed 'Crittal' type windows with flat concrete lintels and projecting sills made of reddish brown bricks laid to rowlock bond. There are three original window openings on the eastern end. These are larger than the others, occupying all of the space between the bay pilasters; one survives and the others have been altered. These large windows have segmental arched heads and blue engineering brick sills laid to rowlock bond of which only the second one from the east survives intact. The head of the easternmost window opening has two courses of bricks laid to rowlock bond and it is flush with the pilasters rather than with the recessed panel. The other two arched heads are made of a single course of bricks laid to soldier bond. The main doorway is situated in the fourth bay from the west which leads into a passageway through the building. There are further inserted openings on the fifth and seventh bay from the east, but they are blocked with later bricks. Four tie plates can be seen on the eastern side of the wall. During groundwork carried out on the alleyway mentioned above an opening was revealed below the plinth of the fourth bay from the east on this elevation. This opening has a cast-iron frame which was used to mount a horizontal drive shaft which would have been powered from the Engine House of the Bone Mill. A similar frame on the opposite wall of the Engine House was also exposed. The drive shaft would have been connected to a series of vertical and horizontal gears with further drive shafts in order to supply power to slip mixers in the Slip House.

The first floor has all the original window openings blocked with bricks and on the third bay from the east there is an inserted timber double door with a concrete threshold and an RSJ lintel. There is another RSJ at the top of the double door which runs north to south and is set on the wall of the opposite building (Building D). This RSJ would have been used to support a winch or similar device used to carry materials from the ground level. On the fourth bay from the east a chimney stack projects out by 1 metre. The stack is square sided (*c.* 700mm x 700mm) and is 9 metres tall. It is made of mid reddish brown bricks (9" x 4¼" x 3") bonded with flush medium light pinkish beige lime mortar (up to 20mm thick) and laid to a mainly English bond with queen closers; the edges are reinforced with vertical metal plates. This chimney was demolished during the redevelopment work. The steel-framed cross-gabled structure projects upright from the eaves of the third and fourth bay from the west and the gable wall is made of mottled reddish/yellowish brown bricks (8¾" x 4¼" x 3") bonded with cement (up to 20mm thick) and laid to Flemish Garden Wall bond. The later upper section of the wall is also visible on this elevation.

Figure 9: Detail of chimney and lantern roof

Figure 10: Example of a blocked window

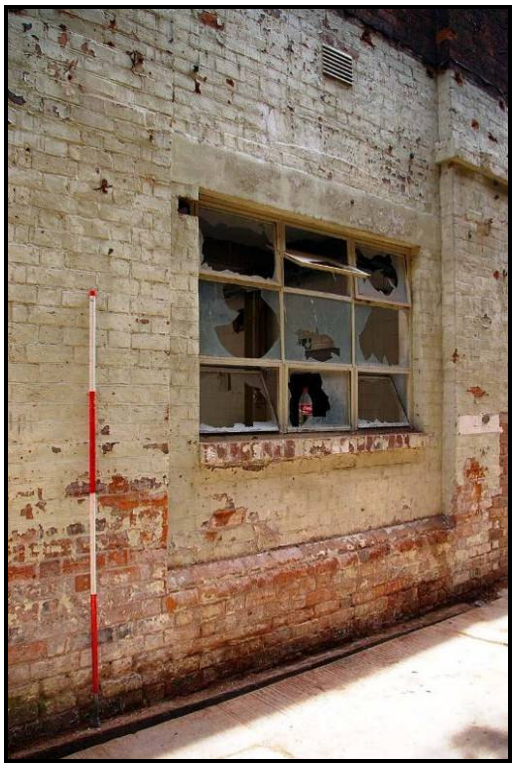


Figure 11: Detail of window on the west side

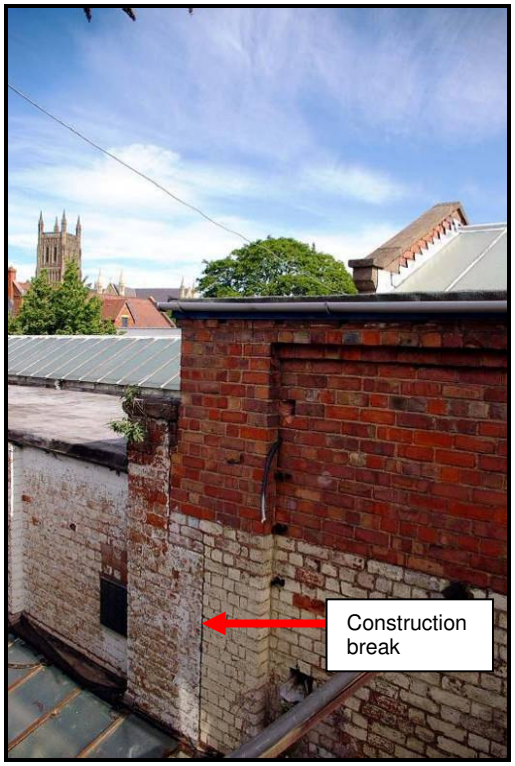


Figure 12: West end of Building A (right) and the adjacent Cafeteria (left)

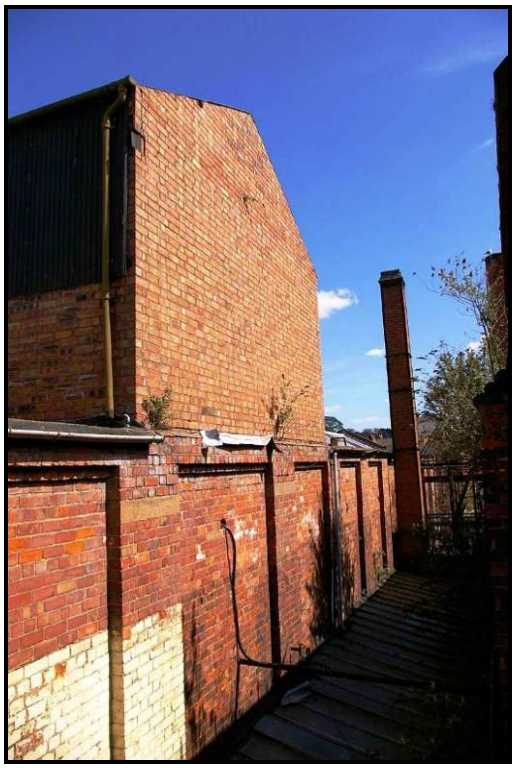


Figure 13: The cross-tower over Building A

Figure 14: South elevation after demolition of the cross-tower

Figure 15: Blocked window on the south elevation

Figure 16: South elevation, looking north-west

Figure 17: Cast-iron frame of former horizontal drive shaft

Figure 18: Survey drawing of the south elevation of Building A (scale 1:100)

East elevation (Figures 19 – 21)

The east elevation is three bays wide and has been slightly altered from its original state. The alterations were carried out when Building B was built against it obscuring the elevation until the demolition of Building B fully exposed it. The scars and rendered plinth of a staircase is still visible. The demolished straight staircase provided access to the first floor through an inserted doorway on the northern bay, but also through several concrete steps recessed in the central bay which leads to a lobby with segmental arched head. On the southern bay of the first floor there is another wide doorway which was inserted over an original window which is blocked with bricks. This doorway was accessible from the first floor of Building B and seems to be the original connection between the upper floors of Buildings A and B.

On the ground floor there is a small doorway in the centre with a concrete lintel and threshold. On top of the lintel there is the concrete landing of the demolished staircase of Building B. There is another doorway on the northern bay which is blocked with bricks with a segmental arched head and a raised threshold made of blue engineering bricks laid to header bond and two red sandstone blocks on each end.

The upper section exhibits the scars of the original gable which has three openings blocked with bricks. One of them is a small square situated in the centre and might have been a vent, the two on either side of this have segmental arched heads made of a single course of bricks laid to rowlock bond. These two openings might have been fixed windows. The later raised gable has concrete coping and kneeler blocks and the flat sides have close eaves with cast-iron guttering.

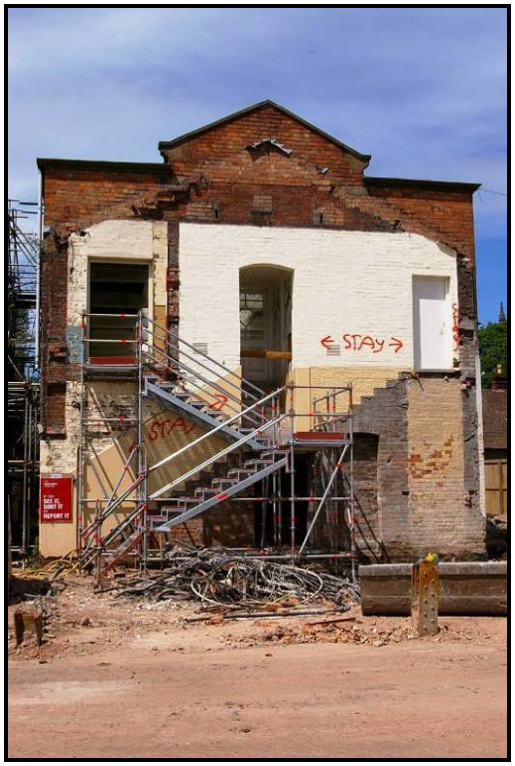


Figure 19: East elevation

Figure 20: Blocked doorway

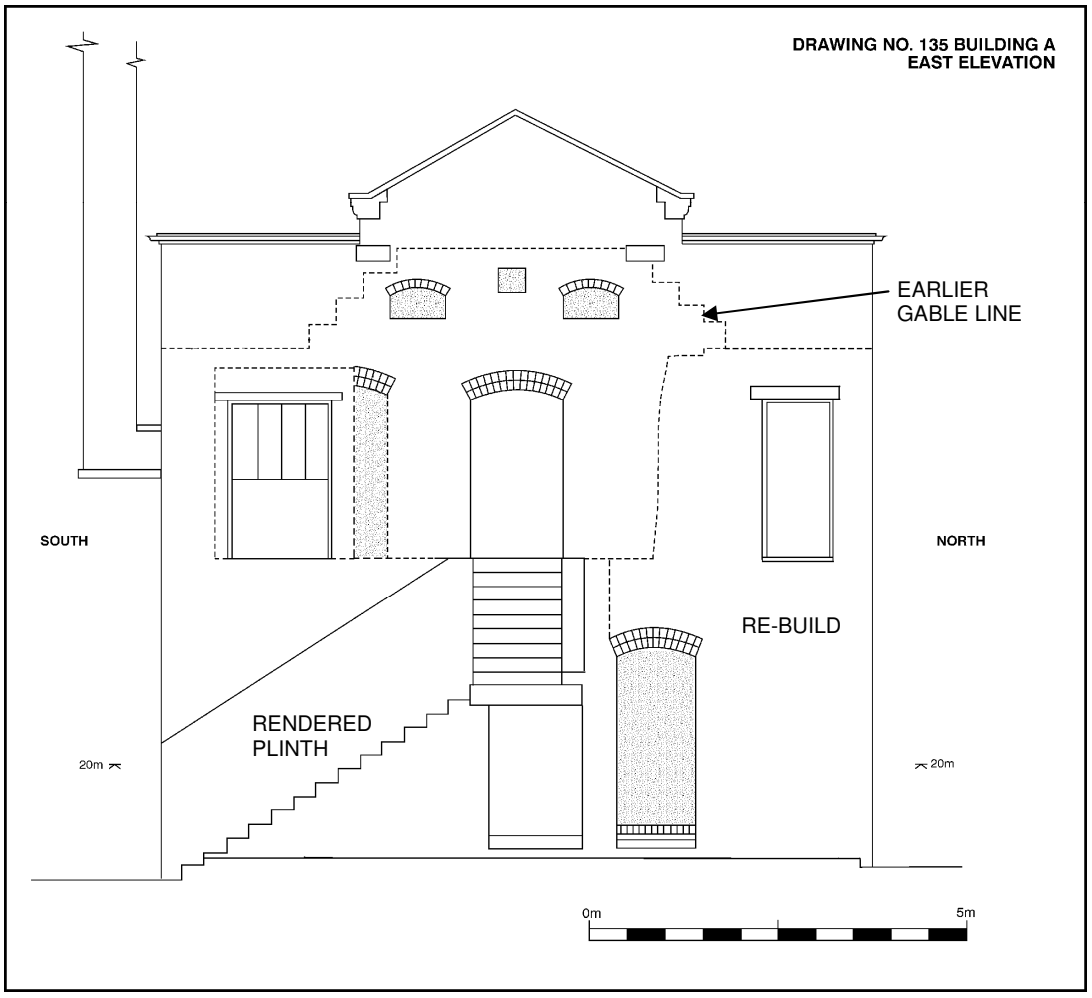


Figure 21: Survey drawing of the east elevation of Building A (scale 1:100)

West elevation (Figure 22)

The west elevation was built against the adjacent Cafeteria (former Showroom) and thus only the top of the original gable and the raised section over it can be seen from the roof of the Cafeteria which matches the eastern gable.

Figure 22: West elevation of Building A

5.1.2 Interior

Ground floor (Figures 23 – 36)

The ground floor consists of three large workshops and a passageway. The eastern workshop measures internally 10.9 metres long (east/west), 8.5 metres wide (north/south) and is 3.5 metres high. It is accessed from two inserted doorways situated on the north and south walls. There is also a small double timber doorway on the east wall which leads to a stairwell. This doorway was once the original external access to the Slip House as it is shown on early plans (see Figure 14 of the Appendix) but it became obsolete when the eastern extension (Building B) was built with a straight staircase against the east elevation. Furthermore, its upper section was altered when a later concrete landing and several steps were added to the staircase in order to access the first floor through an elegant lobby. The blocked windows on the side elevations and a further doorway on the east wall are not visible internally as the walls are covered with white tiles. The workshop has blungers (machinery designed to wash clay and convert it to slip) over underground octagonal pits (arks) which are 1.25 metres deep. This machinery was installed in 1952 of which most survives in good condition. There is a large rectangular underground tank made of bricks on the eastern side of the workshop. This tank has two pumps and contains slip at the bottom. The tank has a ladder set on the eastern wall which is accessed through a metal manhole. Internally it measures 5.3 metres long (north/south), 1.5 metres wide (east/west) and 2 metres deep. The floor is made of

concrete with additional platforms for some of the blungers. There is another blunger at the south-west corner which, instead of having an underground ark, is set on a concrete platform 2 metres high. Next to this platform there is an original doorway which links this workshop to the central one. Almost in the middle of the workshop there are two RSJ stanchions supporting two transverse RSJ beams (north/south) which seem to have replaced earlier columns. The entire workshop has a lath-and-plaster ceiling under iron joists orientated east/west supporting a series of vaulted concrete rows.

Figure 23: Eastern workshop with concrete stairwell over doorway, looking east

Figure 24: Underground tank, looking north

Figure 25: Eastern workshop with machinery, looking north-west

Figure 26: Eastern workshop, looking north

Figure 27: Slip blunger with rotary propeller inside an underground ark

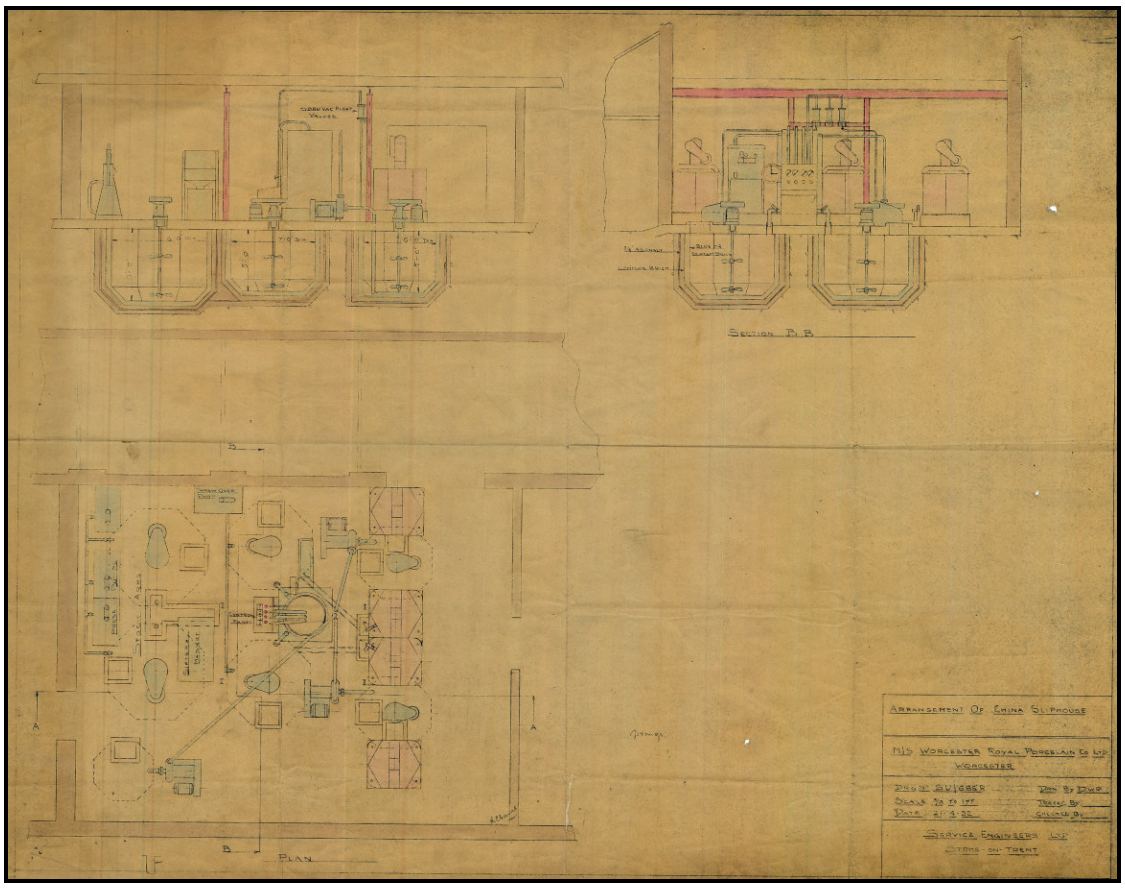


Figure 28: Plan and sections of machinery in the eastern workshop issued in 1952 (WPM)

The central workshop measures 9 metres long (east/west), 8.5 metres wide (north/south) and is 3.42 metres high. It also has tiled walls, a concrete floor and a lath-and-plaster ceiling under iron joists orientated east/west supporting a series of vaulted concrete rows, although its western side has been mostly replaced with concrete encased within an RSJ structure. This ceiling replacement was the result of dismantling an original staircase to the first floor (see Figures 14 and 27 of the Appendix). The workshop is practically empty except for some tall wooden shelves. This workshop is accessed from an original doorway to the eastern workshop and also from a large later opening with a concrete lintel which leads to the passageway on the west wall.

Figure 29: The central workshop, looking west

Figure 30: Ceiling structure on central workshop, looking east

The passageway runs across the building on the fourth bay from the west, between the central and the western workshops. It measures 8.5 metres long (north/south), 2.35 metres wide (east/west) and is 3.44 metres high. It has painted brickwork, a concrete floor and a concrete ceiling supported by a line of four RSJ stanchions set against the east wall with transverse RSJ beams. There are two double timber doorways on the external walls of the passageway. On both sides of the large doorway to the central workshop there are former doorway openings blocked with bricks. There is another blocked doorway on the opposite wall which seems to have been the original entrance to the lower showroom depicted on a plan of the Works around 1885 (see Figure 23 of the Appendix). The west wall has a later doorway inserted near the south end. This has a sliding timber door under a concrete lintel.

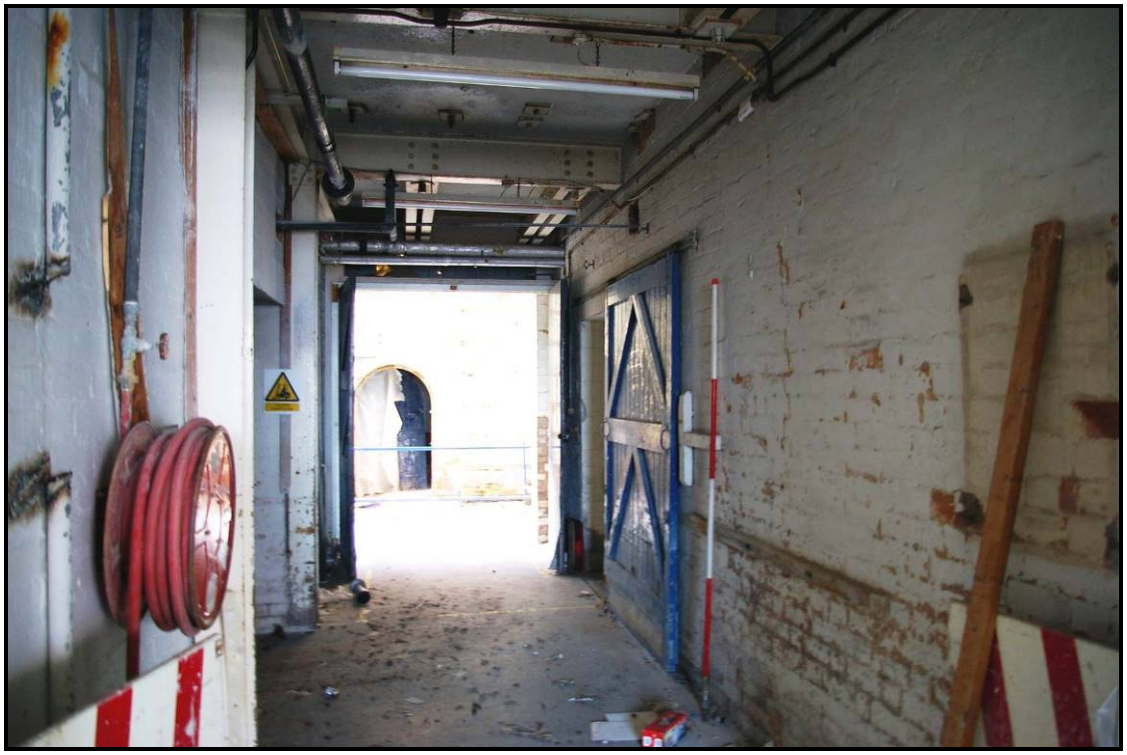


Figure 31: The passageway, looking south towards the Bone Mill (Building D)

Figure 32: The passageway with a blocked doorway in the centre of the west wall

The western workshop measures 10.6 metres long (east/west), 8.5 metres wide (north/south) and is 3.25 metres high. It has tiled and rendered walls, a concrete floor and a concrete ceiling supported by an RSJ structure composed of two long bridging beams (north/south) set on the side walls, with several transverse joists and seven stanchions. There is a rotary mixing machine on the eastern side which is enclosed by a north/south plasterboard partition wall. The workshop is lit by three steel-framed 'Crittal-type' windows on the south wall. Each of these windows has nine rectangular lights set horizontally (3 rows x 3 columns) with pivotal openings on the uppermost row and hopper openings on the lowest row. The first and second bays from the west have been removed, creating a large opening with an RSJ stanchion in the middle which supports a large lintel. The west wall is tiled and thus obscures three doorways that were inserted to link this range with the adjacent Showroom. Their location are illustrated on the ground floor plan based on the proposed architect's plan of the new Small Show Room (see Figure 27 of the Appendix).

Figure 33: Rotary mixer

Figure 34: Detail of mixer component

Figure 35: Western workshop, looking south

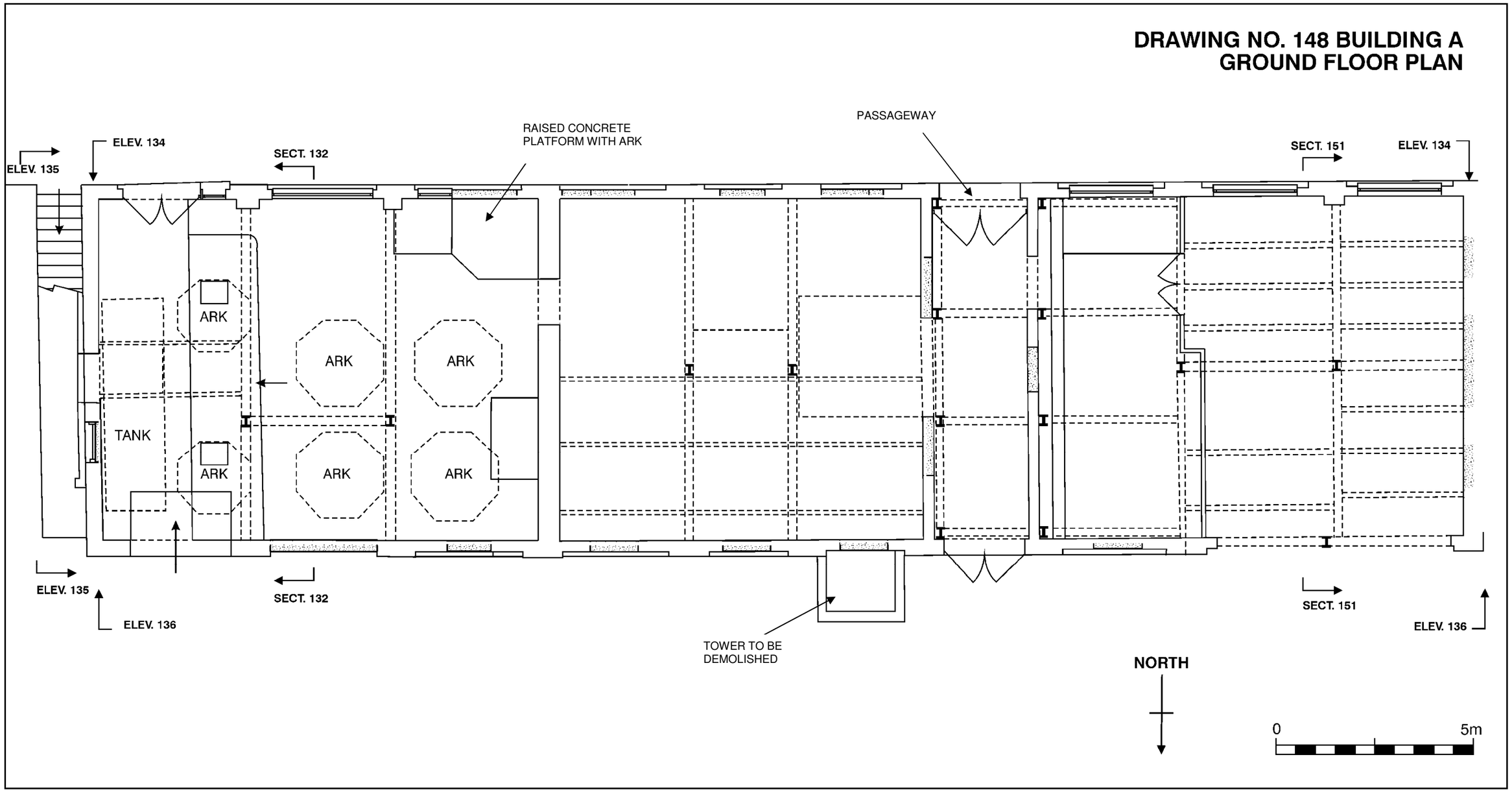


Figure 36: Ground floor plan of Building A (scale 1:100)

First floor (Figures 37 – 56)

The first floor was originally built as a single large workshop but later was divided into three workshops by the addition of two north/south partition walls. The partition wall separating the eastern and central workshops is situated between the third and fourth bay from the east and is made of a brick veneer with plaster (100mm thick). The other partition is situated between the sixth and seventh bay from the east and is made of two interlocking wythes of bricks with plaster (285mm thick). The entire storey has plastered walls (3.8 metres high) which obscures the blocked windows of the side elevations. The floor is made of concrete and the ceiling of lath-and-plaster with a central pitched lantern roof (east/west). The lantern roof runs along the whole centre of the first floor but is interrupted by a steel-framed cross-tower on the seventh and eighth bay from the east. The lantern roof is 4.15 metres wide and stands 6 metres high to the apex from the floor level. It is made of wired glass panels, for fire and impact safety, and is mounted in metal frames supported by eleven bridging RSJ beams set on the north and south walls. The steel beams are encased with plaster and wire net which have ovolo moulded edges, resembling timber beams. The beams have segmental arched timber frames supporting the glazing structure. The frames carry a continuous ridge piece and the sides are covered with lightweight boards which are decorated with cavetto moulded edges. The eastern and western sides of the lantern roof have parapets at their verges.

The eastern workshop measures internally 11 metres long (east/west) and 8.5 metres wide (north/south). It is accessed from three doorways on the eastern wall which links it to the adjacent Building B. The most imposing of them consists of a quarter-turn staircase situated in the centre of the wall. This staircase is part of the adjacent Building B which was once a straight type, but a concrete landing and eight steps were added in order to facilitate access to the first floor of Building A. The additional staircase has an elegant lobby made of moulded timber panels with upper glazing and a single doorway on the west. The lobby is 2.25 metres long (east/west), 1.3 metres wide (north/south) and is 2.3 metres high. This east wall has two painted galvanised hopper vents situated on both sides of the lobby over the remains of skirting boards. The other two doorways are positioned on the northern and southern bays. The southern one seems to have been the earlier insertion which linked the first floors of Buildings A and B. The door is made of timber with upper glazing and is accessed from a corridor of Building B through a small step (65mm high). Immediately on the south of the doorway there is a later pilaster (2.5 metres high) which appears to have been built to reinforce the doorway opening. The northern doorway is smaller and more modern and is made of lightweight boards. Its access is from an upper landing of the aforementioned staircase and via a step (70mm high). This doorway leads into an office area with a stud partition and a long screen which extends throughout the northern side of the workshop. The office has a suspended false ceiling composed of an aluminium frame and fibre slabs which stands 2.63 metres high from the floor level. There is a large window on the first bay from the east of the north wall which lights the eastern side of the office. The window is a wooden casement type with two opening panes on the sides and a small upper awning opening in the middle. Inside the office there are several desks, computers, filing cabinets and shelves. There is another small screened-off area on the southern side which has tall wooden shelves containing porcelain dishes, books and decorative stickers. At the south-east corner there is an electrical oven made of iron and next to it there is an electrical switchgear panel set on the south wall. There is a timber double door on the third bay of the south wall. This would have been used as a loading bay as there is an RSJ attached to the door lintel and set against the opposite wall of the Bone Mill (Building D) which might have carried a winch or a similar device. Next to the double doors there are several lockers. The brick partition wall on the west has a doorway which leads to the central workshop.

Figure 37: Oven and electrical switchgear panel on the eastern workshop of the first floor

Figure 38: The lobby of the first floor, looking north

Figure 39: Office on the first floor, looking south-west

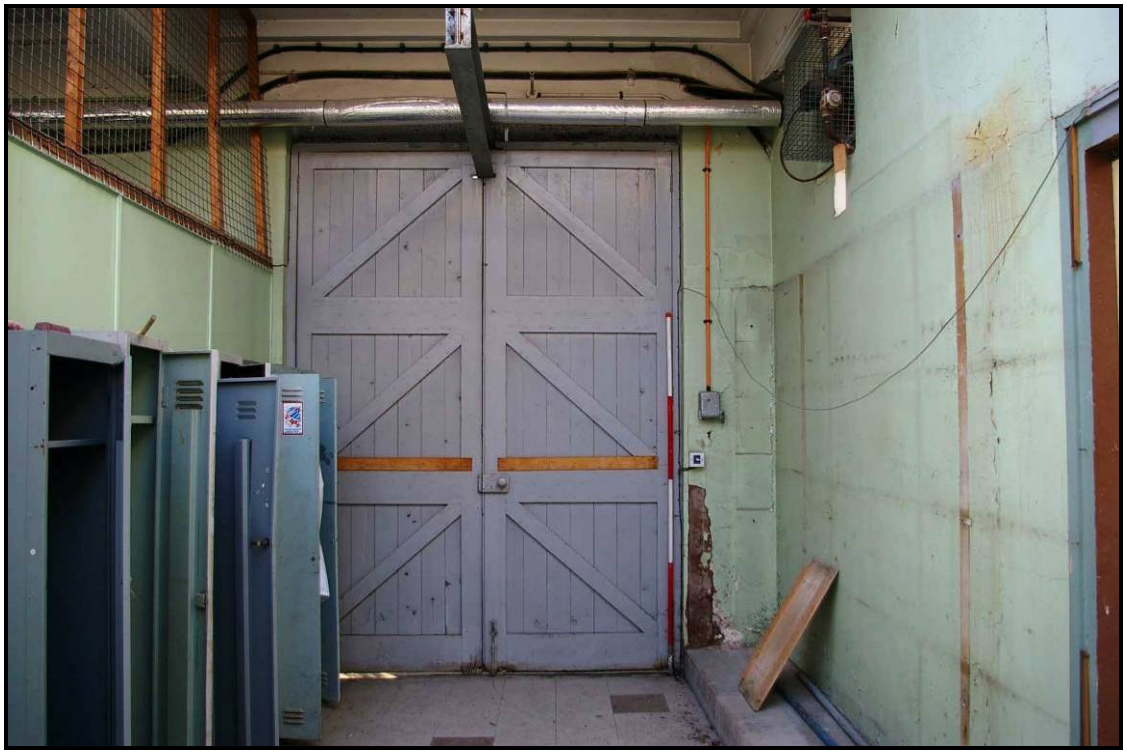


Figure 40: Loading doorway on the first floor, looking south

The central workshop is 9.5 metres long (east/west) and 8.5 metres wide (north/south). This is a laboratory which has several ovens, thermometers, testing equipment, gas burners, rotary machinery, large tables with slate tops, shelves with bowls and jars containing powdered and liquid products, and other apparatus. Some of the equipments are set on raised concrete plinths varying in height from 100 to 200mm. The plinth situated at the north-west corner has a sink and the walls around are covered with tiles up to 1 metre high. There is no sign of the chimney which projects out from this level as its flue opening is obscured by the current painted plaster. There is a doorway in the centre of the partition wall which links to the western workshop.

Figure 41: General view of the laboratory, looking west

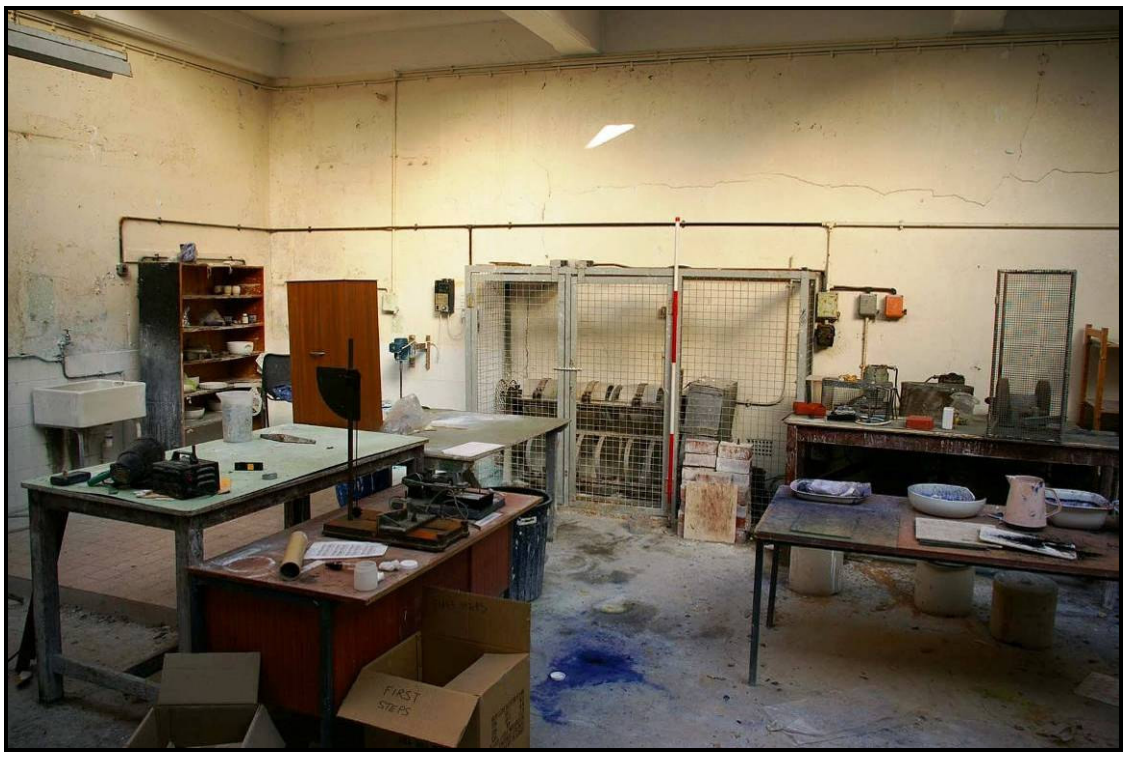


Figure 42: The laboratory, looking north

Figure 43: The laboratory, looking south

Figure 44: West end of the laboratory, looking north

The western workshop is 13.5 metres long (east/west) and 8.5 metres wide (north/south). Apart from the doorway situated on the partition wall which runs through to Building B, this workshop is also accessed from a small doorway leading to a straight steel staircase (north/south) which comes from the northern lean-to extension Building A1. The eastern side of the workshop has a later steel-framed cross-tower over it (9.5 metres high) supported by eight RSJ stanchions, and it has a mezzanine floor (3 metres high) with a gantry crane which is approached from a timber quarter-turn staircase positioned against the south wall. Underneath the mezzanine there are two rotary mixers on the northern and southern sides, and against the west wall there is a concrete platform with glazed white bricks in which three slip arks are located inside with blungers above them. The platform measures approximately 7 metres long (north/south), 2.5 metres wide (east/west) and is 1.6 metres high. There is a fixed door with glazing on the first bay from the west of the north wall. The building was examined after the demolition of its interior which involved the dismantling of the partition walls, the steel-framed cross-tower and the platform with arks and blungers. The knocking down of the platform revealed on the west wall an elliptical arch blocked with bricks. The arch has a timber frame and an iron lintel, and cement plinths painted red at either side. These are the remains of a former staircase which linked this floor to the adjacent Cafeteria (see Appendix). Furthermore, over the arch there are two sockets blocked with cement which would have held the handrails of the staircase.

Figure 45: Staircase to the mezzanine floor of the cross-tower, looking east

Figure 46: Inside the mezzanine floor of the cross-tower, looking north

Figure 47: The western workshop of the first floor, looking north

Figure 48: Raised platform with blungers on the west end of the first floor

Figure 49: Detail of a slip blunger on the raised platform

Figure 50: The first floor after interior clearance, looking east

Figure 51: Archway and sockets for handrail (red arrows) of former staircase revealed after the dismantling of the raised platform on the west wall

Figure 52: Detail of plinth revealed after the dismantling of the raised platform

Figure 53: Example of vent with hopper opening on the first floor

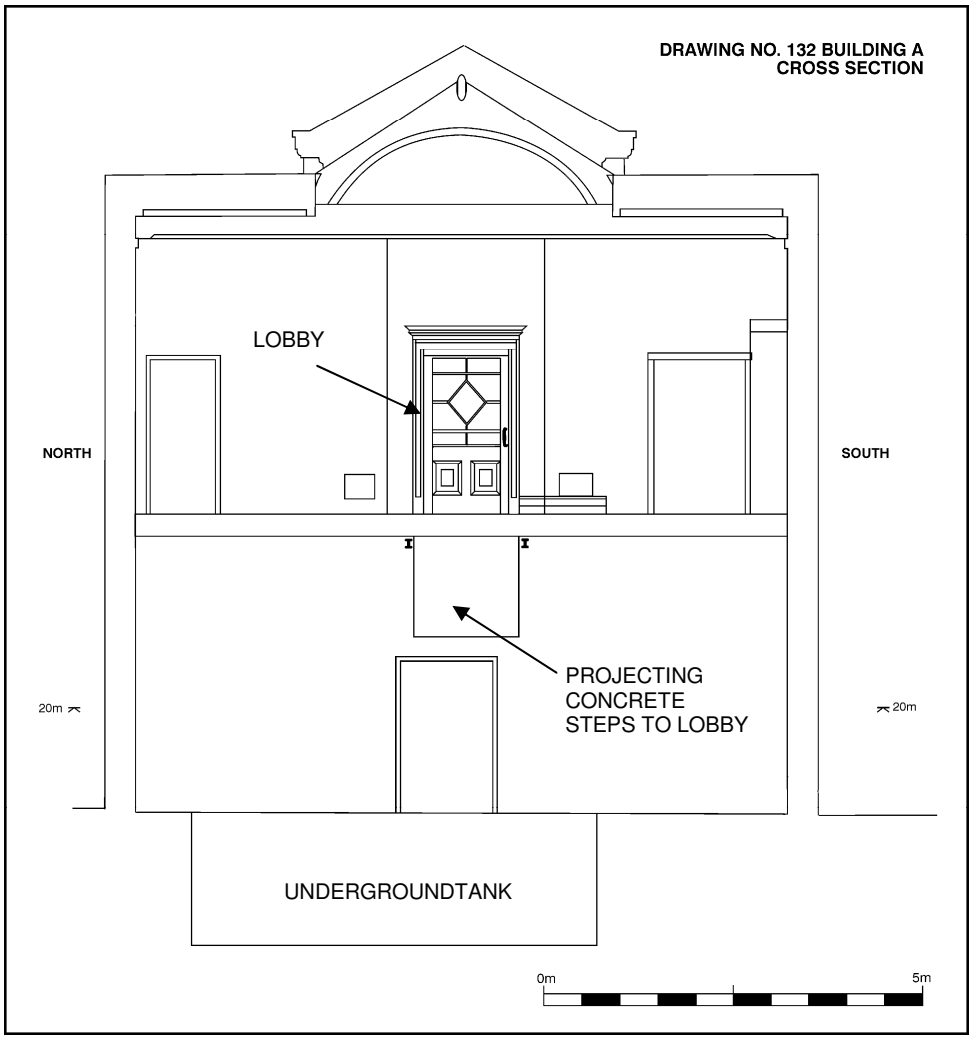


Figure 54: Cross-section of the eastern end of Building A (scale 1:100)

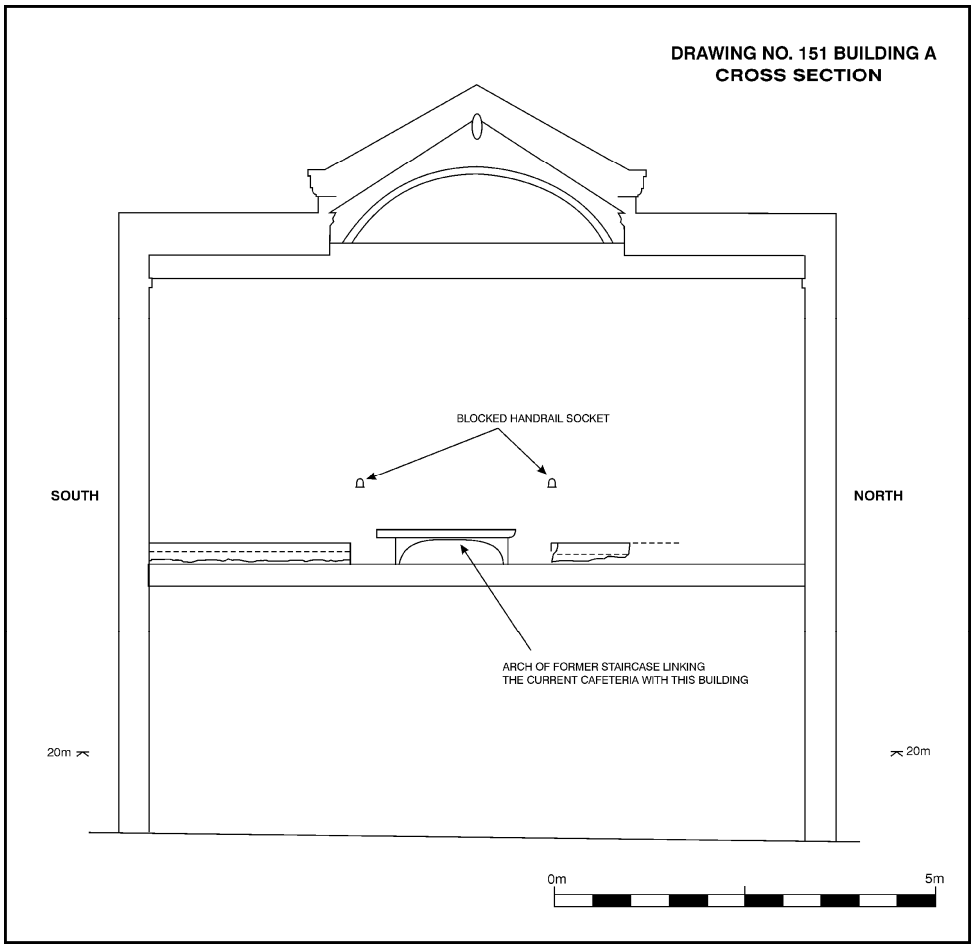


Figure 55: Cross-section of the western end of Building A (scale 1:100)

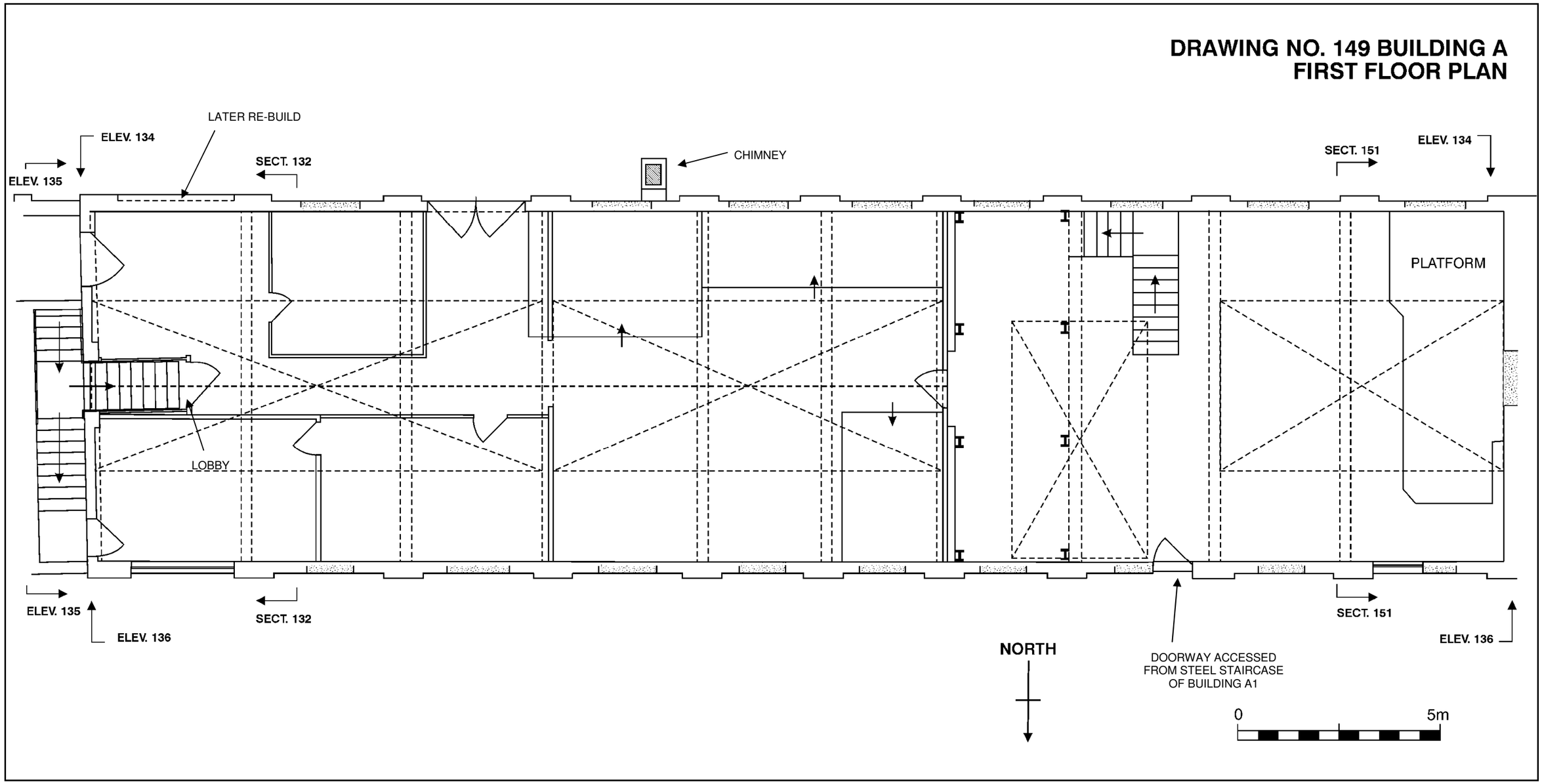


Figure 56: First floor plan of Building A (scale 1:100)

5.2 Building B

This building is known as the Slip House Extension as it was built against the eastern gable of the Slip House (Building A). This building is two storeys high and measures 9.25 metres long (north/south), 6.8 metres wide (east/west) and stands 9.5 metres high to the apex of the roof. It is built of reddish bricks (9" x 4¼" x 3") bonded with flush mid grey mortar (up to 20mm thick) and laid to Flemish bond.

5.2.1 Exterior

South elevation (Figures 57 – 60)

The south elevation is of two and a half bays, the half bay being at the west end which has an internal staircase. The bays are articulated by brick pilasters and the eastern bay has a plinth decorated with two courses of chamfered blue engineering bricks. On the ground floor there is a fixed window on the easternmost bay with a segmental arched head and projecting limestone sill. The window has a wooden frame and glazing bars encasing four square lights. On the central bay there is a doorway blocked with bricks which has a segmental arched head and a flush concrete raised threshold. The half bay on the west has a doorway with a segmental arched head which leads to a straight staircase. On the first floor there are two light windows in each of the main bays and a single light window in the half bay, each with flush limestone lintels and projecting sills and, in the larger windows, mullions. The roof is made of natural slates topped with ridge tiles and it has close eaves with cast-iron guttering and a parapet at the eastern verge. There is a small square area on the roof with replaced lighter coloured slates which would have had a sloping roof-light. This light can be seen on the proposed 1890 architect's plan of the Slip House Extension (Figure 59) and on an early photograph taken around 1900 (Figure 54 of the Appendix).

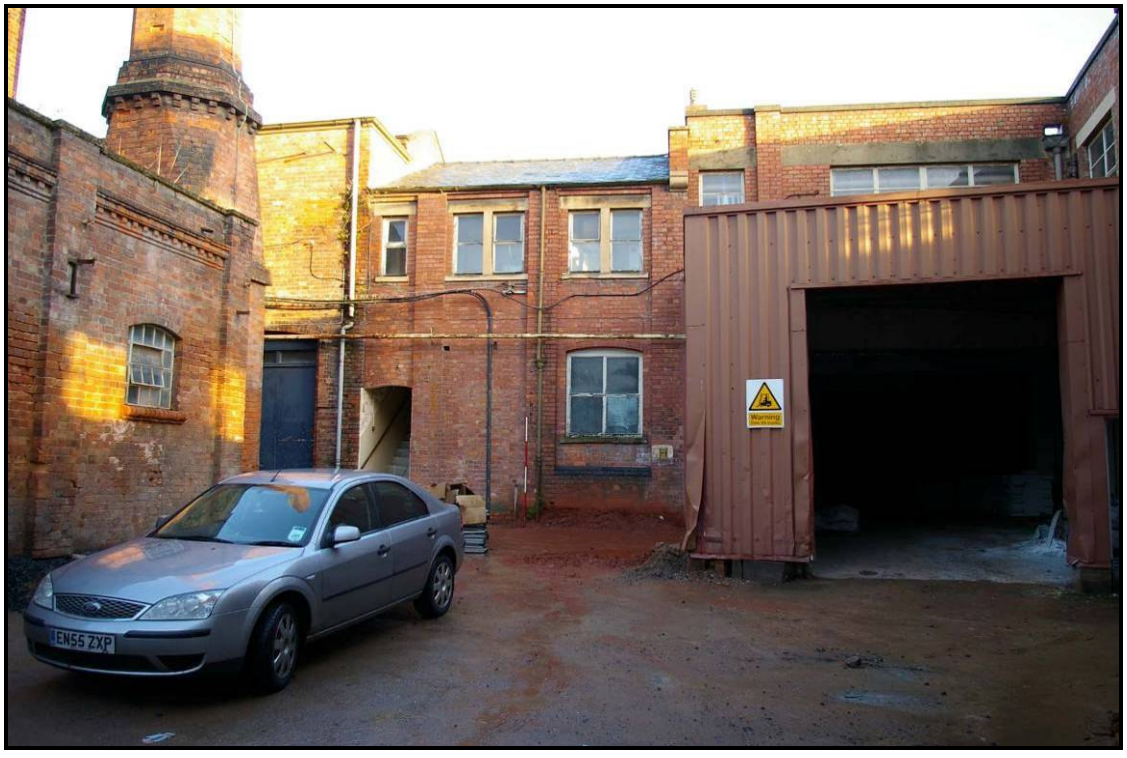


Figure 57: South elevation of Building B

Figure 58: Staircase and blocked doorway on the south elevation of Building B

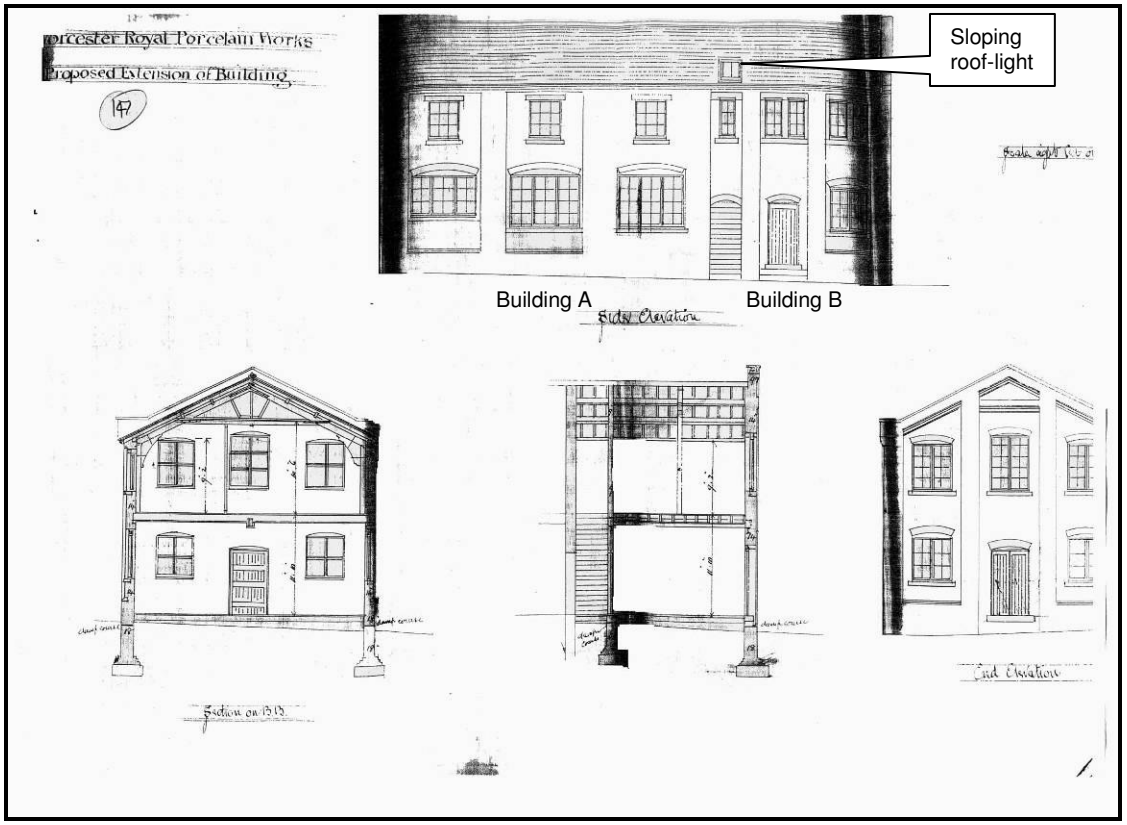


Figure 59: Proposed eastern extension of the Slip House (Building B) (Worcester City Planning Application 1437 23.1.1890)

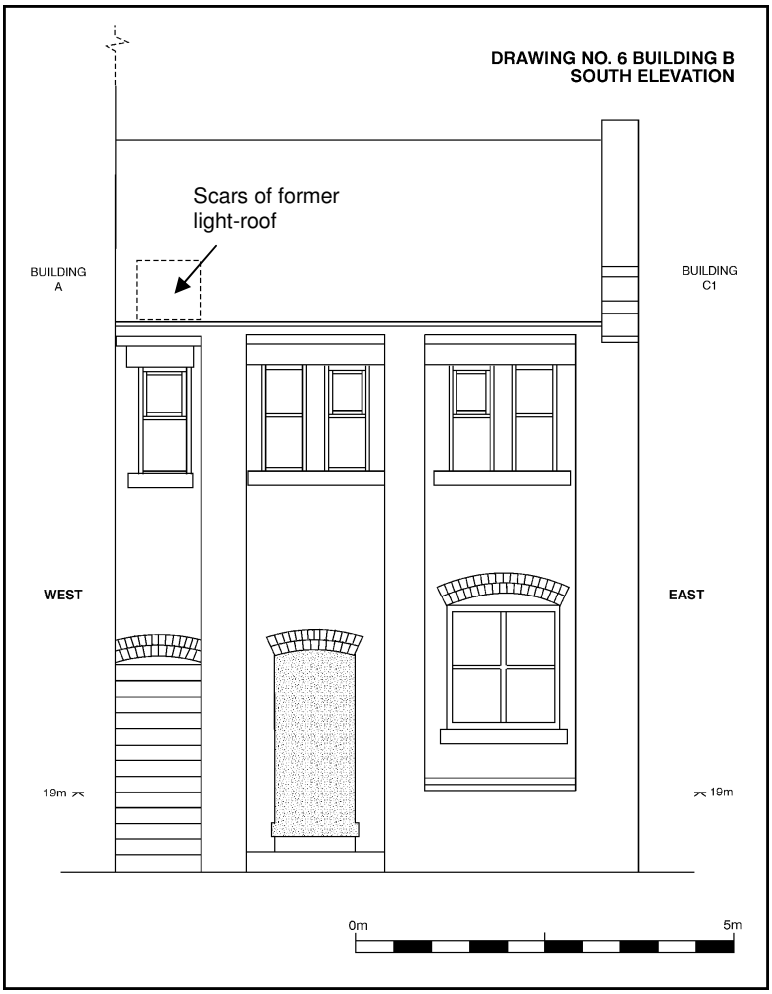


Figure 60: Survey drawing of the south elevation of Building B (scale 1:100)

North elevation (Figures 61 – 63)

The north elevation is similar to the south but much of the lower portion is obscured by the later lean-to extension (Building A2). The ground floor, however, was studied from inside Building A2 which enabled the nature of its construction to be established. There is a window on the eastern bay identical to the one on the south elevation and the central bay has an inserted doorway with a segmental arched head above a blocked window opening of the same style as the adjacent one. The ground floor is painted white and the recessed panels have projecting plinths.

Figure 61: First floor of the north elevation

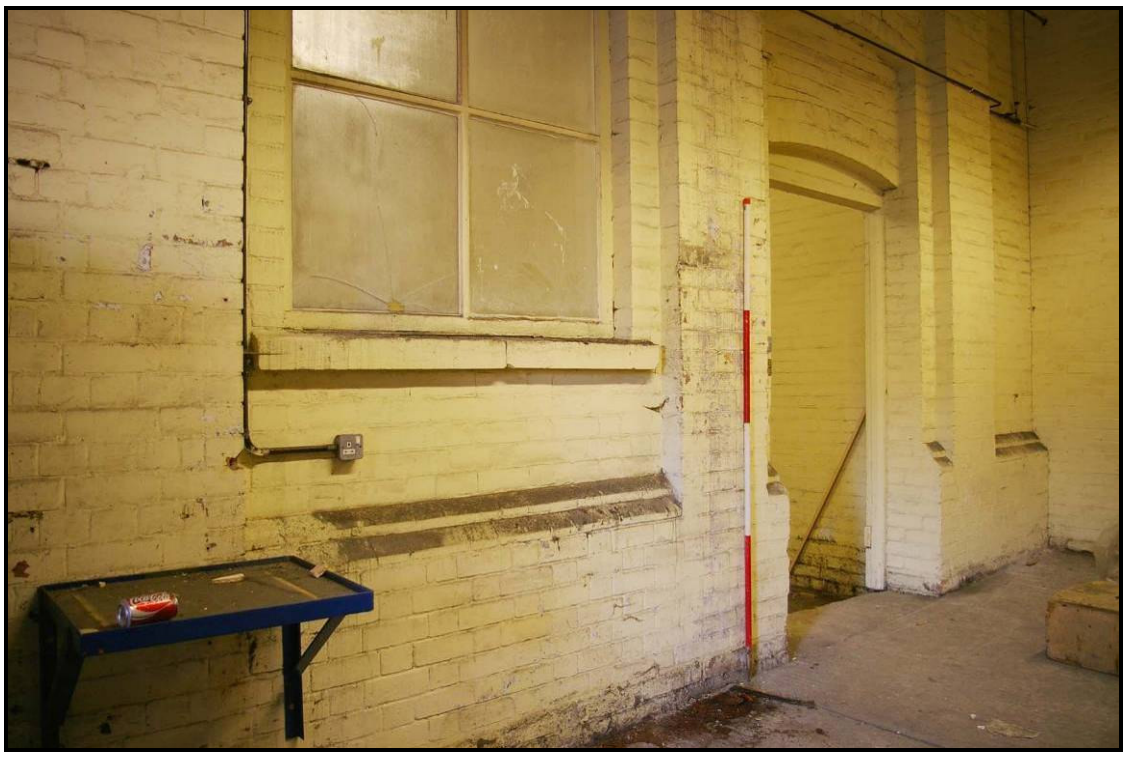


Figure 62: Ground floor of the north elevation

Figure 63: North elevation during demolition

East elevation (Figures 64 –67)

The coped eastern gable end is also largely obscured by the later Despatch Range (Building C1). This elevation is articulated by brick pilasters into three bays. Most of the ground floor wall has been removed but two segmental arched heads can be seen on the northern and southern bays above an inserted concrete bridging beam which is supported by a central brick pillar. On the first floor there are three window openings with segmental arched heads. These are blocked with bricks and painted white. The southern bay has surviving dentil decoration in the foot of the coping and an inserted doorway with a concrete lintel which leads to the adjacent Building C1 on the east. Most of the gable is not visible but it can be seen that it has lias coping stones and two ovolo moulding kneeler yellowish limestones at the top of the side pilasters. The survey drawing of this elevation shows a conjectured upper gable which is based on the visible features as well as the proposed 1890 architect's drawings of the Slip House Extension (Figure 59) and an early photograph taken around 1900 (Figure 54 of the Appendix).

Figure 64: Moulded dentilled brickwork on the first floor of the east elevation

Figure 65: Ovolo moulded kneeler stone of the east elevation

Figure 66: Blocked window opening on the first floor of the east elevation

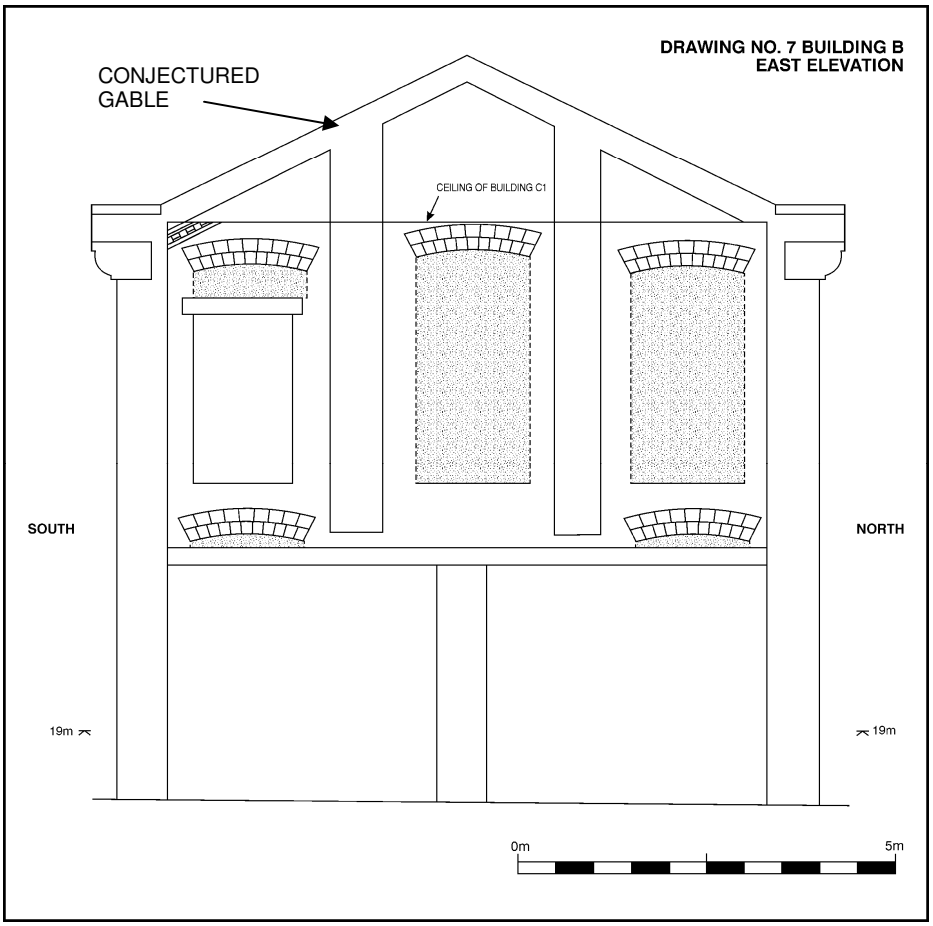


Figure 67: Survey drawing of the east elevation of Building B (scale 1:100)

5.2.2 Interior

Ground floor (Figures 68 and 69)

The ground floor has been altered considerably with the insertion of a partition brick wall (east/west) which divides the floor into two. The east wall has been completely opened up and has a central brick pillar supporting a concrete bridging beam which bears the upper wall. The combined rooms measure 8.35 metres long (north/south), 5 metres wide (east/west) and is 3.9 metres high. These are almost empty except for a few pallets and a large shelf on the southern section. The interior of the whole floor has painted brickwork, a concrete floor and a lath-and-plaster ceiling. Its original entrance would have been situated in the central bay of the east elevation where it is shown on the proposed 1890 architect's plan of the Slip House Extension (Figure 59). Because most of its original footprint has been altered, the plan of the ground floor is not included in this report. Instead, the plan of the first floor has been selected which provides an accurate representation of the overall plan. The westernmost half bay has a straight staircase set between the east wall of Building A and a partition wall. It measures 8.5 metres long (north/south), 1.1 metres wide (east/west) and is 4.5 metres high. The partition wall has a doorway in the middle which would have allowed access to the stairwell but is now blocked with bricks. The staircase is made of solid sandstone blocks and has one landing half way up and another at the top. The intermediate landing is a later insertion made of concrete from which further concrete steps lead to the first floor of Building A. This later insertion entailed re-arranging the position of the upper steps and shortening the upper landing.

Figure 68: Northern end of the ground floor, looking north-west

Figure 69: Southern end of the ground floor, looking west

First floor (Figures 70 – 78)

The first floor is divided into one main office and a corridor with separated by a glazed screen. Its overall dimensions are 8.35 metres long (north/south), 5 metres wide (east/west) and is 3.1 metres high. It has painted brickwork, wooden floorboards and a lath-and-plaster ceiling. It is accessed through a doorway which leads to a staircase on the west side. This doorway appears to be its original entrance consisting of a timber door under a segmental arched head. There are two inserted doorways on the southern side of the floor which links it to the adjacent Building A on the west and Building C1 on the east. Both doors are made of wood with upper lights under concrete lintels. The office is lit by two mullioned windows on the north wall which have single hopper openings situated on the upper lights of the eastern column of each window. There is another fixed casement window on this wall which lights the upper section of the staircase. The finishing details of the windows are of a fairly high standard including boarded frames and sills. The windows on the south wall light the corridor and although they are very similar to the northern set their opening panes differ. Indeed, these windows have awning openings on each upper row with wrought-iron window stays and rat tail handles. The opening of the eastern mullioned window is situated on the west column, whereas the one of the western window is on the east column.

There is a metal ladder attached to the west wall which enables access to the loft from where the roof structure was surveyed. This consists of one upper king truss situated in the centre of the room (north/south) supported directly on the tops of timber posts on the inner face of the side walls. The posts have timber brackets acting as jowls. The truss is made of sawn timber with raking struts rising to the principal rafters from a straining sill over the collar. This arrangement is stiffened by a wrought-iron bolted suspension bar acting as a king strut. The principal rafters carry four tiers of trenched side purlins which are reinforced with wooden cleats. The upper ends of principal rafters are reinforced with metal straps. The area where lighter slates were identified on the south elevation has replaced battens confirming that there once was a sloping light-roof which was dismantled and covered with later slates.

Figure 70: Doorway to the staircase between Building A and B

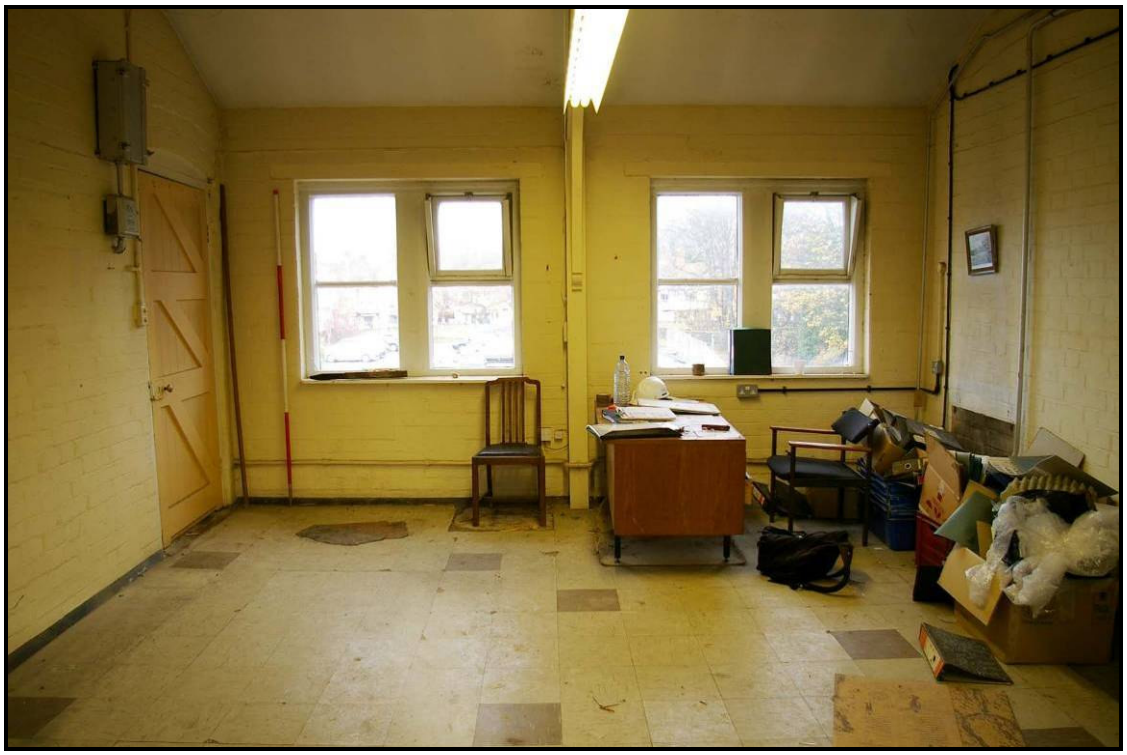


Figure 71: Office room, looking north

Figure 72: Detail of wrought-iron window stay with rat tail handle

Figure 73: Detail of bracket

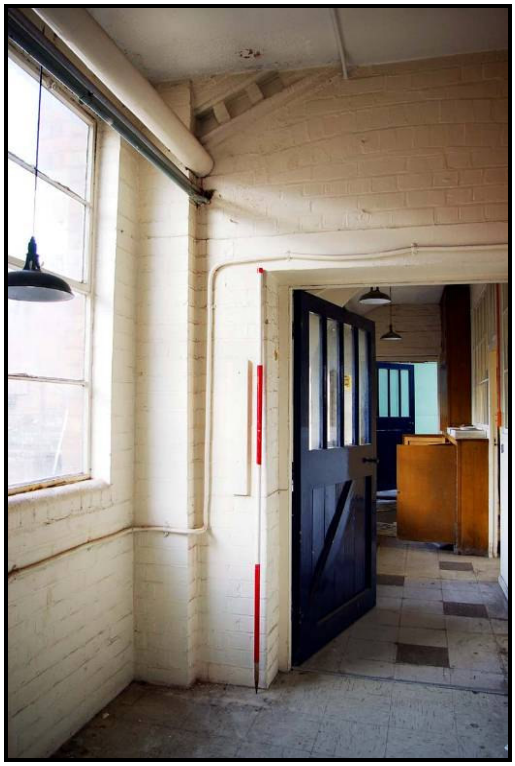


Figure 74: The corridor from Building C1

Figure 75: Southern corridor, looking east

Figure 76: Window on top of the staircase

Figure 77: Roof truss of Building B

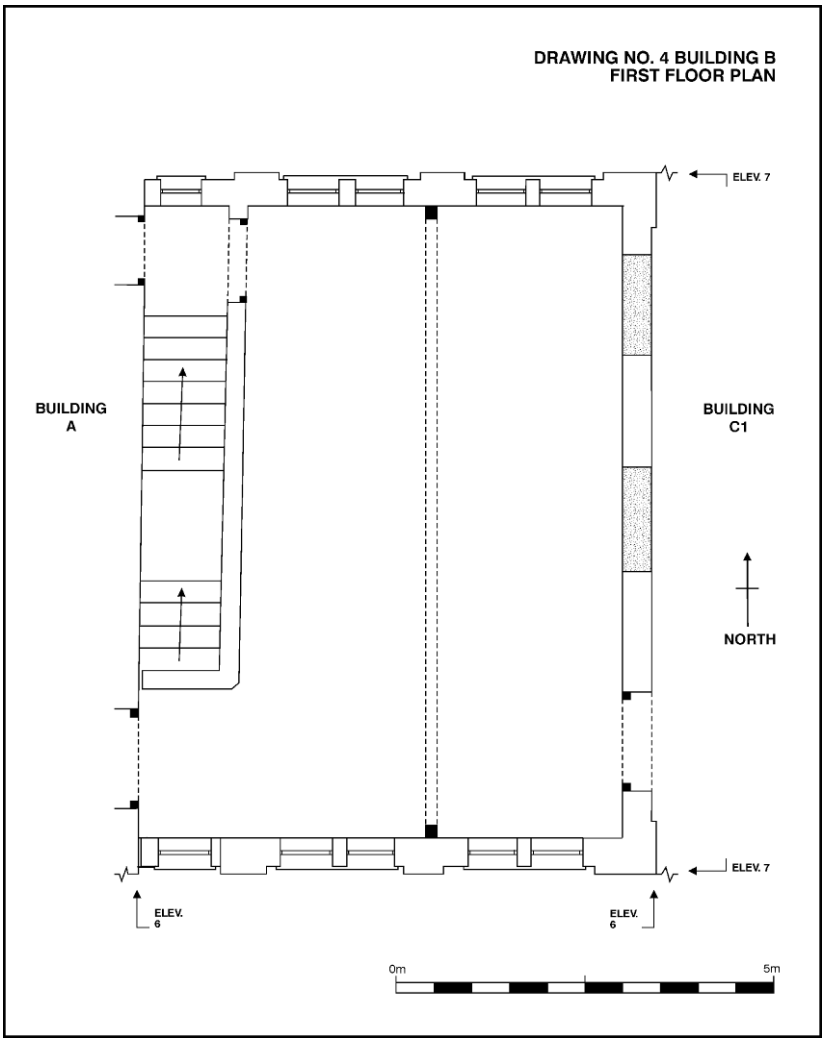


Figure 78: First floor plan of Building B (scale 1:100)

5.3 Building C

This building is the Electricity Sub-station which is set in the top north-east corner of the Works between the car park and the Worcester and Birmingham Canal. It is a smallish rectangular single-storey hard brick building which measures 14.25 metres long (north/south), 6.15 metres wide (east/west) and stands 6.2 metres high from the apex of the roof.

5.3.1 Exterior

West elevation (Figures 79 and 80)

This elevation is of four bays which are divided by pilasters of which the south and north ends are rusticated. It has a continuous plinth decorated with two courses of blue engineering chamfered bricks laid to stretcher bond. The plinth is made of dark brown burnt bricks (9" x 4¼" x 3") bonded with flush beige lime mortar (up to 10mm thick) and laid to English bond. There are four rectangular metal vents set on each bay of the plinth. The recessed panels are made of reddish bricks laid to Flemish Garden Wall bond which are topped with simple dentilled work composed of an interrupted string brick course laid to header bond. The upper section is a simple cornice made with the same type of bricks as the plinths, as are the rusticated pilasters, although these are laid to English bond and topped with concrete coping slabs. The roof is made of cement-based slates with ridge tiles and has close eaves with PVC guttering. The verges have short parapets. On the southernmost bay there is a wooden doorway with a concrete lintel and raised threshold next to the pilaster.

Figure 79: West elevation of Building C

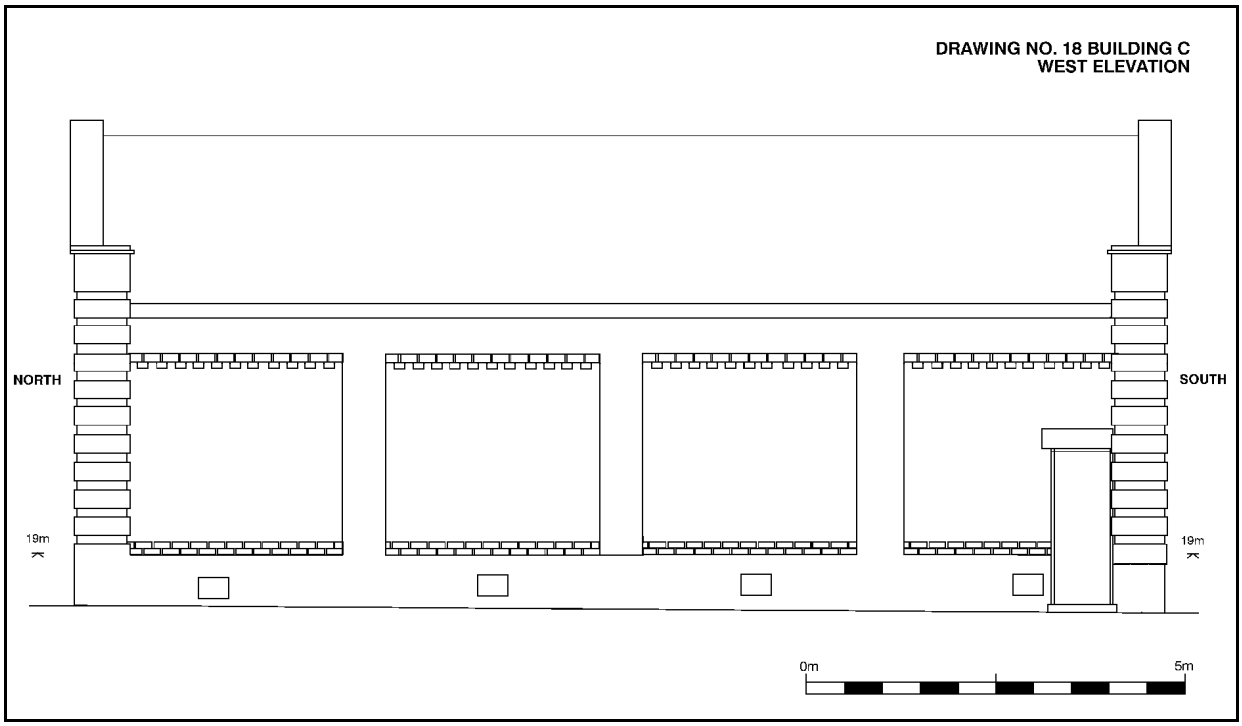


Figure 80: Survey drawing of the west elevation of Building C (scale 1:100)

East elevation (Figure 81)

The east elevation has four windows with concrete lintels and projecting blue engineering chamfered brick sills. It is much simpler than the west elevation as it is devoid of pilasters and dentilled brickwork and the plinth is made of blue engineering bricks flush with the wall. The main wall is made of lighter brown bricks laid to English bond.

Figure 81: East elevation of Building B, from the canal path

North and south elevations (Figures 82 and 83)

The gable elevations are one bay wide with recessed brick panels laid to Flemish Garden Wall bond flanked by two rusticated brick pilasters laid to English bond set as crows-feet from which the gables spring. The gables are emphasised by dentils beneath the eaves all round and topped with concrete coping slabs. The recessed panels are topped by brick cornices laid to English bond with simple dentilled brickwork and decorated with two courses of blue engineering chamfered bricks. These elevations also have plinths of the same style as the west elevation. Each of the gables has a rectangular louvre slat window with a concrete lintel. There is a double door on the north elevation.

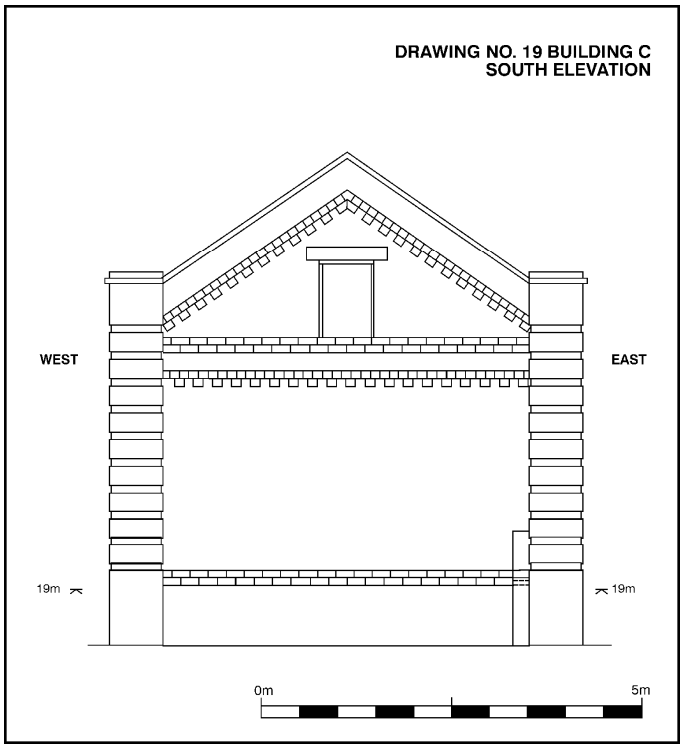


Figure 82: Survey drawing of the south elevation of Building C (scale 1:100)

Figure 83: The gabled north elevation of Building C

5.3.2 **Interior** (Figures 84 – 86)

Internally it measures 13.55 metres long (north/south), 5.43 metres wide (east/west) and stands 6 metres high to the underside of the apex of the roof. The side walls are 4 metres high. It is accessed from a timber double door positioned on the north wall and from a smaller doorway on the southernmost bay of the west elevation. The interior is lit by four fixed windows on the west wall which have metal slender glazing bars with twenty five lights each (5 rows x 5 columns). There is also a large rectangular fanlight over the double door on the north wall. The interior has painted brickwork walls with a continuous rendered plinth (1.2 metres high), a concrete floor and the roof structure is composed of three steel trusses set on the side walls which carry eight RSJ purlins supporting tongue-and-groove boards. This Electricity Sub-station still functions and it has several transformers, high voltage switchgears, circuit breakers and fuse boxes.

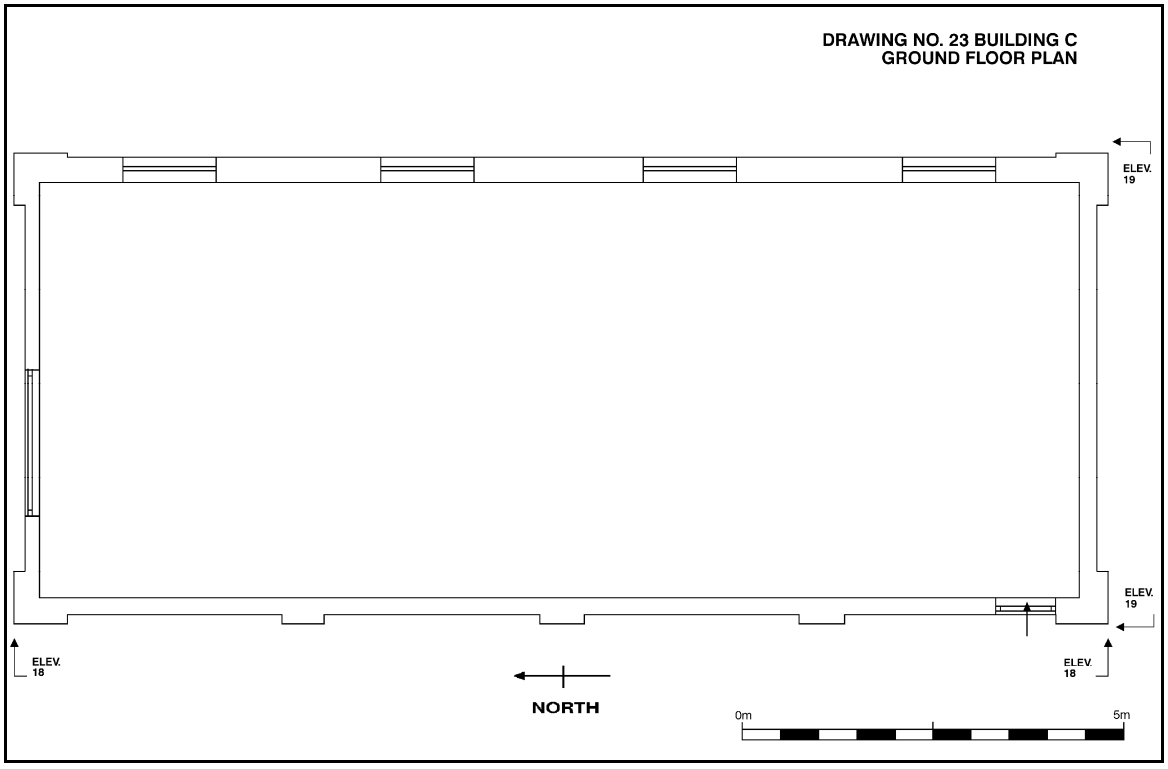


Figure 84: Plan of Building C (scale 1:100)

Figure 85: Inside Building B, looking north

Figure 86: Electrical apparatus inside Building B, looking south

5.4 Building H

This building is the Old Warehouse which was built originally as a Sagger House. It is situated on the right-hand side of the central lane opposite Building G to the west and Building K1 to the south. Building I is adjacent to the east elevation and the south wall of Building F abutts its northern wall. It is slightly trapezoidal in plan, widening towards the south elevation. It has an overall dimension of approximately 18 metres long (north/south), 11.5 metres wide (south end), 9.8 metres wide (north end) and is 9 metres high. Building H consists of two parallel gabled ranges with an M-shaped roof. It is two storeys high built of mid reddish brown bricks (9" x 4¼" x 3¼") bonded with flush light greyish beige lime mortar (up to 10mm thick) and laid to mainly English bond.

Figure 87: General view of Building H, from Building J

5.4.1 Exterior

West elevation (Figures 87 – 91)

The main twin gabled elevation is of seven bays, expressed in the window pattern at first floor level. Interestingly, this bay division ignores the parallel roofs – the central window being directly under the valley between them. The windows of the first floor have cast-iron glazing, projecting blue engineering brick sills and segmental arched brick heads composed of two courses of bricks laid to rowlock bond. One of the first floor windows was dismantled and its opening was converted into the doorway of a later bridge and subsequently blocked. This window was re-inserted on the ground floor next to the northernmost window. The original windows of the ground floor do not match those of the first floor, except for the re-inserted one. These are smaller and their segmental arched heads are composed of one upper brick course laid to header bond and a lower laid to rowlock. There is a doorway in the centre of the ground floor which is blocked with bricks. Its original appearance can be seen on a 1935 architect's plan for Building F (see Figure 74 of the Appendix). The gables have brick-framed roundels containing ornate cast-iron vents although the southern one has been replaced by a lightweight metal grill cover. The coping is a string course of bricks and there is an ovolo moulding kneeler red sandstone forming a termination at the eave of the coping on the south end.

Figure 88: West elevation of Building H

Figure 89: West elevation of Building H after demolition of adjacent buildings

Figure 90: Detail of windows and doorway of former bridge blocked with later bricks

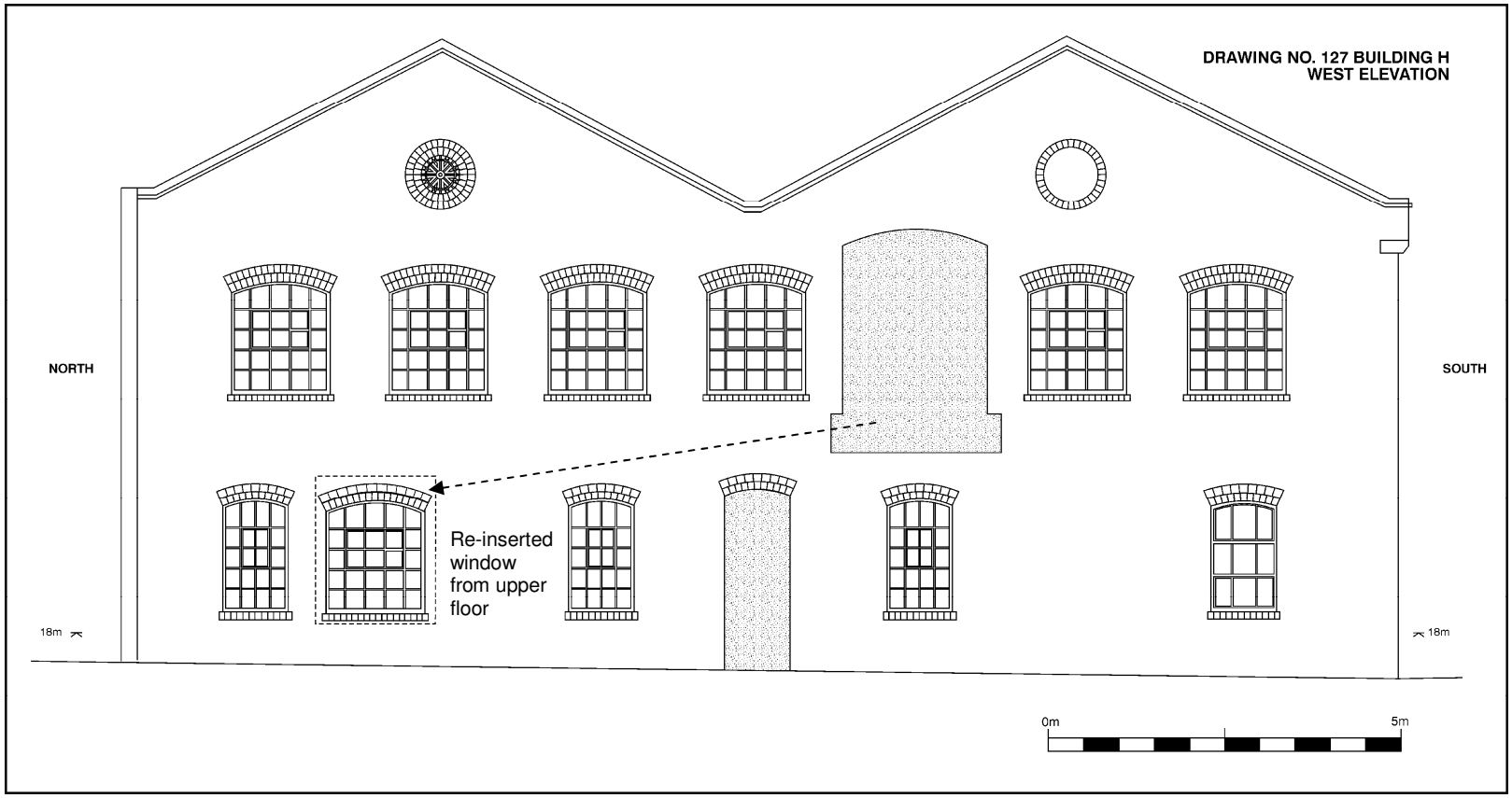


Figure 91: Survey drawing of the west elevation of Building H (scale 1:100)

East elevation (Figures 92 and 93)

This elevation is partially obscured by the later Building I on the east. Much of the ground floor walling on this elevation has been removed to increase access to Building I. The walling has been replaced by RSJ beams supported by RSJ stanchions and brick pillars. The upper storey is of eight bays demarcated by its windows. This elevation, as opposed to the rest of the building, is made of bricks laid to Flemish Garden Wall bond rather than English bond, but there is no clear indication of construction breaks. The windows are the same type as those on the west elevation but their lowest rows have been blocked with later bricks. There are also roundels on both gables with vents, but the southern one is a replacement made of lightweight metal with similar decoration. There is a timber dormer with a cowl situated on the southern slope of the northern gable. This seems to be a later insertion which entailed replacing the original brick coping with lead flashing.

Figure 92: The east elevation of Building H butted by the hipped roof of Building I

Figure 93: East elevation of Building H after demolition of adjacent buildings

South elevation (Figures 94 – 96)

On the exposed south elevation there are five bays in all, topped by a plain brick eaves course. The first floor windows are larger than those on the ground floor. Only the two eastern ground floor windows survive intact; the two to the west have been blocked, and the westernmost one has been replaced by a later and larger window under a concrete lintel. Projecting from this elevation is a modern single storey brick block with a flat roof which was demolished prior to the survey. The roof is visible on this elevation and consists of natural slates topped with ridge tiles with parapets at both gable ends.

Figure 94: South and east elevations of Building H

Figure 95: South elevation of Building H

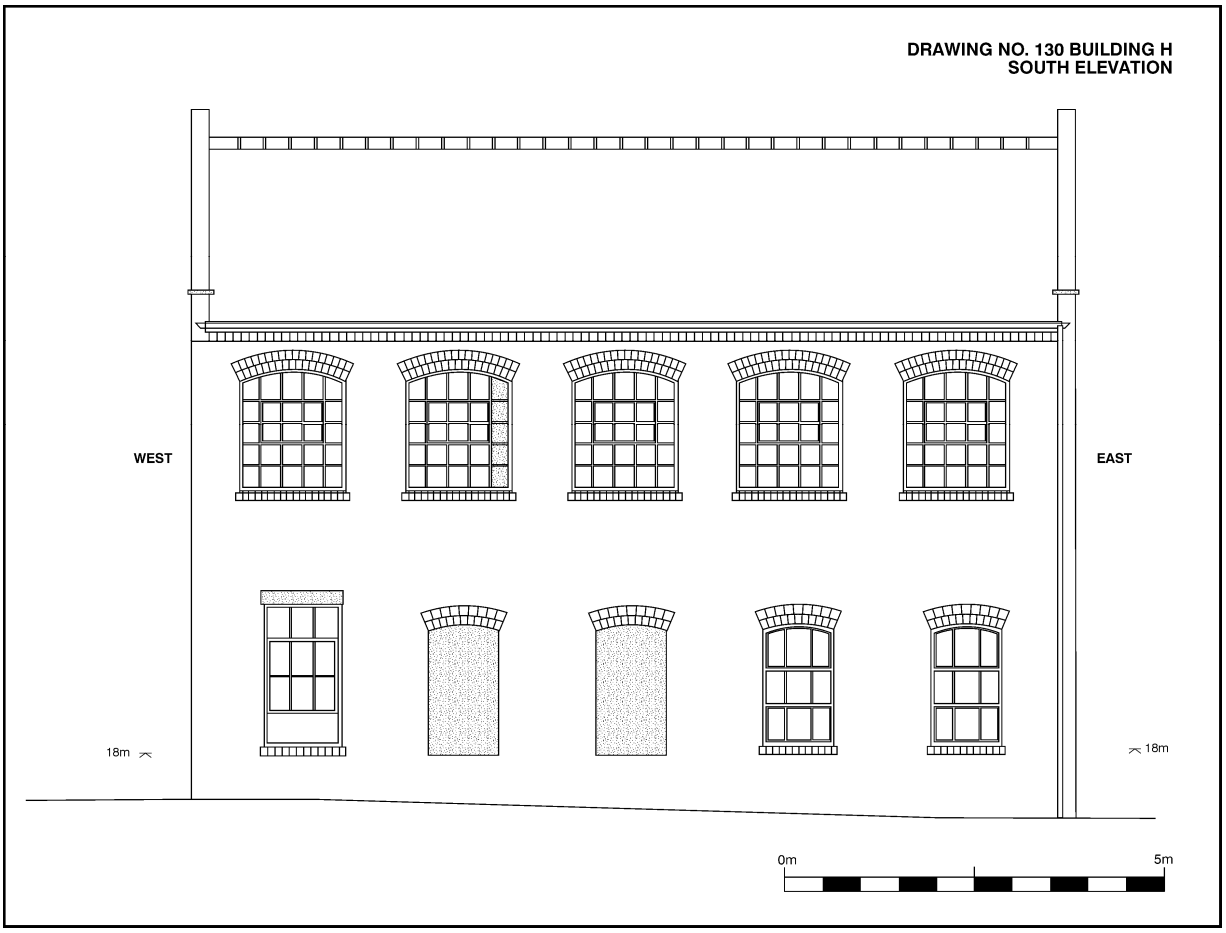


Figure 96: Survey drawing of the south elevation of Building H (scale 1:100)

North elevation (Figures 97 and 98)

This elevation is partially obscured by Building F which was built onto the northern elevation. Much of the ground floor walling has been removed to increase access to the latter building. Following the removal of the walling a large RSJ beam was inserted to hold up the first floor. There is an area on the eastern side of the ground floor which has different brickwork from that of the rest of the building and it is laid to Flemish Garden Wall bond. This brickwork seems to be part of an earlier structure. The upper storey is of four bays demarcated by its windows which have been carefully blocked with bricks and the westernmost has been modified into a doorway linking the first floor of Building F.

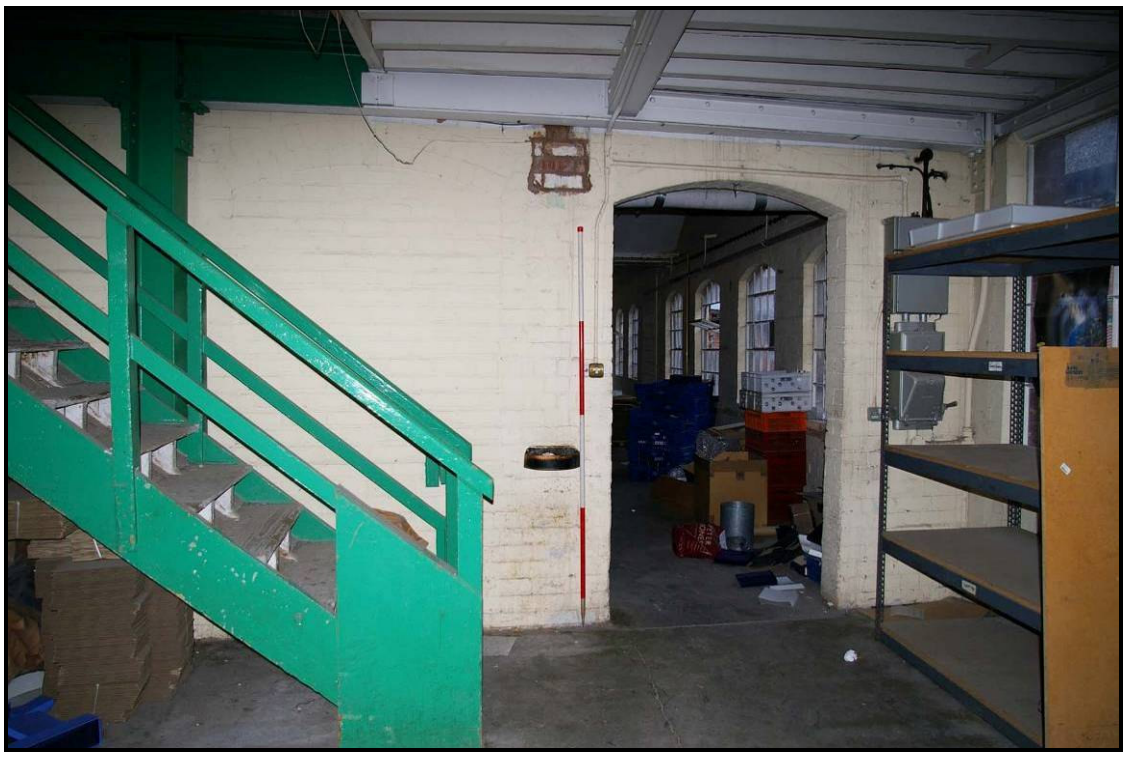


Figure 97: Doorway on the first floor of the north elevation, from Building F

Figure 98: North elevation of Building H after demolition of adjacent buildings

5.4.2 Interior

Ground floor (Figures 99 – 104)

The interior of the ground floor has a single cross-wall but is otherwise an open space, and the removal of the north and east walls means that they are also open to the adjacent structures. It measures approximately 17.30 metres long (north/south), 10 metres wide (east/west) and is 3 metres high. It has painted brickwork, a concrete floor and a fibreboard ceiling under timber floor joists. There are several RSJ beams and stanchions which appear to be later insertions. These were probably inserted when a series of original partitions and staircase were dismantled as they are shown on the 1935 architect's plan for Building F next to Building H (see Figure 75 of the Appendix). The original windows of the south wall consist of nine rectangular lights set vertically (3 columns x 3 rows). Each has an opening with central pivotal hinges on the top row and a hopper opening at the bottom. The inserted window on the westernmost bay has a central opening with pivotal hinges (3 columns x 2 rows). The windows on the west wall are different from the ones on the south except for one situated on the southernmost bay which is identical to the original windows of the south wall. They consist of twenty rectangular lights set vertically (4 columns x 5 rows) on each cast-iron frame. They also have central openings with pivotal hinges. The re-inserted window is the same as the ones on the first floor which are described below. The partition wall is positioned in the centre of the floor and orientated east/west but it does not fully divide the floor into two spaces as the west end is 2.2 metres away from the west wall and has bullnose bricks on the edges. The partition wall has a central doorway which has been carefully blocked with bricks and a cement plinth throughout (230mm high). There is also a similar plinth along most of the west wall. This workshop is empty and thus has no clear signs of its later use.

Figure 99: Partition wall on the ground floor with blocked doorway, looking south

Figure 100: Windows on the west wall of Building H

Figure 101: North wall of the ground floor of Building H with blocked doorway on the right

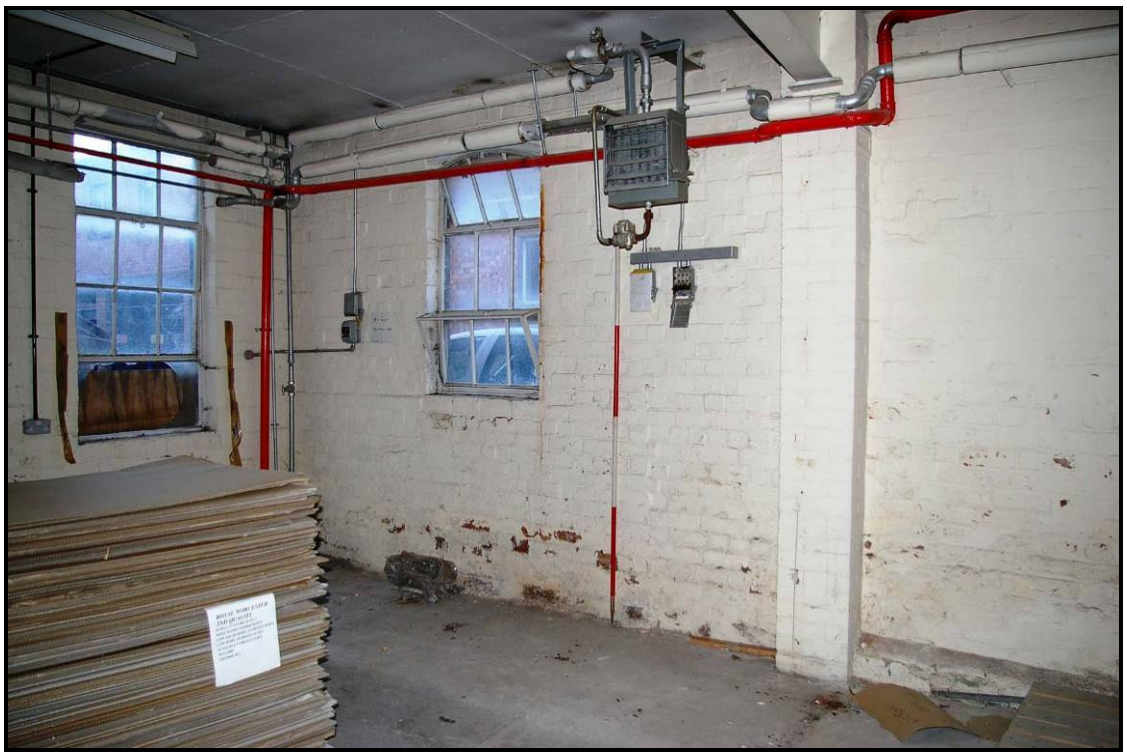


Figure 102: Modified window (left) and original window (right) on the south-west corner

Figure 103: Blocked windows on the south wall of Building H

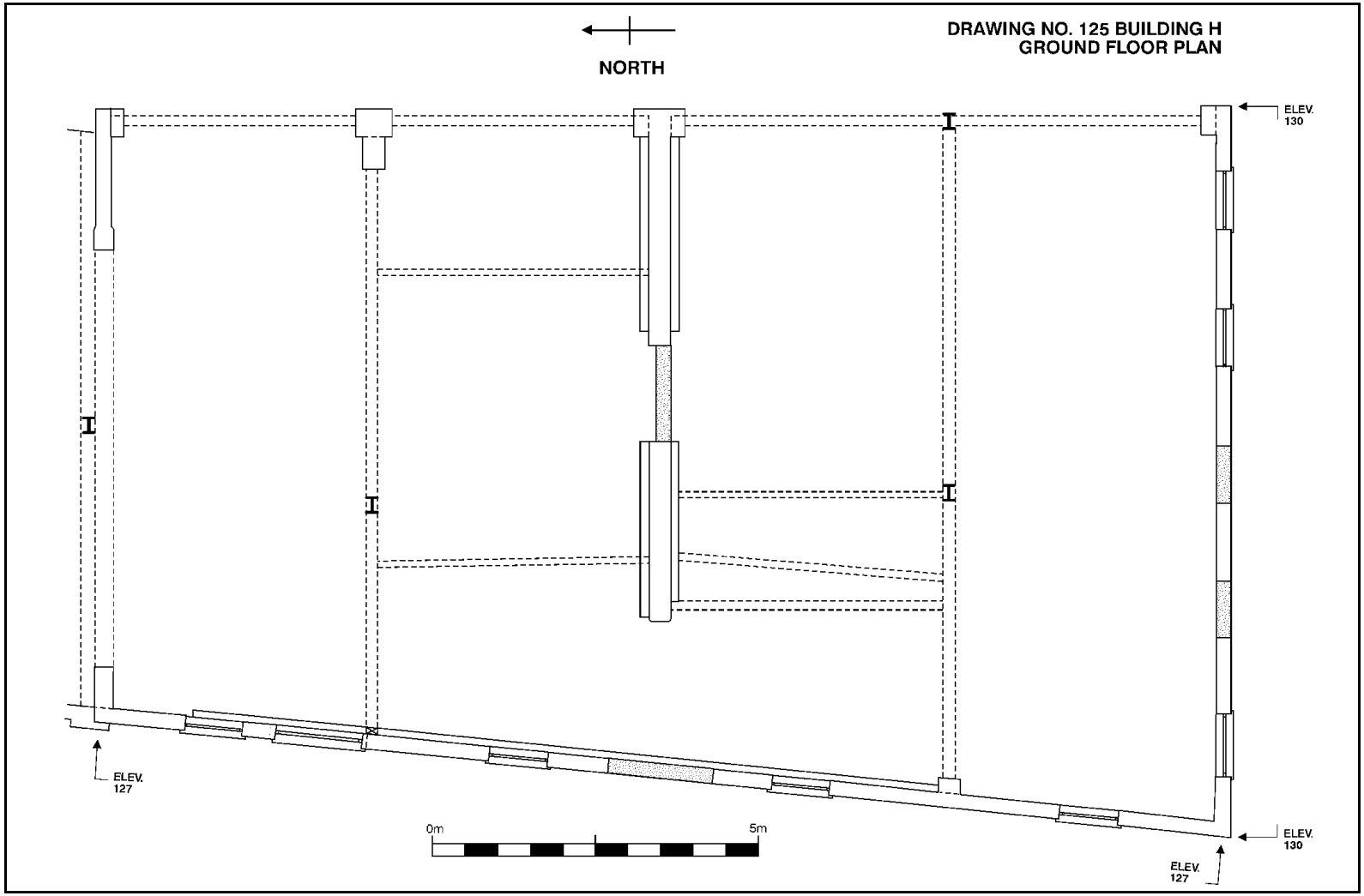


Figure 104: Ground floor plan of Building H (scale 1:100)

First floor (Figures 105 – 114)

The first floor has the same layout as the ground floor, thus the plan of the ground floor constitutes an overall representation of both storeys. There is also an identical partition wall under the central valley of the roof. The surviving original windows are made of cast-iron glazing. Each of these has twenty five lights (5 columns x 5 rows) with a central opening with pivotal hinges (3 columns x 2 rows) and a long curved handle. This floor is accessed through an inserted doorway on the north wall which leads to the first floor of the adjacent Building F. It has painted brickwork, screed over tongue-and-groove boarding on timber floor joists and a boarded sloping ceiling to underside rafters. The top of the ceiling is flat and 4.5 metres high, and the bottom of the sloping sides of the ceiling is 3.1 metres high. The roof structure consists of four king posts (two on each side of the M-shaped gabled roof) orientated north/south and set between the partition wall and the north and south walls. The principal rafters carry four tiers of trenched side purlins (eight in total). The rest of the structure was not possible to survey. The southern half of the whole workshop has a flat false ceiling (2.98 metres high) on its western side and a small square ceiling hatch next to its eastern wall which is accessed from a metal ladder attached to the wall. The windows on the east wall have modified splayed sills. On the northern half there is another ceiling hatch situated over the flat ceiling towards the west end. There is a dormer with a cowl situated over the south-east corner on the northern half section. There are long worktop tables, metal shelves, cardboard boxes and wrapping items which suggest that this workshop was partially used for packaging.

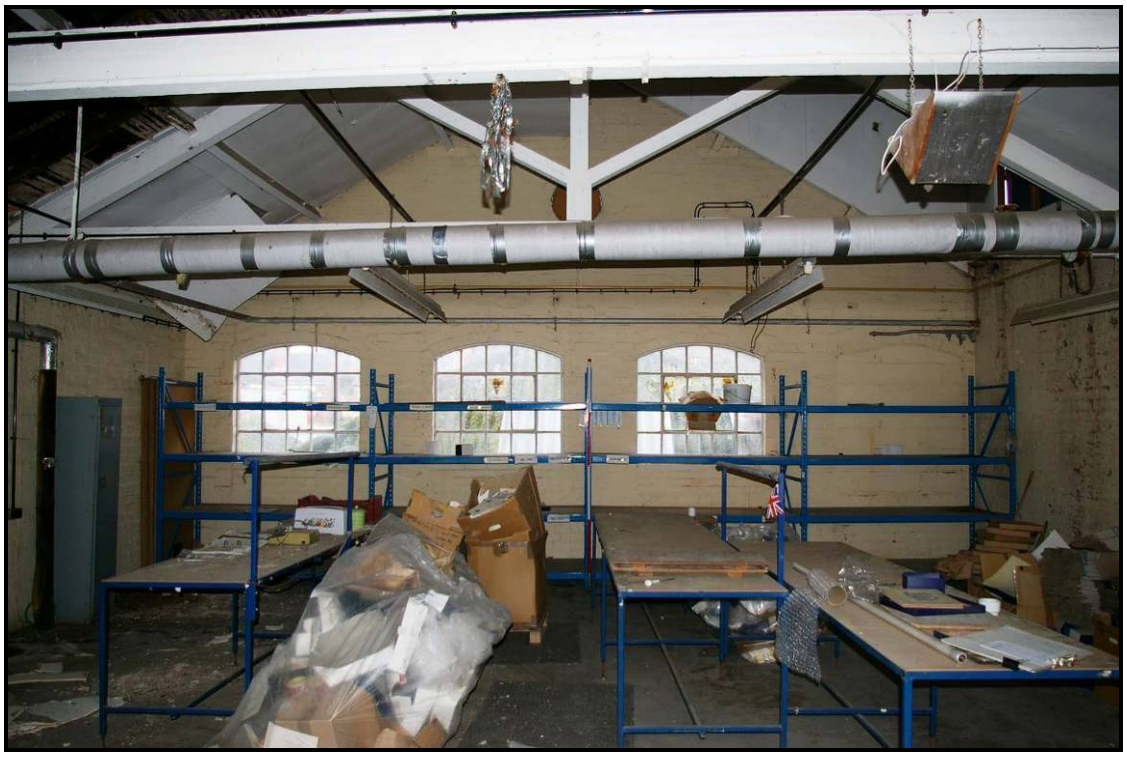


Figure 105: Southern half of the first floor of Building H, looking east

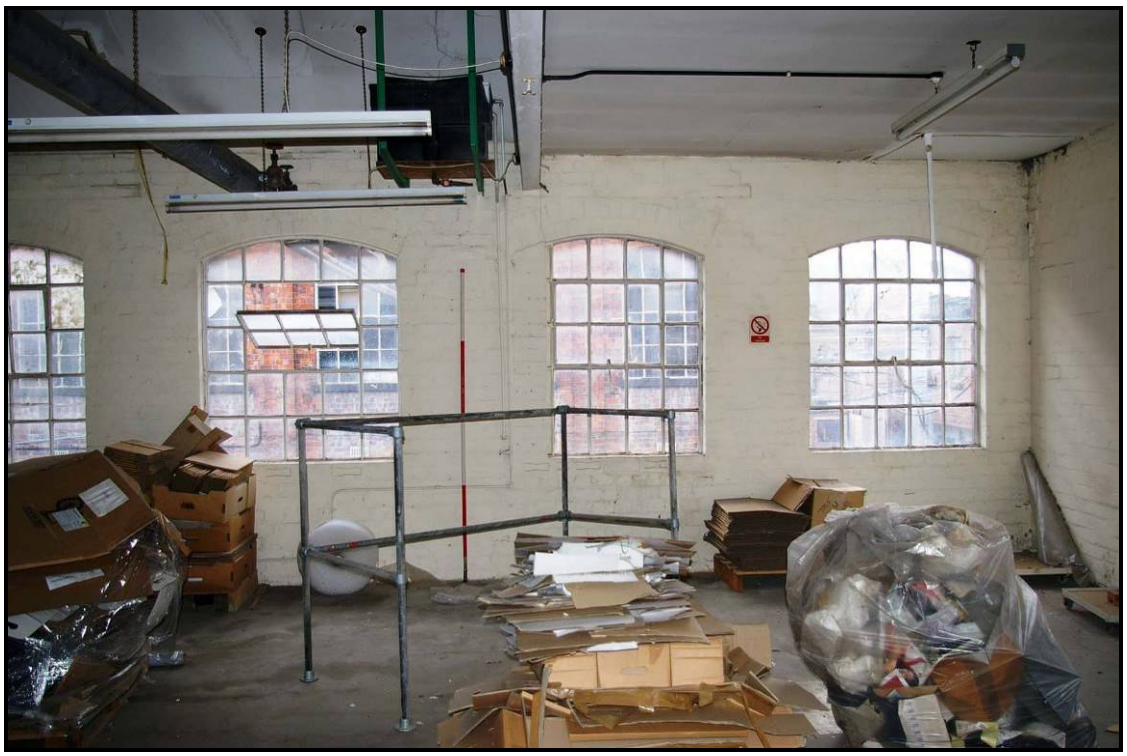


Figure 106: South wall of the first floor of Building H

Figure 107: West wall on the northern half of the first floor of Building H

Figure 108: West wall on the northern half of the first floor of Building H

Figure 109: East wall on the northern half of the first floor of Building H

Figure 110: South-east corner of the first floor with modified window on the left

Figure 111: Partition wall

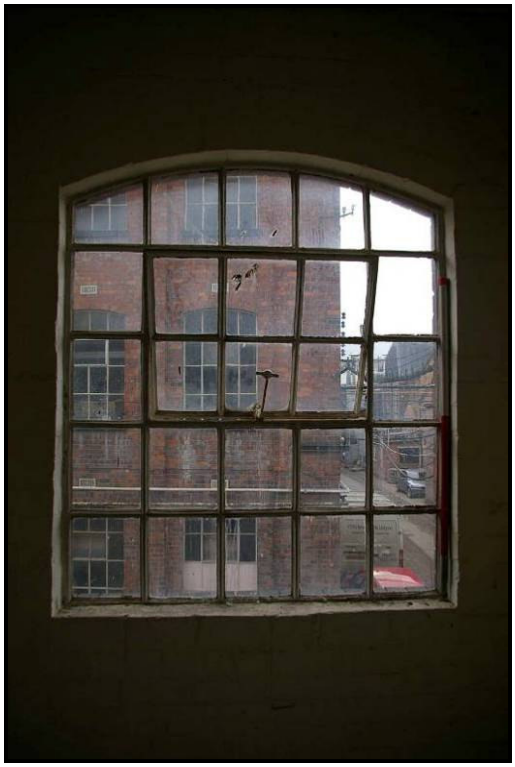


Figure 112: Cast-iron window

Figure 113: Handle of window opening with pivotal central hinges

Figure 114: King post roof trusses of Building H

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, historical 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 A, B, C and H is summarised below.

6.1 Phase 1 (1850 – 1870s)

Building A was built in the early 1850s as the Slip House in which the ground material from the opposite Building D, the Bone Mill, would have been collected through pumps into tanks or arks in order to process such substances. The Slip House can be seen on an illustration of the Works in the early 1850s with the Bone Mill parallel to it (Figure 115). The earliest cartographic evidence for the Slip Hose is the 1863 plan of the Works which shows the building with the present footprint (Figure 116). The building is numbered 41 which corresponds to Offices and Workshops. There is a narrow block on the north side (plot number 42) labelled as Slip Kilns. There are also two small structures on the eastern side but there is no reference to them.

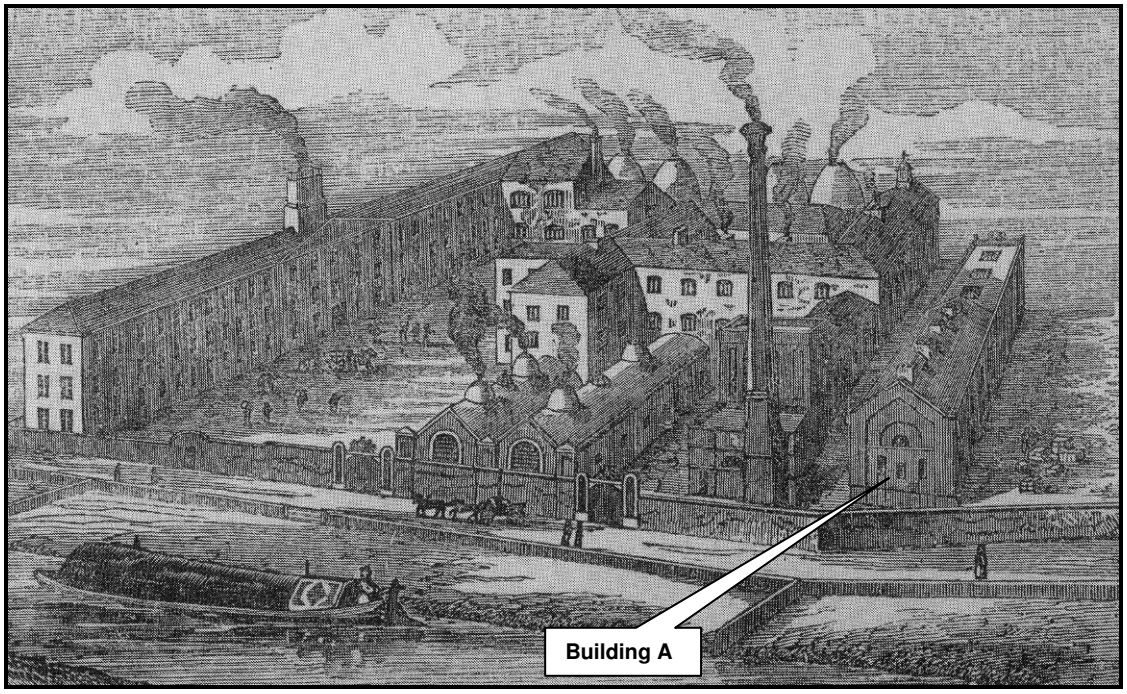


Figure 115: Illustration of the Works in the early 1850s (WPM)

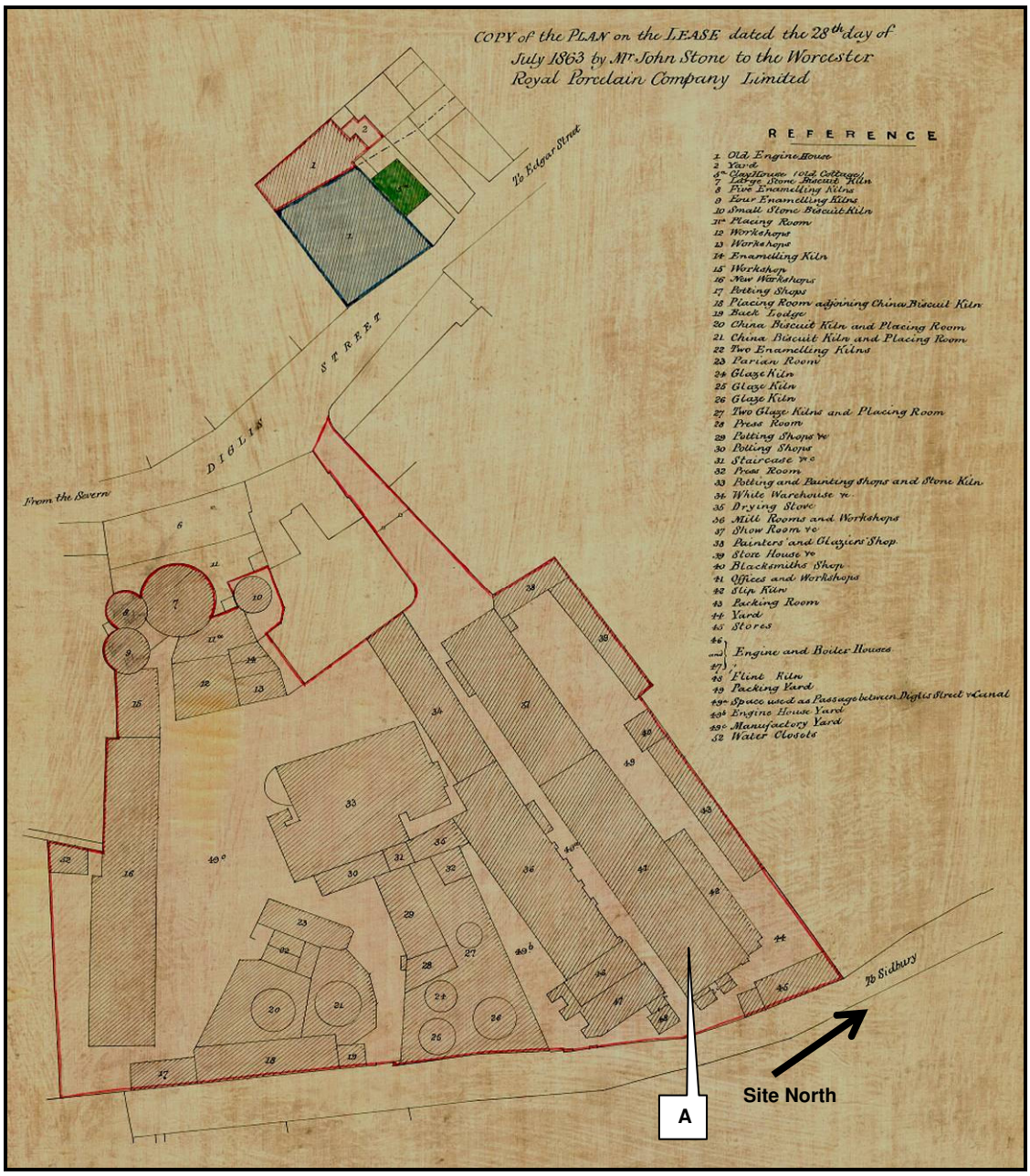


Figure 116: Plan of the Works in 1863 (WPM)

An early illustration of the Works shows that Building A had windows on both of its floor levels and a pitched roof with several skylights (Figure 117). The illustration depicts a cart next to the main doorway of the Slip House which was one of the main access routes into the Works.

Although the Slip House was built as an additional range linked to the Bone Mill, it was probably built slightly later as the land where the Slip House lies was acquired in 1853, whereas the area where the Bone Mill is situated was purchased in 1851. This is exhibited in the plan of the Works issued in 1875 (Figure 120) which shows plots number 7 and 8 shaded in green (purchased on 4th June 1851) and plot number 10 shaded in red (purchased on 1st March 1853). There is also a clear construction break between the Slip House and the adjacent Showroom (the present Cafeteria) to the west. The latter was built in 1852 and designed by R W Armstrong, (see Appendix) thus the Slip House was built against the east elevation of the existing Showroom. The Slip House is illustrated on the 1875 guide of the Works (see Figure 10 of the Appendix) and a similar appearance can be observed in the slip room of the Gladstone Museum in Stoke on Trent (Figures 118 and 119). The 1875 plan of the Works exhibits a large extension on the northern side of the Slip House which is labelled as a Clay Shed.

The earliest construction equated to the present Building H is also shown on the 1875 plan of the Works (Figure 120). The building is called the Sagger House (plot number 26). This land was purchased on 10th August 1866. This building is also exhibited on the 1868 illustration of the Works (Figure 117) which consists of a single storey block with a pitched roof and a chimney stack projecting from the southern side wall.

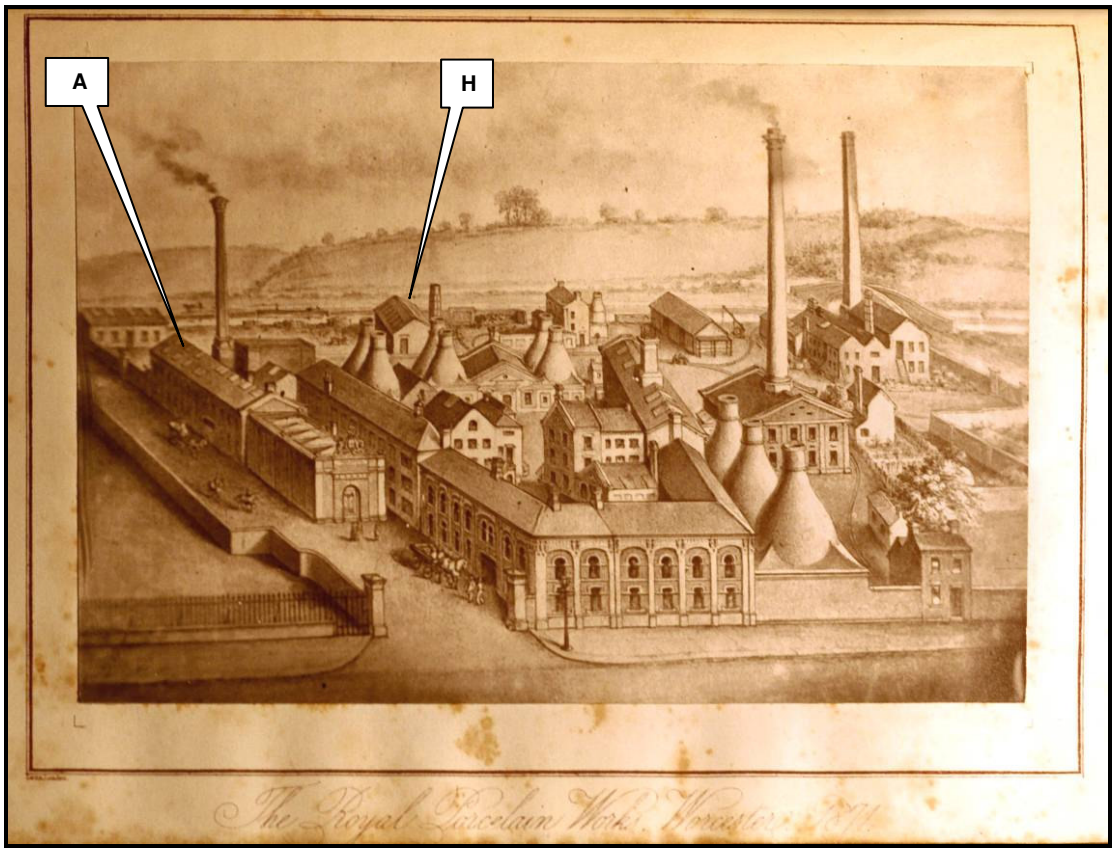


Figure 117: Illustration of the Works in 1871 (from Binns, R W, 1865, *A century of potting in Worcester*)

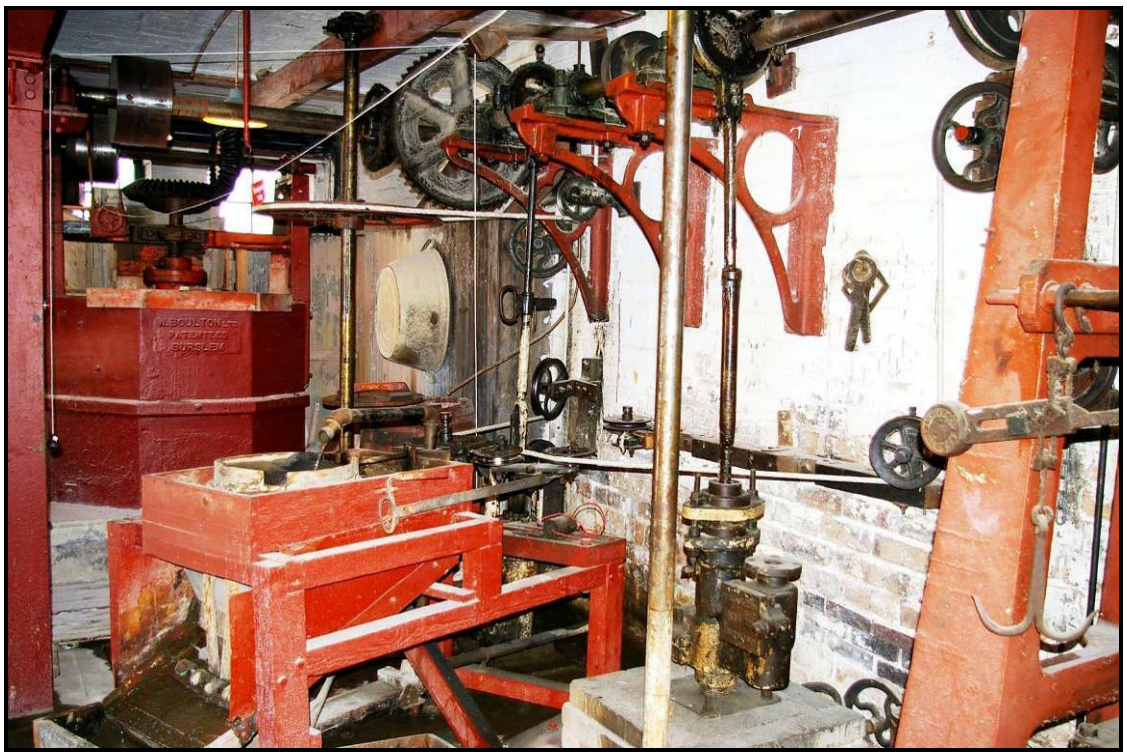


Figure 118: Slip room in Gladstone Museum, Stoke on Trent

Figure 119: Filter press in Gladstone Museum, Stoke on Trent

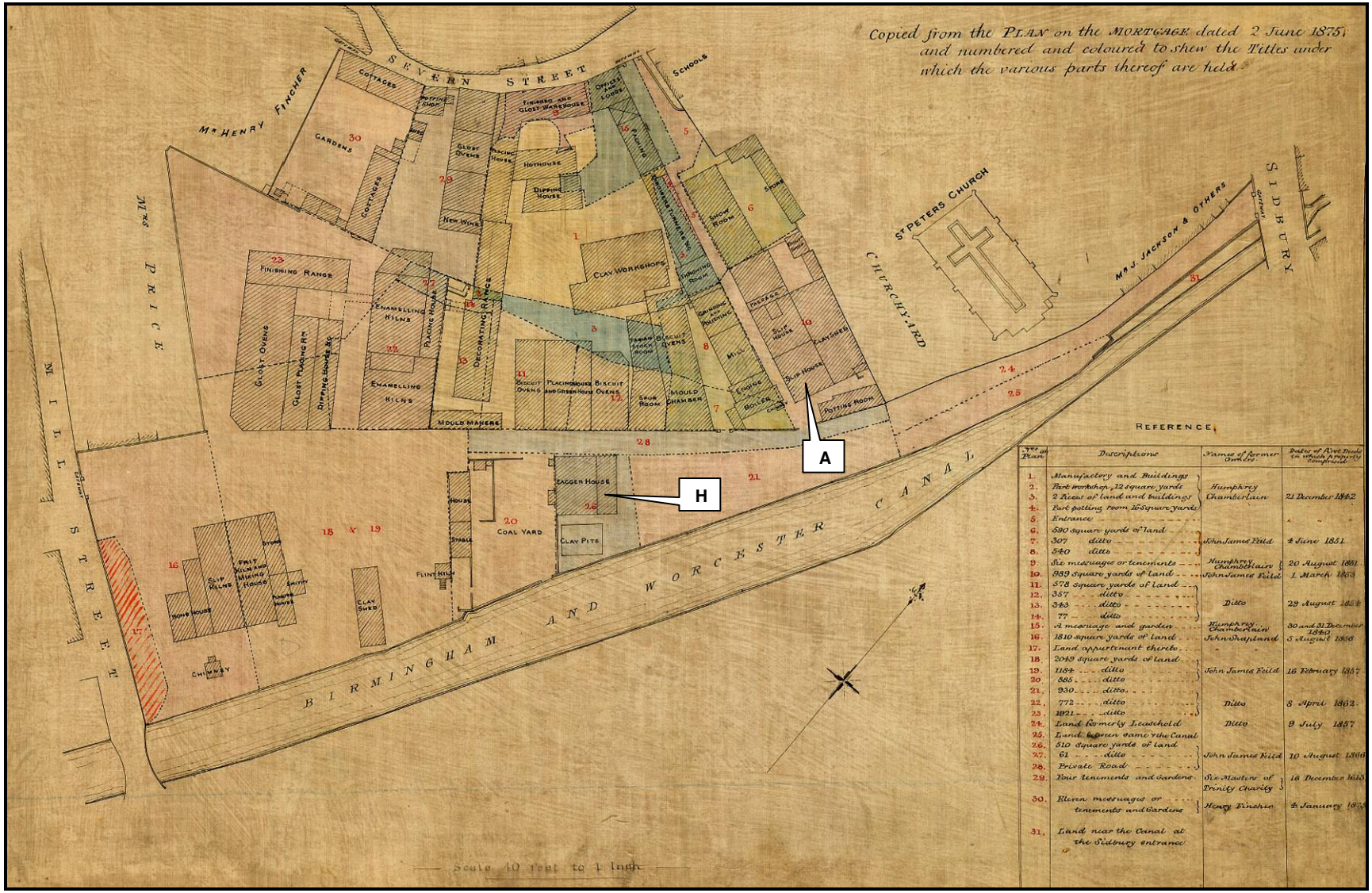


Figure 120: Plan of the Works in 1875 (WPM)

6.2 Phase 2 (1880 – 1900s)

An early photograph of the Works taken in 1880 confirms that the Slip House had windows on both of its floor levels and a pitched roof with several skylights (Figure 121). The structural evidence suggests that the original roof was removed, the side walls raised, the upper windows blocked with bricks, and a new flat roof with raised central lantern added later. The historical research identified that these structural modifications occurred at around 1900. The new arrangement was made to create an additional showroom to the existing one which included the whole of the first floor and the western workshop of the ground floor. These rooms were accessed through inserted doorways and staircases leading to the former Showroom. The remaining eastern section kept its original function as a slip room. The room had columns supporting transverse girders similar to the ones in Building J (Figure 122). The plan of the slip room with its original columns can be seen on the architect's drawings of the proposed eastern extension (see Figure 52 of the Appendix). The columns and girders were later replaced by RSJ stanchions and beams.

The 1884 Ordnance Survey map shows Building H with its current footprint (Figure 123). Furthermore, a photograph taken around 1890 clearly exhibits its present eastern elevation with the M-shaped gabled roof (Figure 124). It seems that the current Building H was built in the early 1880s keeping probably some of the structure of the earlier block as foundations. It is also possible that part of the current north wall contains remnants of the former building as the building survey identified earlier fabric *in situ*.

The photograph also shows Building B which was erected in 1890 as the Slip House Extension on the eastern side. Its appearance matches the architect's drawings of the proposed extension (Figure 59) and its footprint appears outlined on the 1902 Ordnance Survey map (Figure 125). The historical research identified that the ground floor of Building B was original built as a parian slip room with tanks beneath and the first floor was used for mould making.

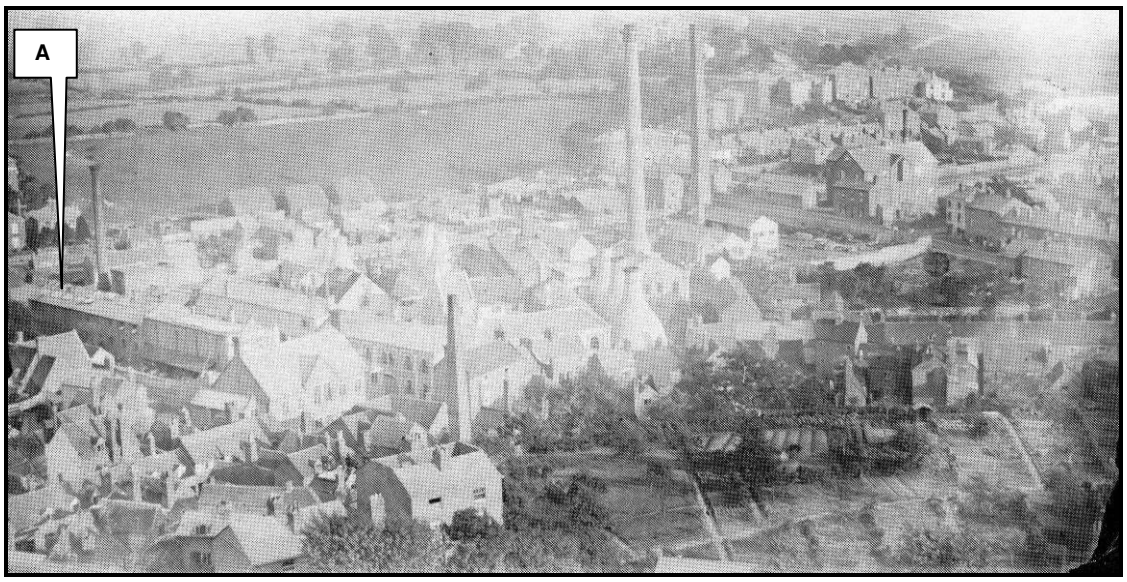


Figure 121: Photograph of the Works taken in 1880 (WPM)

Figure 122: The Slip House in the late 19th century with original columns and girders

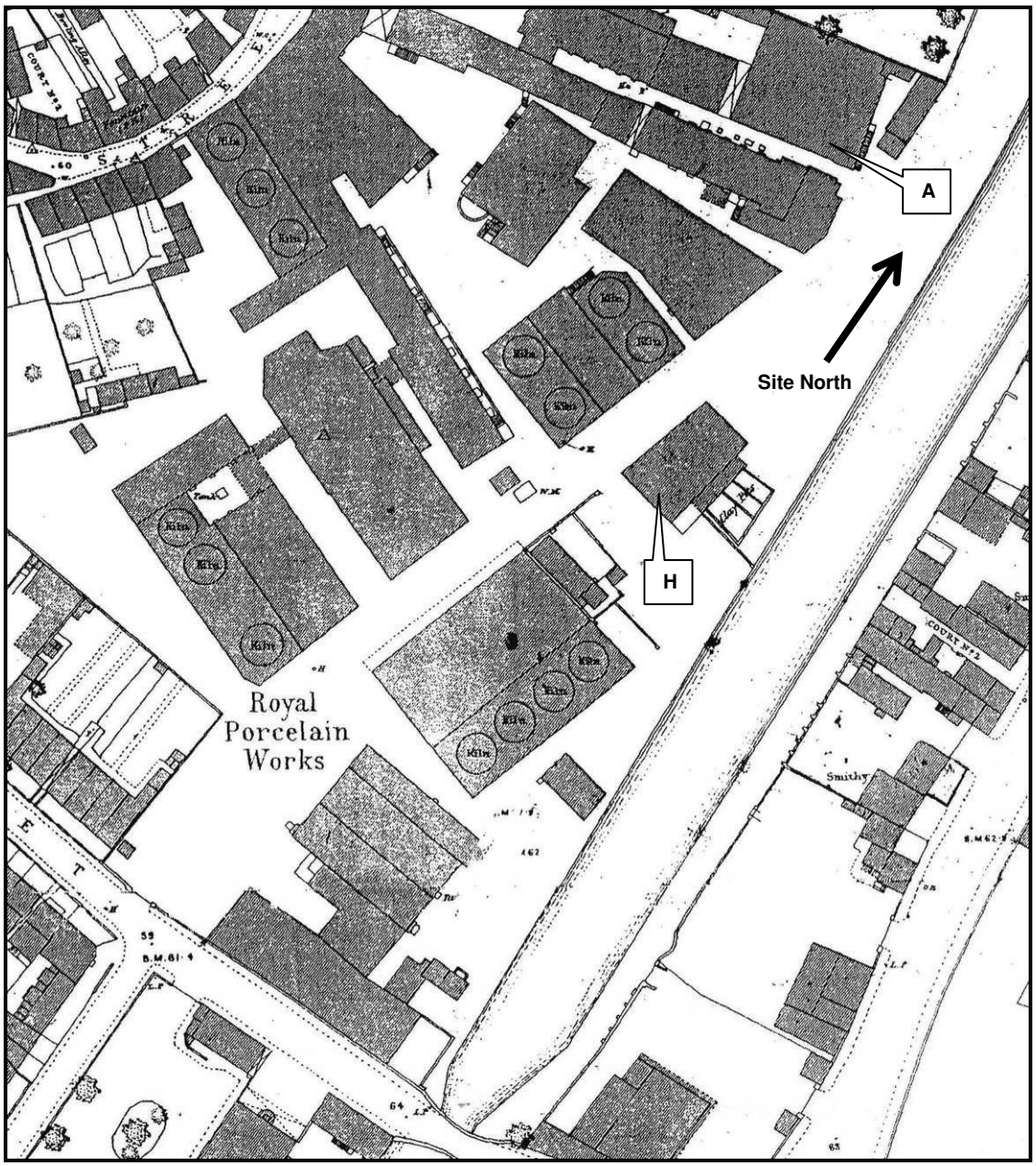


Figure 123: Plan of the Works in 1884 (OS map)

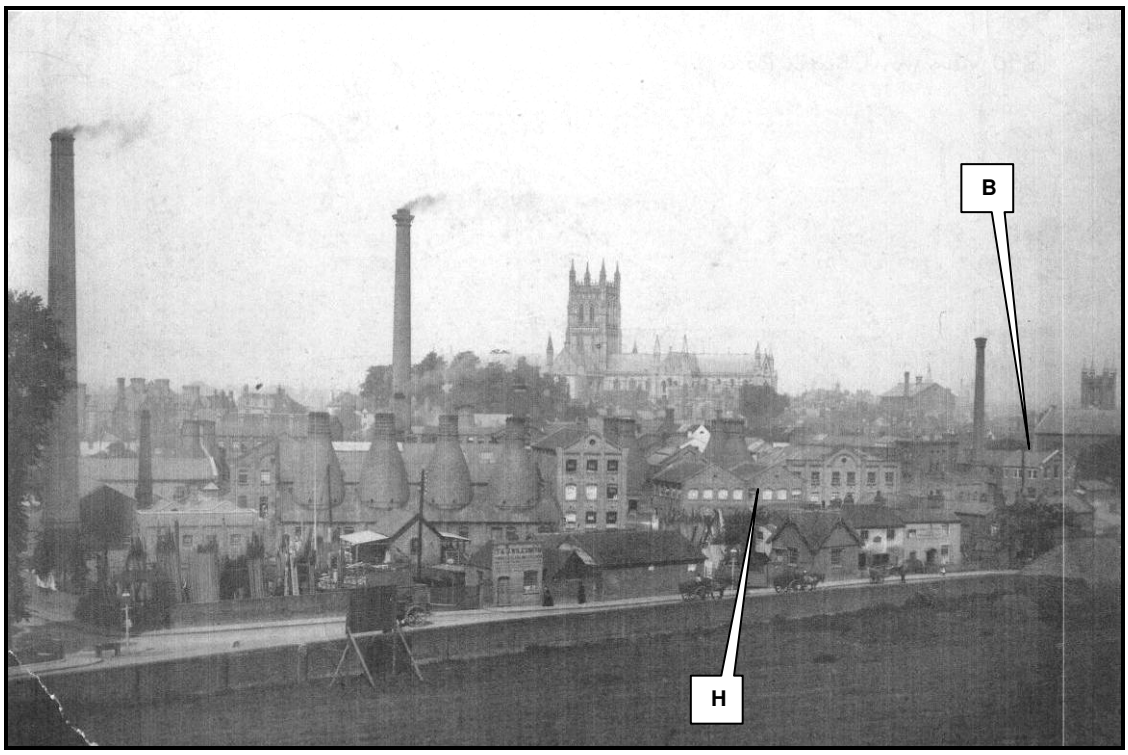


Figure 124: A view of the Works in around 1890 (WPM)

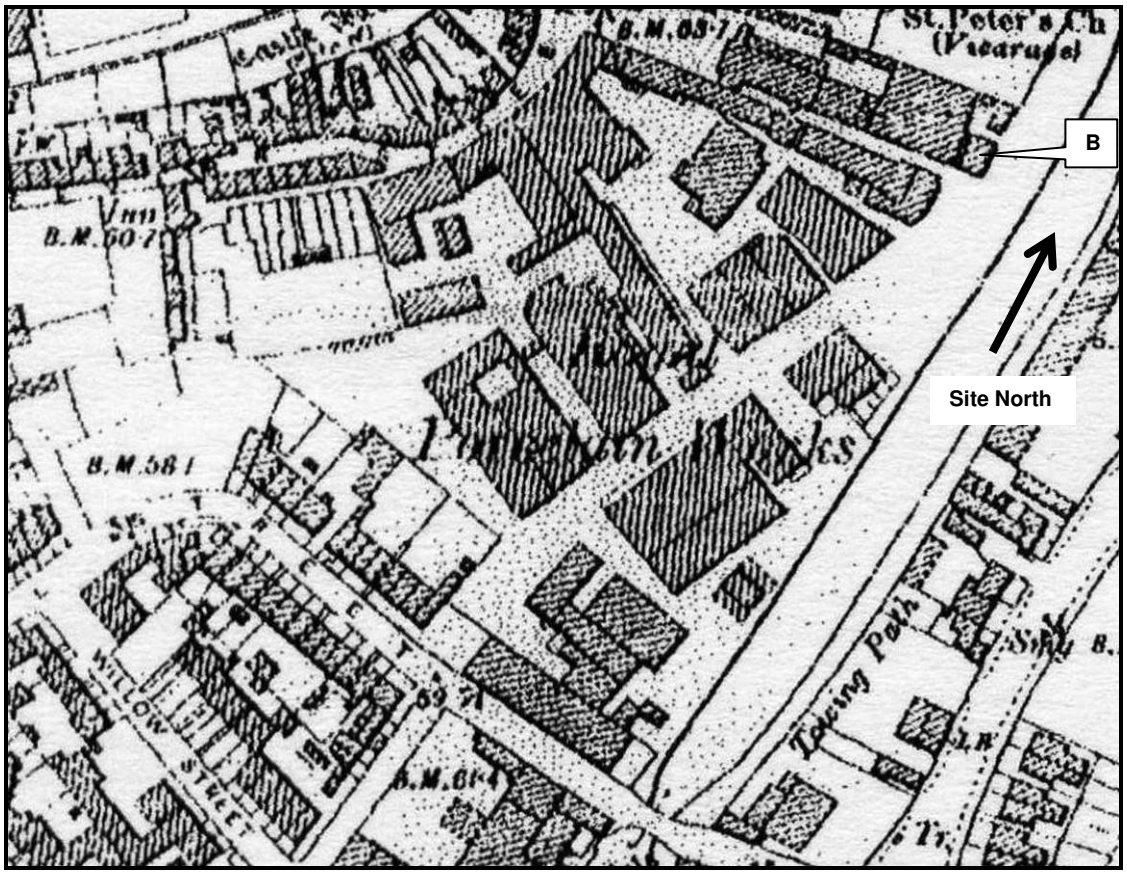


Figure 125: Plan of the Works in 1902 (OS map)

6.3 Phase 3 (1920 – 1940s)

Further development took place in the late 1920s when Building C, the Electricity Sub-station, was built. Although the historical research identified that the building was erected in 1928, it is not shown on the 1928 Ordnance Survey map (Figure 126) presumably because the map was issued earlier than the construction of the Sub-station. Its footprint is shown on the 1934 plan of the Works (Figure 127); more clearly on the 1940 Ordnance Survey map (Figure 128) and the 1941 plan of the Works as plot number 96 (Figure 129). The 1934 plan also shows in great detail the alterations made to the Slip House with three staircases leading to the Showroom on the west. The plan of Building B is also shown on the east, as well as its east elevation; and the northern extension which consists of a large Mixing Room with a W C, an Open Yard, a Paint Shop and a Store (Figure 127).

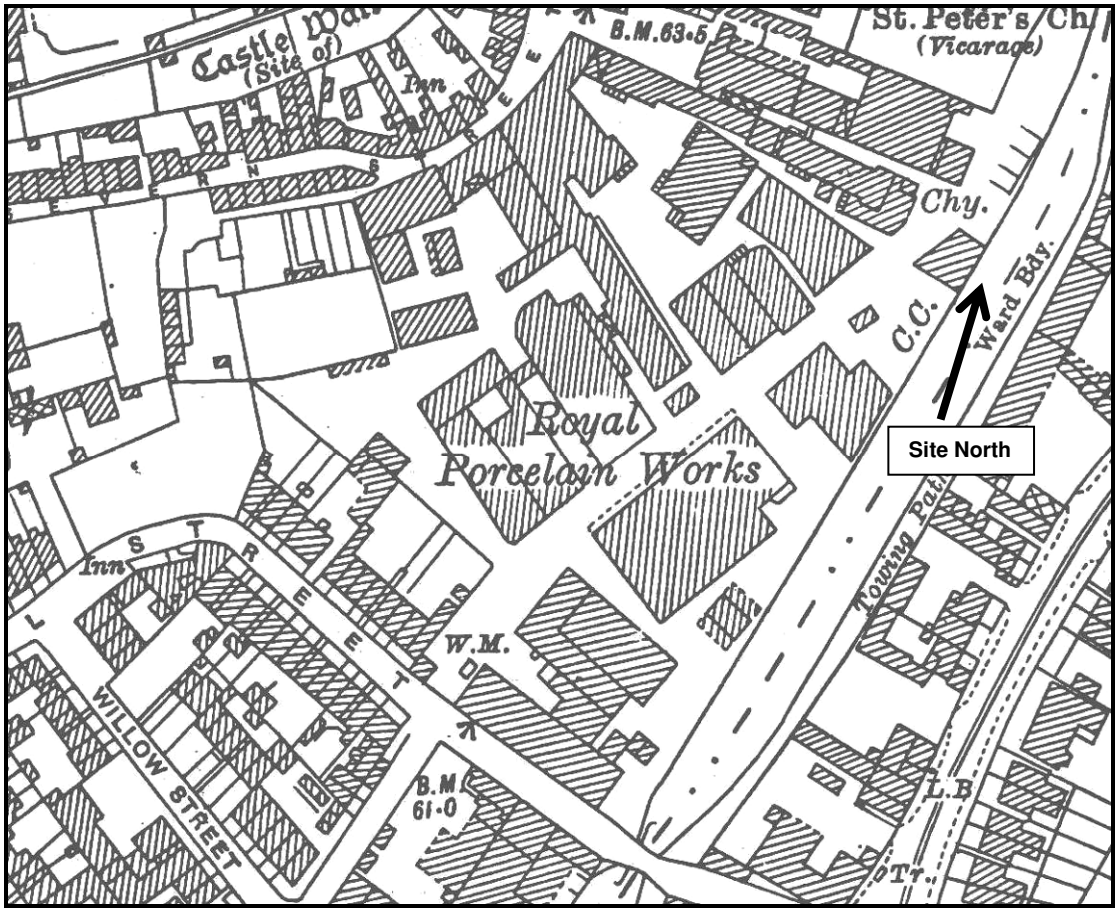


Figure 126: Plan of the Works in 1928 (OS map)

Figure 127: Architect's drawings of the Works in 1934 (WPM)

In the 1940s a bridge was built between Buildings H and the opposite Building G to carry sagger containers from the former to be placed inside the bottle kilns of the latter. The bridge can be seen on the 1940 Ordnance Survey map (Figure 128) and the 1941 plan of the Works as plot number 59 A (Figure 129). The latter plan exhibits in detail some features of Building H which were later removed, such as its original staircase situated at the north-west corner, bridging beams across the ground floor and doorways on the eastern wall.

Further changes took place in most of the buildings, including modernisation to the interior removing most of the historic fixtures and fittings. Building A was disfigured with the addition of the steel-framed sheeted cross-tower structure towards the western end in around 1944. Additions were also added on the north side of the building with the construction of the lean-to structures Buildings A1 and A2, also adversely affecting its appearance. The latter buildings can be seen on the 1963 Ordnance Survey map (Figure 130).

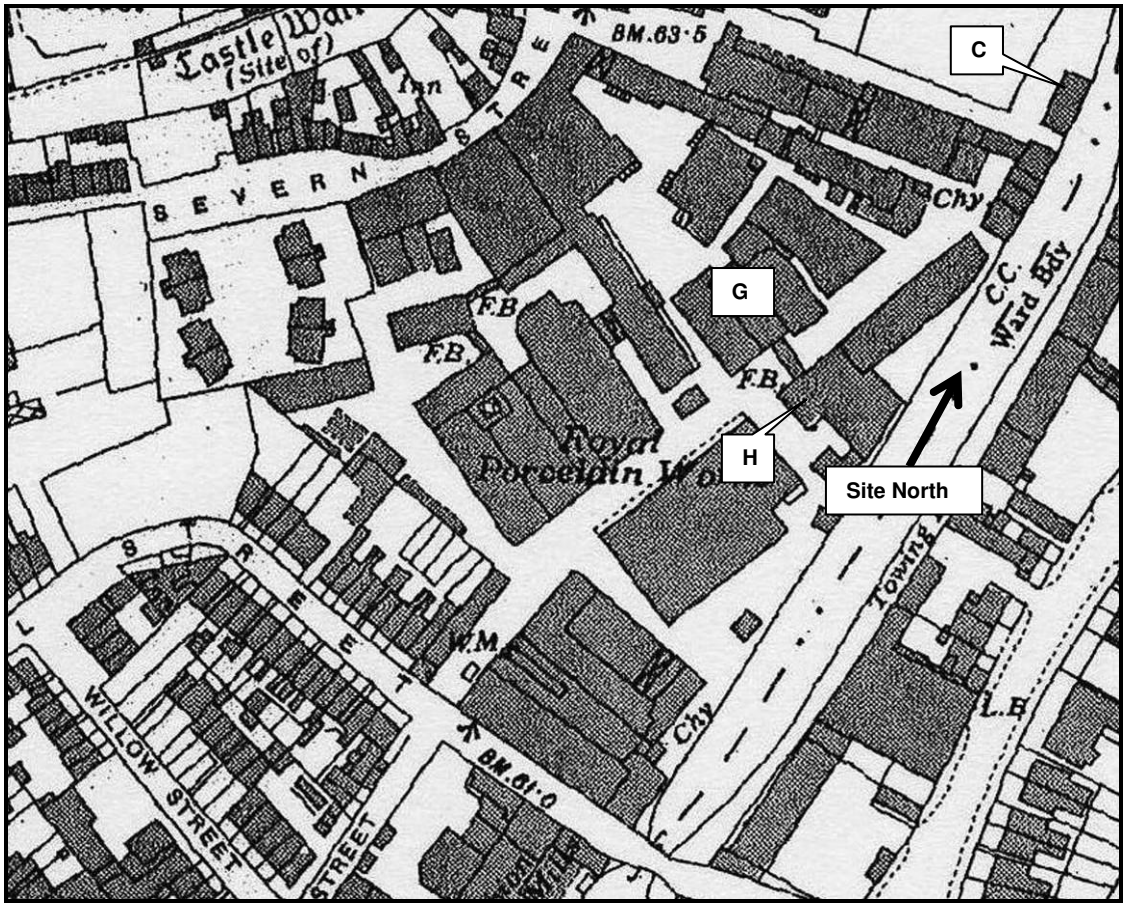


Figure 128: Plan of the Works in 1940 (OS map)

Figure 129: Plan of the Works in 1941 (WPM)

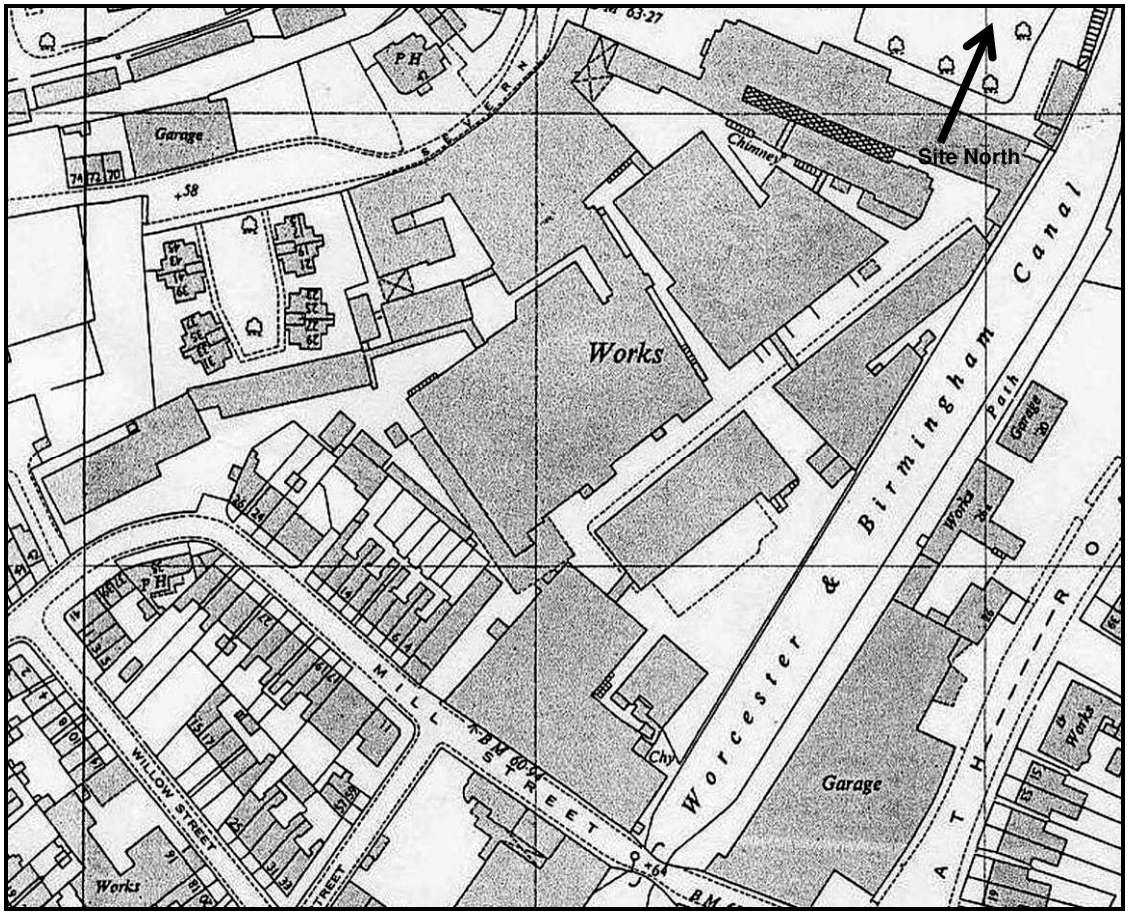


Figure 130: Plan of the Works in 1963 (OS map)

7 Conclusion

This report deals with an archaeological investigation and recording of the Slip House (Building A), the Slip House Extension/Moulders Shop (Building B), the Electricity Sub-station (Building C) and the Sagger House (Building H). The buildings were recorded in detail with scaled 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 A was established in the early 1850s. The original building had windows on both levels and a pitched roof with several skylights, but later redevelopment took place when the original roof was removed, the side walls raised, the upper windows blocked with bricks, and a new flat roof with a raised central lantern was added around 1900. These arrangements were made to extend the former Showroom. Most of the original external fabric is extant but a high proportion of internal original fittings, including carpentry and masonry detailing, no longer survives. Nevertheless, Building A is an interesting example of 19th century factory construction and is of historical and architectural importance nationally.

Building B was built as an extension of Building A in 1890. It was an elegant brick building with a coped gable end and had a parian slip room on the ground floor with tanks beneath and a mould making workshop on the upper floor. However, some of its external fabric has been dismantled and disfigured with the insertion of later openings and additions of later buildings against it. 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 the principal roof structure, part of its fenestration, exterior and interior brickwork.

Building C is the Electricity Sub-station built in the late 1920s. Most of its original fabric still survives in excellent condition. This building is an interesting example of early 20th century industrial construction.

Building H was originally built as the Sagger House which consisted of a single storey block. The footprint of that building was partially used as the foundation for the current building which took place in the early 1880s. Some later insertions have modified part of the external fabric of the ground floor but the majority of its masonry and carpentry fabrics, including the roof structure, are in good condition. Most of its original fenestration is extant. This building is also an interesting example of late 19th century factory construction.

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

208 Photographic records

3495 Digital photographs

30 35mm colour prints

14 Computer discs

10 Drawing register sheets

244 Scaled drawings

The drawing survey of Buildings A, B, C and H comprises 33 scaled drawings of which 16 are included in the report. The drawings are listed below:

No	SCALE	BUILDING	DESCRIPTION	STATE IN REPORT
1	1:20	B	Detail of blocked window inside first floor	
2	1:20	B	Detail of window of first floor	
3	1:50	B	Ground floor plan	
4	1:50	B	First floor plan	Included @ 1:100
5	1:10	B	Detail of moulded dental brickwork on gable	
6	1:50	B	South elevation	Included @ 1:100
7	1:50	B	East elevation	Included @ 1:100
8	1:10	B	Profile of dentilled brickwork	
9	1:50	B	North elevation of ground floor	
15	1:50	B	Phased plan of ground floor	
16	1:50	B	Phased plan of first floor	
18	1:50	C	West elevation	Included @ 1:100
19	1:50	C	South elevation	Included @ 1:100
23	1:50	C	Ground floor plan	Included @ 1:100
24	1:50	C	East elevation	
125	1:50	H	Ground floor plan	Included @ 1:100
126	1:50	H	First floor plan	
127	1:50	H	West elevation	Included @ 1:100
128	1:50	H	North elevation	

No	SCALE	BUILDING	DESCRIPTION	STATE IN REPORT
129	1:50	H	East elevation	
130	1:50	H	South elevation	Included @ 1:100
132	1:50	A	Cross section of the eastern end	Included @ 1:100
134	1:50	A	South elevation	Included @ 1:100
135	1:50	A	East elevation	Included @ 1:100
136	1:50	A	North elevation	Included @ 1:100
148	1:50	A	Ground floor plan	Included @ 1:100
149	1:50	A	First floor plan	Included @ 1:100
150	1:50	A	West elevation	
151	1:50	A	Cross section of the western end	Included @ 1:100
257	1:100	A	North elevation with lean-tos A1 and A2	
258	1:100	A	Long section	
259	1:100	A	Cross section with lean-to A1 and tower	
260	1:100	H	Plan of roof (indicative)	

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

Archenfield Archaeology 2006a	*Programme of archaeological work at Royal Worcester Porcelain Factory*. Unpublished Project Design.
Archenfield Archaeology 2006b	*Programme of archaeological work at Royal Worcester Porcelain Factory*. Unpublished Risk Assessment.
Binns, R W 1865	*A century of potting in Worcester*
British Geological Survey	Geological map 1:50000 Worcester Area. Sheet 199.
Cook, W 2007	The Severn Street Factory 1788-1900. *The Melting Pot*. Spring No **10**:2-5.
Dallas (ed) 2003	*Measured Survey and Building Recording for Historic Buildings and Structures.* Edinburgh: Historical Scotland.
English Heritage 1991	*The Management of Archaeological Projects (MAP2).*
English Heritage 2006	*Understanding Historic Buildings. A guide to good recording practice.*
Feryok, M and Sherlock, H 2004	*Royal Worcester Porcelain Factory and St. Peters.* Desk-based Assessment. Unpublished report by Archenfield Archaeology.
IFA 2001	*Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures.*
Jones, R 1993	*Porcelain in Worcester 1751-1951. An Illustrated Social History*. Worcester: Parkbarn.
Lovell, C and Pikes, P J 2004	*Royal Worcester Porcelain Factory. An Archaeological and Architectural Heritage Assessment*. Unpublished report by Archenfield Archaeology.
Morriss, R K and Sherlock, H 2004	*Royal Worcester Porcelain Factory. An Architectural and Archaeological Assessment of the Buildings*. Unpublished report by Archenfield Archaeology.
Museum and Galleries Commission 1992	*Standards in the Museum Care of Archaeological Collections.*
RCHME 1996	*Recording Historic Buildings: A Descriptive Specification* 3rd Edition.
Robinson, J 2005	*Royal Worcester Porcelain Factory. Former St Peter's Infant School Building. Desk-top Assessment.* Unpublished report by Archenfield Archaeology.
Standing Conference of Archaeological Unit Managers (SCAUM) 2002	*Health & Safety in Field Archaeology Manual.*
UKIC 1990	*Guidelines for the Preparation of Excavation Archives for Long-Term Storage*.
Worcester City Museum Archaeology Section 2006	*Brief for archaeological building investigation and recording, Royal Worcester Porcelain Works, Severn Street, Worcester.* No. 06/22.

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

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